FATAL ALERT

October 29, 2005

A 44-year-old employee was fatally injured while using a power washer to clean the substructure and BOP stack of a gas well drilling rig. The employee was positioned beneath the drilling rig floor on a catwalk. The catwalk surrounded the top of the BOP stack and rotary head within the substructure area. While doing the cleaning work, the employee was utilizing a retractable lanyard personal fall arrest system. While working near the rotary head, the employee's fall arrest system lanyard became entangled in the rotating machinery. The lanyard drew the employee up tightly against the drill string as the machinery continued to rotate. There were not any witnesses to the mishap. A coworker who was making periodic checks on the employee's cleaning progress located the fatally injured employee who was attached to and rotating with the drill string. The drill string was rotating at approximately 45 rpm at the time. The interval between the prior progress check and finding the mishap was approximately five minutes.

Significant Factors

This drilling contractor had acquired the drilling rig during a buy out of a competitor approximately 18 months prior to the mishap. Following the acquisition, the drilling contractor made upgrades and enhancements to the rig that included addition of a catwalk spanning the substructure with the top three feet of the BOP stack protruding through the center of the catwalk. The catwalk provided a stable and safe platform to use when employees worked with the rotary head bushing at the top of the BOP stack. This catwalk also provided a vantage point from which employees could power wash the substructure and BOP stack. The addition of the catwalk to permit ease of rotary head bushing work had the "unintended consequence" of providing access to the rotating kelly and rotary head during drilling operations. The substructure cleaning effort coincided with drilling operations.

The company's safety manual, revised approximately six months prior to the mishap, included direction that "All moving machinery that presents a hazard to employees working in its proximity shall be adequately guarded." This guidance was not heeded in that employees utilized the catwalk surrounding the unguarded rotating equipment as a platform while operating the power washer.

The rig manager on duty at the time of the mishap had been with this drilling rig from the time it was manufactured by the former owner and through the acquisition and subsequent modifications. Neither the rig manager nor other company personnel in leadership roles had identified the hazard of employees working adjacent to rotating machinery while cleaning the substructure during drilling operations.

The fatally injured employee was new to the drilling industry, having previously worked in the construction industry. The mishap occurred on his eleventh day on the job with the drilling contractor. The employer has a new employee orientation checklist and weekly new employee performance appraisal feedback forms incorporated in the newly revised safety guidance manual. These forms were not completed for the mishap employee.

The fatally injured employee had been made aware of the employer's policy regarding use of fall protection equipment. At the time of the mishap, the employee had incorrectly connected two self-locking snap hooks to each other. One hook was attached to the cable lanyard of the rig mounted self-retracting lanyard system. The other hook was attached to the nylon web lanyard of the small, self-retracting lanyard system incorporated into the fall arrest harness worn by the employee. The nylon web lanyard first became entangled in the rotating equipment.

Prior to the mishap shift, the fatally injured employee had not ever been on or near the catwalk when the rig was drilling. The only prior time the employee had been at this location was when the drill string was not rotating and work was being done on the rotary head bushing at the top of the BOP stack.

The employee who was overseeing the work of the mishap employee had worked for the company for two days, though he had several years of drilling industry experience. He had not been on the catwalk when the drill string was rotating.

Approximately 26 months prior to this mishap, the drilling contractor had an employee injured on another drilling rig. That employee had the lanyard of his self-retracting lanyard fall protection equipment become entangled on the rotary head and kelly. The rig was stopped prior to the employee being seriously injured. The incident was investigated with the results and recommendations forwarded to corporate headquarters. One recommendation from that mishap was "Drilling operations should come to a stop, before anyone works around the rotating head." In addition, the company prepared an internal safety alert bulletin for use by drilling rig crews. This alert bulletin was not available on the mishap rig.

Recommendations

- All drilling rig crews should be made aware of this mishap.
- Personnel in leadership roles should be aware of the potential for "unintended consequences" when modifications are made to equipment. A modification to enhance safety and efficiency for one task could have a deleterious effect on other tasks performed in the same area during different operations.
- Relevant lessons learned from prior mishaps within a company should be formalized into pass down information for future crews.
- New employees must be trained and provided orientation commensurate with their prior experience. When checklists and forms are available to assist in the effort, they must be used.
- All affected employees should heed written company safety manual guidelines.
- Fall protection training should not only include "when" to use the equipment, but also "how" to use it properly and "why" proper use is critical.
- Those in leadership roles must be vigilant of the varying levels of professional knowledge and technical understanding on the part of new employees.