

Date: Wed, 18 Feb 1998 10:00:14 -0700
From: Meredith Brown <racer@lanl.gov>
Subject: Yellow Alert: Utility Pole Trailer Failure

TITLE: Crack Failure of Utility Pole Transport Trailer

IDENTIFIER: BN-LL98-045

DATE: February 17, 1998

LESSONS LEARNED STATEMENT: The event demonstrates the problems associated with aging DOE equipment, and the need for periodic preventive maintenance or pre-use inspection/maintenance on infrequently use equipment.

DISCUSSION: On the morning of Jan 6, 1998, a Utility Department boom truck (Ford L-9000 Model) was towing a power pole transport trailer north on Mercury Highway to return it to the Utilities Yard in Area 6 of NTS. It had been used the day before this accident to take one wooden pole to Mercury. About one mile north of the Road 5-01 turnoff, the telescoping arm of the trailer broke in two about 15 feet to the rear of the hitch. The chains securing the hitch reached only a foot back past the hitch, allowing the rear wheels of the trailer to travel off in a different direction on their own as a unit. This unit crossed the on-coming traffic lane and stopped upright about 30 feet southwest of the highway. The driver stopped the boom truck on the shoulder of the lane in which he had been driving. Fortunately, there was no oncoming traffic at that time and the only damage was to the trailer. The damage is estimated at \$4200 to repair so the trailer is to be disposed of instead of repaired since it is not even worth as much.

A fire crash rescue truck happened to be driving behind the trailer when it came apart. The driver of the rescue truck stopped and called to have the sheriff come to the scene. He stated that it looked like the rear wheels of the trailer were smoking before it came apart. A bad bearing or brake could have been causing excessive drag. The bearings and brakes on this trailer were examined in a tear down and no evidence of damage or binding was noticed.

The sheriff deputy determined this accident was caused by material failure through no fault of the driver, so no ticket was issued.

ANALYSIS: The surface of the metal where the telescoping arm separated was two-thirds bright and one-third rusted. This showed that a crack had existed in the arm there for quite some time in order to be rusted. The crack is thought to be from metal fatigue caused by vibration rather than overloading. The configuration of this trailer is such that over loading would cause stress at the yoke attachment areas of the arm, not where this break was. This break point was at least six feet away from the nearest yoke attachment.

The trailer was one of two used by the BN Utilities Dept to haul wooden power poles. It was more than 40 years old and in poorer condition than the other trailer. The trailer had been removed from the property (PRISM) records and identified as "decontrolled" in 1995, because it was valued at less than \$5000. One record of trailer brake maintenance was generated after this declaration. The trailer is not currently listed on a preventive maintenance schedule.

Sophisticated NDT could have discovered the crack, but visual inspection probably would not have identified the rusted crack which was on the bottom side of the trailer telescoping arm.

The trailer was manufactured in 1952, prior to the applicability of 49 CFR 393.43, Breakaway and emergency braking which requires:

§393.43(d) "Every trailer equipped with brakes shall be equipped with brakes of such character as to be applied automatically and promptly upon breakaway from the towing vehicle, and means shall be provided to maintain application of the brakes on the trailer in such case for at least fifteen minutes."

The vehicle did not appear to be equipped with an emergency breakaway braking device that operated in conformance with §393.43(d). The trailer unit was last operated prior to the incident 01/05/97.

The trailer should have been equipped with was a cable or chain which went from the hitch point to the rear trailer axle to keep it from coming free if the arm did break. Another feature to control severity in an accident which was missing was that the rear trailer brakes should lockup if the rear of the trailer becomes disconnected.

RESOLUTION/RECOMMENDED ACTIONS: The Utilities Department's other pole trailer will have the safety features verified as installed and operational before it is used again. It also will be inspected and maintained regularly. Managers must also assure preventive maintenance has been performed on any commercial-type vehicles within the preceding 12 months before use of any such vehicle per BN Procedure C-G50.004; Appendix F.

Additionally, managers should identify other equipment/vehicles, which are in their possession, that may have been decontrolled and/or removed from a preventive maintenance schedule. Maintenance should be performed on this equipment/vehicles either before use or on an established schedule depending upon the frequency of use.

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NAME OF AUTHORIZED DERIVATIVE CLASSIFIER: D. W. Murphy

NAME OF REVIEWING OFFICIAL: D. W. Murphy

PRIORITY DESCRIPTOR: Yellow/Caution

DOE FUNCTIONAL CATEGORY: Safety, Maintenance

KEYWORDS: Equipment Maintenance, Transportation

REFERENCES: Occurrence Report No. NVOO-BNLV-NTS-1998-0001

FOLLOW-UP ACTION: Information in this report is accurate to the best of our knowledge. As means of measuring the effectiveness of this report please notify Dennis W. Murphy by e-mail at murphydw@nv.doe.gov (or phone 702-295-0734) of any action taken as a result of this report or of any technical inaccuracies you find. Your feedback is important and appreciated.