



Near Miss — Worker Pinned Between Manlift and Overhead Pipe

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On April 23, 2008, at Hanford, a subcontractor painter working from a boom lift while cleaning pipe hangers with an electric grinder was caught between the lift and an overhead pipe when the cord of the grinder looped around a toggle switch on the control panel (Figure 1-1), causing the boom to rise. The painter was able to hit the stop switch and reach the controls to move the lift basket enough to free himself and lower the lift to the ground. He received contusions to his back, chest, and jaw; a slight cut on his chin; and scrapes on his hand, but this incident could have resulted in a life-threatening injury or a fatality.

(ORPS Report EM-RP--BNRP-RPPWTP-2008-0008; final report issued June 6, 2008)

The painter was working in tight quarters (i.e., pipe supports, piping, I-beam, and ceiling) and was wearing a respirator. When the foreman asked him to stop work, he put the grinder down, but was unaware that the cord had looped around the toggle switch. He began to lower himself to the ground, and when he engaged the foot pedal and pulled the stop switch to the “on” position, the lift moved unexpectedly. The worker’s left hand was pinned between the control panel guard and an I-beam; his head, neck, and back were pinned between the control panel guard and a 2-inch-diameter pipe. The worker had not removed his respirator, and investigators believe that may have impaired his ability to see the control panel as he began his descent. Figure 1-2 shows the filter on the painter’s respirator, which was crushed in the accident. Figure 1-3 shows a re-enactment of the event, with the worker’s back against the pipe and his chest and head pressed into the control panel.



Figure 1-1. Cord looped over the toggle switch (re-enactment)

Investigators determined that the cord wrapping around the toggle control resulted in unexpected movement when power was provided and that there were not sufficient guards on the control panel. However, several barriers were in place that helped prevent a more serious event, including a “stop” button at the base of the lift that the spotter engaged, a similar button on the control panel that the painter engaged, and a slow setting on the operating speed of the lift. The manufacturer includes some toggle-switch guards on boom manlifts, but not all toggle switches are guarded. The contractor will add toggle-switch guards to all of the toggle switches (see Figure 1-1). Control panel covers that can be lowered during work tasks to protect the control panel will also be added to all lifts.



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Figure 1-2. Damage to pink filter on painter's respirator

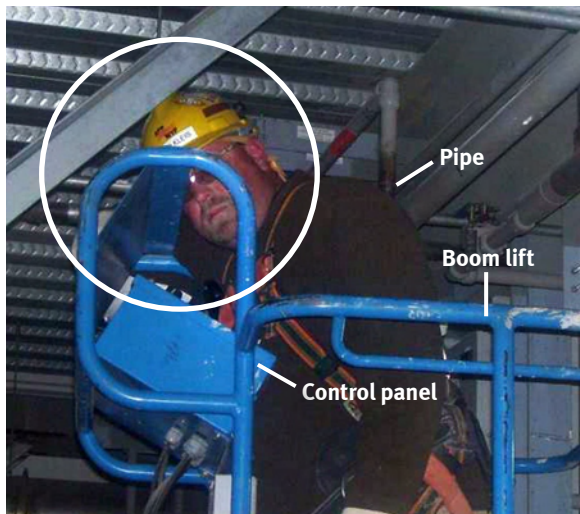


Figure 1-3. Re-enactment of the accident

Subcontractor management issued a Safety Bulletin cautioning workers to pay attention, identify hazards in the work area, establish clear communications, and be aware of co-workers and their safety. The text box on page 3 includes additional precautionary measures from the Safety Bulletin.

Another manlift event occurred at Hanford on July 30, 2007. In that event, a welder working from a scissor lift to weld two sections of stainless steel duct together was caught between the lift and the wall. The welder was having problems with the welding machine he was using, so he

lowered the lift, and exited it to perform some test welds. When he returned to the lift, he repositioned the welding machine with the welding whip lead to the top of the lift, then repositioned his body to the left. However, he did not notice that the lead had fallen off the hand rail and onto the joystick. When the fallen lead depressed the joystick trigger, the wheels engaged and the lift moved about 3 feet, pinning the welder's leg against the wall. (ORPS Report EM-RP--BNRP-RPPWTP-2007-0014)

Investigators determined that the welder did not check to ensure that there were no objects in the travel path of the lift and that job scoping did not identify the need to ensure that equipment inside the lift was controlled to prevent it from becoming entangled in the joystick. Corrective actions included having the operator and a spotter inspect the area where a lift would be used to identify hazards, obstructions, and travel paths and requiring them to engage the emergency stop button when a lift is not in motion.

Although neither of the events at Hanford resulted in serious injuries, similar accidents in the private sector have resulted in fatalities. [OE Summary 2006-12](#) reported on a fatality at the BP Refinery in Texas City, Texas, in July 2006. A contractor pipefitter maneuvering a manlift bucket was crushed between an I-beam structure and the control panel on the manlift. Investigators determined that he had set the speed control to the highest level, circumventing the safety interlock on the joystick, and had applied vertical force to the basket. To address the causes of this accident, revisions were made to the manlift operating procedure and to the hazard assessment form and pre-use inspection record. The OE Summary article also included an analysis of 50 manlift events at DOE that were similar to the BP event. Nearly half of those events were near misses and 14 percent resulted in injuries.



Other fatalities reported in the private sector over the last few years include the following.

- In November 2005, a firefighter was crushed between the manlift he was operating and an opening in the floor. Another firefighter found the victim near the fourth floor opening of a silo, where his self-contained breathing apparatus had become wedged between the frame of the manlift and the opening. The only instructions the firefighter had received about how to operate the manlift were from a plant employee. ([NIOSH Fatality Investigation Report F-2005-34](#))
- In December 2005, in Alberta, Canada, a worker attaching overhead piping from a manlift died when his head was trapped between the manlift basket and an overhead beam. The worker was operating the manlift without a spotter and in limited space. (Alberta Human Resources and Employment, [Workplace Safety and Health Report](#))
- In September 2000, in Minnesota, a painter died from injuries sustained when he was pinned between an I-beam and a manlift. The painter was moving the manlift in reverse while facing in the opposite direction and was either unaware or forgot that the I-beam was behind him. When the safety railings of the manlift passed beneath the I-beam, the victim was pinned between the beam and the control panel. The painter was working alone because a co-worker was working on another task in a different part of the building, and the co-worker found him later in the day upon his return to the work area. ([NIOSH FACE Program](#), Minnesota Case Report 00MN044)

An OSHA study of 35 manlift fatalities between 1986 and 1990 identified the following preventative measures to address such

PRECAUTIONARY MEASURES FOR WORK ON MANLIFTS

- Before work begins, identify all possible obstructions that could pose a potential hazard and implement appropriate control measures.
- Ensure all controls are working properly and complete the daily inspection sheet.
- When operating lifts indoors, be sure to place speed control at the lowest possible setting.
- Think about tools in the lift that could get tangled around your feet or switches and controls. Use cordless tools when possible, and clear any debris from the lift-basket floor.
- Be aware of crush hazards when moving the lift.
- Use the emergency stop button when the lift is not in motion to prevent accidental movement.

incidents. The study is available at www.osha.gov/FatCat/fatcat.html.

1. Establishment and strict enforcement of safety standards covering good safety procedures and practices in the use of aerial devices by workers at the worksite and at critical times, through tailgate discussions and direct supervision at the work location. These include measures to prevent falls and electrocutions.
2. Improved preventive maintenance and regular maintenance procedures and frequencies to reduce equipment failure.
3. Improved efforts in training and education through the use of required work and safety procedures and better



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knowledge of OSHA Safety Standards. Greater attention should be given to employees with language deficiencies.

4. **Improved supervision**, particularly for the new worker, in providing and requiring specific safety measures to be followed and emphasizing general safety awareness.

Manlift accidents can have tragic consequences. It is essential to ensure that all hazards are identified and addressed before a task requiring work from a manlift begins. In particular, any obstructions that could pose a hazard (e.g., items that could fall onto the joystick or cords that could tangle around feet) should be identified and controlled. In addition, the installation of engineered features (e.g., switch guards and control panel covers) should be considered to prevent inadvertent equipment operation. Workers should be properly trained in safety rules, regulations, and procedures, including how to recognize and eliminate hazards associated with tasks. Using a spotter who can help control manlift movement and can stop movement when necessary is also essential to protect the worker on the manlift from what could be a serious injury or fatality.

KEYWORDS: Near miss, manlift, joystick, control panel, pinned, piping, grinder cord, I-beam

ISM CORE FUNCTIONS: Analyze the Hazards, Develop and Implement Hazard Controls, Perform Work within Controls