Intermech Incorporated

Department of Energy Voluntary Protection Program Review

Background

Intermech Incorporated (Intermech) is a subcontractor to Bechtel National Inc. (BNI), the prime contractor for the Waste Treatment and Immobilization Plant (WTP) construction project at the Department of Energy's (DOE) Hanford Site in Washington State. Intermech achieved Voluntary Protection Program (VPP) Star status in the Washington State VPP program for its activities not associated with DOE. Subsequent to that achievement, Intermech applied to DOE-VPP in 2006, was awarded Star status in 2007, and was recertified as a Star site in 2010. This review represents the 3-year review for recertification as a Star site. The Office of Health, Safety and Security DOE-VPP Team (Team) performed the onsite review November 12-14, 2013, in Richland, Washington.

During the 2010 review, the Team found a strong management commitment to safety and to providing leadership and resources, a very good relationship between the crafts and their managers, good worksite analysis processes and procedures, satisfactory hazard prevention and control, and strong management commitment to safety and health training for managers, supervisors, and the workers. EMCOR Group Inc. acquired Intermech in 2011, but interviews with managers and crafts indicated this acquisition had no effect on the routine, day-to-day activities at the site.

The purpose of this assessment was to determine if Intermech continues to meet the standard for DOE-VPP Star status. During the onsite review, the Team interviewed approximately 75 percent of the workers, supervisors and managers, and observed daily safety meetings and work activities. BNI and DOE recently suspended work activities at the WTP Pre-Treatment Building and reduced work in the laboratory building due to funding, quality, and design questions. In 2011, Intermech had reduced its workforce from 78 to 58, and this suspension required Intermech to reduce its workforce again in 2013. At the time of this review, Intermech had only 21 employees assigned to the WTP construction site. Work activities observed during this review included assembly and installation of ducting, primarily in the Low Activity Waste building.

Results

Management Leadership

Since the previous evaluation, Intermech has maintained its Total Recordable Case (TRC) and Days Away, Restricted or Transferred (DART) case rates well below the average for its comparison industry. In 2012, Intermech performed over 110,492 work hours at the WTP site with no recordable injury cases, and no lost workdays. Intermech recently celebrated its 75th consecutive month with no recordable or lost workday cases.

Intermech managers remain committed to providing the leadership, direction, training, and resources for employees to perform their duties in a safe manner. Senior managers at Intermech have taken a number of actions to continue improvements. The managers'

support of the workforce was evident throughout the review. Managers continue to actively support the worker recognition programs and the safety group's recommendations, specifically personal protective equipment (PPE) that enhanced worker comfort while providing the protection levels required (see Hazard Prevention and Control). Senior management as a team personally evaluates and determines the awards' recognition values for the submittals to the employee safety program. Managers maintained a strong presence in the morning plan-of-the-day and safety meetings.

Employee Involvement

Employee Involvement continues to be an integral part of Intermech's success. The interviewed employees were candid and showed a willingness to talk with the Team. All employees were knowledgeable of their rights and responsibilities regarding safety and health. In addition, all employees interviewed effectively described the hazards present during the work activities and provided detailed responses when asked how the prescribed hazard controls applied to their work. Intermech continues to make improvements to its processes, procedures, and activities to enhance employee involvement and ownership of safety among the workforce (see below for discussion of the safety suggestion program, and the Worksite Analysis section). Workers continue to believe that Intermech is *the safest place they have ever worked*.

Employees feel that managers genuinely care for employees' safety, and employees are comfortable raising issues and concerns to managers without fear of reprisal. Moreover, employees stated that managers remain responsive to employees' needs and concerns and continue to encourage open communication and feedback on all safety and health concerns. The communication observed at all levels, both during work activities and meetings, continues to be effective. Employees openly stated that they not only felt responsible for their own safety, but also for their peers' safety. Managers have instilled as a core value that the safety of their employees takes priority even over production. This belief was evident among all workers interviewed.

Intermech managers conducted a survey as a part of their 2012 VPP self-assessment. The survey included a wide variety of questions related to safe work and managers' support of the safety programs. The survey demonstrated an overwhelming support of the Intermech safety and health program, including managers' support of those programs. Although the sample size is small with only 21 employees at the construction site, the Team's interviews and observations agreed with the survey results.

Intermech budgets up to $5,000 annually for six Employee Recognition programs. The six programs include the Safety/General Process Suggestion program, Safety/Quality Assurance (QA) On-the-Spot program, Weekly Safety/QA Trivia program, Quarterly Safety Slogan program, Quarterly Pizza Luncheon celebration, and the Children's Safety Poster contest.

Intermech procedure, WTP-ISH-009, *Safety Recognition Program*, captures the details of the Safety Suggestion program. The Safety/General Process Suggestion program encourages all Intermech employees to submit, in writing, any suggestions related to

safety and/or general process improvements. The Intermech safety committee reviews the suggestions and submits its recommendations to the management team for approval and award determination. Intermech recognizes the individual who submits the suggestion based on its value and contribution to the Intermech construction operations. The safety committee and management team also determine the top three annual safety suggestion awards with values of $500, $300, and $200, respectively.

The Safety/QA On-the-Spot program provides managers the ability to recognize individuals for doing something that surpasses Intermech requirements or expectations as related to safety or QA. Workers may recommend other workers for On-the-Spot awards, but an Intermech manager must approve those recommendations. The On-the-Spot program is the most active recognition program at Intermech. On-the-Spot awards involve $10 gift cards that the worker may apply to any number of prepaid cards offered by the company. The worker may accumulate On-the-Spot gift cards over time and request larger gift cards later.

The Weekly Safety/QA Trivia program involves a safety or QA question asked at each weekly safety meeting. Intermech tracks correct answers and awards a $50 gift card at the end of each quarter to the employee with the most correct answers. The trivia program was the result of an employee suggestion in 2009 and has remained a staple of the Intermech recognition program since that time. The trivia program reinforces the expectations and requirements related to QA and safety for the worker, and has been effective in reinforcing the understanding of those expectations for the workforce.

The Quarterly Safety Slogan program encourages the employees to submit a safety slogan each quarter related to Intermech's operations. Intermech posts the winning slogan for each quarter on company bulletin boards, and the employee who submitted the safety slogan receives a 20-point card or a $20 gift card. Employees may accumulate point cards towards a larger gift card if preferred. Intermech selects an annual award from the winning slogans for all four quarters, and the winning employee receives a cash award.

Intermech initiated the Children's Safety Poster contest about 5 years ago. Intermech employees' children, grandchildren, nieces, and nephews are eligible to submit safety-related drawings for each season for consideration. The winners receive a $25 gift certificate, and Intermech displays the winning drawings as posters in the Intermech employees' areas onsite and in its town facility.

In 2012, Intermech modified its Safety Committee procedure to expand the safety committee team from five to eight members. The purpose of this change was to involve more employees and broaden their responsibilities. Intermech workers select the Safety Committee members by secret ballot. Because of the reduction in the workforce this year, the Intermech Safety Committee represents 44 percent of the workforce at the site. Observations at the safety meeting demonstrated tremendous employee support and involvement in the program.

A review of the employee suggestions log demonstrated strong participation by the workforce in all the safety recognition programs. For example, an employee suggestion identified the potential for personnel injury while accessing and egressing the Intermech Conex boxes. The Conex boxes are located adjacent to a frequently used thoroughfare for the site, and vehicles frequently pass adjacent to the location, including electric golf carts that are difficult to hear. After reviewing the issue, Intermech managers worked with BNI to develop a dedicated walkway that separated workers from the thoroughfare and provided dedicated walking surfaces to the entrance of each of the Conex boxes. Additional employee suggestions are discussed in the Hazard Prevention and Control Section.

Worksite Analysis

As a subcontractor to BNI, Intermech is contractually required to use BNI work control and hazard analysis processes. Intermech has continued to use these processes effectively to enhance its safety process.

Intermech employees and safety staff continue to work with the BNI safety group in order to continue to improve its hazard analysis and control processes. Intermech evaluates its work through the BNI Automated Job Hazard Analysis (AJHA) process. A set of previously developed AJHAs cover the majority of the Intermech work. The Intermech safety personnel and workers develop AJHAs using the Activity Hazard Analysis process with a corresponding walkdown of the work activity. Intermech has chosen to go beyond AJHAs and developed corresponding job instruction documents that include additional controls specific to the work. The job instructions, similar to the AJHA, are not intended to be used as work documents. The job instruction package allows safety personnel to include additional controls information not necessarily covered or required by the AJHA. The Team's review of the job instruction work packages found comprehensive control details beyond those contained in the AJHAs. The hazard analysis (sampling and monitoring) that was performed to justify the additional controls (or reduction of controls in some cases) is separately maintained in the safety lead's files and not included or referenced in the job instruction packages. Although it is not necessary, or even recommended, to put the specific analysis into the job instruction packages, Intermech could improve the packages by providing a reference in the job package to the specific analysis. Such reference would allow workers, supervisors, or safety personnel to easily retrieve the analysis if processes change or are modified that could alter the effectiveness of those controls. Intermech should consider including references to sampling or monitoring information that supports specific controls in job instruction packages.

Opportunity for Improvement: Intermech should consider including references to sampling or monitoring information that supports specific controls in job instruction packages.

As noted in the 2010 Report, the Intermech safety lead, with support from the BNI certified industrial hygienist (CIH), continues to perform extensive personnel sampling of

workers involved in grinding and welding of stainless steel components during ductwork installation activities. A review of the sampling program demonstrated a proactive approach to all new processes or materials added to the work activities. For example, in order to weld duct support hangers into place, Intermech workers must grind or chip any materials from the beams in order to ensure an adequate weld. In some cases, workers have limited access and cannot fully remove the fireproofing material from the beams. A review of the intumescent material's material safety data sheets identified the potential for phosgene gas exposure if the material temperature exceeds 900 degrees Fahrenheit. The Intermech safety lead, in coordination with the BNI CIH, conducted sample testing to determine if welding operations near the material would result in phosgene gas exposures to the workers. Based on their sampling, the safety lead was able to determine that for the welding activities, the material temperature will not exceed 400 degrees, eliminating the concern of phosgene gas exposure and the need for additional PPE. However, the job instruction associated with that work clearly stated the potential hazard and required the workers to stop work and contact safety personnel if they cannot remove the intumescent material per expectations. The requirement to contact safety personnel ensures the work task does not introduce any unanalyzed conditions that may reintroduce the phosgene gas hazard as a result.

The Intermech safety group demonstrated a proactive approach to hazard analysis and sampling. Recently, Intermech procured the Kleinspannung 24-volt Tip TIG High Speed Edition Welder® for a specific series of work. Rather than weld and place the bonding material to the beam, the high-speed TIG welding tool spools the welding feed material in order to achieve much faster welding over the surface of the ducting. Although Intermech had thoroughly analyzed other TIG welding processes and implemented controls, the Intermech safety lead identified that the increase in welding speed might increase ozone generation. The safety lead sampled and monitored the potential ozone exposure of the new tool and demonstrated there was no increase in exposure.

The Intermech safety lead conducts multiple field safety inspections. These inspection activities include the weekly field safety inspection, the weekly site safety inspections conducted jointly by the Intermech safety lead and the BNI Safety Assurance Officer, and the daily safety walkdowns, which are documented in the safety lead's daily log.

Hazard Prevention and Control

The safety committee and the management team reviewed and accepted several employee suggestions that resulted in a number of improvements to hazard controls. One employee suggestion identified the potential for power outages that would affect workers' safe egress from scaffolding work. As a result, Intermech procured LED light systems that attach to the workers' hardhats that would ensure safe egress in case of a power failure and provide additional work lighting in tight spaces when needed.

The Team identified several examples where Intermech acquired engineering controls to improve worker safety and health. For example, due to the amount of welding activities performed by Intermech workers, Intermech procured newly designed lightweight welding hoods to reduce ergonomic stresses associated with welding operations. In order

to facilitate and improve fall protection, Intermech procured beam clamp fall protection installed with the aid of an extension pole from a safe working surface. As a result, the worker maintains 100 percent fall protection prior to accessing any elevated working surface.

Finally, Intermech acquired *clamshell safety caps* for use on its compressed gas cylinders during operations. The *clamshell safety caps* provide protection of the gas cylinders valve while the valve is in the *open* position, thereby minimizing the potential for the valve to experience damage during work activities.

Intermech employees are contractually required to operate under the BNI occupational medicine program (OM) and the BNI Emergency Management program. In support of the OM program, Intermech supervisors work in coordination with the occupational medical provider to develop an Employee Job Task Analysis (EJTA) for each worker's job description. Occupational monitoring is determined based on the job descriptions' activities and the occupational doctor's recommendation. Intermech employees participate in the BNI Emergency Management program by participating in site-sponsored drills and the subsequent evaluations of those drills.

Safety and Health Training

All Intermech employees are required to participate in the BNI site-required training programs. As discussed in the previous BNI/WTP VPP evaluation, the BNI training program was determined to meet the expectations of the VPP tenet. Per BNI procedure, BNI notifies the Intermech project superintendent via e-mail of upcoming training conducted by the BNI training group. The project superintendent is responsible for ensuring Intermech workers maintain their training.

The Occupational Safety and Hazard Administration (OSHA) has modified the Hazard Communication Standard (HCS) to adopt the Globally Harmonized System (GHS) of classification and labeling of chemicals. In connection with that action, OSHA required that all employers train their employees to the new standard by December 31, 2013. Intermech, aware of this requirement, developed its own inhouse employee-training course well in advance of the deadline. All Intermech workers completed the required training and demonstrated familiarity with the new GHS hazard communication standard.

Conclusions

Intermech has maintained effective safety programs and continues to pursue improvements identified through self-assessments and employee suggestions on safety and process improvement. Intermech uses a strong, proactive strategy towards analyzing and addressing potential hazards. Managers and employees continue to demonstrate an exemplary degree of teamwork that establishes safe production as a value. Intermech has institutionalized a culture of safety excellence and continuous improvement. Consequently, the Team is recommending that Intermech continue to participate in DOE-VPP at the Star level.

SAFETY PERFORMANCE RATES:
Injury/Illness Data

Calendar Year	Total Hours Worked	Average Number of Employees	TRC	DART Cases	Total Case Incidence Rate (TCIR)	(DART)
2010	115,908	55	0	0	0	0
2011	149,321	78	0	0	0	0
2012	110,492	58	0	0	0	0
3 Year Total	375,721		0	0	0	0
2010 - 2012 Average Bureau of Labor Statistics (BLS) Rates NAICS** code 238220: National Average					4.5	
Statistics are a combination of the construction site, fabrication shop, and office employees.						
There were no subcontractors working for Intermech in 2012.						
Note: As of October 31, 2013, Intermech's WTP Construction Project employees have worked 75 consecutive months (617,261 hours) with no recordable or lost-time injuries.						

** North American Industry Classification System