



National Transportation Safety Board
Washington, DC 20594

Railroad Accident Brief

Accident No.:	DCA11FR006
Location:	Kansas City, Kansas
Date:	August 15, 2011
Time:	1:12 p.m. central daylight time
Railroad:	BNSF Railway (BNSF)
Property Damage:	\$1,800
Fatalities:	1
Injuries:	0
Type of accident:	Employee fatality

Accident

On August 15, 2011, about 1:12 p.m., central daylight time, a BNSF Railway (BNSF) yard crewmember was killed while coupling railcars in the BNSF Argentine Yard in Kansas City, Kansas. The accident occurred on the east end of track 23 in the classification yard. During the day of the accident, the weather was overcast and rainy. The temperature was 63 F.

The yard crew consisted of three BNSF switchmen: a foreman, a helper, and a trainee. At the time of the accident, the crew was working on job Y-KCK-1032-15A to assemble a train from railcars that were positioned on tracks 23, 24, and 25. The crew was working with BNSF 1975, which was a remote control locomotive (RCL). The foreman and the helper were outfitted with remote control units (RCU).

The crew began the job by coupling the cars on track 25. After the foreman moved the train to track 23, he coupled the cars that were on the east end of track 23. He then returned to the locomotive cab with the helper. The foreman moved the locomotive and railcars eastward, while the helper walked along the railcars on track 23 to determine whether gaps existed between railcars. During this effort, the helper radioed the conductor to inform him that he had found a gap. After receiving the radio message, the foreman transferred the control of the RCL to the helper.

Just prior to the accident, the helper made several short train movements using his RCU on track 23. The foreman told investigators that during this time he noticed that the helper's RCU had become unlinked from the RCL and the helper had not communicated via the radio.¹ Because the helper was working out-of-sight from his crew, the foreman made several radio transmissions over a 7-minute period to contact the helper, but the helper did not respond. After

¹ After 5 minutes of inactivity, the BNSF remote control unit will unlink from the locomotive and the air brakes will apply on the locomotive.

the foreman became concerned about the welfare of the helper, he dismounted the locomotive to walk west between tracks 22 and 23 to find the helper.

After walking along several cars, the foreman saw that the helper was pinned facing west between the B-end coupler of car UCLX 16050 and the B-end of car UCLX 20111 from the east end of number 23 track.² The foreman immediately made an emergency radio call for assistance, which initiated the emergency response.

Yard Operations

The Argentine Yard, which is owned, maintained, and operated by the BNSF, consisted of designated areas for receiving, classifying, and sending freight trains. The yard extended about 3.5 miles in an east-west direction. The hump and classification operations were located about midway in the yard.

Railcars are shoved in an eastwardly direction over the hump, released, and allowed to roll onto the classification tracks. The speed and the switching of the railcars that enter the classification tracks are controlled remotely. The classification tracks are located in a depression or bowl, which serves to collect the cars that are shoved over the hump. Railcars are pulled out of the classification tracks from the east end of the bowl for assembly into trains and are then moved to a nearby departure yard.

The Argentine Yard trainmasters instruct the crews where to operate the switching locomotives and which railcars to move. Train movements were governed by the BNSF General Code of Operating Rules, the BNSF Special Instructions, and other BNSF safety rules and practices.

Track

The accident occurred on bowl track 23, which is about 3,068 feet long and runs west-to-east from the hump. The low point of the bowl on track 23 is 522 feet west of the east access switch, or 2,546 feet east of the west switch point. From the low point to the east access switch, the track has an ascending 0.44 percent grade. From the low point to the west switch, the track has an ascending 0.14 percent grade. The accident occurred about 973 feet west of the east access switch, or about 451 feet west of the low point of the bowl. In the area of the accident, the distance between adjacent track centers was 14 feet.

Equipment

The equipment on track 23 consisted of a locomotive and 35 railcars. Because the accident occurred between railcars in the 8th and 9th positions, the equipment on track 23 is described as two groups or two cuts: (1) the east cut contained the locomotive and seven railcars, and (2) the west cut contained the remaining 28 railcars. The east cut consisted of the locomotive, covered hoppers, intermodal cars, and tank cars; all were configured with conventional draft gears and car cushioning units. The mechanical inspection indicated that the

² B-end refers to the end of the freight car equipped with the handbrake brake wheel.

east cut had a potential for 3 to 5 feet of slack. The railcars in positions 2, 3, 7, and 8 were loaded. The east cut was 698 feet long.

The railcar in the 8th position was tank car UCLX 16050. NTSB investigators noted that the B-end uncoupling lever of this railcar was damaged and the lever was not working. Also, investigators noted that the B-end coupler knuckle was closed. No repair records were available from the railcar owner.

The west cut, which was 1,655 feet long, consisted of box cars, covered hoppers, flat cars, gondola cars, and tank cars; all were configured with conventional draft gears and car cushioning units. The mechanical inspection indicated that the west cut had a potential for 14 to 27 feet of slack. The railcars in positions 9 through 13 and position 16 were loaded.

For the west cut, the railcar in the 9th position was tank car UCLX 20111. The B-end coupler knuckle of this railcar was closed. No repair records were available from the railcar owner.

Reenactment

On August 16, 2011, accident investigators conducted on-scene reenactments with the equipment involved in the accident. During the reenactments, investigators observed that the east cut of cars rolled westward toward the west cut of cars each time the BNSF 1975 was placed in the “coast” mode via the RCU. With the coupler knuckles closed (and touching) on the cars in positions 8 and 9 and the BNSF 1975 in the “forward” mode (eastward) for about an 8-second activation, the separation between the east and west cuts of cars was about 6 feet. Following a “stop” command, the resulting slack action permitted the cars to roll west and to separate by about 4 feet. During the reenactments, the time for moving the BNSF 1975 forward varied from 8 to 10 seconds. The separations between the two cuts of cars varied from 1 foot to 12 feet. The movement from the slack action reduced the amount of separation between the cars in positions 8 and 9 in each reenactment.

Rules

BNSF S13.1.1, *Going Between Cars*, applies to crewmembers who need to enter the gap between railcars. Specifically, before going between railcars, the railcars must be separated by a minimum of 50 feet. If 50 feet of separation is not practical, the equipment must be secured to prevent an undesired movement. During the investigation, the NTSB found that the handbrakes were not set on the freestanding railcar. Additionally, BNSF S13.1.1 requires the crewmember who must enter the gap between railcars to notify other crewmembers about the intention to foul the track. The NTSB found no evidence that the BNSF helper had notified the crew before he entered the gap to couple the railcars.

BNSF System Special Instruction 23(A) *Remote Control Operating Instructions* applies to RCOs who must foul the tracks to work on equipment. Specifically, before fouling the track, the RCO must “set and center” the operator control unit, which means that the speed control is placed in STOP and the direction lever is placed in neutral. The NTSB investigation found that the RCL event recorder indicated that “set and center” was not done.

Managerial Oversight

Each day, about 300 full-time BNSF employees are on duty at the Argentine Yard. This number includes the 29 trainmasters, who oversee the operating employees.³ Each day, about 100 trains travel into and out of the yard. Each day, 18 regularly scheduled RCL events occur.

The oversight of employees is accomplished in several ways:

- by direct observation of employees performing their assigned duties
- by regular safety briefings with supervisors (conducted on a daily basis with RCL crews)
- by remote observation (via a limited number of video cameras)
- by planned efficiency testing of employees for compliance with railroad operating and safety rules

The BNSF Employee Efficiency Testing Program (required by 49 *Code of Federal Regulations* Part 217) is outlined in the BNSF Efficiency Testing Manual for Supervisors. The Program is designed to monitor employee compliance with applicable railroad operating and safety rules. The BNSF trainmasters are responsible for monitoring and testing the RCL yard crews and are required to conduct a minimum of 100 documented efficiency tests and observations per month on the train crews at the Argentine Yard.

The foreman of crew Y-KCK-1032-15A was operationally tested a total of 39 times in the 12 months prior to the accident. Sixteen of these tests and observations were for the six specifically applicable operational tests noted above. No failures were noted.

The helper of crew Y-KCK-1032-15A was operationally tested a total of 246 times in the 12 months prior to the accident. Ninety of these tests and observations were for the six specifically applicable rules noted. No failures were noted.

Postaccident Actions

Immediately following the accident, each train crew at the Argentine Yard was given a detailed face-to-face briefing about the accident. The briefing specifically stressed compliance with all applicable operating and safety rules. The day after the accident, BNSF management conducted face-to-face meetings with all yard employees to discuss the accident, as well as, to reenforce the importance of compliance with all applicable railroad operating and safety rules. BNSF management has continued to stress safe yard operations at the Argentine Yard. They continue to use this accident as a teaching tool for promoting safe yard operations.

On October 11, 2011, the Federal Railroad Administration (FRA) issued a safety advisory in the *Federal Register* to encourage railroads to remind employees about the dangers

³ A trainmaster is a field-level supervisor of railroad operations.

of going between standing railroad equipment.⁴ In its advisory, the FRA made the following five recommendations and encouraged the railroad industry to take action to help ensure the safety of railroad employees:

1. Review current operating and safety rules that specifically address both remote control locomotive and conventional switching operations that require employees to go between rolling equipment, and determine whether those rules provide adequate protection to employees, or need to be updated or revised.
2. Develop, implement, and monitor sound communication protocols that require employees on multi-person switch crews to notify their fellow crewmembers when the need arises to enter between two pieces of rolling equipment—regardless of whether the employee is the primary RCO or working on a conventional crew.
3. Review the SOFA Safety Recommendation 1, *Adjusting Knuckles, Adjusting Drawbars, and installing End of Train Devices*, ... and communicate its procedures implementing that recommendation to employees working in yards or other locations where the possibility of entering between rolling equipment exists.
4. Convey to employees that their own personal safety is their responsibility and that railroad management supports and encourages those employees that make safety their number one priority, regardless of their immediate assignment.
5. Convey to employees that they should encourage fellow employees to perform their tasks safely and in compliance with established railroad rules and procedures.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the accident was the failure of the remote control operations crew to establish required protections before the helper entered the gap between the lead-end of a train and a cut of freestanding, rolling railcars.

For more details about this accident, visit www.nts.gov/investigations/dms.html and search for NTSB accident ID DCA11FR006.

Adopted: June 25, 2014

The NTSB has authority to investigate and establish the facts, circumstances, and cause or probable cause of a railroad accident in which there is a fatality or substantial property damage, or that involves a passenger train. (49 U.S. Code § 1131 - *General authority*)

⁴ *Federal Register* 76, no. 196 (October 11, 2011): 62894.