

**Department of Energy Voluntary Protection Program
Conditional Star Review
of
Waste Treatment Completion Company, LLC
Waste Treatment Plant Construction Project
Hanford Site, Washington
February 6-15, 2018**

The Department of Energy's (DOE) Voluntary Protection Program (VPP) Team (Team) from the Office of Environment, Health, Safety and Security (AU) recommends that the Waste Treatment Completion Company, LLC (WTCC) complete the 2-year transition process that began in March 2017. WTCC needs additional time to stabilize its management structure, institutionalize its management expectations, and regain the trust and respect of the workforce. WTCC has taken actions that address the conditions identified in the 2016 triennial assessment, therefore the Team recommends that WTCC complete the 2-year transition process begun in March 2017, after which time the Team will perform a final transitional assessment.

Background:

Construction of the Waste Treatment Plant Construction Project (WTP) started in 2001, and DOE currently expects to begin vitrification of low-activity radioactive waste by 2022. Bechtel National, Inc. (BNI) is the prime contractor responsible for construction, with AECOM (formerly Washington Group International) as a designated prime contractor responsible for design and commissioning. In 2017, BNI and AECOM formed WTCC, then subcontracted WTCC to complete construction, startup, and commissioning of WTP.

BNI project activities include developing construction strategies; identifying hazards within all work activities; performing constructability reviews; developing construction schedules; managing material receipt; installing and maintaining permanent plant equipment; and executing complex civil, electrical, and mechanical construction activities.

The WTP project includes nonmanual employees, building trade members, and subcontractors from BNI and AECOM. The construction site is on 65 acres of previously undeveloped land on the Hanford site.

The WTP will eventually consist of three processing facilities: Pretreatment, Low-Activity Waste Vitrification (LAW), High-Level Waste (HLW) Vitrification, as well as a large Analytical Laboratory, and the Balance of Facilities consisting of 20 support facilities. These facilities will immobilize more than 56 million gallons of radioactive and chemical wastes stored in 177 aging and leaking underground tanks. The plant will use vitrification technology, which blends the waste with glass-forming materials, heats it to 2,100 degrees Fahrenheit, then pours it into stainless steel canisters to cool and solidify. In this glass form the waste is stable, impervious to the environment, and its radioactivity will safely decay over hundreds to thousands of years.

In 2016, DOE decided to pursue a strategy that bypasses the pretreatment facility to direct-feed low activity waste (DFLAW), and delay completion of the HLW facility.

The 2016 triennial assessment of BNI identified 10 opportunities for improvement, 3 of which indicated conditions that did not meet the expectations for continued participation in DOE-VPP. The 2016 assessment recommended that BNI continue in DOE-VPP conditionally for another 12 to 18 months to address those needs. When BNI turned the construction site over to WTCC in March 2017, it also transferred the DOE-VPP Star with those conditions. WTCC accepted responsibility for those three needs, primarily arising from a significant reduction of Employee Involvement.

Normally, the transition of a DOE-VPP Star to a new contractor would allow a 2-year transition period while the new contractor establishes itself at the site. Since BNI was transferring a conditional Star, AU, DOE's Office of River Protection, BNI, and WTCC all agreed that AU would perform the conditional review in 12 months from the date of the 2016 review, rather than waiting 2 years. Accordingly, the Team reviewed the status of actions addressing the three needs and gauged the effectiveness of those actions in stimulating and encouraging Employee Involvement.

Additionally, the DOE Office of Enterprise Assessments' (EA) Office of Worker Safety and Health Enforcement conducted an investigation of a worker injury that occurred in November 2016. The worker was injured when a pressure testing flange blew off during a process cooling water system pressure test. The results of that investigation were not available prior to this assessment.

This report is being prepared as an addendum to the 2016 assessment report, and supports the Team's recommendation that WTCC complete the 2-year transition process that began in March 2017.

Results:

Conditional Needs

WTCC accepted responsibility for the following three Opportunities for Improvement from the 2016 BNI triennial assessment.

2016 Opportunity for Improvement: BNI managers need to broaden their personal expectations for Employee Involvement, provide resources to the various safety committees to operate relevant campaigns to stimulate employee involvement, and find more effective, objective measures of employee participation in those activities.

2016 Opportunity for Improvement: BNI needs to provide foremen, superintendents, managers, and committee members with tools and training to: (1) recognize and encourage employee involvement in safety programs; (2) increase managers' visibility in the work areas; (3) ensure supervisors are leading by example; and (4) assure workers' concerns are addressed without fear of retaliation or apprehension due to their rank or position (apprentice, journeyman).

These two conditional needs are interrelated, and many of the actions taken by BNI and WTCC address both.

WTCC is making progress toward providing foremen, superintendents, managers, and committee members with the tools and training to address these needs. Several WTCC senior managers have only been in place for the past 1-3 months and are just beginning to demonstrate their safety commitment and philosophy to the workforce. These managers have extensive experience at

other VPP sites through DOE and the Occupational Safety and Health Administration. They understand the value of employee engagement and involvement.

Many workers, particularly in the construction trades, believe recent efforts to encourage employee engagement are just short-term improvements to regain the DOE-VPP Star and will not continue after this assessment. Interviews and walkarounds with managers led the Team to believe that managers are sincere in their desire to engage workers and drive improvements using worker ideas and suggestions. The current management team is reaching out to workers by supporting employee safety teams with resources to address concerns and by promoting safety knowledge and awareness.

As it nears construction completion milestones, WTCC is beginning to transition workers from construction activities to startup and commissioning activities. One of WTCC's objectives is creating a knowledgeable and trained workforce that will be ready to operate the plant. Cooperation between WTCC and the unions allows craftspeople to move from construction to startup and commissioning without having to "go back to the hall." Under this approach, interested workers can move directly to the startup and commissioning organizations. Although workers have to relinquish their daily travel pay, they gain job stability with the prospect of remaining on the project after commissioning is complete.

WTCC has encouraged workers to participate in safety activities. For example, WTCC supported the Craft Safety Watch (CSW) committee by providing candy or other small token awards for workers that allowed CSW members to observe them. Because of these rewards, the CSW committee members reported that workers were asking CSW to watch them work.

WTCC also told workers that they would receive an extra 50 points on their craft performance ranking if they participated on one of the new safety committees. Although some workers believed the extra 50 points do not matter, workers are now volunteering to serve on teams; and in some cases, more workers are volunteering than the teams need.

Other improvements include the formation of a WTCC Executive Safety Review Board that provides a forum for WTCC safety and quality committee chairs; line managers; environment, safety, and health personnel; and senior managers to solve safety issues and implement safety policies. While workers' attitudes towards employee involvement in safety activities are improving, WTCC has not existed long enough to convince workers of its long-term commitment. Revised committee charters and mission statements have helped institutionalize the efforts, but some committees have only been active for a short time. Newly formed committees may not yet have the experience and knowledge regarding their missions, and may need additional mentoring to achieve their full potential.

WTCC is tracking employee participation in identifying issues and concerns, but has not yet implemented other safety campaigns that promote employees voluntarily participating in activities that raise safety awareness, encourage safe behaviors, and reward employees for doing more than just complying with the safety rules. Tracking employee participation in such campaigns can provide WTCC with valuable data it can use to demonstrate employees' discretionary effort as an excellent leading indicator for safety performance.

WTCC has asked the area safety teams to make recommendations for safety promotion activities and has received several suggestions, but has not yet implemented those campaigns.

Some workers at WTCC do believe that asking safety questions, pausing, or stopping work will lead to lower performance rankings or undesirable work assignments. They perceive that WTCC uses discipline unfairly against workers who make minor errors, and holds craft workers to a different standard than nonmanual workers. These perceptions continue to discourage workers from participating in safety improvement activities.

Several workers sought interviews with the Team to make their perceptions known. Some workers shared stories of supervisors bullying workers. Other workers shared stories of workers bullying supervisors. Some workers believed WTCC or BNI had moved them from the construction project site and sent them to the Material Handling Facility because they were vocal about concerns at the construction site. These workers believed that their supervisors were watching them for any minor infractions of rules that supervisors could use as an excuse for reassignment. In one case, a worker believed WTCC had moved him because he refused to work under an inadequate lockout/tagout. Reassignments often resulted in a loss of travel pay to the site for those personnel and reduced overtime. Workers detailed several concerns that they had been raising for months or years without an adequate response from managers.

These perceptions exist primarily within the construction trades, and probably arise from several causes that WTCC needs to address. First, some supervisors in the construction organization are either not aware of, or do not care, when workers perceive their actions as unfair. They follow the labor agreement, and often implement stricter rules to correct worker behaviors. These supervisors (foremen through superintendents) are not using management discretion to give workers the benefit of the doubt when workers make minor errors. They have not adopted a management or supervisory approach that emphasizes rewarding correct behaviors and improvement actions.

Second, some supervisors do not follow the site rules. Workers observe supervisors driving too fast, walking outside designated paths, not wearing personal protective equipment, smoking outside designated areas (“smokers paradise” was a term used by some workers to describe areas used by supervisors that are out of sight of upper management), or other rule infractions without consequence. Workers believe that if they commit similar infractions, WTCC will put a disciplinary letter in their file.

Third, supervisors have implemented worksite rules, typically in response to worksite issues, without adequately considering the consequences from the workers’ point of view. One issue that was particularly troubling to many workers was in the LAW facility. Workers were leaving water bottles (either empty or partially empty) throughout the facility. In response, the area superintendent limited water bottles to a single area within the LAW (truck bay). To get water, workers had to leave their tools, go up or down to the truck bay, drink their water before leaving the truck bay, and then return to their tools. This required them to leave their worksite for up to 30 minutes. Similarly, WTCC has experienced a series of dropped objects from elevated work, primarily materials. These dropped objects pose a threat both to workers in tight quarters below the worksite and to installed equipment. In response, WTCC initiated a “stop the drop” campaign that required attaching all tools to lanyards for work above 24 inches. Some workers described their interpretation of height limit as low as 6 inches. Many workers believed the use of lanyards made it harder or more dangerous to perform certain tasks and did not address the primary problem of dropped materials. WTCC was working to resolve these issues at the end of the assessment. These practices demonstrate how the failure of first line and middle managers to

adequately consider the consequences from the workers' viewpoint can lead to greater problems and loss of trust.

Some workers continue to believe supervisors are not responsive to workers' concerns. A recent case came to the Team's attention during backshift interviews. One employee expressed disappointment that he had not been able to get a satisfactory resolution to a hazard he had identified. Because the LAW building is transitioning from construction to commissioning, WTCC is energizing systems. In some areas, temporary modifications (t-mods), typically done on day shift, are used to energize systems for testing. T-mods provide temporary energy, such as electrical, pneumatic, steam, and hydraulic energy to plant systems. For electrical energy, a t-mod typically involves removing electrical panel covers to tie in temporary electrical power. A red t-mod tag, attached to panel fronts, identifies panels with temporary power. The backshift electrician had expressed a concern that he was finding electrical panels, tagged with red t-mod tags, without covers, potentially leaving energized conductors exposed. The electrician indicated that he had questioned this practice 3 weeks prior to discussions with the Team, but the concern had not been resolved.

Similarly, the Team recognized that workers were receiving a mixed message with respect to electrical safety. Signs at the entrance to the LAW warn workers to assume equipment is energized, but at the same time electricians were continuing the "construction practice" of leaving panel covers off as though they were not energized. This mixed message contributed to the workers' confusion and to the issue identified by the backshift electrician. After the Team inquired about this practice, WTCC issued a work control bulletin. It is following up on that bulletin with a procedure change directing that open electrical panels must be covered or barricaded with signs when not attended.

These practices and conditions have been primarily within the construction trades and the area completion organizations, which have the majority of manual workers. WTCC senior managers committed to the Team that over the next several months, they are determined to eliminate behaviors that disrespect workers, contribute to hostile working conditions, or detract from a just culture. WTCC managers committed to taking whatever action is legal and necessary to eliminate those conditions, many of which they inherited from BNI when WTCC was formed. As a new company with new leaders, WTCC is creating policies, practices, and expectations consistent with DOE-VPP. These policies and practices need additional time to demonstrate the desired improvements and earn workers' trust.

2016 Opportunity for Improvement: BNI needs to develop broader opportunities and activities that workers can participate in that reinforce and encourage safety awareness and safe behaviors and result in assured rewards for employees consistent with the level of effort and expected value of participation rather than cash awards from random drawings.

The 2016 VPP report indicated that apprentices and early career employees were restricted from participation in safety committees. WTCC has addressed this condition, and manual or nonmanual employees can apply for any of the several safety committees, including Zero Accident Council, Area Safety Teams, Electrical Safety Program Committee, or the Developing Responsibility in Vehicle & Equipment Safety committee. As discussed previously, response from these workers has significantly increased. In addition, WTCC has instituted two award programs, *Good Catch* and an *On-the-Spot* awards, that recognize participation in safety program activities, as well as safe acts and safe behaviors. WTCC recognizes employees receiving

awards with certificates and at monthly supervisor meetings, monthly leadership integration meetings, and bi-monthly WTCC electronic newsletters.

The 2016 VPP report discouraged cash awards from random drawings as a means to encourage safety awareness. The Team only identified one award related to a random drawing and that was for the monthly parking space. All other awards were individual awards and did not involve drawings.

WTCC tracks workers' participation in the safety program several ways. The CSW committee performs worker observations and reports the number of CSW observations weekly to the workforce during the *Safely Speaking* meetings. The Safety Observation for Awareness and Risk – Reduction (SOAR) program provides a method for employees to document a safety concern or raise an issue anonymously.

WTCC tracks the count of SOAR submittals to measure employee participation in safety activities. During the evaluation, WTCC indicated an intent to compile the SOAR submittals on a spreadsheet. WTCC should post the SOAR spreadsheets and actions taken by the SOAR input boxes so workers who do not have computer access can review suggestions, actions, and status of open items.

Opportunity for Improvement: WTCC should post the SOAR spreadsheets and actions taken by the SOAR input boxes so workers who do not have computer access can review suggestions, actions, and status of open items.

Other Observations

In addition to addressing the three conditional needs, WTCC has made other improvements discussed in the following paragraphs.

WTCC instituted an Innovation Center to identify, test, and implement technology-based solutions for issues and suggestions. The Innovation Center is located on the construction site and staffed by four people. The center grew out of several reviews that WTCC conducted to improve work processes. Goals include implementing technological solutions for problems; creating error-proof work processes; and improving safety, health, quality, cost, and schedule performance. For example, the Innovation Center is developing interfaces with a three-dimensional computer model for the plant, using virtual reality to improve work planning and sequencing. The Innovation Center also implemented “data vaults” in multiple locations so employees can access information they need to perform work rather than having to return to offices or shops for the information.

The Innovation Center is also developing the capability to perform laser scanning of areas and using those scans to develop three-dimensional models for as-built conditions. Another improvement is using flying drones to perform video surveys, both inside and outside the plant, as a means of monitoring conditions. The Center is also testing the use of three-dimensional printing for prototyping and reviewing new tools, allowing workers to improve work methods without creating additional hazards.

WTCC is continuing to face perception challenges within the workforce that contribute to workers' belief the company is dishonest with them and DOE. These perceptions arise from some workers' misunderstanding of the DFLAW decision. Workers hear reports that the

Laboratory and the LAW are “construction complete” or “substantially construction complete.” However, workers see the buildings with incomplete equipment installation, incomplete utilities, or other signs that indicate construction activities are incomplete. For example, the Laboratory contains a hot cell facility, but there are no shield windows, manipulators, or other equipment installed that would “complete” the hot cell. Other conditions include a large portion of the compressor building, and several large compressors that are blocked off and not completely installed. The reality that workers do not understand is that many of the incomplete construction actions are for equipment or facilities that are not required for the DFLAW process. WTCC has briefed workers on the changes related to the DFLAW strategy, but those briefings have not been effective for the entire workforce. WTCC should continue communicating to workers the necessary plant configuration to implement DFLAW, help workers understand the actual scope of WTCC’s mission, and help dispel negative perceptions.

Opportunity for Improvement: WTCC should continue communicating to workers the necessary plant configuration to implement DFLAW, help workers understand the actual scope of WTCC’s mission, and help dispel negative perceptions.

The site maintains a subcontracted onsite medical care provider (Medcor), and has several employees trained to respond to onsite injuries. After treating the injury, the medical provider verbally notifies the injured employee’s supervisor and area safety representative of any limitations resulting from the injury. Written descriptions of these limitations are generally vague, such as “employee should self-limit.” These nonspecific restrictions may encourage employees to work beyond their limits, leading to aggravation or further injury, and delay healing of the injury. To prevent misunderstanding or miscommunication, WTCC should work with the onsite medical provider to ensure work restrictions resulting from injuries are specifically written and reflect normally assigned duties.

Opportunity for Improvement: WTCC should work with the onsite medical provider to ensure work restrictions resulting from injuries are specifically written and reflect normally assigned duties.

Conclusions

In the 11 months since its formation, WTCC has implemented several changes and attempted to stimulate additional Employee Involvement through several approaches. Increased manager presence at the worksite, increased opportunity for participation in employee safety committees and teams, and managers emphasizing respect between workers and supervisors were evident. Despite these improvements, some supervisors continue to rely on leadership practices and methods that do not support the desired safety culture, and degrade respect and trust between the company and the workers. WTCC needs additional time to stabilize its management structure, institutionalize its management expectations, and regain the trust and respect of the workforce. WTCC has taken actions that address the conditions identified in the 2016 triennial assessment, so the Team recommends that WTCC complete the 2-year transition process begun in March 2017, after which time the Team will perform a final transitional assessment.

Attachment 1

Injury Incidence/Lost Workdays Case Rate (WTCC)					
Calendar Year	Hours Worked	Total Recordable Cases (TRC)	TRC Incidence Rate per 200,000 hours	DART* Cases	DART* Case Rate per 200,000 hours
2015	2,158,931	7	0.65	3	0.28
2016	2,150,850	12	1.12	7	0.65
2017	2,548,172	10	0.85	8	0.63
3-Year Total	6,857,953	29	0.85	18	0.52
Bureau of Labor Statistics (BLS-2016) average for NAICS** 237 (Heavy and Civil Engineering Construction)			2.80		1.70
Injury Incidence/Lost Workdays Case Rate (WTCC Subcontractors)					
Calendar Year	Hours Worked	TRC	TRC Incidence Rate per 200,000 hours	DART* Cases	DART* Case Rate per 200,000 hours
2015	291,614	0	0.00	0	0
2016	241,794	4	3.31	2	1.65
2017	331,838	0	0.00	0	0.00
3-Year Total	865,246	4	0.92	2	0.46
Bureau of Labor Statistics (BLS-2016) average for NAICS** 237 (Heavy and Civil Engineering Construction)			2.8		1.7

* Days Away, Restricted or Transferred

** North American Industry Classification System

TRC Incidence Rates, including subcontractors: 2.80

DART Rates, including subcontractors: 1.70

The rates reported here represent 9 months that WTCC has existed, with the balance of the 3 years reflecting BNI performance. Because the work at the construction site is not substantially different after forming WTCC, the 2 years and 3 months of rates from BNI are valid for comparison. Injury rates for the construction site peaked in 2016, consistent with conditions identified by the Team in November 2016. TRC rates dropped in 2017 in response to improvement efforts after the 2016 assessment. WTCC injury and illness rates are more than 50 percent less than comparable industry rates and meet expectations for VPP participation.

Attachment 2

2018 Opportunities for Improvement

Opportunity for Improvement	Page
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