

# Fatality Investigation Report

OR 2004-23-1

## Ranch hand killed by bulldozer while logging

### SUMMARY

On September 30, 2004, a 52-year-old ranch hand, working as a bulldozer operator in a logging operation, was killed when the D4E Caterpillar tractor he was operating slid backward over the top of him. The ranch hand was an experienced logger. With the engine left running, gear in reverse/neutral, parking brake set, and front blade raised about 1 ft off the ground, the ranch hand had exited the cab and was busy setting chokers to logs behind the bulldozer to haul them to a landing. The bulldozer evidently did not slip into gear, but the front blade was elevated, and the bulldozer was on a slight incline and the tracks rested on branches and other woody debris, which may have contributed to instability. The victim was pinned under the bulldozer, and was pronounced dead at the scene.



The final resting position of the bulldozer shows the front blade was raised about 1 ft off the ground when parked.

**CAUSE OF DEATH:** Multiple blunt trauma

### RECOMMENDATIONS

- **Before exiting a bulldozer, the machine operator must apply the brake and lower the front blade to the ground.**
- **Never rely solely on the brakes of a bulldozer to prevent movement.**
- **Be aware of conditions where bulldozer tracks may be unstable.**
- **Develop a site-specific safety plan that includes an assessment of hazards and plans to minimize the risks.**

## INTRODUCTION

On September 30, 2004, a 52-year-old ranch hand, working as a bulldozer operator in a logging operation, was killed when the D4E Caterpillar tractor he was operating slid backward over the top of him while he was setting chokers to logs. This report is based on findings and reports from OR-OSHA, the medical examiner, and the Coos County Sheriff's office.

The employer was a cattle rancher who had logging equipment to harvest timber on his property. The rancher employed a crew of up to three workers to operate the logging equipment. At the time of the incident, one coworker was onsite operating the loader on the landing. The rancher did not have a written safety and health program, had no documentation of site planning, and no safety committee.

The ranch hand was an experienced logger, with most of his work history in the logging industry. He usually set his own chokers behind the bulldozer, and operated the bulldozer to pull logs to the landing. With a small work crew, the ranch hand performed a variety of work activities, including heavy equipment operator (bulldozer and loader), choker setter, and chaser (unhook logs at landing and other odd jobs).

## INVESTIGATION

The logging operation was hauling logs to the landing from a hillside. The ranch hand in the Cat and a coworker operating a loader on the landing were working within sight of each other. The ranch hand backed the Cat down the hill to set chokers on a turn of logs. The coworker noticed the bulldozer stopped for a longer than usual amount of time, but thought the ranch hand may have stopped work to visit with the timber cutters. When no work activity resumed after a few minutes, the coworker decided to go down the hillside to check on the situation. He noted that the bulldozer was still running. As the coworker walked around the right side, he found the ranch hand pinned beneath the bulldozer. He knew immediately the victim was dead.

The sheriff's department conducted an inspection of the Caterpillar and determined the brakes were in good working condition. It was also noted that the Cat's brakes were set, the gear box was in reverse/neutral, and the bulldozer blade was raised 12-18 in. off of the ground. The tracks were setting on top of tree branches which appeared to have contributed to the Cat skidding or sliding backwards until it came to a rest against logs and a standing tree. It appeared the victim had been standing behind the cat, bent over, and looking away when the incident occurred.

## RECOMMENDATIONS/DISCUSSION

**Recommendation #1. Before exiting a bulldozer, the machine operator must apply the brake and lower the front blade to the ground.**

According to employer and employee interviews the victim's work practice was to "Always lower the blade to the ground before exiting the operator's seat." This incident emphasizes that the rule allows no exceptions. Lowering the blade to the ground effectively stabilizes the machine from movement, more so if the blade is pushed down into a penetrable surface rather than simply floated to a resting point.

## **Recommendation #2. Never rely solely on the brakes of a bulldozer to prevent movement.**

The brakes on bulldozers can release unexpectedly, particularly on older machines where the emergency brake ratchet becomes worn or defective. Repair worn or defective brakes immediately. Some older machines rely on hydraulics to assist the operator when applying the brakes, and if the motor were to shut off, the brakes may fail to hold. In a work situation where the operator or another worker must work close to the machine, be sure to take additional measures to ensure safety, such as dropping the blade to the ground.

## **Recommendation #3. Be aware of conditions where bulldozer tracks may be unstable.**

Bulldozer tracks have great motive traction, but on hard surfaces, such as rock, ice, logs, branches, and other built-up debris, tracks can act just like ice skates. It is imperative to take necessary precautions when working under these circumstances, particularly on an incline. Some precautions include, but are not limited to clearing the area of debris to reach penetrable soil and give the tracks something to hold, and change the work pattern to avoid precarious inclines or conditions. The victim in this case may have been able to park the bulldozer farther up the hill and pull more drumline to work at a safer distance from the machine.

## **Recommendation #4. Develop a site-specific safety plan that includes an assessment of hazards and plans to minimize the risks.**

Any logging or construction site should always be inspected before work begins to develop a site-specific plan that includes a safety assessment to detect and correct hazards. Daily inspections should be continued throughout the operation. Identified hazards and safe practices should be communicated to all workers onsite.

Employers involved in logging activities, even those with 10 or fewer employees, are required to hold safety meetings with all employees. In addition, small employers are encouraged to implement a written safety and health program on the job to meet the same standards as required in Oregon for larger employers. An effective written program should define management commitment, supervisory responsibilities, accident investigation, employee involvement, hazard identification, training, and an annual review of the program.

## **REFERENCES**

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## FOR MORE INFORMATION

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*CROET at OHSU performs OR-FACE investigations through a cooperative agreement with the National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research. The goal of these evaluations is to prevent fatal work injuries in the future by studying the work environment, the worker, the task, the tools, the fatal energy exchange, and the role of management in controlling how these factors interact.*

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