# Drilling Worker Struck by Falling Pipe in Wyoming

## SUMMARY

A 21 year old male oilfield worker died from injuries suffered when an elevator unexpectedly disconnected from a length of pipe being lowered onto a pipe trailer during removal from a 320' well for conversion from a pumping well to a submersible well. The victim was operating the elevators from a position directly below the pipe when it fell, striking him in the head. The victim was working with his brother in a family-run operation, and was not wearing a hard-hat at the time of the incident. No-one at the scene was trained or proficient in first aid.

The co-worker notified the nearest ambulance service about 11 miles away from the incident site. The ambulance, Sheriff, and a registered nurse from a health-care facility responded, preparing the victim for transportation to a hospital approximately 40 miles from the incident site. After being stabilized, the victim was sent by air ambulance to a larger hospital over a distance of 136 miles.

The victim died in the Emergency Room from severe traumatic brain injury approximately 21 hours after the incident occurred.

Employers may be able to minimize the potential for occurrence of this type of incident through the following precautions:

- **Report all observed deficiencies in drilling equipment.**
- **Require use of appropriate personal protective equipment at all times when working around oil well drilling rigs.**
- **Provide periodic inspection of implements and apparatus involved in raising and lowering well tubing.**
- **Locate operator controls on tube pulling units in an area clear of loads being raised or lowered.**

## INTRODUCTION

On a Tuesday morning, November 22, 1994, a roustabout from a family operated well service was working with his brother under contract to a well owner to remove rods and tubing from a 320' sweet well toward converting the pumping well to a submersible well. The two brothers were using a one ton pulling unit, consisting of a derrick (mounted to a one-ton truck) and a wire cable, winched and connected to an elevator set. The operator controls of the unit were located underneath the point where the elevators held the tubing as it was removed from the well hole. The pulling unit was built by the well service company of which the victim was a member, and the elevators were approximately 20 years old.

At the time the incident occurred, area temperatures were in the low 20s with windspeeds recorded between 12 and 21 knots. The tubes were being lifted individually, with each tube measuring 30' by 2⅜" and weighing approximately 120 pounds. The unit could lift only one tube at a time. On removal, each tube would be locked into the elevators and then disconnected from the next tube in the hole. Once disconnected, the tube would be lowered onto a pipe trailer and then released from the elevators by the operator.

Prior to the fatal incident, the victim had mentioned to his brother/co-worker that the elevators had released without operator assistance a day or two earlier, and the brother noted that they would need to check them out later.

**INVESTIGATION**

Through a reciprocal notification agreement with the Director of the Occupational Safety and Health Division of the Department of Employment, the WY- Wyoming FACE Project was notified of the incident on November 23, 1994. Reports were requested and received from EMS, hospital, law enforcement, and coroner's offices, and a site visit was conducted by the WY- Wyoming FACE Field Investigator.

The equipment was owned by the well service company that was under contract to the well owner, the victim was employed by the well service company, and he was acquainted with the equipment and its use. He was one of three brothers that ran the well service company, and had worked for that company for five years as an operator/roustabout. The victim provided most of the maintenance work on the equipment owned by the company.

The elevators that were in use at the time of the incident had released unexpectedly 1½ week prior to that occurrence, while the victim was using them on a similar operation. The victim had not reported the deficiency to his brother, who owned the well service company. The elevators "hold" through a balance of springs and pins that maintain pressure against the tube that is within their grip. The parts wear out over time, and these elevators had been in use for some 15 to 20 years.

Most of the tubing had been successfully removed from the hole when the incident occurred. The tube being disconnected was the next to the last section from the hole. Sections are disconnected with pipe wrenches, and often require striking the tube to release one from another. The tube that fell from the elevators had been disconnected and was being lowered onto a pipe trailer when it came loose from the elevators and fell.

The victim was beneath the falling pipe as the operator controls were located in a position underneath the elevators. He was not wearing a hard hat at the time of the incident and the pipe struck him in the center front portion of his skull. An ambulance crew from the nearest community (approximately 11 miles away) came to the scene in response to a call from the victims co-worker. The county Sheriff intercepted the call and asked if he should bring a registered nurse from a community health care facility to assist in treatment enroute. Following an affirmative response, he picked up the registered nurse and drove her to meet ambulance personnel who were providing emergency care at the scene and enroute to a local hospital several miles further from the incident scene.

While enroute to the hospital, ambulance personnel were joined by personnel from the hospital ambulance service and he was taken to a hospital nearly 40 miles away from the incident site. After receiving stabilizing treatment at that hospital, he was taken by air ambulance to a larger hospital some 136 miles away. Due to the extent of his injuries, he was not considered to be a candidate for surgery, and hospital professionals discussed their findings with members of the victim's family. He died in that hospital on the morning after his injuries had been received.

Company/family representatives inspected the subject elevators by using them to re-lift the tube that had dropped and striking the tube with a hammer; causing the elevators to open and release their grip on the tube. They then had the elevators inspected by a welding company resulting in a report that there was no visible defect that should have caused them to release. The company has discontinued the use of those elevators for future operation.

## CAUSE OF DEATH

The Medical Examiner listed the cause of death as Severe Traumatic Brain Injury.

## RECOMMENDATIONS/DISCUSSION

This incident could have been prevented by reporting and repairing or abandoning use of the elevators after they had been seen to have intermittent slippage or uncontrolled release. The victim himself was aware that they did not always hold and held the responsibility for reporting and correcting the problem some time prior to the fatal incident.

Hard hats should have been worn by the persons working around elevated tubing, and signs should have been posted by the company as reminders of the need for appropriate personal protective gear at the incident site.

Operator controls for mechanisms involved in the raising and lowering of tubing from a downhole should be located in a sheltered area where the operator is protected from falling equipment. Fall of elevators, pulleys, tubing, and other items from elevation in drill rigs is somewhat common in drill rig operations and should be considered both hazardous and probable by the persons working under such elevated equipment.

The use of wind guy anchors should have been used in the drill operation, particularly in the face of low temperature, high wind conditions that existed at the time of the incident.

Employers and their employees should be actively aware of OSHA standards regarding the safe operation of drill rig equipment. There are several opportunities available to receive oil and gas field safety training at minimal or no cost. These avenues should be pursued, particularly by small, family-operated well service companies without the revenues needed for full-scale training programs.

While they may not have been essential toward the prevention of this particular incident, there was evidence that the company did not have a first-aid trained person available on site and no warning signs

designating the site as a "no smoking" area. Such requirements are for the safety of employees and to minimize the opportunity for danger on the work site.

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**FATAL ACCIDENT CIRCUMSTANCES AND EPIDEMIOLOGY ( Wyoming FACE ) PROJECT**

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR), performs Fatal Accident Circumstances and Epidemiology ( Wyoming FACE ) investigations when a participating state reports an occupational fatality and requests technical assistance. The goal of these evaluations is to prevent fatal work injuries in the future by studying the working environment, the worker, the task the worker was erforming, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact.

States participating in this study include: Kentucky, Maryland, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia.

NIOSH Funded/State-based Wyoming FACE Projects providing surveillance and intervention capabilities to show a measurable reduction in workplace fatalities include: Alaska, California, Colorado, Indiana, Iowa, Kentucky, Massachusetts, Maryland, Minnesota, Missouri, Nebraska, New Jersey, Wisconsin and Wyoming.

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Additional information regarding this report is available from:

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Cheyenne, WY 82002
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**Please use information listed on the Contact Sheet on the NIOSH FACE web site to contact In-house FACE program personnel regarding In-house FACE reports and to gain assistance when State-FACE program personnel cannot be reached.**