



# CH2M ♦ WG Idaho, LLC Idaho Cleanup Project

**Report from the Department of Energy  
Voluntary Protection Program  
Onsite Review  
October 18-21, 2010**



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

## Foreword

The Department of Energy (DOE) recognizes that true excellence can be encouraged and guided but not standardized. For this reason, on January 26, 1994, the Department initiated the DOE Voluntary Protection Program (VPP) to encourage and recognize excellence in occupational safety and health protection. This program closely parallels the Occupational Safety and Health Administration (OSHA) VPP. Since its creation by OSHA in 1982 and DOE in 1994, VPP has demonstrated that cooperative action among Government, industry, and labor can achieve excellence in worker safety and health. The Office of 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 compliance with DOE orders and OSHA standards. The program encourages a “stretch for excellence” through systematic approaches, which emphasize creative solutions through cooperative efforts by managers, employees, and DOE.

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

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

By approving an applicant for participation in DOE-VPP, DOE recognizes that the applicant exceeds the basic elements of ongoing, systematic protection of employees at the site. The symbols of this recognition provided by DOE are certificates of approval and the 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 CH2M♦WG Idaho, LLC (CWI) at the Idaho Cleanup Project, during the period of October 18-21, 2010, and provides the Chief Health, Safety and Security Officer with the necessary information to make the final decision regarding CWI’s continued participation in DOE-VPP.

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**ABBREVIATIONS AND ACRONYMS**

AED	Automated External Defibrillator
ARP	Accelerated Retrieval Project
ARRA	American Reinvestment and Recovery Act
BEA	Battelle Energy Alliance, LLC
BLS	Bureau of Labor Statistics
CEST	Company Employee Safety Team
CWI	CH2M♦WG Idaho, LLC
COBRA	Changing Our Behavior Reduces Accidents
DART	Days Away, Restricted, or Transferred
DOE	U.S. Department of Energy
ECC	Emergency Control Center
EM	Office of Environmental Management
EBR II	Experimental Breeder Reactor II
EST	Employee Safety Teams
ETR	Engineering Test Reactor
FHL	Facility Hazard List
HAM	Hazard Analysis Matrix
HIM	Hazard Identification and Mitigation
HMG	Hazard Mitigation Guide
HPI	Human Performance Improvement
HPSC	Hazard Profile Screening Checklist
HSS	Office of Health, Safety and Security
ICP	Idaho Cleanup Project
ICWEA	Intra-Company Work Exchange Agreement
ID	Idaho Operations Office
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
IWTU	Integrated Waste Treatment Unit
JSA	Job Safety Analysis
MFC	Materials and Fuels Complex
MTR	Materials Test Reactor
NAICS	North American Industry Classification System
OMP	Occupational Medical Program
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
RTC	Reactor Technology Complex
RWMC	Radioactive Waste Management Complex
SME	Subject Matter Expert
Team	Office of Health, Safety and Security Team
TRC	Total Recordable Case
TRT	Technical Response Team
USW	United Steelworkers
VPP	Voluntary Protection Program
VPPPA	Voluntary Protection Program Participants Association

## EXECUTIVE SUMMARY

CH2M♦WG Idaho, LLC (CWI) is the prime contractor for the Idaho Cleanup Project at the Idaho National Laboratory. The scope of the project includes decontamination, decommissioning, demolition, and disposal activities at the Idaho Nuclear Technology and Engineering Center, the Radioactive Waste Management Complex, and the Advanced Test Reactor Complex. Additionally, funds from the American Reinvestment and Recovery Act are being used to perform cleanup work at the Experimental Breeder Reactor II at the Material and Fuels Complex.

CWI initially entered the Department of Energy (DOE) Voluntary Protection Program (VPP) at the Star level in 2007. Continued participation requires a triennial assessment by the Office of Health, Safety and Security (HSS). This report documents the results of that assessment and the HSS DOE-VPP Team's (Team) recommendation to the Chief Health, Safety and Security Officer.

CWI managers have successfully maintained those aspects of the CWI safety program that were credited in 2007 for establishing a strong safety culture. Since 2007, CWI has continued to build on those strengths, provided exceptional investment in the program, and made additional culture improvements. These improvements are leading to large cost and schedule savings without sacrificing safety performance, and leading to more rapid cleanup of the Idaho site. Managers' presence, active engagement of employees, and willingness to listen and provide timely information regarding future workforce restructuring are all contributing to a robust safety culture.

Employee involvement is undoubtedly the primary strength of the CWI safety program. Workers clearly demonstrated their participation and involvement in all aspects of safety and health programs at CWI. Employee participation on safety teams, willingness to perform behavior-based safety observations, and use of step-back/stop-work authority were all testaments to the commitment to safety by employees.

With the support of managers, workers are involved, engaged, and take ownership of their safety in planning work. They have a multitude of tools available to them to identify and analyze the hazards within their purview, and actively use those tools appropriately. They demonstrate commitment each day to ensure their fellow workers are safe by continuously looking for, questioning, and correcting hazards. Workers' expectations related to the work planning process are very high, fostering an exemplary safety and quality culture.

CWI demonstrated a comprehensive and proactive program of hazard prevention and control. CWI is continuously eliminating hazards and improving hazard controls through the evaluation of lessons learned by the safety and engineering groups and solicitation of employee recommendations.

Since 2007, CWI has maintained and improved its safety training program. Workers are satisfied with the type and quantity of training they receive and are actively engaged in the training processes. Likewise, managers and supervisors are knowledgeable of the work, the hazards, and the controls.

CWI has maintained an exemplary safety culture over the past 3 years. The entire CWI team has adopted an approach that clearly values and embraces employee participation. Because of the open communication, trust, willingness to provide resources, and encouraging employee involvement, CWI has recognized significant improvements in cost and schedule performance against its contract goals, as well as improvements in its safety statistics. These improvements have also been recognized by external stakeholders. As a result, the Team is recommending that CWI continue to participate in DOE-VPP at the Star level.

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

<b>Opportunity for Improvement</b>	<b>Page</b>
CWI should work with local providers to ensure training resources are available that will permit more timely training classes for workers and help reduce the impact of future workforce restructuring.	<b>6</b>
CWI should revise the work control process in STD-101 for the planner to document the basis for decisions that work does not exceed the thresholds for minor work, and include review by qualified personnel that confirms those decisions.	<b>11</b>
CWI should utilize existing tools for analysis within its work control process and document the rationale for hazard control selection.	<b>11</b>
CWI should take steps to ensure that all employees are aware of benefits changes and are not interpreting any changes to be related to occupational working conditions.	<b>12</b>

## I. INTRODUCTION

CH2M♦WG, LLC (CWI) is the prime contractor for the Idaho Cleanup Project (ICP) at the Idaho National Laboratory (INL). The scope of ICP includes the safe environmental cleanup of specific portions of the INL site, located 45 miles west of Idaho Falls, Idaho. The 7-year, \$2.9 billion project funded through Department of Energy's (DOE) Office of Environmental Management (EM) targets legacy waste generated from munitions testing, Government-owned research and defense reactors, laboratory research, spent-fuel storage, and defense missions at other DOE sites. The DOE Idaho Operations Office (ID) provides direction to, and oversight of, CWI.

CWI initially entered the DOE Voluntary Protection Program (VPP) at the Star level in June 2007. Since 2007, remediation work was completed at the Test Area North and the Power Burst Facility. The current ICP work scope consists of: (1) Idaho Nuclear Technology and Engineering Center (INTEC) Area Cleanup Project; (2) Radioactive Waste Management Complex (RWMC) Area Cleanup Project; and (3) Reactor Technology Complex (RTC) Project. Funds from the American Reinvestment and Recovery Act (ARRA) are being used to perform cleanup work at the Experimental Breeder Reactor II (EBR II) at the Material and Fuels Complex (MFC). In addition, ARRA funds have allowed accelerated work at RWMC and INTEC.

A large part of the cleanup effort at INTEC depends on the successful construction and startup of the Integrated Waste Treatment Unit (IWTU). This plant, currently nearing completion of construction, will be used to treat remaining high-level radioactive tank wastes at INTEC. Construction of IWTU is being performed under an Intra-Company Work Exchange Agreement (ICWEA) with URS, one of the parent companies of CWI. The plant is currently targeted to begin processing wastes in fiscal year 2011.

Continued recognition in DOE-VPP requires a triennial onsite review by the Office of Health, Safety and Security (HSS) DOE-VPP Team (Team) to determine whether the applicant is continuing to perform at a level deserving DOE-VPP recognition. The Team evaluated CWI's safety programs against the provisions of DOE-VPP. During the site visit, the Team observed extensive work activities, evaluated relevant safety documents and procedures, and conducted interviews to assess the strength and effectiveness of CWI's health and safety programs.

The Team interviewed many employees, managers, and supervisors, either formally or during observation of field activities. Hazards associated with work at CWI include, but are not limited to, the range of industrial hazards associated with construction or demolition work, and also extensive radiological contamination and residual process chemicals. Work observed included: retrieval, sorting, and repackaging of targeted wastes at RWMC; construction operations supporting tank closure at INTEC; shop areas at INTEC; unloading and preparation of drums for waste packaging at RWMC; decontamination and demolition activities in the Engineering Test Reactor (ETR) and Materials Test Reactor (MTR) in the RTC and EBR II. Additionally, the Team observed Employee Safety Team (EST) meetings, prejob briefings, and a meeting of the Company Employee Safety Team (CEST).

**II. INJURY INCIDENCE/LOST WORKDAYS CASE RATE**

<b>Injury Incidence/Lost Workdays Case Rate (CWI)</b>					
Calendar Year	Hours Worked	Total Recordable Cases (TRC)	TRC Incidence Rate	DART* Cases	DART* Case Rate
2007	3,782,148	29	1.53	3	0.16
2008	3,513,963	19	1.08	8	0.46
2009	3,229,916	12	0.74	3	0.19
3-Year Total	10,526,027	60	1.14	14	0.27
Bureau of Labor Statistics (BLS-2009) average for NAICS** #562 Waste management and remediation services			5.2		3.3
<b>Injury Incidence/Lost Workdays Case Rate (CWI Subcontractors)</b>					
Calendar Year	Hours Worked	TRC	TRC Incidence Rate	DART* Cases	DART* Case Rate
2007	1,261,167	4	0.63	1	0.16
2008	522,370	6	2.30	2	0.77
2009	842,746	14	3.32	2	0.47
3-Year Total	2,626,283	24	1.83	5	0.38
Bureau of Labor Statistics (BLS-2009) average for NAICS** #562 Waste management and remediation services			5.2		3.3
Total CWI and Subcontractors (3 Years)			1.28		0.29

\* Days Away, Restricted or Transferred

\*\* North American Industry Classification System

***TRC Incidence Rate, including subcontractors: 1.28******DART Case Rate, including construction and subcontractors: 0.29***

CWI's safety performance for self-performed work has continued to be a small fraction of the comparable industry rates for the past 3 years. This trend is continuing through calendar year 2010 with a TRC rate of 0.15 and DART rate of 0.08 through September 2010. Subcontractor performance statistics have not shown a similar trend. The subcontractor performance has been heavily weighted by the construction workforce at IWTU. CWI's efforts to improve the safety culture of IWTU construction workforce have been extensive, but have not been fully effective at driving further improvements. The subcontractor performance, although improving slightly in 2010 (TRC rate of 2.28 and a DART rate 0.70 through September 2010), is still significantly lower than the comparison industry statistics, and meets the criteria for continued participation in DOE-VPP. Reviews of accident and injury logs and records did not identify any questionable record keeping or issues related to classification of injuries.

### 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 2007, HSS determined that CWI managers demonstrated an exemplary level of commitment to the Safety and Health Program. Its nearly continuous presence in the field, participation and partnership with ESTs, and its very visible support for creative and innovative means of promoting safety have been effective in helping workers accomplish a hazardous and challenging mission.

In the past 3 years, CWI managers have continued to build on those strengths. There have been some changes in senior managers, including the company president. These changes have only improved the involvement and participation by senior managers in the day-to-day activities. CWI leadership has clearly established a management environment that supports safety as a core value. The company commitment to safety is seen as a significant contributor to a true employee-driven, management-supported safety culture.

The 2007 report noted that CWI inherited an extensive set of policies and procedures from the previous contract with approximately 4,000 policies and procedures within the CWI document control system. CWI was reviewing those procedures in an effort to eliminate redundancy and ensure the necessary policies and procedures were easy to access and understand. CWI appears to have effectively reduced redundancies with policies and procedures. These efforts have been apparent in the ease of access and understanding by the employees interviewed. Most employees contacted by the Team indicated the system was now less cumbersome, paperwork had been eliminated, and processes streamlined.

Interviews with workers consistently echoed the theme of “trust.” Workers repeatedly told the Team that they trusted their managers, and believed what they were being told regarding managers’ commitment, caring, and expectations. All senior managers interviewed identified providing the workers with consistent information as early as possible as one of their essential functions. Managers were also consistent in their attitude that managers’ jobs were there solely to support the workers.

CWI has clearly established senior manager presence in the field as a core expectation. To support this expectation, CWI has worked diligently to ensure those senior managers are supported by adequately qualified staff to free the senior managers from the administrative tasks that often prevent more visible presence. CWI has also “pushed” support functions, such as engineering, out to the site in order to provide more effective support to the workers when problems arise. Managers are also expected to attend, participate in, and “champion” ESTs.

During interviews, CWI managers universally credited CWI's success in mission accomplishment to actively engaging the workforce to identify and implement solutions. Rather than giving workers solutions that managers identify, managers are asking workers for their ideas. Managers are then ensuring those solutions will meet the necessary requirements, and providing resources to implement those solutions. In the past several months, employee suggestions have directly resulted in cost savings of several million dollars and led to further schedule gains. For example, when faced with a failure of a piece of heavy machinery (an excavator) inside a contaminated area, workers proposed and implemented a process to retrieve and repair the equipment rather than dispose of it. This resulted in an estimated cost savings of approximately \$845,000. The work was accomplished without accident, injury, or significant radiological exposure. In another example, rather than having to set up special cranes to remove three tanks in the reactor test area, workers identified a method to remove the tanks with existing equipment. The method was reviewed by structural engineers and determined to be safe. Removal of the tanks was accelerated by several weeks, a cost savings over \$1,000,000 was realized, and all work was accomplished without accident, injury, or significant radiological exposure.

CWI managers have clearly demonstrated their willingness to invest in safety improvements. Financial resources are provided not just for compliance issues, but also for other promotional and excellence-related efforts. These resources are provided by both DOE and the CWI parent companies (taken from fee). CWI clearly believes these resources to be an excellent investment in its workforce that leads to a significant return in increased award fees. The Changing Our Behaviors Reduces Accidents (COBRA) Behavior-Based Safety program has become a linchpin for the safety program (see Employee Involvement). The "no-name, no-blame" approach, as well as the trust developed between workers and managers, has allowed managers to perform effective observations and given the program additional credibility in the eyes of those managers. In addition to the rewards and incentives, CWI managers are actively supporting community outreach activities to schools, community fairs, and other companies pursuing VPP certification.

Another effort that has become fully integrated into the safety culture is the Human Performance Improvement (HPI) initiative. CWI has been training workers in HPI fundamentals for the past several years, has incorporated HPI principles into work planning and prejob briefing tools, and has encouraged workers to use HPI topics in their day-to-day work activities. Workers throughout the plant were observed discussing "error precursors," "latent weaknesses," and other topics related to HPI. In most cases, workers are using these tools seamlessly, indicating a high degree of familiarity and comfort on the part of workers. Managers have been fully supportive of these efforts by providing workers the time to attend training, using the tools themselves, and encouraging the use of HPI as a framework for feedback and improvement.

As described in the 2007 VPP review, CWI continues to employ Technical Response Teams (TRT) within the decontamination and decommissioning projects. TRT uses individuals from varying disciplines each day to be responsible to respond to a work-related technical issue in the field when issues arise. Essentially, if a work task in progress is stopped for an unidentified hazard or other reason, TRT (individuals from engineering, safety, nuclear, etc.) is available to respond to the issue at the worksite immediately to resolve it. The TRT process ensures that qualified individuals are always available to workers to resolve any technical issues that may arise. At the MFC, in addition to its normal duties, TRT performs daily team walkdowns of the facility addressing different focus areas. At the Advanced Test Reactor Complex these walkdowns are performed weekly. In both cases, managers recognize the additional benefits the walkdowns generate beyond the compliance items identified. The presence of TRT members,

engineers, safety professionals, operations supervisors, and other team members significantly improved communications between crafts and the professional staff. The resulting increase in communication increases the willingness of workers to communicate opportunities for improvements, and helps the professional staff better understand the work they are evaluating as members of TRT.

Within the past year, the company president established a working goal for workers that if they could accomplish one million work hours without a recordable injury, he would buy them a steak and lobster dinner, cooked, and served by the managers. This represents approximately 3-4 months work at the current performance rate. Some senior managers expressed concern to the company president that such a challenge might drive underreporting of accidents and injuries. The company president recognized this risk, and intentionally charged each of his senior managers to very closely monitor work, first-aid cases, or any other indications of underreporting. Further, it was made clear to workers that failure to report accidents or injuries was unacceptable. Senior managers closely monitored first-aid cases as a key indicator. During the first two attempts, workers were not successful in achieving the one million hours. Finally, on the third attempt, workers did achieve one million hours. More importantly, managers did not see any decrease in reporting of first-aid cases. In fact, reporting of first-aid cases increased. The presence of the managers in the field helped ensure that injuries would not go unnoticed.

These efforts clearly paid significant dividends, not only financially, but also from the perspective of positive feedback from outside organizations. In September 2010, the Chairperson of the INL Site Environmental Management Citizens Advisory Board sent a letter to Dr. Ines Triay, Assistant Secretary for EM, praising the safety record at INL. The INL Site Environmental Management Citizens Advisory Board is a federally appointed citizen panel that provides advice and recommendations to the DOE/EM program for ICP at INL.

CWI managers have faced their largest challenge in trying to help change the culture of the construction workforce at the IWTU construction project. This project was initiated several years ago as an ICWEA. Under this agreement, URS Washington Group, one of the parent companies of CWI, is treated as a subcontractor to CWI. As a subcontractor, URS is not a participant in DOE-VPP under CWI, but CWI is actively working with URS to improve the safety culture of the construction project workforce. This agreement does not have the normal mechanisms for CWI to hold the subcontractor (parent company) accountable for performance, including safety performance. The workforce at the IWTU construction project has not fully adopted the CWI safety culture. Construction workers use URS work control processes and procedures, not the processes and procedures from CWI. CWI does not provide daily direction and control of the construction workforce. While CWI has had some limited success in improving the workers' attitudes and approaches to safety, the IWTU construction project remains the highest source of workers' injuries in ICP. The difficulty in changing the safety culture on the construction project was highlighted by a hoisting incident prior to this assessment that occurred when a gantry system tipped while lifting a shield door at IWTU. That incident is under investigation by the Office of Enforcement (HS-40). Although no personnel were injured, the potential for injury was significant. The construction project is in its final stages and is being turned over to operations personnel. CWI managers and the ID Manager were unanimous in their opinions that this type of arrangement would be avoided in the future.

CWI managers are also faced with the challenge of workforce restructuring as they complete the cleanup project. Managers recognize the stress and distraction this can place on the workers and are providing resources for workers to prepare for future changes. For example, CWI is making

up to \$5,000 available to employees for training to develop new skills. CWI has also offered financial planning seminars to help employees prepare for potential periods of unemployment. CWI is also actively working with other companies regionally and nationally to identify job opportunities for workers facing layoffs and assisting workers with developing resumes. One hurdle yet to be overcome is in retraining. Some training classes (e.g., welders and radiological control technicians) are very popular as these are seen as prime opportunities by workers. These classes have anywhere from an 18-24 month waiting period. These long-time delays will not allow workers to complete the training before potential layoffs and are reducing the effectiveness of the retraining program. CWI should work with local training providers to ensure training resources are available that will permit more timely training classes for workers and help reduce the impact of future workforce restructuring.

**Opportunity for Improvement:** CWI should work with local providers to ensure training resources are available that will permit more timely training classes for workers and help reduce the impact of future workforce restructuring.

## Conclusion

CWI managers have successfully maintained those aspects of the CWI safety program that were credited in 2007 for establishing a strong safety culture. Since 2007, CWI has continued to build on those strengths, provided exceptional investment in the program, and made additional culture improvements. These improvements are leading to large cost and schedule savings without sacrificing safety performance and leading to more rapid cleanup of the Idaho site. Managers' presence, active engagement of employees, and willingness to listen and provide timely information regarding future workforce restructuring are all contributing to a robust safety culture.

#### IV. EMPLOYEE INVOLVEMENT

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

The Team observed that employees are strongly involved in the CWI safety and health programs. During interviews, employees shared positive experiences about their involvement with various safety programs. It is evident that employees feel responsible for their safety and the safety of their coworkers at CWI. Examples of employee engagement witnessed by the Team include many programs developed and promoted by employees at all levels (safety awareness videos like the CWI-Light Zone and the CWItles, COBRA, “Star” Bucks rewards, and Pay It Forward).

Various communication efforts are in place to support employee involvement, including the use of Web sites and newsletters. These methods are generally effective, but CWI should work to ensure that information provided on Web sites is current and relevant. CWI should also be cautious about becoming too dependent on electronic communications. Many site workers do not have access to electronic media in the course of their normal workday. CWI is encouraged to continue and expand forms of communication that do not rely on computer access.

Employees demonstrate a solid sense of “ownership” towards safety, making it difficult to differentiate between hourly and salaried employees. Several managers relayed an observation made by personnel visiting from the United Kingdom that “it was often difficult when observing workers to identify the foremen and supervisors.” Although intended otherwise, the CWI managers considered this a compliment. Workers are involved in the formal and informal reporting of hazards with no reported concern for reprisal or retaliation. Step-backs and Stop-work authorities have become an integrated part of doing work. Many workers identified there were more likely to be repercussions from not reporting a problem, including from their peers. Past and current efforts have effectively encouraged workers to “actively care” for their coworkers.

As previously discussed, employees are encouraged to incorporate HPI into work practices and are provided training to promote situational awareness. Each employee is provided an error precursor card to help recognize behaviors that can lead to errors and ultimately injuries. Observed workers seamlessly incorporated these tools into their normal behaviors.

ESTs remain the primary element for encouraging employee engagement and participation in safety. There is a central CEST, and then there are subordinate ESTs in each of the major work areas. EST members organize and conduct facility inspections using checklists to document deficiencies. Each month a different focus area is selected based on trend analysis or lessons learned (i.e., electrical cords, space heaters). Every meeting begins with a Safety Share (topics encourage safety in the workplace) and an I-Stretch exercise presented by one of the EST members. Each EST develops goals and objectives that they work towards completing during

the year. In several areas, work at the site is stopped for a period of time in order to give workers the opportunity to attend the EST meeting. Consequently, EST meetings are very well attended, often with over 100 employees present at each meeting. EST meetings observed by the Team were energetic with many employees contributing to the discussions.

CWI's Union employees' involvement in all levels of safety and health programs is effective in promoting the feeling that we are all one "safety family." In some cases, Union participation in safety improvements could be further enhanced. For example, the Local Union has not actively encouraged participation in COBRA observations. There are Union members who are actively engaged and participating, but they have not been successful in garnering additional Union participation. CWI and the Local Union should find ways to work together to encourage additional Union participation in programs that clearly improve safety at the site for those workers.

CWI has a clause in its contract that encourages it to identify and implement cost savings on the contract (B.8). The B.8 program is intended to encourage workers to streamline processes, reduce waste, and develop innovative ways of doing business. The program has been in place since the start of the current contract and has a management sponsor. When employees identify such ideas, they can be nominated for a "B.8 Award." Cumulative employee submittals have reached 775 suggestions resulting in an estimated \$46 million in cost reductions. All levels of CWI employees participate in the program, including good representation from the craft. B.8 is visible to employees through posters in the facilities and the *I Clips* newsletter. Any safety suggestions received through the B.8 program are also turned over to the Industrial Safety and Health Director for handling. Although the submittal of employee suggestions through the B.8 process is "relaxed," the review and evaluation process is structured and thorough. The extent of employee participation is not tracked, and total numbers of employee suggestions per year could not be easily provided. All statistics are cumulative. The suggestions database is fairly simple and only includes basic data analysis tools.

B.8 awards have been given frequently, but as currently implemented, are not commensurate with the realized cost savings. For example, the largest awards identified were for the excavator repair described in the Management Leadership section. Each of the employees involved received a gift card valued at \$100, for a total of \$1,500. According to the company president, these awards have been limited for several reasons, such as finding ways to gain Union support for more sizeable awards to individuals. The Union wants to ensure that all workers' contributions are adequately recognized in these cost savings. As an opportunity to encourage additional innovation, CWI and the Local Union should work together to find ways to ensure individual and group contributions are equitably rewarded for significant cost savings. Shortly before the 2007 evaluation, CWI revamped its Employee Concerns Program. This program has become very effective in dealing with employee concerns of all types. The "hands-on" approach to dealing with employees is effective and a true measure of management presence at the worksite. Examples provided to the Team show the high level of trust that the employees have with the Employee Concerns Program.

The COBRA program is an effective tool in getting workers to become actively involved in caring for their coworkers. Employees being observed receive immediate positive reinforcement and at-risk behaviors are discussed. COBRA is simple to use and effective in producing leading indicators for trending and analysis. Over the years, the program has matured significantly. Over 22,000 observations have been completed in 2010 (through September) with only one recordable injury. These observations are evaluated and tracked, and at-risk behaviors are

analyzed for trends. In addition, CWI has shown a direct correlation between increasing COBRA observations and improving safety and health statistics. Subsequent promotions and safety campaigns are designed to target any identified trends. The COBRA program continues to reward employees for their participation. An improvement in the past 3 years has been expanding the COBRA program to allow managers to participate as well. It is a best practice that should be shared with all DOE sites.

Community Outreach is well established and participated in by employees at all levels of the company. “Spiderman®” and “Batman®” are two icons that show up at most community events, school activities, and planned safety fairs making safety a true 24/7 activity for CWI employees, most of which is on their own time. Workers that participated in these outreach activities and were contacted by the Team, clearly understood that “Safety 24/7” not only made their workplace safer, but also helped ensure their families and friends were safer. In addition to community outreach, CWI has encouraged workers to participate in mentoring efforts, and given many workers the opportunity to participate in safety conferences. CWI presentations at the Voluntary Protection Program Participants Association (VPPPA) are always imaginative, engaging, and informative. Additionally, CWI support to the Region X Chapter of VPPPA has been exemplary.

## **Conclusion**

Employee Involvement is undoubtedly the primary strength of the CWI safety program. Workers clearly demonstrated their participation and involvement in all aspects of safety and health programs at CWI. Employee participation on safety teams, willingness to complete COBRA observations, and use of step-back/stop-work authority were all testaments to the commitment to safety by employees. As stated in the previous review during 2007, worker-developed safety videos and the COBRA program continue to be best practices in promoting employee involvement.

## 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.

CWI employs multiple processes to assure that hazards are identified and analyzed. These processes include, but are not limited to, baseline surveys, Facility Hazard Lists (FHL), and Job Safety Analysis (JSA). CWI has established hazard baselines for its facilities and operations such that work planners and procedure writers can easily reference retrievable data relative to the hazards and controls applicable to tasks. Qualified safety professionals conduct comprehensive baseline surveys, and personal monitoring is conducted on a regular basis. Discussions with workers indicate that they are monitored for beryllium, lead, asbestos, chromium, and other hazardous materials depending on their work. All this data is collected and maintained in a single database, the Hazard Assessment and Sampling System. As situations change or sampling data is acquired, the database is updated to reflect the new information.

For those activities that are performed by procedure, CWI includes a procedure appendix that documents the rationale for selection of controls. This appendix is derived from JSA, which is also referenced. The appendix breaks down the task sequence into steps, identifies the hazards, and develops the control set based upon that hazard. This process is one of the best observed by the Team in the DOE complex. It follows the process found in Occupational Safety and Health Administration (OSHA) 3071 2002 (Revised), *Job Hazard Analysis*. In a few cases, the Team observed the use of generic terms, such as “appropriate Personal Protective Equipment (PPE)” or “proper lifting technique.” CWI should be very careful about the use of these terms, which generally indicate that the hazard analysis for that hazard has not been completed.

For work that is not performed by specific procedure, but is included in the work control process, CWI has identified three types of work: planned, expedited, and minor. STD-101, *Integrated Work Control Process*, defines the types of work and level of rigor associated with the development of the work packages. Through past experience and analysis, CWI has documented planning thresholds in STD-101. This list of documented thresholds is one of the most extensive seen by the Team in the DOE complex. Once a decision has been made by the planner that the work is either planned or expedited, the planner utilizes tools, such as the FHL, JSA (typically used for construction activities), Hazard Identification and Mitigation (HIM), Hazard Analysis Matrix (HAM), Hazard Profile Screening Checklist (HPSC), walkdown checklists, and Hazard Mitigation Guide (HMG).

STD-101 defines two levels of minor work. Request Exempt Minor Work is an activity that meets the criteria for minor work, is performed entirely as skill-of-the-craft, does not require higher than Level I Lockout/Tagout (single point), and is performed frequently. If the work can be performed as Request Exempt Minor Work, a work request is not needed. Skill of craft is defined as technical proficiency for a worker performing a particular job that is verifiable by training qualifications or supervisory knowledge. These types of work include, but are not

limited to, relamping, repairing bookshelves, installing bulletin boards, grounds maintenance, snow removal, housekeeping, or janitorial work. The second level of minor work requires a request and is for work that does not exceed the additional thresholds defined in STD-101.

For expedited and planned work, the HIM process identifies elements to be considered in planning work such as FHL. FHL identifies known hazards listed for a particular facility. These facility hazards have been established by subject matter experts (SME) and workers for that facility and documented. Another element is HAM. This matrix links documented hazards to approved controls for expedited work. HPSC is used for planned work and high-risk work to ensure that hazards are addressed and mitigated before work is released by matching the HPSC question to the item number in HMG. Walkdown checklists are utilized by the planner, craftsmen, and SMEs to assure they have addressed hazards associated with the work to be performed. HMG is an excellent reference that directs the user to applicable mitigations or controls.

One weakness in the CWI approach to defining the level of work control is that the decision of the extent of planning is not based on the analyzed hazards, but rather on the assumed level of hazard and complexity. As previously noted, the list of exceptions for minor or expedited work is extensive, but the process for making that decision is solely up to the planner, and is not documented. Consequently, the level of control (for the planning process) is not based on the analysis. CWI should revise the work control process in STD-101 for the planner to document the basis for decisions that work does not exceed the thresholds for minor work, and include review by qualified personnel that confirms those decisions.

**Opportunity for Improvement:** CWI should revise the work control process in STD-101 for the planner to document the basis for decisions that work does not exceed the thresholds for minor work, and include review by qualified personnel that confirms those decisions.

Another weakness observed by the Team in work control was the lack of a documented rationale that links the hazard to the control when not driven by regulatory or corporate policy. This lack of rationale was exemplified during an observation of a prejob briefing where nitrile gloves were specified as the hazard control, but no reasoning for that selection was provided. Workers and their foreman were unaware of the rationale for using nitrile gloves rather than latex or vinyl gloves. By not understanding that rationale and the specific protection factors that nitrile provided over the alternatives, the workers could incorrectly assume that any glove would be appropriate for that work evolution.

**Opportunity for Improvement:** CWI should utilize existing tools for analysis within its work control process and document the rationale for hazard control selection.

CWI has an exceptional safety culture that involves the workforce in all aspects of worksite analysis. Discussions with workers, both new and old, indicate ownership of the product (safe work) and the process. Prior to work being performed, a “workability” walkdown is conducted by the workers to ensure conditions have not changed since the package was prepared. This walkdown may also include SMEs, engineers, craftsmen, and planners. The Team interviewed several craftsmen about work packages they were given. These craftsmen had, on several occasions, returned the packages due to workability issues or omissions that needed revision, even when they were not the personnel that would actually perform the task. This willingness to

perform detailed reviews and return packages clearly indicates complete ownership for safety and quality. Interviews across the company demonstrated this ownership and support.

Although the Team did not interview any workers that had participated in accident or incident investigations, employees were aware of investigations and their roles in those proceedings. CWI uses a documented process to evaluate upsets and develop corrective actions to preclude repeat occurrences. CWI has a lessons learned program, and uses lessons learned in every prejob briefing. Additionally, supervisors were observed in all prejob briefings soliciting input from workers' past experiences related to the lessons being discussed.

CWI tracks and trends a variety of information throughout the year. Normal accident and injury rates, OSHA recordable and days away are typically the most familiar to the workers. Sampling data for hazardous materials in the workplace are also trended for action levels and the need for controls or reduction of controls. CWI tracks and analyzes COBRA observations and uses those observations to identify clusters of at-risk behaviors and identify interventions or promotional activities. CWI has clearly correlated the number of observations with reductions in at-risk behaviors and reduced accident and injury rates. The workforce clearly accepts this concept as demonstrated by workers volunteering to perform observations in prejob meetings.

CWI also tracks work performance and includes in that tracking any causal factors associated with work delays, whether those delays are related to safety or not. This data is used to evaluate whether work-planning processes are effective for the workers, and used to make modifications to the process when warranted to ensure workers have the appropriate authorizations, procedures, and controls to safely perform their work.

CWI can improve its communication regarding Occupational Medical testing. Employees are no longer receiving wellness physicals through Occupational Medicine, but through the workers' health plan. The industrial hygiene department has performed numerous assessments within the welding shop for hazardous constituents, such as lead and chromium. Employees at the INTEC welding shop erroneously believed that the blood samples drawn for the wellness physicals were being used to look for exposures to lead and chromium, and when the wellness program was moved to the health plan, employees mistook that action for a change in their chemical exposure profile. In fact, samples drawn within the welding shop never demonstrated any need for blood sampling of workers, and those workers were not enrolled in any hexavalent chromium monitoring program. CWI clarified this for the workers. CWI should take steps to ensure that all employees are aware of this "benefits" change and are not interpreting this to be related to occupational working conditions.

**Opportunity for Improvement:** CWI should take steps to ensure that all employees are aware of benefits changes and are not interpreting any changes to be related to occupational working conditions.

## Conclusion

CWI clearly meets the tenet of Worksite Analysis. With the support of management, workers are involved, engaged, and own their safety in planning work. They have a multitude of tools available to them to identify and analyze the hazards within their purview and actively use those tools appropriately. They demonstrate commitment each day to ensure their fellow workers are safe by continuously looking for, questioning, and correcting hazards. Workers' expectations

related to the work planning process are very high, fostering an exemplary safety and quality culture. However, CWI should ensure that decisions on planning levels and hazard control selection are adequately documented and clearly linked to the appropriate analysis.

## 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/procedures must also be followed by everyone in the workplace to prevent mishaps or control their frequency/severity.

The Team observed many examples of effective engineered controls and PPE being utilized by CWI. For example, the ventilation system used at the Accelerated Retrieval Project (ARP) tents at RWMC has been significantly improved in newer tents. Initially, CWI installed fixed fan systems to provide the necessary ventilation to the tents during operations. CWI switched to using portable, modular fan units in the new tents. The portable fans offer several advantages over the fixed units, including greater airflow, increased flexibility, and easily interchangeable with other units in the event of a failure. The use of modular fans has also simplified maintenance.

Discussions identified the fact that many hazard control improvements were the result of worker input. For example, ARP tent design improvements have been driven by employee recommendations. CWI engineering and project managers continuously reevaluated lessons learned from each use of the tent structures. Specifically, due to the dome-like structure the tent created, CWI engineers recognized that if they installed a barrier across the tent prior to the curve of the tent, the suspended barrier would ensure greater laminar flow and circulation of the ventilation air in the work area. This improved contamination control and spread within the zone and will simplify future cleanup efforts when the tents are removed. Other employee feedback resulted in larger maintenance bays, improved locations of air line hoses, and improved methods for drum handling and bag cutting in the gloveboxes.

Other engineered controls observed included: (1) remote video monitoring of hazardous zones; (2) positive pressurized cabs of the telehandlers and excavators in RWMC with High Efficiency Particulate Air filtration; (3) glovebox use within the ARP tents; and (4) the installation of a concrete shell around the MTR reactor to reduce radiological exposure to workers during completion of the teardown of the reactor.

Due to the nature of the work being performed, many tasks still require extensive use of PPE in addition to elimination and engineered controls. CWI has instilled a commendable culture for PPE use with the crafts. All Team observations of performed work demonstrated 100 percent PPE use by the workforce. In addition, workers were observed to be actively involved in prejob briefings, particularly in discussions regarding the identified hazard and the appropriate control.

CWI has a Preventive Maintenance program to ensure equipment is maintained in safe operating condition. A description of each piece of equipment is listed in a maintenance database. All equipment is inspected based on manufacturer recommendations and frequency requirements. In addition to preventive maintenance, managers and workers at RWMC identified the need to demonstrate heavy equipment reliability before putting equipment into service within the ARP tents. Telehandlers and excavators are used extensively outside the tent to identify any manufacturer's defects before the equipment is used in the zone. This practice has helped reduce personnel exposure for repairs, and has also helped workers identify some design issues in the

equipment. Although the project only has a limited scope remaining (approximately 2 years), CWI has avoided adopting a “run to failure” approach regarding equipment maintenance.

CWI has a well-established Emergency Preparedness program. The Emergency Control Center (ECC) cadre receives extensive training on its respective roles. Emergency exercises are conducted throughout the year. An accountability exercise was conducted in September of this year. It took only 16 minutes to account for all personnel working at INTEC, including visitors and subcontractors. In addition to routine exercises, each division conducts a quarterly practical exercise associated with its particular job process in order to better prepare employees for an actual emergency. In preparation for planned work associated with the handling of sodium (metallic, passivated, and NaK), MFC managers organized a test sodium fire for the site fire department to gain experience in extinguishing a sodium-based fire and to better understand the characteristics of sodium fires firsthand. CWI is also using emergency drills to ensure workers are ready to respond to a variety of situations. RWMC conducts 3 training drills each month. The value of this training was made abundantly clear recently when there was a fire in a piece of heavy equipment within the ARP tent. Workers had recently practiced this very scenario in a drill and were ready to respond quickly and appropriately. Lessons were learned from the actual event and incorporated into response procedures and additional training.

The Occupational Medical Program (OMP) for CWI is operated under the Battelle Energy Alliance, LLC (BEA) OMP. Since the last VPP onsite review, CWI amended its OMP to specifically allow the use of outside medical services to address emergency needs during off-shift hours when the BEA OMP does not provide services (i.e., in town on Fridays, weekends, and holidays). BEA OMP continues 24/7 nursing and on-call physician coverage for CWI site workers.

First-aid kits are located throughout the facility to encourage workers to treat minor cuts and scrapes, and the kits are inspected monthly. Medical Response Team members have been trained in first aid and Cardiopulmonary Resuscitation/Automated External Defibrillators (AED) to respond to incidents until emergency response personnel can arrive from Central Facilities Area. AEDs are located throughout the facility.

## **Conclusion**

CWI demonstrated a proactive program towards comprehensive hazard prevention and control. Observations revealed CWI’s efforts for continuously improving hazard prevention controls through the evaluation of lessons learned by the safety and engineering groups and solicitation of employee recommendations. CWI fully meets the expectations of the VPP tenet for hazard prevention and control.

## VII. SAFETY AND HEALTH TRAINING

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

Discussions with employees indicate that the scope and duration of training provided is adequate for the positions and tasks assigned. The Team interviewed newly hired workers, as well as long-time CWI employees. Employees are provided with an ICP Safety Tool Box Handbook. It describes the relationship of Integrated Safety Management System, title 10, Code of Federal Regulations (CFR), part 851, *Worker Safety and Health Program*, and VPP. It contains the safety policy and describes employees' responsibilities. This handbook is small in size, but large in content. It communicates the company's expectations and provides the necessary tools to make the employee successful. The Team queried employees about the content of VPP information included in training. Each employee was knowledgeable and referred to the Safety Tool Box Handbook if they were unsure of the correct answer.

CWI has an extensive training program. Each position requires courses to qualify the employee for their particular position. The emergency preparedness organization, ECC cadre, Construction Coordinators, and members of EST are evaluated. All employees must complete a series of classes prior to assuming responsibility. This training is in addition to job-specific requirements and site-access requirements. Interviews with newly hired operators at IWTU indicated some frustration with training due to the fact that construction has not been completed. They were anxious to get into the building and get on with their training. Newly hired personnel were very motivated and complimentary of the training they had received to date.

By agreement with the local bargaining unit, the United Steelworkers (USW) provides all the 10 CFR 851 and Hazardous Waste Operations training for CWI workers. This training was initially proposed by USW, and after some modifications to include more local information specific to ICP, CWI adopted this training. Union leaders expressed their appreciation for CWI's willingness to use USW training, and employees indicated that the information provided was adequate and had no issues with course content or duration.

During a prejob briefing to perform maintenance on an elevator, the supervisor checked the training of onsite personnel and checked the training and qualifications of the vendor performing the maintenance. All personnel training were current and no delays were incurred due to training deficiencies. In a plan-of-the-day meeting for Naval Fuels, the supervisor passed along training due dates that were upcoming for several employees. Interviews with newly hired (less than a year) employees indicated that their training included self-study, as well as classroom training. Some expressed a desire for more time during the self-paced portion since they had not worked on the site before.

### Conclusion

Since 2007, CWI has maintained and improved its safety training program. Workers are satisfied with the type and quantities of training received, and are actively engaged in the training processes. Likewise, managers and supervisors are knowledgeable of the work, the hazards, and

the controls. The training programs as implemented continue to satisfy the expectations for a DOE-VPP Star participant.

## VIII. CONCLUSIONS

CWI has maintained an exemplary safety culture over the past 3 years. The entire CWI team has adopted an approach that clearly values and embraces employee participation. Universally, the CWI management team establishes the mission goals and then actively seeks employee ideas on how to achieve those goals. Employees broadly identified trust in their managers as a theme. The willingness of the management team to provide timely, accurate information to employees, whether good or bad news, was widely recognized and appreciated by workers. This openness has also contributed to an excellent working relationship between CWI and the bargaining unit. Because of the open communication, trust, willingness to provide resources, and encouraging employee involvement, CWI has recognized significant improvements in cost and schedule performance against its contract goals, as well as improvements in its safety statistics. These improvements have also been recognized by external stakeholders. As a result, the Team is recommending that CWI continue to participate in DOE-VPP at the Star level.

## Appendix A: Onsite VPP Assessment Team Roster

### Management

Glenn S. Podonsky  
Chief Health, Safety and Security Officer  
Office of Health, Safety and Security

William A. Eckroade  
Deputy Chief for Operations  
Office of Health, Safety and Security

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

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

### Review Team

Name	Affiliation/Phone	Project/Review Element
Bradley K. Davy	DOE/HSS (301) 903-2473	Team Leader, Management Leadership, RWMC
John A. Locklair	DOE/HSS	Worksite Analysis, Training, INTEC
Michael S. Gilroy	DOE/HSS	Hazard Prevention and Control, D&D Projects
Barbara Guenveur	Savannah River Nuclear Solutions, LLC	Idaho Falls Facilities, INTEC
Brenda Kelly	Savannah River Nuclear Solutions, LLC	Employee Involvement
John Davey	Bechtel BWXT Idaho, LLC	D&D Projects
Rocky Simmons	Mission Support Alliance, LLC Hanford	RWMC
Marsha Bevins	Wastren-EnergX Mission Support, LLC	INTEC
Marilyn Peabody	Los Alamos National Security, LLC	INTEC