



SUBJECT: An oil field worker died after being struck by a falling pump jack head.

SUMMARY

A 24-year old oil field floor hand died on August 18, 2003 from massive chest trauma received on July 21, 2003 from a falling pump jack head (horsehead). The victim and three co-workers were working to replace the down-hole pump, which required removal of the horsehead. At the time of the incident, the victim was standing in the work over rig floor opening with the rig floor in the up position. As the workers attempted to secure the winch line to the horsehead, the line caught the horsehead jack screw and pulled the head off the walking beam of the pump jack. The horsehead was not secured to the walking beam with a properly installed clamp bolt. The falling horsehead struck the victim in the chest and also struck a second floor hand, causing a nonfatal head injury. The victim died 28 days later as a result of his injuries.

Oklahoma Fatality Assessment and Control Evaluation (OKFACE) investigators concluded that in order to prevent similar occurrences, employers should:

- Ensure that the pumping unit horsehead is tightened, locked and/or latched securely in place with properly installed jack screws and clamp bolt.
- Use tag lines to position the pumping unit horsehead when removing or lowering and to keep personnel clear of the suspended load.
- Develop written safety procedures for securing and removing well parts using the hoisting system of the work over rig to reduce the chance of fall, overhead, and struck-by hazards during maintenance and servicing.
- Ensure that all employees are trained to perform each assigned task, are able to recognize and control associated hazards, and have access to manufacturer-specific operator manuals.
- Develop a system to monitor activities and assure the safe operation of machinery and equipment on jobsites.

INTRODUCTION

A 24-year old oil field worker, employed as a floor hand on a work over rig by an oil well servicing company, died August 18, 2003, from massive chest trauma received at a well site on July 21, 2003. The decedent was hit in the chest by the horsehead (i.e., the pump jack head) as it fell from the pump jack's walking beam. OKFACE investigators reviewed the death certificate and reports from the Occupational Safety and Health Administration (OSHA), Medical Examiner, sheriff's office, and emergency medical services (EMS). Investigators also interviewed a company official.

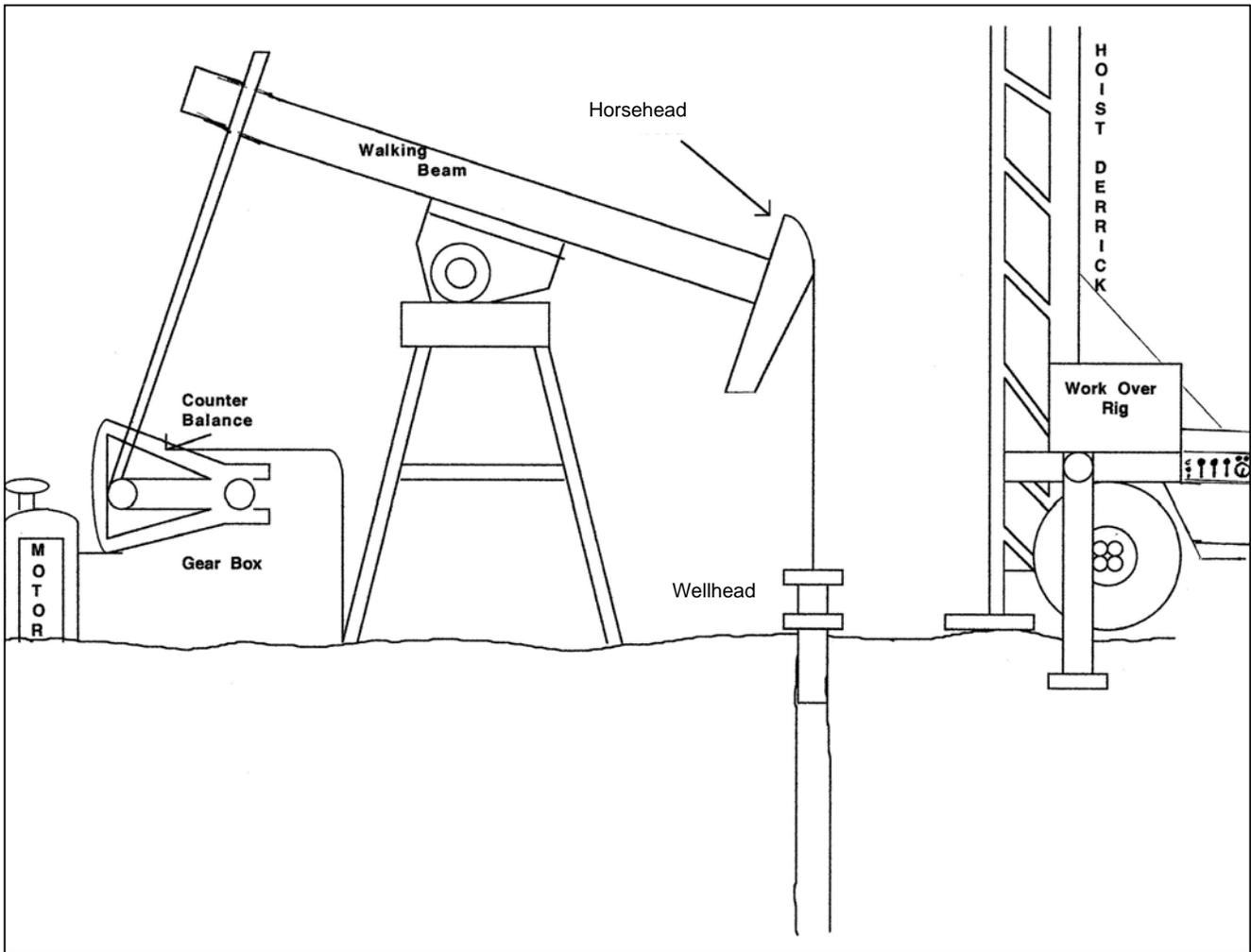


Figure 1. Diagram of oil well site (not drawn to scale)

The company was contracted to service the well where the incident occurred and had a four-person crew assigned to the site that day. The decedent had been employed with the company for 8 months prior to the incident and had less than one year of experience in his current occupation. Approximately 190 people were employed with the oil well servicing company, which had been in business for 33 years. The company had a comprehensive written safety and health program and there were written task specific safe working procedures for many of the tasks performed. The company had task specific and machine specific training for all machine operators through on-the-job training and safe operation manuals. There was not a management safety and health committee; however, tailgate and monthly safety meetings were held regularly, and documentation on all safety training was maintained. The hazard that resulted in the fatality was not specifically addressed in the written safety program, but had been discussed informally during safety meetings.

INVESTIGATION

A four-person oil well servicing crew was at a contracted well site, assigned to replace the down-hole pump, at the time of the fatal incident. The crew's work over rig was rigged up and work had begun to replace the pump. Rigging up refers to the processes involved in forming and assembling the parts of equipment that comprise the rig, prior to servicing or



Recommendation #2: Employers should use tag lines to position the pumping unit horsehead when removing or lowering and to keep personnel clear of the suspended load.

Discussion: It is recommended that tag lines, ropes attached to the load to prevent rotation and assist in guiding, be used to position the horsehead during removal and lowering. Tag lines also help keep crew members clear of overhead hazards resulting from the suspended horsehead. Employers should utilize lockout/tagout procedures to maintain a zero energy state during the servicing and maintenance of machinery or equipment. In this incident, locking the pump jack head to the walking beam may have prevented the head from falling prematurely.

Recommendation #3: Employers should develop written safety procedures for securing and removing well parts using the hoisting system of the work over rig to reduce the chance of fall, overhead, and struck-by hazards during maintenance and servicing.

Discussion: Employers should develop written safety procedures that include all operations involving the use of the hoisting system to remove well site equipment and parts. Also, employers should consider specifying safety procedures related to servicing pump jacks that do not have properly secured horseheads. Best safe practices should be incorporated into these procedures and should include possible hazards present and the limitations of the procedures. These procedures should be evaluated annually to assure future applicability. Furthermore, employers should ensure that employees follow occupational safety recommendations made by the American Petroleum Institute (API) for oil and gas well drilling and servicing operations.

Recommendation #4: Employers should ensure that all employees are trained to perform each assigned task, are able to recognize and control associated hazards, and have access to manufacturer-specific operator manuals.

Discussion: Each employee should be trained on all aspects of the safe operation of the specific equipment, materials, and environment they will be working with or around. OSHA requires employers to train employees in all areas of operation where the potential for exposure to a hazard is present. The training must indicate what the hazards are, how they can be avoided, any specific protective measure or equipment required, and the limitations of the equipment and procedures. Some training is done on initial assignment and others must be conducted at specified intervals. The documentation of all training must be kept on file with the company for three years. Training should also include familiarizing employees with recognized industry practices, particularly those of the API in this incident. Employees should also know where and how to access operator and maintenance manuals for the model under repair and understand the manufacturer's recommendations for servicing.

Recommendation #5: Employers should develop a system to monitor activities and assure the safe operation of machinery and equipment on jobsites.

Discussion: Any work procedure that might result in an employee's exposure to a hazard must be monitored for compliance. Compliance monitoring should be conducted by a competent person, as defined by OSHA. This qualified individual is someone knowledgeable



and experienced on the activities being performed. Employers may elect to utilize a continuous monitoring system or random inspections. Any procedure that does not comply with the company's policy should be addressed and corrected.

REFERENCES

- CFR 1910.29 Code of Federal Regulations, *Walking and Working Surfaces, Scaffolds and Towers*.
- CFR 1926.552 Code of Federal Regulations, Subpart N, *Material Hoist, Personnel Hoists, and Elevators*.
- CFR 1910.145 Code of Federal Regulations, *Specifications for Accident Prevention Signs and Tags*.
- American Petroleum Institute, *Occupational Safety for Oil and Gas Well Drilling and Servicing Operations* (API RP54), Third Edition, August 1999.
- Occupational Safety and Health Act of 1970, Section 5(a)(1), *General Duty Clause*.

The Oklahoma Fatality Assessment and Control Evaluation (OKFACE) is an occupational fatality surveillance project to determine the epidemiology of all fatal work-related injuries and identify and recommend prevention strategies. FACE is a research program of the National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research.

These fatality investigations serve to prevent fatal work-related injuries in the future by studying the work environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in injury, and the role of management in controlling how these factors interact.

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