

# **National Transportation Safety Board**

Derailment with Hazardous Material Released  
Canadian Pacific Railway  
Minot, North Dakota  
January 18, 2002

**DCA-02-MR-002**

Factual Report

## Mechanical Group

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## Synopsis

About 1.39 a.m., Central Standard Time, January 18, 2002, a Canadian Pacific Railway (CP) freight train with two (2) locomotive units and 112 cars derailed 31 cars near Minot, North Dakota. Several tank cars carrying anhydrous ammonia were compromised and a vapor plume covered the derailment site. One local resident was fatally injured. The conductor was taken to the hospital for observation after complaining about breathing

difficulties. Approximately 10,000 residents were evacuated in-place, 32 people were admitted to the hospital with respiratory and burn injuries.

The operating crew stated that while operating near 40 mph they had felt a rough spot, attempted to slow the train and the derailment occurred. After assessing the situation the crew removed the two locomotive units from the rest of the train and departed the immediate area towards Minot.

At least three tank cars were still leaking product at the onset of the investigation. Local emergency responders had designated a hot zone with restricted access to the derailment site. Investigative teams were established. Parties to the investigation were Canadian Pacific Railway, Federal Railroad Administration, Brotherhood of Locomotive Engineers, United Transportation Union, and Minot Rural Fire Department.

### Train Consist

CP train CP 9106 East consisted of two locomotive units (CP 9106, CP 8631), eighty-six loaded and twenty-six empty freight cars, (see attachments) and an end-of-train device (CPT 86590). The train drafted 12,015 tons.

### Damages

Thirty-one cars derailed. The fourth through thirty-fourth head cars. The first thirty cars were completely destroyed in the accident. The thirty-first cars sustained damage to the BL corner and underframe.

CP estimated the replacement value of the derailed equipment to be \$1,966,000. The depreciated value of the equipment was \$1,080,000.

Monetary loss from the lading was estimated to be \$340,000.

### Post Accident Testing

#### Locomotive

CP locomotive units 9106 and 8631 were inspected and the air brakes tested. There was no air pressure loss on the main reservoir leakage test. The headlight, ditch lights, horn, bell, radio and sanders all functioned as designed.

The wheels were closely inspected on both units. The L3 wheel on the CP9106 displayed an abrasion near the center of the tread. The abrasion was about ½ inch wide by ¼

inch high. There was metal flow out of the abraided area. CP 9106 was the lead unit. The L wheels were on the north rail.

All periodic inspections were within their respective limits on both locomotive units. Air brake piston travel was within limits on each brake cylinder.

## Cars

The cars that did not derail were given an initial terminal air brake test and a mechanical inspection after the accident. The cars were tested in three separate groups. Combined leakage on the air brake tests was one psi. Four mechanical defects were noted; CSXT 502692 was missing a bolt on the AL sill step; GATX 61011 had 50 % of a 2-inch composition brake shoe missing on the R1; AOUX 50006 had 50% of a 2-inch composition brake shoe missing on the L2; EOGX 4137 had a brake rod worn to less than one half of the original strength.

The three head cars were closely examined. All side bearing and bolster gib clearances were within AAR limits. There were no false flanges. All twelve wheels on the north rail displayed vertical abrasions across their respective treads. The marks increased in intensity from east to west. The location of the marks on the wheel treads varied from the edge of the rim to the throat of the flange.

## Wheels

All derailed wheels were inspected. There were no flat spots or built-up tread observed on any wheel. Non-Condemning shelled-out spots were observed on about eight wheel sets. The shells were all less than ½ inch in diameter and did not extend around the circumference of the tread. Three broken and one loose wheel were observed. The broken wheels all displayed new fracture surfaces without any evidence of batter or chaffing. The wheel seat for the loose wheel did not exhibit any rotational scouring.