Bechtel National Incorporated/ Waste Treatment Plant

Report from the Department of Energy
Voluntary Protection Program
Onsite Review
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Foreword

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

DOE-VPP outlines areas where DOE contractors and subcontractors can surpass mere compliance with DOE orders and OSHA standards. The program encourages a "stretch for excellence" through systematic approaches that 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, research and development operations, and various subcontractors and support organizations.

DOE contractors are not required to apply for participation in DOE-VPP. In keeping with DOE's VPP philosophy, *participation is strictly voluntary*. Additionally, any participant may withdraw from the program at anytime. 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 contractors and subcontractors 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 Star program.

By approving an applicant for participation in DOE-VPP, DOE recognizes that the applicant exceeds the basic elements of ongoing, systematic protection of employees at the site. The symbols of this recognition provided by DOE are certificates of approval and the right to use flags showing the program in which the site is participating. The participant may also choose to use the DOE-VPP logo on letterhead or on award items for employee incentive programs. DOE will provide the opportunity for contractors to work cooperatively with the agency to resolve health and safety problems. Each approved site will have a designated DOE staff person to handle information and assistance requests from DOE contractors.

This report summarizes the results from the evaluation of Bechtel National Incorporated/Waste Treatment Plant during the period of October 21-31, 2008, 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

BNI	Bechtel National Incorporated
BOF	Balance of Facilities
CPA	Certified Physician Assistant
CSR	Craft Safety Representative
DART	Days Away, Restricted or Transferred
DOE	U.S. Department of Energy
ECP	Employee Concerns Program
EJTA	Employee Job Task Analysis
EMS	Emergency Medical Services
HLW	High Level Waste
HSS	Office of Health, Safety and Security
IH	Industrial Hygienist
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
JHA	Job Hazard Analysis
LAB	Analytical Laboratory
LAW	Low Active Waste
NAICS	North American Industry Classification System
ORP	Office of River Protection
PIER	Project Issues Evaluation Reporting
PM	Preventive Maintenance
POD	Plan of the Day
PTF	Pretreatment Facility
PPE	Personal Protective Equipment
SETO	Safety Education Through Observation
SIP	Safety Improvement Plan
SOMD	Site Occupational Medical Director
STARRT	Safety Task Analysis Risk Reduction Talk
TRC	Total Recordable Cases
VPP	Voluntary Protection Program
VPPPA	Voluntary Protection Program Participants' Association
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. 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 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 remove more than 53 million gallons of radioactive and chemical wastes stored in 177 underground tanks and vitrify the waste for safe and secure long-term 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 construction organization for the WTP project located on the Hanford Reservation is comprised of BNI and Washington Group International nonmanual employees, building trade members, 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 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 was originally scheduled for March 2008. However, this review was postponed based upon the results of a readiness assessment conducted by the DOE Office of River Protection (ORP) in January 2008. The ORP assessment team determined that there were significant issues with the safety culture and the level of VPP commitment at WTP, and ORP recommended the March 2008 onsite review be delayed and that WTP perform a full VPP self-assessment to evaluate all areas of VPP onsite. A self-assessment was conducted by the WTP VPP Steering Committee in May 2008. The committee concluded that BNI would be ready for an onsite review by HSS in the fall of 2008.

WTP was scheduled to have an HSS Independent Oversight inspection of environment, safety, and health from October 20-31, 2008. In order to reduce the number of inspections that WTP is subjected to, and to better utilize resources, HSS decided to conduct the VPP onsite review concurrently with the Independent Oversight inspection. The Team focused primarily on Management Leadership, Employee Involvement, and Safety and Health Training, and relied on the Independent Oversight Team's results for Worksite Analysis and Hazard Prevention and Control. The purpose of this report is to document the results of the HSS review and provide the Chief Health, Safety and Security Officer with the necessary information to make the final decision regarding WTP participation in DOE-VPP.

Based upon discussions and interviews with more than 190 workers, supervisors and managers, as well as extensive observation of work activities at the construction site, the Team determined that while WTP has the fundamentals in place for establishing a culture of safety excellence, the programs are not sufficiently mature to warrant entry into DOE-VPP at the Star level.

Accordingly, the Team recommends that WTP be approved for entry into DOE-VPP at the Merit Level. As a Merit participant, HSS will conduct annual progress assessments to determine whether WTP has made sufficient improvement to attain Star status.

The Team identified a number of opportunities for improvement. These opportunities reflect those areas where WTP must further improve its performance (see table 1) to attain Star status. While no formal action plan is required to address those opportunities, these will be monitored as part of the annual progress assessments by HSS.

TABLE 1

OPPORTUNITIES FOR IMPROVEMENT

Opportunity for Improvement	Page
WTP should contact the Voluntary Protection Program Participants' Association (VPPPA) for assignment of a mentor from the construction industry.	4
WTP should look for ways to better communicate and engage both labor and management in effective and frank information exchanges.	4
WTP should explore better ways to celebrate the successes of enhancement programs and initiatives. Communication efforts should go beyond written newsletters and postings.	5
WTP should consider forming a PPE subcommittee to help address safety PPE and procurement issues to ensure that craft, Safety Assurance Department, and managers are all included in the final decision process and that resources are wisely spent.	5
WTP should take steps to more effectively communicate between projects to share lessons learned, improvements, and other corrective actions for similar work being performed, as well as ensure consistency of work practices from worksite to worksite.	6
WTP should require more visible management participation on the committees, including middle managers. WTP should consider additional participation by project controls, procurement, human resources, ECP, or others that may be able to contribute solutions to problems identified by the committees.	7
WTP should develop effective means to recognize and reward individual contributions, which focus on encouraging desired behaviors that improve the statistics, rather than on achieving the statistical goal.	9
WTP should continue its efforts to improve ECP, educate the workforce in ECP procedures, and communicate the results of ECP cases, including trends and areas being targeted for improvement.	11
WTP should ensure managers across the organization are engaged in SIP development, problem resolution, and communication of corrective actions taken to the workforce so they see what is in it for them and to further enhance the buy-in of the workers with respect to the company's pursuit of DOE-VPP status.	11
WTP should conduct an end-to-end review of the SETO program and revise accordingly to ensure that the site fully, and consistently, benefits from a mature behavioral-based approach to safety.	12
WTP should review the requirements of Part I of the DOE-VPP Manual and structure the Construction Safety Council as a joint labor management council with membership from across the organization, including middle managers. Members from the crafts should be selected by craft leadership.	12
WTP should consider using one database to document the results of weekly self-inspections to ensure that the entire site, including administrative areas, is inspected at least monthly and that findings are trended across the site.	13
WTP should develop a formal procedure for the CSR program. This procedure should identify roles and responsibilities, functional relationships across the	13

organization, and include business rules for meeting agenda and minutes, as well as method for documentation of problems and resolution.	
WTP should conduct a thorough review of all work planning and control procedures to ensure specific unambiguous guidance is available to the workforce with no room for loose interpretation or informal means to conduct hazard analysis. WTP should consider a consolidation of procedures to eliminate confusion.	15
WTP should review the role of the Safety Assurance Department with respect to hazard analysis and corresponding development and implementation of the appropriate controls. At a minimum, safety professionals and subject matter experts should be involved in this process.	16
WTP should conduct a review of all JHAs to ensure they capture the full scope of hazard identification and analysis based upon the work activity with the appropriate linkage to specific controls for hazard mitigation.	16
WTP should conduct a review of the current library of JHAs to ensure all work activities are covered by an appropriate JHA, and develop the JHAs that are lacking.	17
WTP should review STARRT card procedures and conduct refresher training of the workforce with respect to proper use, including capturing important feedback for lessons learned.	18
WTP should include employees in the development and review of the EJTA.	18
WTP should review procedures for documentation, classification, and reporting of injuries and concurrently conduct training of the workforce in proper procedures to be followed as a result of accidents/injuries that occur on the job. BNI should ensure that all forms related to the treatment and claim of injury are completely accurate, including those forms completed at offsite medical facilities. After an accident or injury, the basic information related to the incident should be disseminated to the workforce as soon as possible.	22

I. INTRODUCTION

The U.S. Department of Energy (DOE) Voluntary Protection Program (VPP) onsite review of Bechtel National Incorporated (BNI)/Waste Treatment and Immobilization Plant (WTP) was conducted from October 21-31, 2008. The DOE Office of River Protection (ORP) provides direction to and oversight of BNI in this construction project, the largest in the DOE complex.

The construction organization for the WTP project located on the Hanford Reservation is comprised of BNI and Washington Group International nonmanual employees, building trade members, and subcontractors. Currently, more than 1700 personnel work at the construction site, 1440 BNI personnel (manual and nonmanual) and nearly 300 personnel from 23 subcontractors. Trades employed at the construction site 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 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.

Approval of an applicant to participate in DOE-VPP requires an onsite review by the DOE Office of Health, Safety and Security (HSS) team (Team) to determine whether the contractor is performing at a level deserving DOE-VPP recognition. The Team evaluated WTP safety programs against the provisions of DOE-VPP. During the site visit, the Team observed work activities, attended work planning and safety committee meetings, evaluated relevant safety documents and procedures, and conducted interviews to assess the strength and effectiveness of WTP health and safety programs. This onsite review was conducted concurrently, and in cooperation, with the HSS Independent Oversight inspection of environment, safety and health. This approach ensured the results of the assessments were consistent and allowed the Team to consider the results of the Independent Oversight inspection in making a recommendation with regard to WTP participation in DOE-VPP.

The Team had contact with more than 190 employees, managers and supervisors, and subcontractors, either formally or during observation of field activities. The WTP construction site has many potential hazards similar to other large-scale construction projects. Typical workplace hazards include biological, chemical, confined space, electrical, ergonomic, environmental, fire, general industrial, gravity, physical, and stored energy. The typical workplace activities that expose workers to hazards include mobilization and demobilization, working at elevation, heavy equipment operation, excavation, general electrical activities, maintenance, welding, hoisting and rigging, and many other construction related activities.

II. INJURY INCIDENCE/LOST WORKDAYS CASE RATE

Injury Incidence/Lost Workdays Case Rate (WTP)					
Calendar Year	Hours Worked	Total Recordable Cases	Total Recordable Case Incidence Rate	DART* Cases	DART* Case Rate
2005	2,662,000	39	2.93	20	1.50
2006	1,172,000	26	4.44	16	2.73
2007	1,748,000	32	3.66	14	1.60
3-Year Total	5,582,000	97	3.48	50	1.79
Bureau of Labor Statistics (BLS-2006) average for NAICS** Code # 2362			5.4		2.7
Injury Incidence/Lost Workdays Case Rate (WTP Subcontractors)					
Calendar Year	Hours Worked	Total Recordable Cases	Total Recordable Case Incidence Rate	DART* Cases	DART* Case Rate
2005	405,000	5	2.47	3	1.48
2006	304,000	6	3.95	6	3.95
2007	409,000	9	4.40	2	0.98
3-Year Total	1,118,000	20	3.58	11	1.97
Bureau of Labor Statistics (BLS-2006) average for NAICS** Code # 2362			5.4		2.7

* Days Away, Restricted or Transferred

** North American Industry Classification System

Total Recordable Case Incidence Rate, including subcontractors: 3.49

Lost or Restricted Workday Case Incidence Rate, including subcontractor: 1.82

A review of the accident and injury statistics at WTP over the past 3 years revealed that rates are well below the construction industry average. There has been a rise in the Total Recordable Case Rate for subcontractors, and WTP should work with subcontractors to reverse that trend. The Independent Oversight review of accident and injury reporting had one finding regarding WTP procedures for classification of accidents and injuries. Of 105 cases reviewed, 6 appeared to be incorrectly classified. While the finding must be addressed to ensure all cases are appropriately classified, even if all 6 cases are reclassified, the overall statistics will still be below the NAICS averages for the construction industry and meet the statistical requirements for participation in DOE-VPP.

III. MANAGEMENT LEADERSHIP

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

Safety and quality are core values at WTP with maintaining cost and schedule performance baselines as a high priority. Senior managers are committed to maintaining a safe working environment while providing their customer a top quality product. WTP has a clearly stated policy on safe and healthful working conditions. This policy is communicated to employees at all levels through daily reinforcement during plan-of-the-day meetings, safety meetings, pre-job briefings, and during the completion of the Safety Task Analysis Risk Reduction Talk (STARRT) cards. Policies posted within the buildings at the WTP construction site facility are visible and located where both manual and nonmanual employees can view (with the exception of the title 10, Code of Federal Regulations, part 851 (10 C.F.R. 851) poster on worker rights discussed later). Safety is communicated as a value to employees that does not compete with cost and schedule, but complements the work activities, and is integrated into the work process. Interviews across the site confirmed a strong personal awareness of safety as a value.

Safety is included in the overall planning process for outyear scheduling and costs. Safety is integrated, and costs are planned for specific activities and takes into account the processes and infrastructure for future work. On a fiscal basis, safety is integrated into work planning with adjustments made as necessary when activities are planned, reviewed, and executed. This information details the necessary full-time equivalent employees necessary to staff the Safety Assurance group, the Craft Safety Representatives, VPP coordination staff, and space available for these groups. Equipment, training, and promotions are listed as line items in the budget and project controls Earned Value Management System.

Interviews of managers at both the senior management and middle management levels confirmed that BNI managers initiated the pursuit of VPP status. Interviews revealed that the program has not been effectively promoted to the majority of the workforce. Employees are aware of the VPP efforts made by BNI managers. They understand that they are responsible for safety and have the accountability for this in their daily actions. They remain unconvinced of the benefit of pursuing VPP Star status. Many workers believe the site is safe and do not see the need to improve. Others are waiting to see the value of VPP before they get involved. Union representatives have been notified of WTP's desire to pursue Star status, and the Building Trades Council has provided a letter of support in this action. However, some of the member unions in the Building Trades Council do not yet fully agree with the Building Trades Council position, and do not understand that commitment to pursue VPP is not an agreement that WTP is performing at the Star level. Managers have not effectively reached out to ensure union leaders understand the commitment. Employee interviews indicated that the lack of communication by BNI managers and the management-driven approach to VPP has been a hindrance in obtaining

union support. Other labor management disputes are undermining the VPP effort. There is not a clearly identifiable VPP Champion. There is support and acceptance by a small group, but the efforts to educate, enthuse, and involve the entire workforce have not proven effective.

A key element of success in the pursuit of VPP Star status is the mentoring relationship established between a current VPP Star site and the applicant. To date, WTP has requested assistance from other participants in performing assessments and a gap analysis. Those assessments and analyses have identified several issues that WTP needed to address. Unfortunately, WTP has not established an effective mentoring relationship with a current VPP Star participant. Consequently, personnel working on making suggestions and improvements do not have the benefit of knowing what has worked or not worked at a successful VPP site. The VPP committee has been trying to "do it on their own." This has hindered its progress in selecting and prioritizing its efforts. An effective mentoring relationship would help the VPP committee and WTP managers in selecting a few effective improvements and then being able to celebrate and advertise those successes.

Opportunity for Improvement: WTP should contact the Voluntary Protection Program Participants' Association (VPPPA) for assignment of a mentor from the construction industry.

Interviews of employees revealed that a labor distrust of managers exists throughout the workforce despite efforts by managers to reach out to labor. Much of that distrust stems from the layoffs that occurred in 2005, as well as other incidents where workers are not convinced that senior managers were held accountable for breaches of trust. Much of the workforce believes that WTP managers had assured workers there would be no layoffs, yet the layoff occurred. Managers are working to ensure the workforce is optimally structured to accomplish the mission, but job assignment and workforce mixture changes are part of the construction industry. Labor union leadership and workers alike do not trust that the system in place to rank workers is fairly applied. This distrust has contributed to fear of reprisal, failure to communicate, and a misinterpretation of the message from managers that safety is a value. WTP has taken steps in the past few months to rebuild trust with the workforce, including replacing key senior managers, but those changes have not yet reestablished the workers' trust. For example, the Team had the opportunity to attend the site-wide All Hands Meeting. At that meeting, managers provided workers an honest assessment of WTP performance against the contract. Although the project was slightly behind schedule and slightly over cost, they were within the schedule and cost contingency. Managers reiterated that cost and schedule improvements would not be made at the expense of safety. Despite this message, interviews conducted after this meeting suggested that employees do not believe the information managers provided. Several employees indicated the message they heard at the meeting was that a significant layoff was imminent. Nothing was said or presented that should have contributed to this perception.

Opportunity for Improvement: WTP should look for ways to better communicate and engage both labor and management in effective and frank information exchanges.

Managers have not been effective at communicating the results and successes of various programs and initiatives that are designed to improve working conditions and promote the safety and well-being of the workforce at WTP. WTP has several systems that are used to identify and track issues and concerns. Although as discussed later, these systems are not well coordinated with each other; they do provide a means to identify, track, and close issues. The solutions and

improvements from those systems have not been actively advertised to the workforce. The workforce is unaware of solutions that might address known problems. Employees are generally not aware of the status of Project Issues Evaluation Reporting (PIER) cases, Employee Concerns, or the Safety Improvement Plan (SIP). The result is that workers complain to their peers about problems, do not know about efforts to correct those problems, and eventually come to believe that managers do not care about making improvements. There are a number of pathways available to communicate those successes (bathroom wall, e-mails, newsletters, postings, and posters), but managers are not finding ways to determine which of those pathways is effective.

Numerous activities have taken place to improve the safety of the worksite (i.e., Craft Safety Representatives (CSR), VPP scratch cards, Safety Education Through Observation (SETO) support, procurement of desired safety equipment, etc.). Managers' support of safety initiatives and willingness to provide time for workers to participate in new initiatives and to purchase better safety equipment were clear. In some cases, these initiatives to purchase better equipment or results of safety improvements were not always effectively communicated to workers. For example, a number of workers complained that they could not obtain "mechanics gloves" that gave them better dexterity. Experience at the site had shown the mechanics gloves did not provide adequate protection for the type of work being performed. Managers supported an initiative by the VPP committee to identify and procure more effective gloves. Those gloves were being ordered, but had not yet been received, and many workers were unaware of the efforts.

Opportunity for Improvement: WTP should explore better ways to celebrate the successes of enhancement programs and initiatives. Communication efforts should go beyond written newsletters and postings.

There have been several cases recently where resources were spent, only to find out later that the equipment purchased was either deficient or unsuitable to the intended purpose. WTP managers must find ways to help workers identify and implement smart solutions that use resources effectively. For example, WTP could expand efforts to involve both the safety committees (VPP, Safety Council, Electrical Safety, and SETO) and the Safety Assurance Department in the selection and approval of additional personal protective equipment (PPE) and other safety equipment.

Opportunity for Improvement: WTP should consider forming a PPE subcommittee to help address safety PPE and procurement issues to ensure that craft, Safety Assurance Department, and managers are all included in the final decision process, and that resources are wisely spent.

WTP is structured to provide a management flow of responsibility and accountability from the senior management through to the individual workers. Responsible WTP personnel have adequate authority and resources to perform the desired tasks. Professionals and skilled craft persons are onsite to provide the technical skills and the experience to operate safe and productive work activities. Senior management involvement in health and safety-related activities is evident in its participation in site walk-throughs, communication via All Hands Meetings, and providing resources to employees for the necessary safety materials and

equipment. Interviews confirmed that managers, from foremen to superintendents to senior managers, encourage and promote safety involvement and participation. However, some of employees do not see consistent support of safety in all levels of management. In some cases, employees have raised safety concerns and entered PIERs without receiving feedback on the resolution of their issues.

The construction site is divided into five basic areas or projects. These are the Pre-Treatment Facility (PTF), Low Activity Waste Facility (LAW), High Level Waste Facility (HLW), Analytical Laboratory (LAB) and Balance of Facilities (BOF), and the Distributions organization. Each of these project areas is separately managed by an area superintendant. In addition, each of the areas is at a different stage of construction. PTF, LAW, HLW, LAB, and BOF are all performing construction of facilities, while the Distributions organization conducts support activities, such as material receipt and transfer, distribution of drinking water, and facility maintenance. Concerns were expressed by some employees that these projects function as "little cities," each with its own particular culture and work standards. While this perception doubtlessly arises from the differing management styles of the area superintendants, there did not appear to be many concerted efforts to ensure communication between the project areas. As a result, opportunities for sharing of trends, lessons learned, improvements, and corrective actions are limited.

Opportunity for Improvement: WTP should take steps to more effectively communicate between projects to share lessons learned, improvements, and other corrective actions for similar work being performed, as well as ensure consistency of work practices from worksite to worksite.

There are a multitude of programs in place at WTP designed to keep the workers and job site safe, which are discussed throughout this report. Many of these programs, while designed to enhance worker safety and health, are not entirely effective because they are confusing, have not been formalized, or are relatively new and have not had the opportunity to mature. For example, four safety committees (discussed in the Employee Involvement section of this report) exist and have specific roles and responsibilities in the safety and health program. This is in addition to efforts by the Safety Assurance Department, and the recently established CSR program. While these committees have made improvements, they have not yet reached maturity. Committees are still trying to work out processes or identify their roles. Some committees do not have charters and, subsequently, do not have a clear agreement on their mission. One possible method for consideration would be to establish an overall safety committee with subcommittees (for example, SETO, VPP, and Electrical Safety) that could report through the governing committee.

Committees are working the same issues without effectively communicating with each other. Committee actions, findings, or initiatives are not yet effectively integrated across committee lines. WTP recently initiated a monthly meeting of committee chairpersons to share actions being taken, but this effort needs time to mature. Committees have established their own tracking systems for issues and concerns, rather than using established systems, such as the corporate PIER system. Broader use of the PIER system would also have the advantage of gaining more senior management awareness and support for the issues, as well as ensuring that targets are established to institute necessary or desired corrective actions.

There is only limited participation on these committees by middle level managers and supervisors; organizations responsible for project controls, procurement, human resources, and the employee concerns program (ECP) are not represented. Consequently, committees are often stymied in their efforts to identify solutions by their own assumptions regarding rules and limitations. WTP needs to find ways to involve the other organizations that will aid the committees in suggesting practical, efficient, and effective solutions to identified problems.

Opportunity for Improvement: WTP should require more visible management participation on the committees, including middle managers. WTP should consider additional participation by project controls, procurement, human resources, ECP, or others that may be able to contribute solutions to problems identified by the committees.

Manual and nonmanual employees are held accountable for safety through their individual performance reviews. Nonmanual employees are evaluated for their contributions to safety and health through their involvement in safety and maintaining their objectives as established in their personal safety plans. Manual employees are rated for safety with a weighting of over 50 percent for their involvement in safety. A weakness in the rating system for manual employees exists in that workers are not told their individual rating or ranking and must rely solely on day-to-day feedback from their foreman for identifying potential performance deficiencies. If there are other communication issues or personality clashes between a worker and a foreman, there is no real opportunity for the worker to be aware of, and correct, a performance deficiency.

There are only limited means available for managers and supervisors to recognize excellence at the worker level. At present, employees are aware of the goal of a 20 percent reduction of accident and injury rates. Each employee will receive an award, as long as the overall project goal is met. This award is not dependent on any individual action or contribution. Consequently, there is no incentive for workers to suggest safety improvements or alter their individual behavior. A previous “On the Spot” recognition program was in place but was discontinued. Managers are reviewing this issue and have plans to put a recognition program back into place. Deficient behaviors are observed through SETO, but this system is designed as a “No Blame” system. Other deficient behaviors have been documented in the PIER system, but individual deficient performance has continued. For example, the enforcement and compliance with the smoking policy has repeatedly been raised through ECP. Both the HSS VPP Team and the Oversight Team observed many cases of workers not following work controls that had not been identified on SETOs.

Subcontract workers are governed by subcontractor coordinators who report to the area superintendents. Subcontractors are required to comply with the site safety and health procedures and policies and fulfill the requirements of 10 C.F.R. 851. Daily supervision is provided by the subcontractor safety representative who interfaces with both the Bechtel Safety Assurance and the Bechtel supervision for that area. Requirements are flowed down to each subcontractor in a seamless manner so that all employees on the jobsite are required to comply with the same requirements. The Independent Oversight Team did observe that some subcontractors did not always comply with these requirements.

WTP managers provide adequate resources for the procurement of necessary PPE and safety support equipment (i.e., fire extinguishers, fall protection equipment, fire retardant clothing, etc.). In addition, WTP provides the support staff, equipment, and materials specifically dedicated to the VPP efforts. This staff attends external VPP conferences both at the regional and national levels, and is afforded the opportunity to attend WTP Safety Committee meetings and organize safety events via a dedicated charge account. Management has also provided for a Safety Assurance Department for technical direction on safety and health-related issues in the field. A recent addition is the appointment of CSRs. These individuals are craft persons whose job description has become that of safety advocate. CSR duties are strictly safety-related and supplement the Safety Assurance Department.

Despite managers' commitment to safety, recent findings by ORP, similar findings by the Independent Oversight Team, and observations by the HSS VPP Team related to the implementation of Integrated Safety Management (ISM) consistently indicated that corrective actions have not been effective; some managers may not completely comprehend the extent of systematic approaches to safety expected by DOE in the application of ISM; and some managers may not yet believe the improvements in efficiency that can be gained thereby. This was primarily evident in the area of worksite analysis, particularly with the application of the Job Hazard Analysis (JHA) process.

Conclusion

Senior Managers at WTP are committed to safety and have put in place and support several initiatives, which contribute to the overall safety of the workforce. Pursuit of DOE-VPP is one such initiative. However, while managers do provide the direction and funds for a functioning safety program, managers need to better communicate the intent and benefits of VPP to the workforce. It is perceived by the workforce that VPP is a corporate initiative and not driven and implemented by the employees. Managers should look for ways to fully communicate improvements so that all employees are aware of the efforts taken on their behalf. Additionally, managers should institute a formal recognition program for employees for superior accomplishments and suggestions for safety. A single system for tracking, trending, and communicating lessons learned from walk-throughs, best practices, or positive behaviors that resulted in improved safety conditions with the rest of the project facilities will significantly contribute to improving not only safety, but quality and efficiency as well. The individual efforts by the various committees are credible, but should be integrated and coordinated, and their processes made more rigorous and formal. Participation by middle level managers will help engage employees and help build trust between labor and management. Finally, managers must ensure they implement a fully functioning ISM system that efficiently and effectively ensures all hazards are appropriately controlled. WTP managers must successfully address these issues to establish the culture of safety excellence required at a DOE-VPP site.

1V. 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 participation is in addition to the individual right to notify appropriate managers of hazardous conditions and practices. Field observations and interviews indicate that WTP workers are committed to their personal safety, as well as the safety of their coworkers.

The site offers many opportunities for the workforce to be involved in mitigating hazards. These opportunities include serving in one of several committees discussed below, participating in self-inspections and JHA development and review, and initiating and completing STARRT cards. Walk-downs, interviews, and document reviews demonstrated that employees are involved to varying degrees. Most employees interviewed indicated that they were aware of the various safety programs, but not all were equally enthusiastic in their opinion of the contribution these programs made to their own safety or that of their coworkers. Several employees stated that the committees were a chance for some members to avoid work. As a result of interviews and observations, the Team determined that, contrary to those opinions, individuals are truly "volunteering" to serve on committees out of a sincere desire to make constructive improvements. Some employees felt that resolution of issues by committees did not always receive the support of managers. One example given involved the adoption of a soft welding hood that, while approved by the WTP Construction Site Safety Council for use, has been apparently challenged by at least one manager who disagrees with the decision made by the Safety Council.

The construction site is well maintained and notably clean for an active construction site. The workforce consists of experienced personnel at all levels. Interviews, walk-downs, and work observations clearly showed that workers take great pride in their jobs and have a keen sense of contribution to a critical mission.

Craft personnel were nearly unanimous in their assertion that WTP was the safest place they had ever worked, but attributed that to the professionalism of the individual crafts and not to anything that managers had specifically done. Most individuals who were not members of the VPP Steering Committee had heard about VPP, but demonstrated limited grasp of what the program was about, why the company had applied for entry into the program, or how it would improve their working conditions. Several of those interviewed thought that the company was applying for the program for the good of the company, not necessarily that of the employees. The employees did credit managers' universal support of the morning stretch program as something that put the well-being of employees first. This program was also credited for providing a good opportunity for communication. As previously discussed, there was no means of positive reinforcement for the workers, and most workers felt that managers were slow to recognize extraordinary performance. The lack of a formal recognition program was highlighted by an employee at an All Hands Meeting that the Team had the opportunity to attend.

Opportunity for Improvement: WTP should develop effective means to recognize and reward individual contributions, which focus on encouraging desired behaviors that improve the statistics, rather than on achieving the statistical goal.

All employees were aware of their rights and responsibilities with respect to maintaining safety in the workplace. While workers understand their right to stop work if there is a safety issue, there needs to be reemphasis that it is not just a right, but a responsibility. Those interviewed stated that they would have no problem stopping work, and many indicated that they had, in fact, taken action to remedy an unsafe condition. The following avenues are available for reporting safety concerns:

- First Line Supervisor/Foreman – preferred choice;
- Management chain or any member of management;
- Union Stewards;
- Safety Representatives (Safety Assurance and Craft Safety Representatives);
- Project Issues Evaluation Reporting (PIER);
- Human Resources;
- Labor Relations;
- Employee Concerns Program (ECP);
- DOE Employee Concerns Program; and
- Office of Inspector General.

Most indicated that they preferred to address concerns either with their first line supervisor or the area safety representatives. However, there was evidence that the other programs had been used as well.

Information on worker rights under 10 C.F.R. 851 (the poster) is posted in some locations on the construction site. Specifically, it is located in locked bulletin boards at the "Brass Alley" by T-1, on the Second Floor of T-1, and outside the LAW lunchroom. While these locations are accessible to workers, they are not in the daily pathway for a large majority of workers. Therefore, many of the workers interviewed were unfamiliar with the poster. BNI has an opportunity for improvement in better positioning of the Employee Rights Poster for 10 C.F.R. 851 by ensuring it is posted at the alternate "Brass Alley" and the employee lunchrooms.

Several workers expressed a fear of retaliation for raising safety concerns, and some had used the BNI ECP to request investigation. The workers, in general, were not aware of their right to use the DOE-ORP ECP. This was despite the evidence that workers presented with the results of their claim investigation by BNI were provided the contact information for the DOE-ORP ECP (see below). In some cases, the concerned individual's dissatisfaction with the results of the BNI investigation resulted when the action did not include the results the concerned individual was hoping for (firing). In those cases, there had been action, but the concerned individual did not have a right to know the specifics of the final action (personal privacy concerns). Fear of retaliation has been an ongoing issue and is identified on the WTP SIP. Surveys of the workforce have shown some modest improvement in this area, but not enough to close it from the SIP. WTP managers, superintendents, and foremen need to be much more proactive in eliminating those situations where employees may feel harassed or retaliated against by peers, foremen, or general foremen.

WTP has taken steps in the last 3 years to revitalize its ECP. These actions, as well as annual program reports and workforce survey results, indicate improvement efforts are on track and should be continued. Effective actions include expansion of ECP staff, opening an ECP office at

the construction site, and more formal investigation and tracking of employee concerns. When an investigation is completed, the concerned individual is briefed on the results of the investigation and provided with information on how to contact the DOE-ORP ECP. Despite these efforts, a few employees did not realize that a formal complaint was required to initiate an investigation, and as previously mentioned, they were unaware of the availability of the DOE-ORP program.

Opportunity for Improvement: WTP should continue its efforts to improve ECP, educate the workforce in ECP procedures, and communicate the results of ECP cases, including trends and areas being targeted for improvement.

Employees have the opportunity to participate in one of several safety committees at the construction site. The VPP Steering Committee was established in October 2005 when WTP decided to pursue DOE-VPP Star status. In July 2007, the VPP Committee was chartered to:

- Compile the DOE-VPP application;
- Implement and promote VPP fundamentals;
- Organize and execute construction site VPP assessments;
- Develop and maintain SIP;
- Communicate the VPP fundamentals to the workforce;
- Communicate WTP-VPP progress to all stakeholders;
- Participate in WTP Construction Site Safety Walks;
- Participate in Functional Group Meetings;
- Promote employee involvement;
- Facilitate effective communication;
- Provide guidance to the workforce;
- Assist other DOE-VPP Star sites; and
- Promote improvement within the Construction Site Safety Culture.

The charter was revised in September 2008 to reflect changes in organizational structure and business rules for membership rotation. The Field Safety Assurance Manager was specifically added as a member of the committee. The VPP Committee consists of volunteers, both manual and nonmanual personnel, along with the Site Construction Manager and the Safety and Health Assurance Manager. A significant portion of the workload of the committee is to track completion of SIP items from previous assessments. A review of SIP revealed items that had been active longer than 12 months with no apparent manager assistance to help resolve these issues. Moreover, the results of assessments and SIP are not communicated to the general population at the site.

Opportunity for Improvement: WTP should ensure managers across the organization are engaged in SIP development, problem resolution, and communication of corrective actions taken to the workforce so they see what is in it for them and to further enhance the buy-in of the workers with respect to the company's pursuit of DOE-VPP status.

SETO is another positive approach for worker involvement. SETO is a process performed and led by the craft, which uses an observation approach to identify and educate against at-risk

behaviors through observations of workers in the work areas. These observations are publicized to the workforce in their morning meeting to enhance awareness of unsafe behaviors being committed by the workers. SETO has been functioning for more than 12 months, but at the time of this assessment, neither an approved guide nor procedure has been put in place. Interviews, attendance at SETO meetings, review of records, and actual observations demonstrated that the safety culture at WTP has not matured to the point where behavior-based observations are welcomed by the workers. A consistent method of observations does not exist among the SETO groups, nor do all craft participate as observers. For example, some observers only conduct observations after the employees are told of the observations. Other observations are documented after the employee has "prepared" for the observation. These observations are not allowed without prior notification of the employee being observed. A review of the documentation for one area revealed more than 3000 behaviors observed over a 3-week period with no at-risk behaviors identified. SETO members receive initial training for conducting observations of behavior, but no additional training or guidance is provided for members after they are selected to the committee to improve their level of observation. Some observers were not sure if they were permitted to correct unsafe conditions while conducting the observation. At one weekly Superintendent's Safety meeting, a discussion concerning whether SETO observers should instruct a worker to correct an identified deficiency with PPE yielded no consensus and no definitive answer with respect to the proper procedure. Additionally, there is no current method for SETO or other committees to recognize and reward positive behaviors. Employee interviews revealed a mixed response with respect to the contribution the SETO program makes to the safe working environment at WTP. Some indicated that the program was a distraction, while others indicated the observations gave employees a chance to verify their PPE and working conditions, and thus, improve worker safety.

Opportunity for Improvement: WTP should conduct an end-to-end review of the SETO program and revise accordingly to ensure that the site fully, and consistently, benefits from a mature behavioral-based approach to safety.

The WTP Construction Safety Council has been in operation for more than 12 months with an approved charter (24590-WTP-RPT-CON-07-006. Rev 2). The council is labor driven, but does not fully meet the criteria for DOE-VPP in that it does not function as a joint labor management council. Although two senior managers (Site Construction Manager and Safety Assurance Manager) are members and attend meetings, the council lacks the support and participation of middle managers. Moreover, new members are nominated by committee members needing replacement with no apparent input coming from the craft leadership.

Opportunity for Improvement: WTP should review the requirements of Part I of the DOE-VPP Manual and structure the Construction Safety Council as a joint labor management council with membership from across the organization, including middle managers. Members from the crafts should be selected by craft leadership.

The Team had the opportunity to attend the monthly meeting of the Electrical Safety Committee. This committee is responsible for tracking and addressing electrical issues WTP site-wide. This committee has been functioning for more than 12 months, but lacks the rigor and structure to benefit the project. No charter exists and no meeting minutes were observed to determine actions taken or forward progress planned by the committee.

Employees at WTP participate in the weekly self-inspection program. This inspection is performed by superintendents, council members, workers assigned to the area being inspected, and a representative from Safety Assurance. The Team had the opportunity to participate in several of these area inspections, including walk-downs with Area Superintendents. A vital part of hazard recognition in the field, this process has been used for more than 12 months and has excellent participation from workers, managers, Safety Assurance, and Safety Council members. However, there has yet to be a procedure or guide developed to capture the "how and why" of this process, including the need to track and trend the findings across the WTP site, not just within each facility.

Opportunity for Improvement: WTP should consider using one database to document the results of weekly self-inspections to ensure that the entire site, including administrative areas, is inspected at least monthly and that findings are trended across the site.

The work control process incorporates different ways to ensure worksite hazards are recognized, analyzed, and controlled. One way is through the JHA process. This tool's intent is to capture the workers input at the earliest point possible. It was stated by numerous employees at various levels that the JHA process is supposed to involve the affected workers when JHAs are developed, but that in reality it does not. Several (more than 40) interviews with manual workers indicated that only one worker had ever been involved in the developing of a JHA.

Workers are also responsible for participating in the STARRT process. Prior to beginning work each day, work crews are required to fill out the STARRT card for the job they are to perform that day. This program relies on the expertise of the worker to properly identify workplace hazards and which controls to implement. It is discussed further in the Worksite Analysis section of this report.

In the last year, the CSR program was put in place at WTP to better involve workers from the craft in identification and resolution of safety issues. One CSR was selected per area, and meetings are held weekly with the Safety Assurance Department to discuss areas of focus and status of problem resolution. The Team had the opportunity to attend a meeting with the CSRs, the weekly CSR meeting with the Safety Assurance Department, and the follow-on weekly Safety Assurance Staff meeting. While the flow of information between these meetings was generally complete and accurate, there was no formal documentation of meeting agenda, issue discussion, or problem resolution. Within the last several weeks, WTP has begun the process of formally establishing the roles and responsibilities for the CSR program.

Opportunity for Improvement: WTP should develop a formal procedure for the CSR program. This procedure should identify roles and responsibilities, functional relationships across the organization, and include business rules for meeting agenda and minutes, as well as method for documentation of problems and resolution.

Conclusion

WTP has afforded opportunities for employees to be involved in the various safety committees and initiatives throughout the organization. Participation by employees in these programs, although voluntary for those that do participate, is not widespread. While all employees are

involved in their own personal safety, most have not been convinced that the pursuit of DOE-VPP by senior managers can positively affect their safety or that of their coworkers. In order to meet the requirements of the Employee Involvement tenet, WTP must empower all of its employees to take an active role in establishing a safety culture that makes the site the safest place it can possibly be.

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 mitigative measures during work planning to anticipate and minimize the impact of such hazards.

WTP conducts daily Plan of the Day (POD) meetings and pre-job briefings for all BNI workgroups and subcontractors to ensure the workers are knowledgeable of facility status and any changes in facility condition. At the end of the workday, a coordinating meeting is held for update purposes to plan work for the next day. Each area conducts its own POD and coordinating meeting. BNI uses a map that includes a detailed floor-by-floor plan of the buildings to clearly show which group and what activities are expected in each area. The POD map is an effective tool for identifying potential colocated hazards during the planning process, as well as identifying and remedying potential conflicts between work activities.

WTP has several procedures which describe mechanisms for conducting hazard analyses for construction work activities. These include procedures on JHA/STARRT, WTP Hazardous Screening and Work Control, Construction Work Planning and Control, Hazardous Work Permit, WTP Hazardous Work Planning, Industrial Hygiene Exposure Assessment Strategy, etc. Additionally, analysis of specific safety hazards is detailed in procedures for safety permits, such as lockout/tagout. Collectively, these processes have not been effective in systematically identifying and analyzing hazards for all construction work activities as required by 10 C.F.R. 851 and DOE Policy 450.4. Supervisors had difficulty determining what hazard analysis was required based upon the expected work activity. One manager stated that hazard analysis at a construction site was not as complex as in the management and operating environment since construction work was repetitive from day to day. Work descriptions identified did not adequately define the activities being conducted. Procedures have not been adequately linked together to facilitate effective use of the process. A number of work activities are not required by these procedures to have a documented hazard analysis and for these activities there is no evidence that an appropriate hazard analysis has been performed. In some cases, the STARRT card completed by workers is the only record that a hazard analysis has been performed.

Opportunity for Improvement: WTP should conduct a thorough review of all work planning and control procedures to ensure specific unambiguous guidance is available to the workforce with no room for loose interpretation or informal means to conduct hazard analysis. WTP should consider a consolidation of procedures to eliminate confusion.

A cadre of safety professionals is available at WTP. A key responsibility of the Safety Assurance Department is to assist line management in the development and use of JHAs, as well as the collection of the data necessary for a risk-based approach to medical qualification and monitoring. However, through observation of work activities and numerous interviews of

employees and supervisors, the Team determined that these professionals are not effectively in the hazard analysis process. Workers are relied upon to conduct most of the hazard identification and implement the necessary controls with no input from subject matter experts or safety professionals. No hazard analysis training or expertise was required to perform this task. JHAs and STARRT cards were not well understood. The differences between JHAs and STARRT cards and how they are supposed to interface were not evident as discovered through direct observations and employee interviews. There is a heavy reliance on skill of the craft and expert worker knowledge for identification of hazards.

Opportunity for Improvement: WTP should review the role of the Safety Assurance Department with respect to hazard analysis and corresponding development and implementation of the appropriate controls. At a minimum, safety professionals and subject matter experts should be involved in this process.

WTP has a series of JHAs that describe the hazards and controls for the activities performed at the construction site. Workers are expected to review the JHAs annually through a required reading program. Also JHAs are required to be updated semiannually. If review of a JHA reveals that it is past due for the semiannual review, employees are directed not to use it and inform their supervisor of the problem. The JHA is not effectively used or implemented to fully analyze the hazard and define the necessary controls. A review of the current library of JHAs revealed that for the most part JHAs are general and not sufficiently detailed with respect to an analysis of the hazards and do not show the linkage of specific controls to the hazard they are intended to mitigate. The analysis is not clearly captured within the JHA, and in the cases the Team looked at, other analysis methods, such as baseline exposure assessments or other monitoring data, were not available for review. For example, the Team had the opportunity to attend a pre-job briefing for a pneumatic test of propane piping. This test was being conducted on piping that will support the temporary heaters during the winter months. The JHA for pneumatic testing, included as a part of the work package, was generic and did not give any specific details as to what, if any, analysis had been done to specify the 100-foot, standoff distance, or how a hierarchy of controls; i.e., face shield in addition to goggles, should be followed. Further, the JHA did not contain an analysis of the volume of piping being tested or the adequacy of the relief valve to protect the system and prevent piping rupture in the event of a regulator failure on the supply manifold.

Opportunity for Improvement: WTP should conduct a review of all JHAs to ensure they capture the full scope of hazard identification and analysis based upon the work activity with the appropriate linkage to specific controls for hazard mitigation.

Work activities are being conducted that are not proceduralized and not effectively analyzed via the STARRT card. Supervisors indicated that all work activity at WTP required a governing JHA and that one did exist for each of those activities. The Team observed that this was not the case. For example, the Team observed a transport of water bottles on the back of a stake truck. None of the bottles were secured to the truck. Consequently, two 5-gallon thermos jugs of water fell off the truck during an observation posing a hazard to the workers that were walking alongside the truck. Workers questioned indicated that there was a JHA that covered this task when, in fact, there was not. A previous JHA for onsite transport of materials had been cancelled and did contain a provision that all loads transported onsite shall be secured. No procedure or

JHA was located that replaced the cancelled JHA. Another example included the sanitizing of the water jugs where a JHA had been prepared and a subsequent procedure developed, but the adequacy of the specified PPE had not been determined. In this operation, workers use a solution of household bleach and water to sanitize the water jugs. The JHA required "gloves." Workers observed performing the operation were wearing latex gloves, but the solution was getting between the glove and the workers hand. In this case, the glove being used was increasing the workers exposure to the household bleach, and the appropriate glove had not been analyzed or specified in the JHA.

Findings by ORP and the HSS Office of Independent Oversight and the Team's observations indicate that WTP is having significant difficulty adapting from the standard construction industry approach to safety into the DOE ISM approach. Discussions with managers, supervisors, and workers indicated that they almost universally thought that ISM required performing detailed hazard analysis for every job. Consequently, WTP has tried to remove details from the JHA to make the process quicker for workers. A better approach would be to identify those tasks, which are repeated everyday throughout the construction process, and perform a JHA for each of those tasks that clearly analyzes all the hazards associated with the task, identifies the specific controls used, and clearly maps the control to an implementing mechanism. Those mechanisms may include worker skill and knowledge (training), standard work instructions, detailed special work instructions, postings, standard work rules. Workers should be used to help prepare these JHAs to ensure normal work practices are adequately included, as well as ensuring the final control sets make sense to the workers. This approach should provide the assurance that DOE is expecting in the implementation of ISM and will significantly simplify the requirements for the workers.

Opportunity for Improvement: WTP should conduct a review of the current library of JHAs to ensure all work activities are covered by an appropriate JHA and develop the JHAs that are lacking.

STARRT cards are used by all workers and serve as a good reminder for workers to review the hazards encountered during the work and the controls necessary to address those hazards. However, the application of this process lacks rigor. Prior to the start of an activity, all workers, including subcontractors, are expected to use a STARRT card to review the specific task to be completed. This card must be filled out prior to commencing work. The elements of the STARRT card identify the work scope, hazard analysis, hazard communication, and the development and implementation of hazard controls for that task. The STARRT cards being used by BNI and its subcontractors were not being derived from applicable JHAs. Since JHAs are only required to be read semiannually, some controls were missed. A review of several active STARRT cards revealed inconsistencies with respect to the detail of information, but in all cases the cards were deficient with respect to linkage between specific work activity, analysis of potential hazards, and the list of controls that could be implemented to mitigate specific hazards. The Team could not find a case where the feedback section of the STARRT card had been used. In one case, the worker had filled in "N/A" before the work was completed. When questioned as to why, the worker replied that their supervisor would not let them start work until all the sections of the STARRT card had been filled out. Another worker stated that there was never any time for the work crews to provide feedback because employees were expected to work until the whistle blew at the end of the day. The STARRT card, while serving as the primary hazard

analysis tool in the daily work activities, has fallen into a routine with workers repeating information from the previous day.

It appeared to the Team that due to the complexity of the work control processes and the misunderstanding of the purpose and use of JHA, that the WTP STARRT card is being used in lieu of more detailed hazard analysis. Workers are relying solely on their own knowledge of the worksite and work hazards rather than on more rigorous analysis, are not referring to standard work procedures or practices to determine controls, and are subsequently not identifying and implementing the expected or accepted control set. This situation was particularly evident in observation of welding activities by both the VPP Team and the Independent Oversight Team. For example, there were numerous combustible hazards that had accumulated in hot work areas, and welders were not wearing the appropriate fire retardant clothing.

Opportunity for Improvement: WTP should review STARRT card procedures and conduct refresher training of the workforce with respect to proper use, including capturing important feedback for lessons learned.

The Employee Job Task Analysis (EJTA) process has been in place for approximately 16 months with some improvements made during that time. The initial development of EJTAs at WTP was done by Safety Assurance personnel and Construction managers, with some input by the union stewards. EJTA is craft-specific with different classifications within each craft. After the initial creation, they are reviewed annually by the Industrial Hygienist (IH). They are available for the workers to review, but workers have not reviewed them with the IH either initially or at the annual anniversary. In general, workers that were interviewed were aware of the EJTA, but not what information it contained.

Opportunity for Improvement: WTP should include employees in the development and review of the EJTA.

Conclusion

Formal hazard analysis is inconsistent and not always applied where warranted at WTP. The JHA process has been identified as an area needing attention in previous assessments, including the DOE-VPP readiness review conducted by DOE/ORP in January 2008, as well as during the Integrated Safety Management System (ISMS) reverification review of August 2008. WTP must successfully address these issues, as well as any other ISMS Core Functions 1 and 2 (Define Scope of Work and Identify and Analyze Hazards, respectfully) deficiencies that may result from the inspection by the Independent Oversight Team and require formal corrective action before fully satisfying the requirements of the Worksite Analysis tenet.

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, and/or PPE). Equipment maintenance, PPE, 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 and followed by everyone in the workplace to prevent mishaps or control their frequency and/or severity.

A variety of engineering and administrative controls, coupled with PPE, are available at WTP to mitigate and control hazards for construction work activities. Some controls, such as noise protection boundaries, scaffolds, and training are well established and extensive. However, there were systematic weaknesses in application of a variety of controls in accordance with institutional requirements in areas, such as JHA and STARRT card use, discussed in the Worksite Analysis section. Hazard controls observed were not backed up by sufficient analysis.

Employees were generally knowledgeable of the requirements to wear safety glasses, safety shoes, hardhats, and electrical safety PPE. The Team did not observe any failures to comply with the requirements for these general PPE. Moreover, the requirements for lockout/tagout and fall protection were well understood, and workers were observed complying with these requirements. As previously discussed, there were cases observed where workers were not effectively using PPE for hot work or water jug sanitizing.

Workers demonstrated a good understanding of environment, safety and health requirements and a willingness to follow them. One exception was a recent procedural change that required the Superintendent and a representative from the Safety Assurance Department to sign the permit when a worker needed to leave a lift to complete a task at an elevated work level. No one was in violation of this new requirement, but several workers complained that this was an excessive requirement given the tie-off requirements and the additional time it took to complete work when attempting to track down the individuals for signature.

Most observed work was performed in accordance with established controls; however, as currently implemented by WTP, construction work control for most work assignments relies heavily on the individual workers' knowledge at the time of work rather than written instructions that supplement individual knowledge and skills. Instructions for hazard controls were left up to the workers as identified on the STARRT cards. Method of controls on STARRT cards were often incomplete and focused on the same routine tasks that were stated the day before. The lack of detailed JHAs, as discussed in the Worksite Analysis section, is contributing to this heavy reliance on workers skills and knowledge. In many cases, a detailed JHA may demonstrate that worker training is adequate to ensure controls are implemented, but it may also help identify those specific controls that should be highlighted in standard work practice instructions or STARRT cards.

Emergency preparedness program is in place and is functioning well. Drills have been scheduled for the entire year and the schedule has been adhered to with good followup reports in place.

As discussed in the Worksite Analysis section, the Safety Assurance Department has not been actively involved in hazard analysis and the corresponding development and implementation of appropriate controls. Workers are relied upon to conduct hazard identification and then select which controls to implement with no input from subject matter experts or safety professionals and without formal training in hazard identification and controls.

The WTP preventive maintenance (PM) program is used to mitigate the chances and effects of unplanned equipment failure. The WTP PM program is managed by the equipment superintendent within the Distributions organization. The overall PM program is described in *Construction Equipment Maintenance and Utilization and Construction Tools and Equipment Inspection*. This program uses a combination of preventive, predictive, and corrective maintenance to ensure the equipment, systems, facilities, and structures will function safely and reliably for their intended application. PM activities are performed by the Project Equipment Maintenance and Operation Team. The actual preventative maintenance activity is performed in accordance with Construction Equipment Maintenance and Utilization.
Daily equipment checklists have been developed for all WTP construction site equipment, such as cranes, aerial lifts, and excavation equipment. These checklists are required to be used before the use of any equipment. The frequency of PM on equipment is determined by complying with both the WTP procedure and the equipment manufacturer requirements.

The WTP Equipment Pool Preventive Maintenance program is controlled by the Construction Equipment Maintenance and Utilization procedure, the U.S. Department of Transportation regulations, and the American National Standards Institute safety inspections that are tracked on an equipment inspection log.

The maintenance schedule for construction equipment at the WTP construction site is managed through the utilization of a computer database. The computer database was developed specifically for the WTP construction site to track the various maintenance requirements across the entire spectrum of equipment.

The PM program also includes safety PPE and other safety-related equipment. For instance, all WTP rigging equipment is maintained by the Rigging Loft, where it is inspected before issuance. Each quarter all rigging equipment is thoroughly inspected and tagged, including all rigging issued to the field for use. Trained riggers are instructed on how to inspect rigging and are required to fully inspect all rigging before each use.

The Safety Assurance Department provides direct support and planning to the facilities on occupational health-related processes. The occupational medicine provider AnovaWorks interfaces with Safety Assurance in a variety of areas, including:

- Assistance during ergonomic assessments;
- Assistance in safety issue resolution;
- Comprehensive health surveys;
- Coordination of safety initiatives;
- Followup on medical monitoring results;
- General program development;
- Injury case management (lost/restricted workdays); and
- Monitoring plan development and implementation.

Occupational medicine staff and project industrial hygienists meet regularly to discuss the results of studies and trends related to physical results. This information is used to help define the need for additional workplace monitoring or emphasis during periodic reviews of comprehensive baseline surveys. However, these trends or subsequent corrective actions were not observed or tracked by management.

The medical program provider, AnovaWorks, is an established contractor of occupational medical services in the Richland, Washington, area. AnovaWorks provides occupational health services under contract to BNI. These services are provided by a staff of up to three certified physician assistants (CPA) and nursing staff at the construction site. The manager of the onsite clinic is the senior CPA. Offsite supervision is provided by an AnovaWorks doctor who rotates between various AnovaWorks facilities in Richland, but attends monthly meetings with WTP management, responds to managing WTP inquiries almost daily, and provides clinical support as needed (i.e., when WTP staff are ill or otherwise unavailable). He is regarded as the Site Occupational Medical Director (SOMD) for this site and contract.

The services provided by AnovaWorks onsite are highlighted by a banner upon entering the clinic as "first aid," but also include medical monitoring (e.g., hearing conservation studies in an enclosed sound booth) and return-to-work examinations. The term "first aid" includes both minor and serious injuries/illnesses. The staff is experienced in a broad range of services, such as the assessment and treatment of lacerations, fractures, and chest pain--common concerns in an industrial setting such as WTP. X-ray equipment is available in the clinic, providing a service which is generally regarded as "within the scope of practice" of CPAs, as well as physicians who are not otherwise certified radiology technicians. More unusual presentations are assessed in real time through telephonic consultation with the SOMD. More severe injuries/illnesses are referred directly to local emergency medical services (EMS).

Close coordination with local EMS provides for rapid transport to the hospital in Richland (less than 30 minutes transport time). In addition, the onsite manager maintains electronic communications and access to medical records with the local hospital in order to provide disability management services to the extent possible. AnovaWorks staff has a strong working knowledge of medical specialists in the area in order to facilitate treatment of occupational injuries and illnesses.

The medical program at WTP is highlighted by effective communication by the medical practitioners onsite with both their offsite medical oversight and their WTP management counterparts at the construction site. Interviews with workers and supervisors onsite confirm the perception that overall medical services are effective and efficient. There is a uniform comment from these interviews, as well as the interview with the SOMD, that this is the "safest worksite ever seen" in terms of the working environment and associated injuries/illnesses. One worker described a torn meniscus in his knee as the result of a fall on ice. He indicated that medical care was immediate and that he received appropriate treatment (surgery and rehabilitation) for over a year, before resuming his current work as a pipefitter and labor representative regarding health and safety at WTP.

The Team reviewed the results of the ORP assessment of BNI OSHA injury/illness recordkeeping for WTP during the period March 1-5, 2004. Based upon that review and the observations and interviews conducted during this assessment, BNI is working to improve its

performance with respect to reporting of injuries/illnesses. This improvement was evident in more recent records that included completion of detailed documentation by medical personnel of causative and contributory factors during each patient encounter. Each case generates an onsite investigation by WTP personnel and corrective actions as needed. For example, slips on the staircases created by carpenters have resulted in additional marking/taping of such stairs. A coding system is used to facilitate compilation of this data. The monthly compilation is reviewed by the clinic manager and his WTP counterpart to identify possible trends, which require further evaluation. Despite these improvements and as discussed in connection with the injury and illness statistics, there are concerns with the accuracy of accident and injury classifications and reporting raised by the Independent Oversight Team.

The Team spoke to several employees that requested to be interviewed. These individuals alleged that some injury cases, either their own or that of some other coworker, were improperly recorded as not work-related or had the categorization changed from work-related to personal after the initial report. In a few cases, the individual reported for emergency medical diagnosis offsite without having reported to the onsite medical clinic as required by WTP procedure. In some cases, paperwork completed by offsite medical facilities did not accurately represent the injury as a significant aggravation of a preexisting condition, and workers were denied compensation. The Independent Oversight Team identified six cases over the past 3 years that were not correctly classified with respect to recordability. These errors are contributing to problems with worker perceptions of inappropriate classification and compensation. WTP will need to address the finding from the Independent Oversight Team. In addition, WTP might consider assignment of an advocate to the worker that understands both the case and the Washington Department of Labor and Industries policies and procedures. The advocate could work directly with the individual and help ensure the worker seeks appropriate medical advice and treatment, as well as help ensure the correct forms are accurately completed.

As evidenced in worker interviews, rumors regarding worker injuries abound. Although the scope of this assessment did not provide for investigation of each individual rumor, it was clear that WTP has not been effective in ensuring facts of injuries and accidents are provided to workers in a timely manner. This contributes to workers' perceptions that WTP is not accurately reporting or recording accidents and injuries.

Opportunity for Improvement: WTP should review procedures for documentation, classification, and reporting of injuries and concurrently conduct training of the workforce in proper procedures to be followed as a result of accidents/injuries that occur on the job. BNI should ensure that all forms related to the treatment and claim of injury are completely accurate, including those forms completed at offsite medical facilities. After an accident or injury, the basic information related to the incident should be disseminated to the workforce as soon as possible.

While, in general, employees follow safety and health rules, the Team did note some disregard for certain policies and procedures. For example, fire extinguishers are being borrowed from racks and not returned. In addition, some fire extinguishers did not have racks and were placed on the ground in front of the sign. Workers were observed wearing various head wear (sweatshirt hoods, baseball caps) under their hardhats, and workers were observed smoking outside designated smoking areas; i.e., in the work area. With respect to the smoking issue, a PIER had been opened in September 2008 with no action to date. The failure to follow some

controls may be a result of the reliance on individual knowledge and skills, and a failure by workers to hold themselves and their coworkers to a higher standard.

Conclusion

While the hierarchy of controls to mitigate hazards is present at WTP, identification and implementation of controls lack rigor and oversight by the Safety Assurance Department. To meet the requirements of the Hazard Prevention and Control tenet, WTP must revise its processes to require formal identification and implementation of controls based upon an accurate definition of work scope and a comprehensive identification and detailed analysis of the hazards associated with that work. Additionally, WTP must successfully address any ISMS Core Function 3 (Develop and Implement Hazard Controls) findings from the inspection by the Independent Oversight Team and require formal corrective action before satisfying the requirements 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, that personnel recognize hazards they may encounter, and that they are capable of acting in accordance with management expectations and approved procedures.

The Team found that overall there is a strong management commitment to safety and health training at WTP. Through interviews across the organization the Team determined that managers, supervisors, and employees alike are knowledgeable about and understand the policies, rules, and procedures established to help prevent unnecessary exposure to the hazards associated with the site mission. Workers appeared to be well trained, proud of their worksite, and confident in their ability to keep themselves safe in the inherently hazardous environment of the construction site. This included the complete range from the inexperienced new hire to the seasoned worker.

Safety and health training commences when an individual is added to the workforce. All employees, managers, and supervisors attend a comprehensive, 40-hour site orientation, which includes safety and health topics, as well as an introduction to DOE-VPP. A portion of this orientation is tailored to the individual based upon expected work area and tasks. The Team had the opportunity to attend a site orientation session. Supervisors and managers also receive specific training in the Human Performance Initiative, Performance Based Leadership, Supervisor Safety training, and Environmental, Safety and Health Leadership training.

In addition to the 40-hour site orientation, employees receive work-specific training. Training includes such topics as fall protection, ladders and scaffolding, electrical safety, man lifts, hexavalent chromium, etc. Employees also receive SETO general observation training and an annual refresher training for certain training requirements.

Training is verified prior to conducting work. Employees hold a personal training card, which documents all of their required training. Dates for expiration are also on these cards to confirm when additional training is needed. Managers, supervisors, and employees are all able to document competency using their training cards, which are kept on each person. The Team was able to determine that across the board employees feel comfortable that they have received the necessary training to adequately complete their job activities and can and have asked for additional training in areas where they are unfamiliar.

WTP ensures that all persons are oriented and held accountable in contractor-controlled spaces, including subcontractor employees, vendors, consultants, students, and visiting scientists. Visitors are held accountable for their safety and the safety of those around them. All visitors must complete a site orientation and receive a briefing from security and safety assurance. All visitors must sign a STARRT card on a daily basis reviewing the basic hazard they may encounter during their visit. In addition, visitors are assigned an escort and are informed of their responsibilities on the site.

Based upon the level of training held by persons accessing the WTP site, security determines if personnel are allowed unescorted access. Those who have the Hanford General Employee

Training still need additional training specific to the WTP site operations. This is reviewed prior to access to the site.

Conclusion

Safety and Health Training is robust and effective in addressing the hazards associated with working at the construction site at WTP. Based upon the documents reviewed and the field verification, this VPP tenet has been met.

VIII. CONCLUSIONS

Safety and quality are core values at WTP. Managers believe in these values and are committed to ensuring cost and schedule constraints do not compromise safety and quality. The commitment of senior managers to safety excellence and continuous improvement is strong and efforts to pursue DOE-VPP status are credible. However, WTP does not yet meet the criteria established for DOE-VPP Star status for the Management Leadership, Employee Involvement, Worksite Analysis, and Hazard Prevention and Control tenets. Labor/management trust issues, communication shortfalls, and lack of rigor and formality in established safety programs, as well as failure to coordinate and integrate their efforts, detract from the overall desire to establish a strong safety culture based upon an equal partnership between managers and employees. The work planning and control processes at WTP are cumbersome and confusing. Longstanding deficiencies exist in both hazard analysis and implementation of controls to mitigate hazards. These deficiencies have been identified during several previous assessments with little progress toward resolution made to date. Personnel at WTP are not raising the bar on themselves or their coworkers. A key aspect of DOE-VPP is continuous improvement. The overwhelming attitude is "this is the safest place I've ever worked" which can contribute to workers becoming complacent with respect to safety. WTP must shift the focus to "we're making this the safest place it can be."

WTP has expended a considerable amount of resources and energy in its pursuit of DOE-VPP, and there have been significant strides made toward attaining the required culture. The elements of DOE-VPP have been put in place, but actions, thus far, have not yet resulted in an ingrained mature program. Accordingly, the Team recommends that WTP be approved for entry into DOE-VPP at the Merit level.

Appendix A

Onsite VPP Audit Team Roster

Management

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