



Washington Closure Hanford, LLC

**Report from the Department of Energy
Voluntary Protection Program
Onsite Review
June 11-14, 2012**



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

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

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

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

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

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

This report summarizes the results from the evaluation of Washington Closure Hanford, LLC (WCH), at the Hanford Site during the period of June 11-14, 2012, and provides the Chief Health, Safety and Security Officer with the necessary information to make the final decision regarding WCH's continued participation in DOE-VPP as a Star site.

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ABBREVIATIONS AND ACRONYMS

ALARA	As Low As Reasonably Achievable
BLS	Bureau of Labor Statistics
CA	Contamination Area
CAS	Contractor Assurance System
CFR	Code of Federal Regulations
CRATER	Compton Ratio Analysis for Testing Environmental Radioactivity
D4	Deactivation, Decommissioning, Decontamination, and Demolition
D&D	Decontamination and Decommissioning
DART	Days Away, Restricted or Transferred
DAC	Derived Airborne Concentration
DOE	Department of Energy
EJTA	Employee Job Task Analysis
EP	Emergency Preparedness
ERDF	Environmental Restoration Disposal Facility
FR	Field Remediation
FY	Fiscal Year
GERT	General Employee Radiological Training
HAMTC	Hanford Atomic Metal Trades Council
HASP	Health and Safety Plan
HGET	Hanford General Employees Training
HIM	Hazard Identification and Mitigation
HSS	Office of Health, Safety and Security
IH	Industrial Hygiene
IWCP	Integrated Work Control Program
JHA	Job Hazard Analysis
LSIT	Local Safety Improvement Team
MSDS	Material Safety Data Sheet
NAICS	North American Industry Classification System
NPL	National Priorities List
OSHA	Occupational Safety and Health Administration
PM	Preventive Maintenance
PPE	Personal Protective Equipment
RCCP	River Corridor Closure Project
RCT	Radiological Control Technician
RWP	Radiological Work Permit
SAE	Subcontractor Administrative Engineer
SHIP	Safety and Health Improvement Plan
SME	Subject Matter Expert
STR	Subcontractor Technical Representative
STS	Safety Trained Supervisor
Team	Office of Health, Safety and Security DOE-VPP Team
TPD	Training Position Description
TRC	Total Recordable Case
TRIS	Training Records Information System

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VPP Voluntary Protection Program
VPU Vertical Pipe Unit
WCH Washington Closure Hanford, LLC

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EXECUTIVE SUMMARY

Washington Closure Hanford, LLC (WCH), a limited liability company owned by URS Corporation-Washington Division, Bechtel National, Inc., and CH2M Hill Constructors, Inc., was awarded the prime contract to manage the River Corridor Closure Project (RCCP) in March 2005. The River Corridor is approximately 220 square miles (546 square kilometers) of the Hanford Site, adjacent to the Columbia River. The current contract runs through 2015 with an estimated completion cost of \$2.3 billion. In that time, WCH will decontaminate and remove 329 facilities, close or remediate 555 waste sites, remediate two high-risk burial grounds known to contain transuranic wastes, place three nuclear facilities into interim safe storage, and dispose of about 6.5 million tons of contaminated material.

Total Recordable Case rates and Days Away, Restricted or Transferred case rates for WCH and RCCP as a whole have been declining over the past 3 years and are a small fraction of the comparison industry average. A review of the accident and injury records demonstrated a willingness by workers to report minor injuries with no concerns about underreporting. WCH successfully reversed an increasing trend identified in 2009.

The WCH management team continues to be exemplary in its demonstration of leadership and commitment to safety. Since assuming the contract in 2005, WCH has transformed itself from a poor performing contractor with multiple safety issues to a top performer that holds the trust of the workforce and sets an example for other companies seeking excellence in safety and health. WCH willingly commits the necessary resources to keep safety at the forefront of workers' attention and accomplishes its mission efficiently and effectively because of its dedication to maintaining safety as a value

Since the last Voluntary Protection Program (VPP) review in 2009, WCH employees continue to be actively involved in the safety program with effectively functioning Local Safety Improvement Teams. Senior managers have improved the partnership with workers to promote safety in the workplace. The senior managers meet frequently with bargaining and nonbargaining employees to identify and jointly resolve safety issues. WCH has a well-developed and efficient program to minimize worker distractions and the subsequent safety issues that result from planned workforce reductions by assisting workers to seek other employment when their current jobs end.

WCH continues to seek improvements in its efforts to ensure that the hazards, analysis, and controls are well understood by the workforce. Improvements undertaken and implemented since the 2009 review demonstrate the continuous improvement model that is a cornerstone of the Department of Energy (DOE) VPP.

WCH continues its effective use of engineered controls to minimize its workers' exposure to hazards. With the exception of one instance, WCH controls are well-implemented and understood and ensure a safe workplace.

Safety and health training continues to be a strength for WCH. All WCH and subcontractor employees receive appropriate training to deal with the hazards in their work. The training material is well organized and has appropriate content to impart the necessary knowledge of

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hazards encountered by the workers. A user-friendly system for training records provides timely alerts to the workers of the upcoming training.

Overall, WCH continues to expand and improve its safety and health programs. Both the management team and the workforce are firmly committed to completing the RCCP in a safe, efficient, and environmentally sound manner. The cooperative atmosphere and uncompromising demand that the job is done safely and correctly the first time creates a strong culture where all workers accept and believe in their right to ask questions, stop when concerns or questions arise, and obtain correct and accurate information that addresses their concerns. WCH's efforts to reduce workers' distraction and stress by assisting them with transition to other work well in advance of project completion are exemplary. Improvements in the work planning and control process effectively address many long-term issues experienced by other sites in the DOE complex, and therefore can be used as an example for other sites. The approach taken from the beginning of the contract in 2005 to address lower hazards initially while work processes are developed and then move into the higher hazard remediation work has prepared WCH well for the remaining highly hazardous work in the 618-10 and 618-11 Burial Grounds. Some opportunities exist to further improve a mature system. WCH is encouraged to consider and address these opportunities as it develops and implements future plans. WCH is clearly committed to continuing improvement and excellence, and the Office of Health, Safety and Security DOE-VPP Team highly recommends that WCH continues to participate in DOE-VPP at the Star level.

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TABLE 1
OPPORTUNITIES FOR IMPROVEMENT

Opportunity for Improvement	Page
WCH should consider revising its leading indicators to implement a statistical baseline, upper and lower control bands, and then investigating variations outside those control bands to more effectively evaluate and use leading indicators.	5
WCH should systematically review older JHAs and revise or replace them to conform to the new process expectations.	12
WCH should ensure the Final Hazard Categorization for the 618-10 Burial Ground is updated to reflect current operational conditions and expectations.	15
WCH should ensure that RWP and radiological associated controls are consistent and captured in work instructions for radiological activities.	17
WCH should ensure controls identified in operator aids have a documented analysis captured within the WCH work control process that supports the recommended controls, and clearly defines who is responsible for performing identified actions. WCH should ensure operator aids currently in use are appropriately analyzed and authorized using the work control process.	17

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I. INTRODUCTION

Washington Closure Hanford, LLC (WCH), a limited liability company owned by URS Corporation-Washington Division, Bechtel National, Inc., and CH2M Hill Constructors, Inc., was awarded the prime contract to manage the River Corridor Closure Project (RCCP) in March 2005. The River Corridor is approximately 220 square miles (546 square kilometers) of the Hanford Site, adjacent to the Columbia River. This area is divided into four major subareas: the 100 Area, comprised of shutdown plutonium production reactors and support facilities; the 300 Area, comprised of reactor fuel fabrication, research, and support facilities; the 400 Area, which includes support facilities for the Fast Flux Test Facility and Infrastructure Program; and the 600 Area, comprised of mostly vacant land. The 100 and 300 Areas are on the United States Environmental Protection Agency's National Priorities List (NPL) and represent 2 of the 3 open NPL sites at the Hanford Site. The current contract runs through 2015 with an estimated completion cost of \$2.3 billion. In that time, WCH will decontaminate and remove 329 facilities, close or remediate 555 waste sites, remediate two high-risk burial grounds known to contain transuranic wastes, place three nuclear facilities into interim safe storage, and dispose of about 6.5 million tons of contaminated material.

The RCCP is organized around five projects to complete the work:

- D4 Project: deactivates, decommissions, decontaminates and demolishes retired nuclear and support facilities;
- Field Remediation (FR) Project: cleans up and removes materials from waste sites and burial grounds;
- Waste Operations Project: transports, treats, and disposes of low-level radioactive, hazardous and mixed waste, and manages the Environmental Restoration Disposal Facility (ERDF);
- Environmental Protection: helps protect workers and the environment by ensuring cleanup work is performed within applicable State and Federal environmental laws and guidelines; and
- Technology Needs: WCH executes RCCP by deploying technologies in the field that prove to be safe, efficient, and cost-effective.

Successful cleanup of the River Corridor will allow the land to be available for other uses (e.g., providing opportunities for public access to key recreational areas, protecting cultural resources, and shrinking the footprint for active Hanford cleanup operations to approximately 75 square miles (185 square kilometers). Key challenges include the need to remove and process buried high-activity wastes; deactivation, decontamination, decommissioning, and demolishing excess facilities; and isolating the reactor buildings while existing source terms decay (Interim Safe Storage). Per its contract with the Department of Energy (DOE), WCH performs approximately 35 percent of the work at the site with the remaining 65 percent divided among various subcontractors.

WCH was admitted to the DOE Voluntary Protection Program (VPP) in June 2009. Since that time, WCH has completed a significant amount of work within its contract scope, including most of the closure work in the 100 and 300 Areas. WCH is now performing field remediation on one of two very highly contaminated Burial Grounds (618-10) and is continuing to make significant progress on the remaining contract work.

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Continued participation in DOE-VPP requires that the Office of Health, Safety and Security (HSS) DOE-VPP Team (Team) conduct an assessment every 3 years to ensure WCH continues to demonstrate the pursuit of excellence in worker safety and health. The recertification assessment was conducted June 11-14, 2012, and this report documents the results of that review.

During the review, the Team conducted work observations at worksites within RCCP. Work observed included field remediation activities, decontamination, deactivation and decommissioning, demolition, and disposal activities. The Team also attended meetings of various committees, observed training sessions, and performed extensive reviews of documents, including work plans, procedures, hazard analyses, lessons learned, special reports, and a variety of management assessments. Additionally, the Team had contact with approximately 100 workers, supervisors, and managers from both WCH and its subcontractors.

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II. INJURY INCIDENCE/LOST WORKDAYS CASE RATE

Injury Incidence/Lost Workdays Case Rate (WCH)					
Calendar Year	Hours Worked	Total Recordable Cases (TRC)	TRC Incidence Rate	DART* Cases	DART* Case Rate
2009	1,320,140	6	0.91	1	0.15
2010	1,439,746	0	0.00	0	0.00
2011	1,693,516	2	0.24	0	0.00
3-Year Total	4,453,402	8	0.36	1	0.04
Bureau of Labor Statistics (BLS-2010) average for NAICS** Code #56291 Remediation services			3.6		1.9
Injury Incidence/Lost Workdays Case Rate (WCH Subcontractors and Vendors)					
Calendar Year	Hours Worked	TRC	TRC Incidence Rate	DART* Cases	DART* Case Rate
2009	990,321	4	0.81	1	0.20
2010	1,135,210	5	0.88	0	0.00
2011	1,563,590	2	0.26	0	0.00
3-Year Total	3,689,121	11	0.60	1	0.05
Bureau of Labor Statistics (BLS-2010) average for NAICS** Code # 56291 Remediation services			3.6		1.9

* Days Away, Restricted or Transferred

** North American Industry Classification System

TRC Incidence Rate, including subcontractors: 0.47***DART Case Rate, including subcontractors: 0.05*****Conclusion**

TRC and DART case rates for WCH and RCCP as a whole have been declining over the past 3 years and are a small fraction of the comparison industry average. A review of the accident and injury records demonstrated a willingness by workers to report minor injuries with no concerns about underreporting. WCH successfully reversed an increasing trend identified in 2009. The low rates for the past 3 years clearly meet the expectations for continued participation in DOE-VPP.

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III. MANAGEMENT LEADERSHIP

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

In 2009, the Team observed that the WCH management team had been exemplary in its demonstration of leadership and commitment to safety. WCH had progressed from an organization that was perceived as valuing production over safety to an organization that effectively accomplishes its mission because of safety. The commitment to provide the necessary resources, the actions that demonstrate the personal leadership and involvement in safety, and the relentless focus on doing the job right were evident and fully demonstrated the Management Leadership tenet of VPP.

Since 2009, the WCH management team has experienced significant change. New personnel were assigned to all the senior management leadership positions. WCH filled many of the senior leadership positions with personnel from within WCH. These changes produced an even more effective organization and a renewed emphasis on safety and health excellence. The new company president brings extensive experience in nuclear decommissioning, along with a strong emphasis on the human aspects of management. She has intentionally emphasized to the entire management team her expectation that all managers need to spend time in the field interacting directly with workers on a regular basis.

In the past 2 years, multiple concerns related to safety culture have been raised and investigated at the Hanford Site. Managers, workers, and supervisors at WCH interviewed by the Team universally expressed to the Team members that those concerns about safety culture did not apply to WCH. All workers contacted by the Team expressed great trust in the management team and were proud of their ability to raise questions and have them addressed quickly. Managers effectively prevent any schedule or production pressures from affecting workers' attitudes or work habits.

In 2009, the Team identified two opportunities for improvement related to Management Leadership. The first was to provide measurable targets for as many actions in the Safety and Health Improvement Plan (SHIP) as possible as a means of identifying successful achievement of the goals. The second was to ensure wider and more frequent dissemination of SHIP and monthly status updates. WCH continues to produce an annual SHIP that contains many planned actions on a monthly basis. The SHIP is disseminated on WCH's internal Web site and is available to all workers. The SHIP begins by identifying the previous year's focus areas with a brief evaluation of progress in those areas and then identifying the focus areas for the coming year. For fiscal year (FY) 2012, WCH identified six broad improvement areas and identified improvement actions in each area. The actions described for each area tend to be very broad, but are typically not measurable. WCH should continue to identify some measurable targets and goals for actions in SHIP.

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With regard to performance indicators, WCH relies primarily in the contractor assurance system (CAS). The CAS contains 24 measures in 7 different areas. Based on a review of the system, however, it is heavily dependent on lagging indicators, using primarily the number of incidents or issues. Only four indicators (Self Assessments and Surveillances, Assessment Grading, Management Walkthroughs, and Emergency Preparedness Drills) would appear to be leading indicators. Of these leading indicators, the basis for the indicator is not necessarily clear. For example, the Self Assessments and Surveillances indicator uses a percentage of assessments performed that were scheduled. This indicator could be misleading if few assessments were performed, but all were scheduled, such that WCH reached 100 percent performance. Similarly, even if a large number of narrow assessments were completed, the indicator does measure the effectiveness of those assessments. The measurement of Management Walkthroughs as a direct indicator (number of walkthroughs) could also be similarly misinterpreted. Other DOE-VPP sites have successfully used these types of indicators not by establishing an expected minimum or maximum, but rather by establishing a baseline number that is expected. While variations from that baseline might be expected, upper and lower control bands are established using statistical analysis. Variations either above or below that control band are investigated for either a positive or negative cause. This approach allows for more effective use of leading indicators. WCH should consider revising its leading indicators to implement a statistical baseline, upper and lower control bands, and then investigating variations outside those control bands to more effectively evaluate and use leading indicators.

Opportunity for Improvement: WCH should consider revising its leading indicators to implement a statistical baseline, upper and lower control bands, and then investigating variations outside those control bands to more effectively evaluate and use leading indicators.

WCH continues to do an excellent job of ensuring adequate resources are provided for safety and health. WCH assigns a site safety representative to each area and subcontractor. In addition, those safety representatives are expected to continue their professional development in safety. Professional development includes obtaining degrees in safety and pursuit of Associate Safety Professional and Certified Safety Professional certification. Each of these processes is supported by WCH through tuition reimbursement and payment of course and examination fees. Further, WCH continues to be intentional in its support for safety communication and promotional efforts. A professional communication staff works with safety and health personnel to identify, design, and publish a variety of posters, publications, and educational campaigns to make workers more attentive to safety. Resources for these efforts reflect a balance of reimbursable funds from DOE and contributed resources from WCH's parent companies.

WCH is also providing resources to prepare workers as the contract approaches its end date in 2014. Recent studies have linked worker concerns about impending layoffs to reductions in safety attitudes and compliance, and increases in accidents and injuries from behavioral errors. Other DOE cleanup and closure projects have seen similar increases in human errors as those projects approach completion. In order to minimize the potential distractions and behavioral errors as the project approaches completion, WCH notifies workers up to a year in advance of their expected termination date. This allows the workers to begin preparation by updating skills, taking training classes, preparing resumes, and financial planning. Workers have access to four "Closure Coaches" hired specifically to help workers prepare for their next job. In addition, WCH has a tuition reimbursement program that helps workers gain new skills and education that might improve their marketability in the workforce.

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Subcontractor management remains a significant aspect of the WCH mission. With 65 percent of the field work being performed by subcontractors, overall project performance is heavily dependent on ensuring individual subcontractors are aware of, and meet, DOE and WCH expectations. In order to ensure subcontractors understand and meet these expectations, WCH contractually establishes that subcontractors must use WCH safety and health processes and procedures. This also serves to ensure consistent practices by all subcontractors across the variety of projects. Before WCH authorizes a subcontractor to begin work, the subcontractor must have met the expectations for Integrated Work Control, including a joint review of the Job Hazard Analysis (JHA) between the subcontractor and WCH.

Each subcontractor also has a WCH Area Project Manager, a Subcontractor Technical Representative (STR), and a Site Safety Representative. These WCH personnel are colocated with the subcontractor at the site and provide day-to-day oversight and direction to the subcontractor. Although there is a contractual separation, WCH continues to treat subcontractors functionally on par with any WCH employee and expects subcontractors to exhibit the same high standards.

WCH modified its subcontractor performance measures to include criteria for reporting all incidents, injuries, and accidents. Subcontractors are not measured by the number of reported incidents, but are held heavily accountable, including withholding of quarterly bonuses for up to two quarters, if they fail to report an injury, illness, or other reportable occurrence.

WCH has made several improvements to the STR program in the past 3 years. WCH has approximately 20 construction STRs directly assigned to observe and monitor large subcontractor activities. In addition, WCH has approximately 60 service STRs that monitor smaller service subcontractors and 10 contract STRs that provide administrative support. WCH also employs Subcontractor Administrative Engineers (SAE) who provide support to the construction STRs. The SAE's support allows the construction STRs to focus on the work observations and surveillances while the SAEs support the contractual aspects of the subcontract management requirements and act as a liaison between the STR and WCH personnel administering the contract.

The WCH Health and Safety group performs periodic quality reviews of the STR program that provide valuable opportunities to improve the STR process. WCH performed one such review earlier this year. The Environment, Safety, Health and Quality group evaluated the STR program by determining how well the subcontractors understood their own health and safety requirements, reporting requirements, and performance. All these factors represent the contractual elements that an STR is required to reinforce with the subcontractors. By evaluating the subcontractors' understanding of these elements, WCH can evaluate the effectiveness of the assigned STR. WCH identified several improvements from this review and the STR program manager was developing improvement plans.

A final challenge WCH has effectively addressed is the "bump and roll" process under the Hanford Atomic Metal Trades Council (HAMTC) bargaining agreement. Under that process, workers with more seniority that are laid off from other site contractors can bump lower seniority personnel. Since WCH has a disproportionately larger number of lower-paid decontamination and decommissioning (D&D) workers, the bargaining unit personnel tend to be the most junior in seniority. Consequently, when other site contractors go through force reductions and layoffs, WCH sees a large influx of new personnel. These personnel have not been oriented or integrated into the WCH safety expectations and culture. Recognizing this as vulnerability, WCH requires

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all personnel, no matter their seniority at the Hanford Site, to complete all initial worker training for WCH. WCH uses this training as an opportunity to ensure that newly assigned workers clearly understand their right and responsibility to raise safety questions, issues, or concerns without fear of retribution. It further provides WCH the opportunity to build trust with the new workers before they are assigned to field work.

Conclusion

The WCH management team continues to be exemplary in its demonstration of leadership and commitment to safety. Since assuming the contract in 2005, WCH has transformed itself from a contractor with many safety challenges and multiple safety issues to a top performer that holds the trust of the workforce and sets an example for other companies seeking excellence in safety and health. WCH willingly commits the necessary resources to keep safety at the forefront of workers' attention, and accomplishes its mission efficiently and effectively because of its dedication to maintaining safety as a value. WCH clearly meets the expectations for continued participation in DOE-VPP as a Star site.

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IV. EMPLOYEE INVOLVEMENT

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

The 2009 Team found employee ownership was strongly rooted across the WCH organization. Managers and employees were working together to develop open lines of communication, identify and promote safety and health responsibilities, goals and expectations, and identify potentially hazardous conditions.

WCH has further strengthened these attributes over the past 3 years. The president and the senior managers have improved the communication with the workforce by holding frequent meetings and issuing daily communications online to keep the employees informed on all issues. WCH's professional communication staff is dedicated to providing news bulletins and newsletters, designing excellent safety posters in consultation with the safety department, and other forms of communication. The efforts of the communication staff were visible in all of the work areas. Additionally, WCH works to minimize or prevent rumors by promptly issuing safety bulletins for incidents and events. The bulletins help employees get relevant facts and build their trust that corrective actions are effective.

WCH has also enhanced communication with the bargaining unit employees by frequent meetings between the senior managers and the HAMTC safety representatives. These safety representatives are trusted by all personnel, including subcontractor personnel. Their frequent presence, willingness to ask hard questions, and encouragement to workers to speak up when they have questions remain significant strengths of the WCH safety program.

WCH employees continue to believe they have the right to pause or stop work if they perceive danger to themselves or their workers without any fear of retribution. In fact, interviews with workers demonstrated that pauses or stop work actions could be applied to any task that workers felt uncomfortable with, whether it was perceived danger or something as simple as a situation where the workers may question the applicability of the work steps as described. This belief is reinforced by the company president's widely distributed poster "Carol's Expectations," which clearly states "If unsure, stop and seek help."

WCH continues to use Local Safety Improvement Teams (LSIT) to foster greater worker involvement. There are 15 LSITs located in various WCH work areas. LSITs meet monthly and carry out the safety initiatives and handle safety issues identified by the workers, perform safety walkdowns of their areas, and log their findings with associated photos to ensure proper closure. In the past 3 years, WCH reinstated safety logbooks where workers can enter safety issues. The LSITs review these logbooks and track issues to closure. If the LSIT cannot close an identified item within 30 days, it is elevated to upper management for closure. LSITs also initiated WCH's slips, trips, and fall prevention program. The field remediation group invites its

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subcontractors to participate in its LSIT where WCH and subcontractor employees work as a team.

WCH has several employee recognition programs. One employee recognition program is the “On the Spot Program,” which can be given for any act, including safety. The awards are \$50 gift certificates. Any employee can nominate a coworker for the award. Once approved, WCH provides the award to the employee’s supervisor for presentation in staff meetings or plan-of-the-day meetings. WCH has allocated \$18,000 in FY 2012 for this program. The second employee recognition program is the Osprey Awards, for individuals or teams, worth \$1,500. Named for a native bird species found in the region, a Recognition Task Group selected the Osprey to represent the Employee Recognition Award because its unique nature supports its ability to complete its mission safely and efficiently. These awards recognize special acts or services that significantly improve safety or efficiency. An award committee consisting of 8-10 members reviews the nominations for these awards. The company president then selects the winners. In FY 2012, WCH had awarded 10 Osprey awards as of this assessment. Additionally, the Safety Department provides many small recognition items for actions that improve safety. Finally, each manager has an allocation of nonreimbursable funds for employee recognition.

The WCH employee discipline process continues to provide progressive discipline for infractions of the WCH Standards of Conduct. The Standards of Conduct list infractions considered misconduct, serious misconduct, or extremely serious misconduct. WCH may give the employee an oral or written warning, suspension, or termination depending upon the severity of the infraction. The Hanford General Employee Training (HGET) provides an overview of the discipline process, and staff meetings and required reading reinforce the standards. WCH processed 25 disciplinary cases from June 2011 to June 2012, none of which was safety-related. Most cases resulted in verbal or written warnings, with only three suspensions and two terminations. All workers interviewed by the Team believed WCH administered the discipline process fairly.

Conclusion

As in 2009, the WCH employees continue to be actively involved in the safety program with effectively functioning LSITs. Since 2009, the senior managers have improved the partnership with workers to promote safety in the workplace. The senior managers meet frequently with bargaining and nonbargaining employees to identify and jointly resolve safety issues. WCH continues to meet the requirements of the Employee Involvement tenet of DOE-VPP at the Star level.

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V. WORKSITE ANALYSIS

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

In 2009, the VPP Team noted that WCH has effective methods and processes in place to identify hazards associated with RCCP. In all cases, workers demonstrated the ability to recognize new or unexpected hazards and to step back or stop work when those conditions were encountered. The Team expected WCH would be able to gain significant improvement in its work planning process by modifying the planning process to perform and document more detailed analysis of those identified hazards. The ability to perform and document detailed hazard analysis had been demonstrated through special studies and lessons learned, and the Team believed that ability should be incorporated into the work planning process.

Interviews with job planners and workers confirm that WCH continues to pursue improvements in the work control process. WCH plans work activities using a team approach with workers, subject matter experts (SME), supervisors, and managers committed to ensuring that all involved personnel contribute to the safe performance of the work activity. As an example, even though a particular work evolution might be repetitive, WCH performs a walkdown, group hazard identification, and reconstitutes the JHA as a normal part of business rather than attempting to reuse the old job package and performing a quick review to evaluate if conditions have changed. The rationale for this approach is that there may be new people assigned and new ideas that can be employed or used to improve the performance of the job. This approach builds upon a 2009 opportunity for improvement that suggested clear definition and documentation of analysis and linkages to hazards would significantly enhance the JHA process.

Other improvements undertaken by WCH include: (1) reorganization and realignment of the industrial hygiene (IH) staff to be more user-oriented; (2) moving the management and maintenance of the comprehensive baseline exposure database from the D4 safety manager to the WCH program manager; (3) use of interviews with retired Hanford workers to augment reviews of historical files; (4) elimination of the site-specific health and safety plans (this information is now covered in a project health and safety plan, which includes multiple sites); and (5) a revision of the Integrated Work Control Program (IWCP).

Prior to the Team's arrival, WCH released PAS-2-1.1, Rev 9, *Integrated Work Control Program*, for training purposes with a target date of mid-July for implementation. This revision implements corporate work planning and control expectations from URS, the lead parent company of WCH. Improvements and clarifications include: training and work scheduling requirements; field changes and stop work discussions; and reclassifying "emergency work" as "urgent" work. Attachment 5 to the procedure documents the criteria for convening a Senior Management Review Team and Attachment 4 provides a list of SMEs. Additional enhancements include: simplification of the technical procedure section, and adding the requirement that a qualified work control planner is responsible for developing technical procedures.

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The revised IWCP describes and defines the categories of work performed. Classifications include Exempt, Urgent, Routine, Craft, Type 1, Preventive Maintenance (PM), or Technical Procedure. Notably, the WCH work planning process requires a JHA for all types of work with the exception of “routine” work. In order for any work to be classified as routine work, the responsible manager must complete a Routine Work Determination Form that includes reviewing the area, the workers’ skills, their familiarity with the task, the need for any work permits, or the interface with nuclear safety systems or nuclear facilities. The responsible manager must document and sign for that determination, and must authorize the routine work on a daily basis.

Section 6.5 of the IWCP procedure defines the JHA process used for planning WCH work. After the workscope is defined, the JHA process is initiated to identify the activity hazards associated with the work. This effort requires a walkdown of the worksite by supervisors, craft, and SMEs to ensure identification of hazards is comprehensive. In some cases where walkdowns involve exposure to hazardous substances or situations, the walkdown team may use a tabletop discussion to address the hazards. WCH analyzes the hazards and develops a set of controls to eliminate or mitigate the hazards. The approach to analysis includes a “What If Analysis” where the team engages in discussions of potential scenarios and consequences. The JHA team documents the analysis on the JHA form. For hazards already analyzed in the Hazard Identification and Mitigation (HIM) document, project Health and Safety Plans (HASP), and Radiological Work Permits (RWP), the JHA refers to these documents for the analysis, but includes the specific controls. Controls identified in the JHA are then incorporated into the appropriate work control documents.

During this review, the Team sampled several JHA documents and associated work instructions from Operations (ERDF), D4, and FR. WCH now uses a JHA that specifies the major job step/activity, the potential hazards, required controls and critical resources, and analysis. This approach is an improvement since the 2009 review where the activity, hazard, and controls were documented, but not the analysis. Also, more detailed information relating to work steps rather than general descriptions is an enhancement. Potential hazards are now linked to steps versus general descriptions. In addition to controls, which have always been documented, critical resources are now included that can augment control implementation if needed. The analysis section now references a more complete set of institutional controls and requirements found in the HIM document and HASP.

The Team reviewed a JHA in a D4 work evolution to neutralize and dispose of tank waste, one tank containing sulfuric acid and another containing sodium hydroxide. The JHA clearly identifies the hazard, defines the required controls for workers both for normal activities and in case of a spill or exposure, and identifies the documented exposure assessment. The Team cross-referenced the JHA to the work instruction to evaluate incorporation of controls into the document used by the workers to perform the work. The JHA contains controls for dermal and inhalation exposures to corrosives. The work instruction clearly identified the specific gloves, respirator type and cartridge, and other necessary controls. A JHA reviewed from the FR project also examined the chemical exposure hazard. Consistent with the previous example, the reference to the exposure assessment document provides the clear analysis linkage between the hazard identified and the controls employed.

One of the projects WCH is currently engaged in is the remediation of the 618-10 Burial Ground. Waste from the 300 Area laboratory that examined irradiated fuel and reactor components is buried in drums, boxes, and vertical pipe units (VPU). The Team reviewed the IH exposure

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assessment for 618-10 Burial Ground Remediation that documents the site characteristics, waste descriptions, workscope, hazardous agents/characterizations, exposure routes, presence of Beryllium and other more hazardous agents (such as hydrogen cyanide), the IH Monitoring Plan, engineering controls, administrative controls, personal protective equipment (PPE), and medical surveillances required. In addition to nondestructive assay to determine the presence of particular radioactive isotopes, WCH employs an engineered system to address the potentially pyrophoric materials that may be in the waste drums (See Hazard Prevention and Control section).

During this review, the Team reviewed a few JHAs that indicate WCH should conduct further training or emphasis to fully capture the intent of documenting concise, useful analysis. Although not prevalent in the sampling set reviewed by the Team, several JHAs in the analysis section state that the information needed to support the control is in the Material Safety Data Sheet (MSDS). This requires the worker or user to research the MSDS to determine controls. This JHA ambiguity may result in misuse or application. Also, some older JHAs may be in use that were not consistent with the new process. For example, another JHA reviewed by the Team observed that the last step documented was demobilization, with no unique hazards identified, “Not Applicable” for controls, and no analysis provided. While no unique hazards may be present, hazards remain that may be already documented in HIM or HASP as indicated in the initial step, which identified “Controlling General Hazards” as a major job step/activity with the corresponding analysis captured in HASP. WCH should systematically review older JHAs and revise or replace them to conform to the new process expectations.

<p>Opportunity for Improvement: WCH should systematically review older JHAs and revise or replace them to conform to the new process expectations.</p>

The IWCP refers in several locations to “risk.” Examples include requiring critical resources to help manage risks, or evaluating if an activity is “low risk” and can be performed as routine work. The IWCP does not define the term “risk” or provide any consistent thresholds to determine or evaluate risk. Risk is normally considered a function of consequence and probability. To be consistent, WCH should consider removing the word *risk* from its hazard analysis process and simply refer to hazards and controls.

WCH analyzes trends on a yearly basis, a 2-year rolling analysis, starting with contract inception and depending upon the indicator and the amount of data available. As previously discussed in Management Leadership, WCH uses these trends to develop SHIP. For example, WCH identified the need for additional oversight of subcontractors concerning excavations in 2011. WCH incorporated this need as a goal into the safety and health employee involvement goal for 2012. Vehicle incidents remain an issue for WCH and additional emphasis, especially using spotters and caution around obstacles, is planned for FY 2012. Tracking and trending heat stress conditions, equipment, and preparation from FY 2012 enabled WCH to better prepare and plan work through the summer of FY 2011 without any heat stress issues. WCH provided all employees with information on hydration, water, breaks, and acclimatization through bulletins and pre-job briefings. During this assessment, the Team observed preparation and focused activity relating to heat stress in preparation for the upcoming FY 2012 summer months.

Self-treated incidents are also tracked and trended, which results in additional oversight, focused observations, and specific campaigns to address the trends. Hand and finger incidents; slips, trips, and falls; and fall protection items were some of the trends identified with additional

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emphasis and safety campaigns assigned to each. As a result of additional emphasis and focused campaigns, WCH has observed a reduction in these incidents.

Conclusion

WCH continues to seek improvements in its efforts to ensure that the hazards, analysis, and controls are well understood by the workforce. As evidenced by the improvements undertaken and implemented since the 2009 review, WCH embodies the continuous improvement model that is a cornerstone to DOE-VPP. WCH clearly meets the VPP tenet of Worksite Analysis for a DOE-VPP Star site.

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VI. HAZARD PREVENTION AND CONTROL

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

Substitution and engineered controls are the preferred method used by WCH, followed by work practice controls. When those controls are not sufficient, PPE may be used. WCH only uses PPE as the final protection level for hazards that substitution, engineered controls, and administrative controls could not fully mitigate, or when otherwise required by regulations.

WCH has demonstrated a healthy interest in evaluating and improving its processes to reduce or eliminate hazards to the workforce by acquiring new engineered controls through commercial resources or developing them internally. The Team observed numerous examples of engineered controls during the review. Some examples include:

- Daily application of soil fixatives to reduce potential spread of contamination at ERDF;
- The drum penetrating facility at the 618-10 Burial Ground, which allows for the remote handling and treatment of waste drums prior to operators contacting the waste;
- Blast shield glass installed on the excavating equipment; and
- Hyper-accurate Global Positioning System to monitor and ensure appropriate cell soil-compaction activities at ERDF.

As discussed in the 2009 VPP Report, one of the most innovative examples of WCH's engineered controls was the development of the Compton Ratio Analysis for Testing Environmental Radioactivity (CRATER) device. The CRATER is a radiation detection device that attaches directly to the excavator bucket and within 15 seconds determines if any spent nuclear fuel materials are present. Prior to the development of the CRATER, FR employees would excavate potential spent nuclear fuel from burial sites into "survey mounds." Workers transported the spoils to an evaluation area where the Radiological Control Technicians (RCT) donned PPE and manually surveyed the mounds for fuel elements. WCH has continued to use the CRATER device at some FR sites. WCH has improved the reliability of the CRATER device by making it more robust and has refined the software to provide greater accuracy.

WCH identified one issue regarding WCH controls immediately prior to this review. As workers remove drums from the trenches in the 618-10 Burial Ground, the drums are set aside, analyzed, and characterized to determine treatment prior to disposition. A key part of the characterization and treatment process involves the use of the drum penetrating facility, commonly referred to as the drum punch. The drum penetrating facility provides: (1) remote monitoring of radiation, IH, and temperature; (2) video monitoring and recording capability; (3) remote operation of the drum penetrating equipment; and (4) the ability to add stabilizing fluids (water or mineral oil) to the drum contents to render the contents safe for personnel to approach and sample. The drum punch facility is also equipped with a gravity-fed, cone-shaped hopper filled with sand that can

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be released remotely in the event of a fire during drum penetration. The drum punch enclosure is a commercially available, hazardous material storage unit that was modified for the specific purpose of housing the drum and penetration equipment. A high-efficiency particulate air filter exhaust ventilates the enclosure.

On June 4, 2012, while still in the hazardous material storage unit, workers observed tendrils of smoke emanating from a recently punched drum. Recognizing the potential for fire, the operators activated the sand hopper to extinguish any reaction. However, the sand hopper released only a small amount of sand. The sand hopper is equipped with an external vibrating agitator designed to ensure the sand dumps efficiently. Observers stated that the agitator was functioning, but the sand did not dump. Recognizing the significance of the problem, operators used a nearby telehandler to tap the sand hopper causing the remaining sand to dump. During this DOE-VPP review, WCH personnel were still analyzing the causes for the failure of the system to operate properly. Analysis also revealed that there was no testing or PM performed on the drum punch facility's sand hopper. Because of the design, any periodic testing of the system would result in significant corrective maintenance and cleanup to the hazardous material storage unit and its components. Both DOE and WCH reviewed the readiness of the facility prior to operation. WCH personnel continue to evaluate this issue to ensure appropriate operating conditions, and WCH suspended drum punch operations until the failure is understood and corrected.

A review of the Final Hazard Categorization report (October 2011) for the 618-10 Burial Ground revealed that the report did not address the current recommended approach for stabilizing and remediating VPUs. These units contain very highly contaminated waste from the 300 Area's fuel research and development activities and present the highest hazard remediation activities yet encountered. The current planned approach (not yet in use) is to use a large drill or auger to homogenize the wastes in VPU and then draw representative samples. The report describes an intrusive sampling method that is no longer under consideration. The report does not mention the newly accepted VPU "homogenization" process. WCH has initiated the development of an individual Documented Safety Analysis to address the VPU operations as a separate project from the trenching operations currently underway in the 618-10 Burial Ground. The Final Hazard Categorization has been revised three times in the past 2 years and should reflect these decisions and changes accurately to ensure appropriate hazard analyses are maintained and in place for safe operations.

<p>Opportunity for Improvement: WCH should ensure the Final Hazard Categorization for 618-10 Burial Ground is updated to reflect current operational conditions and expectations.</p>

When engineered and administrative controls are not enough, WCH requires use of PPE, and specifies the correct PPE in work documents, such as operating and maintenance procedures, technical procedures, work packages, and RWPs. During work observations, the Team observed all WCH personnel using appropriate PPE and honoring all postings as prescribed by the work controls requirements. When required, qualified Industrial Hygienists or Radiological Controls professionals select and approve respiratory protection equipment per established procedures.

WCH's successful closure of many facilities in the past 3 years has greatly reduced the number of systems that require PM. For the remaining activities, a PM program continues to improve equipment run time and to avoid equipment failure. WCH establishes appropriate maintenance

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frequencies based on manufacturers' recommendations, plant operating experience, engineering requirements, and, in some cases, equipment history.

WCH performs maintenance on heavy equipment, both in the shop and in the field when necessary. ERDF constructed a new maintenance facility for heavy equipment and controls work through a maintenance procedure with associated JHAs. The actual maintenance work is classified as craft work performed by skilled mechanics with proper PPE utilized.

WCH continues to require its facilities/project areas to develop and maintain Emergency Preparedness (EP) Hazard Assessments and Emergency Response Procedures. While no drills were conducted during the Team review, interviews regarding the drum punch incident demonstrated the EP training and preparations were well understood by the workers involved, and their response to the incident was correct. WCH continues to maintain an effective EP program.

During the review of the radiation protection program, the Team did not identify any noncompliances with title 10, Code of Federal Regulations, part 835, *Occupational Radiation Protection* (10 CFR 835). However, Team observations did identify some opportunities for improvement.

For example, the Team reviewed an As Low As Reasonably Achievable (ALARA) review checklist for 618-10 Burial Ground Trench Remediation, dated April 13, 2011, that evaluated contamination levels, airborne radioactivity, and internal and external exposure levels (both current and anticipated). WCH evaluates the airborne radioactivity and internal exposure levels by determining the fraction of the contamination that could become dispersed or resuspended in the air (resuspension factor). The resuspension factor is used in estimating potential Derived Airborne Concentration (DAC) levels and subsequent selection and use of respiratory protection or other internal dose control measures.

Procedure RC-100-4.2, *Estimating Airborne Radioactivity Levels*, dated December 16, 2010, specifies various methods of estimating airborne radioactivity for the purpose of work planning. In Table 2 of the procedure, the use of resuspension factors is shown. Table 2 identifies a resuspension factor for 618-10 Burial Ground Trench Remediation of 1.0 E-4. The value used for the resuspension factor in the ALARA review checklist was 1.0 E-5. The resuspension factor used on the ALARA review checklist was nonconservative by a factor of 10. WCH personnel stated that the ALARA review checklist used a computer program to calculate the DAC values. A review of other ALARA review checklists did not reveal this error on any other documents. WCH could not duplicate the error when entering the same variable or different sets of variables in the computer program. It should be noted that for the activity reviewed, the error did not result in the improper selection of PPE. However, repeating this "error" could result in underestimating the radiological hazard and selection of controls in other cases. Although not conclusive, there appears to have been an error between a procedure revision and the software implementation. WCH should review the ALARA review checklist and implementing software to ensure calculations and values identified in the procedure are correct and consistent with values used in the software.

In another example, the Team observed WCH's use of remote reading alarming electronic dosimeters located on the heavy equipment in the 618-10 Burial Ground. These alarming dosimeters supplement the personal electronic alarming dosimeters worn by individuals conducting the 618-10 Burial Ground work. The controlling RWP had alarm set points, dose

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rate and integrated dose for the electronic alarming dosimeters worn by the individuals. The alarm set points on the remote reading alarming electronic dosimeters used on the front end of the heavy equipment and in the area of the heavy equipment operator were set more conservatively than the electronic alarming dosimeters worn by individuals. However, the RWP did not specify use of the remote reading alarming electronic dosimeters nor their alarm setpoints. Operator Aid 618-10-2011-006 did specify the dose rate alarm setpoint for the remote reading alarming electronic dosimeters. There were no associated work instructions that specified the use of the remote reading alarming electronic dosimeters, nor were there any instructions on the setting of the integrated dose for the remote reading alarming electronic dosimeters. Similarly, the ALARA review for this work did not identify the remote reading instruments or identify a basis for the alarm setpoint. Apart from the information contained in the operator aid, the Team could not identify any part of the work control process that provided for the analysis and determination of the setpoints for these devices.

Opportunity for Improvement: WCH should ensure that RWP and radiological associated controls are consistent and captured in work instructions for radiological activities.

In a related example, during Team observations of the 618-10 Burial Ground trenching and retrieval operations, the radiological postings and boundaries appropriately identified and delineated radiological areas. The work process and physical layout of the work area required the heavy equipment operators to transverse a short distance through a Contamination Area (CA) in order to turn on his air supply, check the vehicle oil, and enter the vehicle cab. The operator transverses the CA to enter the vehicle cab one or more times a work day. Per the radiological controls, the interior cab of the telehandler is not considered a CA. The telehandler then transverses into a High Contamination Area for work activities. To exit the area, the telehandler returns to the CA where the operator exits, doffing his PPE, and is monitored by the RCT.

This process requires the operator to wear additional PPE than that specified in the task-specific RWP. Operator Aid 618-10-2011-001 specified the additional PPE and actions to be taken by the operator to access the telehandler in the CA. In addition, the operator aid specifies that the operator perform smears of the air bottle and engine components. WCH radiation protection personnel stated that the operator does not perform these radiological control functions, rather the RCT covering the job performs these functions. The operator aid should be revised to appropriately describe the tasks as performed and identify the personnel responsible for performing that activity. As described in the previous discussion, the controls set by operator aids should have a documented analysis captured within the WCH work control process that supports the recommended controls and assign the actions to be performed by the responsible personnel.

Opportunity for Improvement: WCH should ensure controls identified in operator aids have a documented analysis captured within the WCH work control process that supports the recommended controls, and clearly define who is responsible for performing identified actions. WCH should ensure operator aids currently in use are appropriately analyzed and authorized using the work control process.

The primary objectives of the WCH occupational health program are to maintain a healthy workforce, promote a healthful work environment, and establish worker protection requirements that protect the health of employees whose job assignments place them in potentially hazardous

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working environments. CSC Hanford Occupational Health Services currently supports the WCH medical program administered by the Safety and Health organization. This program is primarily responsible for performing occupational medical exams, a first-aid program, and the Employee Job Task Analysis (EJTA) process.

The Site Occupational Medical Provider has a staff of physicians, physician assistants, nurses, and other medical specialists trained in Occupational Medicine. Occupational Medicine staff and project industrial hygienists meet regularly to discuss the results of studies and trends related to physical results and exposures. Recently, WCH identified hand and arm injuries as an increasing trend. WCH and CSC Hanford Occupational Health Services provided employees with additional information on how to prevent these injuries and recommended the methods employees could take (proper tools, use of equipment aids, focus on work, etc.) to reduce and reverse this trend.

WCH has sought continuous improvement in its medical program. Recent improvements include a focus on the annual EJTA review and the necessary medical monitoring required for site employees.

During the review, DOE announced that it awarded HPM Corporation of Kennewick, Washington, the new contract to provide occupational medical services at the Hanford Site. The new contract is set to run for a base period of 2 years, with four 1-year option periods. Services under the new contract continue to include occupational medical services for the approximately 8,000 workers at Hanford; operation and maintenance of two clinical facilities; and providing support to epidemiological studies of current and former Hanford Site workers, the Chronic Beryllium Disease Prevention Program, and the Energy Employees Occupational Injury Compensation Program. HPM Corporation is set to assume responsibility for the new contract on October 1, 2012.

WCH continues to maintain a cadre of qualified, competent, safety professionals. These personnel have the expertise to accomplish a variety of activities necessary to support a comprehensive safety and health program. All work observed by the Team and interviews conducted with WCH employees verified the appropriate availability of professional expertise to the workforce.

Conclusion

WCH continues its effective use of engineered controls to minimize its workers' exposure to hazards. With the exception of the identified radiological controls improvements, WCH controls are well implemented and understood and ensure a safe workplace. WCH has met the expectations for the Hazard Prevention and Control tenet.

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VII. SAFETY AND HEALTH TRAINING

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

The 2009 Team had found that WCH employees, supervisors, and managers receive appropriate training to recognize the hazards of their job. One aspect of training that was not fully examined in 2009 was the General Employee Radiological Training (GERT). The Team examined GERT more comprehensively in this assessment.

The Team evaluated the training program at WCH by reviewing the training material, attending selected online and classroom sessions, and interviewing workers, supervisors, and managers. WCH provides most training online, such as HGET and HGET Refresher. The company also provides about 40 percent of the classroom training. The Volpentest Hazardous Materials Management and Emergency Response Training and Education Center continues to provide the rest of the classroom training. The American Red Cross provides first aid and Automated External Defibrillator training, and other vendors provide some specialized training. Subcontractors are responsible for training their employees.

The 2012 Team members completed the HGET prior to commencing on the VPP review of WCH. The Team consensus was that it was sufficiently challenging and adequately covered the necessary material. The Team also reviewed the online GERT provided to individuals per 10 CFR 835, subpart J, *Radiation Safety Training*. DOE provides guidance for the training in DOE Guide (G) 441.1-1C, *Radiation Protection Programs*, developed for use with 10 CFR 835. The Team identified some areas where the GERT materials may not be completely consistent with the regulation. For example, the GERT module identified the dose limit for general employees as 100 mrem, clarifies that this is the whole body dose limit for nonradiological workers, and that additional training is required to exceed that value. Per 10 CFR 835, the dose limit for general employees is 5,000 mrem, but additional training is required for workers that might receive over 100 mrem in a calendar year. The use of the term "general employees" to refer only to nonradiological workers is not consistent with the regulation and WCH should revise the training module to avoid confusion. The GERT module also incorrectly identifies that the DOE radiological worker limit is 2,000 mrem while the Federal limit is 5,000 mrem. The DOE limit is the Federal limit. DOE recommends use of a lower administrative control level of 2,000 mrem.

For short-term visitors, the site provides an orientation booklet, which includes a section on radiation safety training. This section includes information on radiological risks, radiological controls, dose reports, and worker rights and responsibilities. Although the booklet is titled "Visitor Orientation," general employees visiting the site for a short period can also be provided this information and enter controlled areas with a trained and qualified escort. The combination of GERT and the Visitor Orientation for some individuals is consistent with the guidance for radiation safety training in DOE G 441.1-1C, *Radiation Protection Programs*, guide for use with 10 CFR 835.

The Team attended two classroom training sessions: Electrical Safety for NonElectricians and Hazardous Material Employee/Driver Training. The instructors in both classes were experienced and knowledgeable in their subject, the training material was well-organized, the students asked

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many questions, which were suitably answered, and both had written tests with a required passing grade of 80 percent. The sampling of the online and classroom training led the Team to conclude that the training content and presentation continue to be of good quality as found by the 2009 Team.

WCH still encourages its employees to obtain the independent, third party certification as Safety Trained Supervisors (STS) by the Board of Certified Safety Professionals' Council on Certification of Health, Environmental, and Safety Technologists. With a cadre of about 200 STS' on its staff, WCH continues to strive for additional STS' in its construction personnel. WCH provides training and reimburses the registration fee for WCH employees seeking the STS certification. Since the STS certification is widely recognized in the construction industry, this program not only provides WCH with improved safety knowledge at the worksites, it also supplements WCH's efforts to assist workers with transition to other employment as the project approaches completion. WCH also encourages employees to enhance their credentials and maintain professional certifications, such as certified industrial hygienists and certified safety professionals, through tuition reimbursement up to \$5,250 per year.

The Team found two noteworthy training programs. The first program is the STR qualification program. The STR program has an extensive, formal, and well-documented qualification program. As part of the qualification program, STRs in training are required to meet a preliminary set of theoretical knowledge qualifications. WCH mentors STRs through well-defined practical elements. The STR documents the practical elements using qualification cards during the mentoring process. The Team sampled several qualification cards and found no issues. After completing the mentoring and qualification requirements, the STR must pass an oral exam for final qualification.

The second noteworthy practice is the qualification program for machine operators at the 618-10 Burial Grounds. The machine operators assigned to operate equipment, such as excavators or telehandlers inside the 618-10 Burial Grounds, are required to undergo a two to 3-week practical training course. The course includes a practical test prior to receiving approval to operate equipment inside the Burial Grounds. Experience in this kind of operation has demonstrated that not all equipment operators are sufficiently skilled to perform the detailed work required to excavate drums and other waste from the Burial Ground trenches. In order to evaluate and enhance the skills of the operator, the training requires the operators to train in a mockup training area with their equipment to demonstrate their proficiency in performing the necessary tasks. The tasks include (but are not limited to) excavating mock drums from a trench and inserting the drum into an overpack without upsetting the mock drum. The Team discussion with the workers showed that there have been several instances where experienced machine operators were unable to perform the required excavation work during the mockup training and as a result were not authorized to operate that equipment within the Burial Grounds.

WCH continues to maintain training records in the computerized Training Records Information System (TRIS). The employees, their managers, the training coordinators, and training staff have access to the training records and upcoming training. TRIS notifies employees, managers, and training coordinators of upcoming training 60 days in advance through e-mail. It also generates a monthly overdue training records report, which is sent to the managers and training coordinators. Supervisors inform craft personnel without computer access of the upcoming training. The managers are responsible for ensuring that employee training is current for the tasks assigned to them. The Team reviewed the training records of 20 employees and found no cases of employees performing the tasks with expired training.

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The 2009 Team had identified an opportunity for improvement recommending that WCH should ensure that all Training Position Descriptions (TPD) were up-to-date and that all workers had completed the required training. WCH addressed that improvement by reviewing and updating all old TPDs to reflect the current duties of the workers. The Team reviewed several TPDs and found them to be current.

Conclusion

Safety and health training continues to be a strength for WCH. All WCH and subcontractor employees receive appropriate training to deal with the hazards in their work. The training material is well organized and has appropriate content to impart the necessary knowledge of hazards encountered by the workers. A user-friendly system for training records provides timely alerts to the workers of the upcoming training. WCH continues to satisfy the Safety and Health Training tenet of DOE-VPP.

*June 2012***VIII. CONCLUSIONS**

Overall, WCH continues to expand and improve its safety and health programs. The management team and the workforce are firmly committed to completing RCCP in a safe, efficient, environmentally sound manner. The cooperative atmosphere and uncompromising demand that the job is done safely and correctly the first time creates a strong culture where all workers accept and believe in their rights to ask questions, stop work when concerns or questions arise, and obtain correct and accurate information that addresses their concerns. WCH efforts to minimize worker distractions and the accompanying errors helping workers plan and prepare for transition to other work well in advance of project completion are exemplary. Improvements in the work planning and control process effectively address many long-term issues experienced by other sites in the DOE complex and can be used as an example for other sites. The approach taken from the beginning to address lower hazards initially while work processes are developed, and then move into the higher hazard remediation work, has prepared WCH well for the remaining highly hazardous work in the 618-10 and 618-11 Burial Grounds. Some opportunities exist to further improve a mature system. WCH is clearly committed to continuing improvement and excellence, and the Team highly recommends that WCH continue to participate in DOE-VPP at the Star level.

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APPENDIX A**Onsite VPP Audit Team Roster****Management**

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