

Date: Tue, 20 Jan 1998 08:59:40 -0700
From: Meredith Brown <racer@lanl.gov>
Subject: Blue Alert: Articulated Dump Truck Overturns

The following Idaho National Engineering and Environmental Laboratory (INEEL) Lockheed Martin Idaho Technologies Blue Alert Lessons Learned is being issued to remind equipment operators to be especially cautious near uneven grades to prevent articulated vehicles from tipping or overturning.

Title: BLUE - **Back Half of Articulated Dump Truck Overturns**

Date: December 9, 1997
Identifier: INEEL Lessons Learned #97404

Lessons Learned Statement: To prevent articulated vehicles from tipping or overturning, operators should take care to keep the back half of the vehicle level side-to-side. When backing near dirt piles, both rear wheels of articulated dump trucks should be driven up onto the pile, keeping the back end of the vehicle level side-to-side. Dump truck loads should be dropped at the edge of the pile where they can be moved onto the pile by other appropriate equipment. By using appropriate equipment (in this case, an articulated dump truck in conjunction with other earth-moving equipment) potential safety hazards can be avoided.

Discussion of Activities: The back half of a 35-ton articulated rock dump truck overturned while backing up to a large dirt pile. The cab remained upright (the back half is designed to swivel independently of the cab). The truck was being used to stockpile dirt at the Radioactive Waste Management Complex (RWMC).

As the truck backed up, one of the back wheels went up on the dirt pile. The other back wheel stayed at grade level. When the grade difference became too great, the back end of the truck overturned, spilling the load of dirt.

The vehicle is one of two that have been used at the RWMC for more than 10 years. The trucks are used primarily for roads and grounds maintenance activities. Only one previous accident has occurred with the trucks. In 1987, the back half of one of the trucks also flipped during operations.

Articulated dump trucks were originally designed for use at mine sites where large quantities of soils must be moved, often across uneven grades. The rear end of the truck (including the dump bed, rear axle, suspension, and wheels) is designed to pivot behind the cab. In an accident situation, the back half of the truck will tip or overturn, leaving the cab (and its occupants) upright.

There were no injuries to the driver. The truck was uprighted. No damage was found and the truck was placed back in service.

Analysis: Articulated vehicles require significantly different driving skills and techniques than standard vehicles. The operator is unable to "feel" potential problems because the back half operates independently of the cab. The only way to know how the back half is behaving is to view it through the side-view mirrors.

Recommended Actions: Operators should maintain a heightened awareness when operating articulated vehicles. When work requires an articulated truck to back onto a dirt pile, the operator should take extra care that the back half remains level side-to-side. A more conservative alternative is to dump the load at a safe distance from the pile where it can be moved later by a front-end loader.

Originator: Lockheed Martin Idaho Technologies Company Radioactive Waste Management Complex Operations

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Functional Categories (User-Defined): Construction, Maintenance, Occupational Safety and Health

Key Word(s): truck, safety, equipment

References: N/A.

Follow-up Action: Information in this report is accurate to the best of our knowledge. As a means of measuring the effectiveness of this report, please notify Terry Pierce at (208) 526-4288 (or by electronic mail at txp@inel.gov) or the INEEL Lessons Learned Program Office at (208) 526-1530 (e-mail at mae@inel.gov or limitll@inel.gov) of any action taken as a result of this report or of any technical inaccuracies you find. Your feedback is important and appreciated.