

Parsons Corporation Salt Waste Processing Facility Construction Project

Report from the Department of Energy Voluntary Protection Program Onsite Merit Progress Review October 12-15, 2015



EHSS

Office of Environment, Health, Safety, and Security

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

I. INTRODUCTION

Parsons Corporation (Parsons) submitted its Department of Energy (DOE) Voluntary Protection Program (VPP) application for the Salt Waste Processing Facility (SWPF) Construction Project to the Savannah River Operations Office (SR) in June 2012. SR endorsed the application and forwarded it to DOE's former Office of Health, Safety and Security (HSS). After reviewing the application, the Office of Worker Safety and Health Assistance within HSS, performed an onsite evaluation in February 2013 to assess the effectiveness of the processes at Parsons. That assessment recommended that DOE admit Parsons into DOE-VPP as a Merit participant and identified several conditions that Parsons needed to address to achieve Star status.

The Office of Worker Safety and Health Assistance (AU-12), within the Office of Environment, Health, Safety and Security (AU), conducts annual progress reviews for Merit participants, and conducted the first annual review of Parsons from May 5-8, 2014. That report identified that Parsons had made some progress addressing the needed improvements identified in the 2013 DOE-VPP assessment, but the progress had not yet met the expectations for a DOE-VPP Star participant. A large turnover in the workforce as construction progressed presented special challenges for Parsons and the company had not yet been effective in convincing newer workers (those hired in the previous year) of its commitment and expectations for safety. Managers and superintendents had improved their communication with workers, but workers remained aware of too many cases where superintendents' actions conflicted with Parsons' expectations. Parsons needed to become more proactive with the employee safety committee and workers, and seek more substantial employee ownership and involvement in its safety program to achieve DOE-VPP Star status. The AU DOE-VPP Team (Team) recommended that Parsons SWPF Construction Project continue to participate in DOE-VPP at the Merit level as it continued to pursue improvements.

AU scheduled the second Merit review for October 12-15, 2015. This report documents the results of that review. The Team focused on the needed improvements identified in the 2013 and 2014 reports rather than a comprehensive review of all five DOE-VPP tenets. Consequently, this report is an addendum to the 2013 and 2014 reports and documents the Team's recommendation to the Associate Under Secretary for Environment, Health, Safety and Security regarding Parsons' continued participation in DOE-VPP. Following the October 12-15, 2015 progress review, the Team recommends that Parsons SWPF Construction Project continue participating in DOE-VPP, and be elevated to Star status.

The SWPF Construction Project is an ongoing project to construct a facility that will process liquid wastes in support of the DOE's environmental management mission. When operational, SWPF will separate the highly radioactive cesium and actinides from salt solutions. After completing the initial separation process, SWPF will send the concentrated cesium and actinide waste to the nearby Defense Waste Processing Facility (DWPF) for immobilization in a glass matrix and storage in vaults until eventual disposal in a geological repository. SWPF will send the decontaminated salt solution to the nearby Saltstone Facility that will mix the salt solution with cement and fly ash for disposal onsite. DOE initially expected completion of SWPF in 2015 to meet a commitment to State regulators. However, delays in the delivery and installation of several key vessels to the plant caused that target to slip. In 2013, DOE and Parsons renegotiated the project completion and construction costs. Parsons is working towards an April 2016 completion date.

Since the 2013 assessment, Parsons has reduced staffing from approximately 870 people at SWPF to 600 people, with about 450 of those representing the variety of construction crafts. The Augusta Georgia Building and Construction Trades Council collectively represents the construction crafts and fully supports Parsons' participation in DOE-VPP and provided its written support in December 2010. Since 2014, Parsons has expanded its onsite presence beyond construction personnel. New workers support the turnover and maintenance of systems as system construction is completed, develop test and operating procedures, and support a shift from construction to initial operation. In that role, personnel perform system walkdowns and inspections.

Hazards encountered by workers at the SWPF Construction Project are those typically encountered at any large construction project and include heavy equipment, cranes and rigging, elevated work, confined spaces, uneven walking and working surfaces, tools, open trenches and holes, exposure to weather extremes, chemicals associated with cleaning and coatings, poisonous insects and animals, and control of hazardous energy.

INJURY INCIDENCE/LOST WORKDAYS CASE RATE II.

Injury Incidence/Lost Workdays Case Rate (Parsons and Teaming Partners)						
Calendar	Hours	Total	TRC Rate	DART*	DART*	
Year	Worked	Recordable		Cases	Case Rate	
		Cases (TRC)				
2012	954,348	5	1.05	3	0.63	
2013	1,042,806	6	1.15	1	0.19	
2014	1,149,070	9	1.57	6	1.04	
3-Year	3 146 224	20	1 27	10	0.64	
Total	3,140,224	20	1.27	10	0.04	
Bureau of Labor Statistics (BLS-2013)						
average for NAICS** Code 237 (Heavy			3.2		1.8	
and civil eng	ineering constr	uction)				
Injury Incidence/Lost Workdays Case Rate (Subcontractors)						
Calendar	Hours	TRC	TRC Rate	DART*	DART*	
Year	Worked			Cases	Case	
					Rate	
2012	444,822	6	2.70	6	2.70	
2013	180,441	5	5.54	4	4.43	
2014	186,034	1	1.08	0	0.00	
3-Year	811 207	12	2.96	10	2.47	
Total	011,277	12	2.90	10	2.77	
BLS-2013 average for NAICS** Code						
237 (Heavy and civil engineering			3.2		1.8	
construction)						
Injury Incidence/Lost Workdays Case Rate (Combined)						
Calendar	Hours	TRC	TRC Rate	DART*	DART*	
Year	Worked			Cases	Case	
					Rate	
2012	1,399,170	11	1.57	9	1.29	
2013	1,223,247	11	1.80	5	0.82	
2014	1,335,104	10	1.50	6	0.90	
3-Year						
Total	3,957,521	32	1.62	20	1.01	
BLS-2013 average for NAICS** Code						
237 (Heavy and civil engineering			3.2		1.8	
construction)					

* Days Away, Restricted or Transferred ** North American Industry Classification System

3-year TRC Rate (Parsons, Teaming Partners, and subcontractors): 1.62 3-year DART Case Rate (Parsons, Teaming Partners, and subcontractors): 1.01

Conclusion

The injury rates for 2012 to 2014 are consistently well below the construction industry average, and meets the expectations for continued participation in DOE-VPP. The combined TRC rate, which includes Parsons, its teaming partners, and subcontractors, has been decreasing since 2013. The combined DART rates have increased slightly since dropping between 2012 and 2013. Over the past 3 years, Parsons has reduced the number of subcontractors and added some of those employees to the Parsons workforce. Therefore, the yearly total combined injury numbers give a meaningful progress report of Parsons' safety program. First aid cases have steadily dropped from a high of 115 in 2012, to 39 cases so far in 2015. Workers did not indicate any impediments to reporting injuries, and the Team believes the data also reflects a greater willingness of workers to report injuries.

III. RESULTS

This section describes the opportunities for improvement identified in the 2014 assessment, and provides the Team's evaluation of Parsons' actions to address those improvements.

2014 Opportunity for Improvement: Parsons needs to continue focusing on coaching and training mid-level managers, superintendents, and foremen to eliminate responses that reduce worker trust.

Since 2014, Parsons has expanded its training and coaching for foremen, although most foremen interviewed by the Team did not recall that training until they were prompted by the Team about specific training events. For example, in the fall of 2014, Parsons conducted Safety Conscious Work Environment (SCWE) training for all foremen and superintendents. When asked about this training, foremen and superintendents did remember the training, and discussed how important it was for them to listen to workers' concerns, and ensure they understood the workers' point of view. Recently, Parsons began providing superintendents and foremen with its Supervisor Training and Accident Reduction Techniques (S.T.A.R.T. TM) training. This course consists of 2 hours of classroom training, led by the Parsons' corporate deputy for environment, safety, and health. The course, owned by Caterpillar Safety Services and licensed to Parsons, consists of videos demonstrating a variety of scenarios and workplaces, and challenges the participants to identify appropriate supervisor responses to situations. Training began in September 2015, with 10 superintendents and 3 foremen completing the class. Parsons intends to have all superintendents and foremen complete the training, but has not developed a plan or schedule to meet that intent. Although not a requirement, the Team strongly encourages Parsons to complete the S.T.A.R.T. TM training for all superintendents and foremen as expeditiously as possible.

Opportunity for Improvement: Parsons should complete the S.T.A.R.T. TM training for all superintendents and foremen as expeditiously as possible.

Parsons recognized that the workload on superintendents was high, which may have contributed to perceived responses interpreted by workers on issues raised to superintendents. After the 2014 assessment, Parsons added general foremen to the organization. These general foremen report directly to a superintendent, and provide a more effective means for workers to communicate issues to superintendents. The general foremen are craft workers (union members), but are also comfortable talking with the superintendents. The general foremen interviewed by the Team were all experienced, knowledgeable craftspeople, and all expressed their commitment to ensuring that any worker issue was appropriately addressed, and not dismissed. They understood they had the authority to fix many issues, and to raise issues up the chain of command, if necessary. Most importantly, the general foremen interviewed by the Team were clear in their commitment to performing the work safely and correctly, even if it meant temporarily stopping or delaying work. They understood it was part of their responsibility to have alternative work available in the event of a job delay. They universally described to the Team how the director of construction met with them on a regular basis (monthly), and supported them in ensuring a safe work environment, without fear of retribution for raising safety concerns.

2014 Opportunity for Improvement: Parsons needs to expand the scope of its annual evaluation, expand worker participation in the process, and use the process to self-identify targeted improvements.

Parsons increased the role of the Employee Safety Committee (ESC) during its 2014 self-assessment. Parsons requested input from the ESC regarding accomplishments and potential improvements and an evaluation of the improvements for 2015. The annual evaluation also included a general discussion of an employee survey, conducted by the ESC to obtain data on employees' beliefs regarding managers' commitment and response to safety concerns. Parsons did identify continued growth in employee engagement as a focus area for 2015.

2014 Opportunity for Improvement: Parsons needs to continue its efforts to establish an effective partnership between managers, superintendents, the ESC, and workers.

Parsons has integrated the efforts of managers, superintendents, workers, and the ESC, which has significantly improved worker participation and ownership of safety at the site. The open communication between managers and workers is evident. The Team attended the bi-monthly ESC senior management meeting and observed an atmosphere of open dialogue and mutual support addressing issues and deficiencies. The ESC manages the Monday craft safety meetings, including presentations and discussions. The Team observed both the day shift and the night shift meetings during this assessment. The safety messages were consistent at both craft meetings and the management meeting. Workers, supervisors, superintendents, and managers exhibit a constructive relationship and freely exchange ideas and suggestions. Workers receive prompt feedback from managers and supervisors regarding suggestions and concerns. The Performance-Based Safety Observation Program (PBSOP) is flourishing with hundreds of observations weekly.

Craft workers are enjoying the opportunity to participate and receive recognition for their efforts. The reward system for participation in safety activities is not cash based. The ESC chairperson develops safety activities that challenge employees to find procedural requirements, complete safety crossword puzzles, or develop slogans. Workers earn points for each activity, and the ESC recognizes a winner monthly. The ESC posts a picture of the winner in the craft break area (craft tent) and the winner gets a premium parking spot close to the site entrance for a month. The Team interviewed several winners who were proud of their accomplishments and enjoyed the recognition. Other rewards include "Job Well Done" stickers for craft to put on their hardhats for participation and recognition. A weekly drawing of "Job Well Done" participants also rewards those employees with a premium parking spot for a week.

Parsons has adopted several employee suggestions in the past year. With the installation of interior walls in the Central Processing Area (CPA), the craft suggested that convex mirrors at corridor intersections would decrease the possibility of injuries by workers carrying equipment or material into the facility. Workers voluntarily provided spotting at intersections for other workers that were carrying material through corridors and intersections. Craft workers also suggested using bolt bags for lifting material and tools up to work platforms. Craft members suggested an evacuation light system to inform workers of protective actions during an emergency. Colored strobe lights near building exits warn employees of an emergency condition. This system addresses verbal and audible communication issues in the CPA. The Team observed craft personnel monitoring and assisting vehicle activity at shift change. During this visit, Parsons was installing speed bumps to keep vehicles at a safe speed near pedestrian

crosswalks. All these improvements demonstrated Parsons' commitment to include workers' input in its safety program.

Parsons has two separate safety committees at the site. The ESC represents all craft on both day and night shift. The testing and procedures group has grown from 3-4 people last year to over 90 workers. Many of those workers have previous experience on the Savannah River Site (SRS), so they opted to form a Local Safety Improvement Team (LSIT) following the model of the other SRS contractors. They use the LSIT to address their safety issues and improve their workspaces. The testing group is performing hydrostatic pressure testing of many systems in close proximity to construction activities. Construction still has priority and all testing personnel are required to comply with Parsons' construction procedures. Currently, the craft manage the ESC meetings and attend bi-monthly meetings with senior managers to discuss and address issues. The Team attended the ESC senior management meeting during this assessment. Members of the LSIT were not present at the observed meeting, and discussions with the LSIT chairperson indicated that they are interested in attending the bi-monthly meeting with the senior managers. As construction activities are completed, a reduction in construction workers will occur and testing and operations workers will increase preparing for the facility operation phase. To increase communication and prepare for a seamless transfer, Parsons should consider including the LSIT in safety discussions with management, such as the bi-monthly meetings with the ESC, and share information between the ESC and LSIT formally.

Opportunity for Improvement: Parsons should consider including the LSIT in the safety discussions with management and share information between the ESC and LSIT formally.

2014 Opportunity for Improvement: Parsons needs to ensure that communication of the commitment to safety and health excellence comes from all levels of managers and superintendents and ensure managers and superintendents find effective ways to support worker suggestions and improvements.

Managers, superintendents, and foremen interviewed by the Team consistently demonstrated their willingness to listen to worker concerns and suggestions. The ESC has significantly increased its level of activity. The Team observed the weekly All Hands safety meeting held at the beginning of the shift on Monday. The director of construction opened the meeting with a compelling and direct message to the entire workforce about the use of illegal substances, and the need for any worker to speak up if one of their coworkers had a problem. The message was clear that Parsons' first concern was safety in the workplace, then getting the person help if possible, and lastly, removing the person from the workplace if they would not cooperate and accept help. The ESC presented the remainder of the meeting. The increase in worker participation during the meeting was evident to the Team when compared to worker participation during the work expressed disdain for any person that exhibited an unsafe work ethic.

One effort in particular by the ESC was effective in gaining worker confidence and dispelling workers concerns that Parsons dismissed their safety issues without proper consideration. Parsons recently held a safety standdown. During the standdown, the ESC documented many comments from workers about potential safety concerns. It then used that list to identify specific actions completed that addressed those concerns. Most importantly, the ESC members then went back to the workers that made the comments, and presented either the actions that were taken, or

the logic and reasons why the concerns were not a problem. This action gave the ESC credibility with the workforce, and helped workers better understand Parsons' decisions and actions.

In an effort to strengthen the ESC, Parsons has made the ESC chairperson a full time position rather than a collateral duty, and that individual reports directly to the construction safety and industrial hygiene manager. The ESC chair does not perform any regular craft duties, allowing him or her to focus solely on addressing safety concerns and implementing safety improvements. Other ESC members get time to participate in safety activities. The active engagement by the ESC chairperson and safety committee members with management support is allowing craft workers to take ownership and pride in working safely.

2014 Opportunity for Improvement: Parsons needs to revise the ESC charter to reflect a strong and active role for the committee in the safety and health program, revise language that minimizes the value of workers' opinions, and ensure managers commit to their roles as committee champions.

In response to the 2014 recommendation, Parsons revised the ESC charter to reflect expectations for ESC member's participation. The ESC is now empowered to review accident investigations, and make suggestions to managers on preventive measures that preclude reoccurrence. Another change in the charter requires the ESC to review hazardous work conditions. Typically, employees notify their immediate supervisor or an ESC member if they find a hazardous condition. The immediate supervisor may correct the condition on the spot or engage an ESC member to bring the condition to the attention of the committee for corrective action recommendations. These changes provide the ESC with active roles to improve employee engagement, open a dialogue with management, and develop a sustainable partnership to improve the safety at the site.

2014 Opportunity for Improvement: Parsons needs to ensure it meets the periodic testing requirements of title 29, Code of Federal Regulations, part 1910.137, for insulating rubber gloves prior to their use. Parsons should return the arc flash personal protective equipment kits and rubber and leather gloves to the tool crib for storage, periodic inspection, replacement, and future issue to users.

The Team, along with the electrical foreman, inspected the arc flash equipment located in the electrician's trailer and in the tool crib. The arc flash suit, helmet, and gloves (both leather and rubber) were in good condition, and the rubber gloves were within 6 months of the certification date. The tool crib has additional certified replacement gloves. As identified last year, the Team found safety pins in the label on the inside of the top and bottom sections of the suit in the trailer. However, the electricians did not recognize the pins as a hazard that would reduce the effectiveness of the suits, and had not removed the pins prior to wearing the suits. Electricians use the suits at least weekly. After discussing the recurring safety pin issue, the electrical foreman agreed that additional training may be needed on how to inspect arc flash equipment. The Parsons training organization should work with the electricians to identify and implement training that ensures electricians understand arc flash hazards and controls, particularly as they relate to inspection and use of arc flash personal protective equipment (PPE).

Opportunity for Improvement: The Parsons training organization should work with the electricians to identify and implement training that ensures electricians understand arc flash hazards and controls, particularly as they relate to inspection and use of arc flash PPE.

2014 Opportunity for Improvement: The emergency manager, along with the operations manager, should develop a formal plan to test the CPA speakers to ensure they are broadcasting during announcements.

In response to the 2014 opportunity for improvement, Parsons assigned the Operations Group the task to develop and perform a monthly inspection/test of the SWPF public address (PA) system to ensure the system operates and ensure that employees understand all broadcasts across the site. The monthly tests and inspections occur on the first Thursday of every month. Initial tests identified several speakers that either did not function or functioned ineffectively. Parsons immediately repaired or replaced those speakers. In addition, the S-Area (DWPF) now has the capability to broadcast on the Parsons PA system in the event of an emergency that may affect SWPF. As previously discussed, the employee suggestion regarding the strobe light notification system also contributed to the resolution of this issue.

The Operations Group is in the process of developing joint emergency management drills with S-Area to ensure coordinated responses between the two facilities for any emergency event that may affect one or both facilities.

2014 Opportunity for Improvement: Parsons should work with Savannah River Site Operations Center (SRSOC) to confirm that it receives and acts on all messages from SRSOC.

In response to the 2014 opportunity for improvement, Parsons requested that SRSOC provide written faxes to the administration building point-of-contact regarding announcements from the DWPF to ensure the Parsons emergency management group receives, understands, and responds as necessary, to collocated events.

As discussed earlier in the report, Parsons has tasked the Operations Group to lead in the development of the emergency management function in preparation for the transition from construction to testing and operation. Because the Operations Group is focusing on the operational concerns of the emergency management program, the Team believes that they are taking a more inclusive approach to the emergency management program, which will further strengthen the program.

2014 Opportunity for Improvement: Parsons should consider providing emergency egress safety equipment to personnel working within the dark cell (limited access space), installing exit path lighting (such as LED rope lighting) to mark the exit paths from each cell, and staging emergency rescue equipment and supplies in lockers adjacent to the topside entrances of the dark cells.

The Parsons Safety Group evaluated the Team's 2014 opportunity for improvement and decided upon an alternative plan to ensure the workers' safety while performing work in the dark cells. The Safety Group introduced a continuous monitoring program of the dark cells for carbon monoxide, hydrogen sulfide, oxygen, and flammable gases (previously the dark cell air monitoring occurred prior to start of shift). Parsons posted egress route signs on all dark cell ladders to facilitate workers' egress from the dark cells during an emergency event.

Additionally, Parsons and the Savannah River Nuclear Solutions, LLC's (the management and operating contractor at SRS) fire department conducted an exercise to simulate retrieving an injured worker from the dark cell. After the exercise, Parsons procured and prepositioned fall

protection and retrieval equipment at the entrances to the dark cell to assist emergency responders and facilitate retrieval.

Additional Observations:

2013 Opportunity for Improvement: Parsons needs to complete its corrective actions related to storage and retrieval of exposure monitoring data, complete a comprehensive baseline exposure assessment, and use the results of that assessment to implement an effective industrial hygiene program.

The 2014 assessment determined the activity to complete documenting, correlating, and evaluating all air-sampling records since project initiation had been completed. This included reviewing trends and activities that created the potential for exceeding exposure limits and the level of protection required in those activities. In addition, industrial hygienists completed a review of all chemicals approved for use onsite and developed a hazard assessment or risk-rating relative to the chemical's intended use and the need for industrial hygiene (IH) evaluation of the chemical exposure. Parsons was using the data to develop revisions to the air sampling plans and better methods to communicate the information to the workforce. Air sampling records were available to employees in the craft tent. During the 2014 assessment, one worker expressed concerns about hazardous vapors from heating epoxy coatings. The Team brought the concern to the attention of the industrial hygienists who were able to quickly retrieve sampling records and demonstrate that controls used were adequate to maintain workers' exposure well below the appropriate limits. Parsons was continuing to pursue further improvements in IH sampling and exposure assessment processes.

Improvements attributed to the IH program in 2014 have not been sustained. The current IH staff was unable to retrieve exposure assessment data, could not easily retrieve the basis for categorizing chemicals as low, medium, or high hazard, and did not have a sampling strategy based on current activities. The project's industrial hygienist believes he does not have sufficiently trained and qualified technicians to perform the sampling. Personnel that were performing these duties and retrieving data to populate the new databases in 2014 have left the project.

Parsons is generally performing activities that use solvent-based products (adhesives, paints, and coatings) on night and weekend shifts to prevent other workers from damaging coatings during product cure times, and minimize potential chemical exposure to collocated workers. Workers that perform these activities ensure there is active ventilation in work areas using fans or blowers. Most of these products advise the user to ensure "adequate ventilation". The industrial hygienist evaluates chemicals for potential exposure hazards before Parsons purchases and brings the chemicals onsite, but in some cases, those evaluations were difficult to retrieve. The industrial hygienist performs sampling, and posts the results in the craft tent, but is not entering other exposure evaluation records into the record system in a timely manner. Parsons is selecting and using low hazard materials where possible, and minimizing worker exposures to hazardous materials, but it should ensure an effective process is in place to store analysis and sampling data and other records in a readily retrievable manner.

Opportunity for Improvement: Parsons should ensure it properly records and stores industrial hygiene evaluations and other records in a retrievable manner.

IV. CONCLUSIONS

The Team recommends that Parsons SWPF construction project continue participating in DOE-VPP, and be elevated to Star status. Since becoming a DOE-VPP participant in 2013, Parsons has made great strides in improving its safety culture at the SWPF Construction project. It has transitioned from a management-directed safety program with a disengaged and dissatisfied workforce, to a shared safety program between managers and workers. Although recordable injury rates have been relatively constant, the Team believes these results are partially attributable to workers feeling secure reporting injuries that previously went unreported. Parsons is effectively managing production schedule pressures that were evident in previous evaluations, and is enabling workers, foremen, and superintendents to delay or stop work to ensure workers can safely and effectively complete work. The ESC has become an energized, enthusiastic group that takes its mission seriously, and is effectively engaging the entire workforce. Senior managers are training and coaching mid-level managers and supervisors, and appropriately responding to workers' concerns.

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