Train disaster kills 50

Train rolls down hill with insufficient braking

A 73-car train was parked uphill, and left unmanned in a town in Quebec, Canada. After the main engine was turned off, the brakes released and the train rolled downhill. The derailment, subsequent explosions and fires resulted in 50 assumed deaths.

"This tragedy notwithstanding, movement of hazardous material by rail not only can be, but is being, handled safely in the vast majority of instances."

- Spokesman for Canadian National

More Detailed Cause-and-Effect

For the train to roll backwards down the hill, both sets of brakes had to be ineffective. The railway company has stated that the air brakes released because the main engine had been shutdown. However, "since the 19th century, railways in North America have used an air-braking system that applies, rather than releases, freight car brakes as a safety measure when it loses pressure." This certainly makes more sense than having brakes be dependent on engine power.

The hand brakes functioned as backup brakes. The number of cars (which, when on a hill, affects the force pulling on the train) determines the number of handbrakes required. In this case, the engineer claims to have set 11 handbrakes, but the railway company has now stated that they no longer believe this. No other information - or evidence that could help demonstrate what happened to either sets of brakes - has been released.

Also of concern are the style of train cars - believed to be the same that the NTSB identified as "subject to damage and catastrophic loss of hazardous materials".

1 Problem

What
Problem(s)
Fire, release of brakes, derailment, crash, explosions, more fires

When
Date
July 6, 2013
Time
1:15 a.m.

Different, unusual, unique
Train unmanned; parked in Nantes, Quebec

State, city
Lac-Megantic, Quebec
Facility, site
Railway

Task being performed
73-car train; 72 tanker cars contained crude oil

Impact to the Goals
Safety
24 known dead; 26 presumed dead

Environmental
Leakage of crude oil (amount unknown)

Customer Service
High potential for litigation

Production-Schedule
Possible impact on rail shipments?

Property, Equip, Mtls
Much of town destroyed

Labor, Time
Emergency response, cleanup

Frequency
High death toll rare; worst rail disaster in North America in more than 20 years

2 Analysis

Basic Level Cause Map - Start with simple Why questions.

Safety Goal Impacted

Customer Service Goal Impacted

Property Goal Impacted

Labor Goal Impacted

Explosions/ fires

24 known dead; 26 presumed dead

High potential for litigation

Leakage of crude oil (amount unknown)

Emergency response, cleanup

Production Goal Impacted

Environments Goal Impacted

Fuel

11 handbrakes set

Heat (spark)

Main brakes lost effectiveness

Transporting crude oil

Oxygen (atmosphere)

Main engine

See same cause

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