



National Transportation Safety Board

Washington, D.C. 20594

Railroad Accident Brief

Accident No.:	DCA-07-FR-010
Location:	Stockton, California
Date:	August 30, 2007
Time:	4:59 a.m., Pacific daylight time ¹
Railroad:	BNSF Railway Company
Property Damage:	\$500
Fatalities:	1
Injuries:	None
Type of Accident:	Remote control locomotive switching operation

The Accident

On August 30, 2007, about 4:59 a.m., a westbound BNSF Railway Company (BNSF) train, consisting of a locomotive and two cars, was being remotely controlled when it collided with the side of a standing tank car that was fouling² a crossover between two tracks at BNSF's Mormon Yard in Stockton, California. A helper, who was remotely controlling the moving train, had been riding the side ladder on the leading end of a covered hopper car. When the hopper car collided with the tank car, the helper was killed. At the time of the accident, it was dark, and the temperature was 74° F. The property damage was \$500.

The remote control train crew consisted of a foreman, who was on his regular assignment, and the helper, who had filled a vacant position. The foreman and the helper had 5 years and 2 years of experience, respectively, as remote control operators. The crew had reported for duty at 11:00 p.m. on August 29 (the night before the accident) and had been on duty about 6 hours when the accident occurred. Each man had a remote control transmitter attached to his vest. Each man had also carried a railroad radio and a handheld lantern.

¹ All times in this brief are Pacific daylight time.

² *Fouling* means that equipment on an adjacent track is within the clearance zone needed for passing movements. In this case, the area needed for safe crossover movement. A crossover is not fouled until its outer switches are lined for use of the crossover.

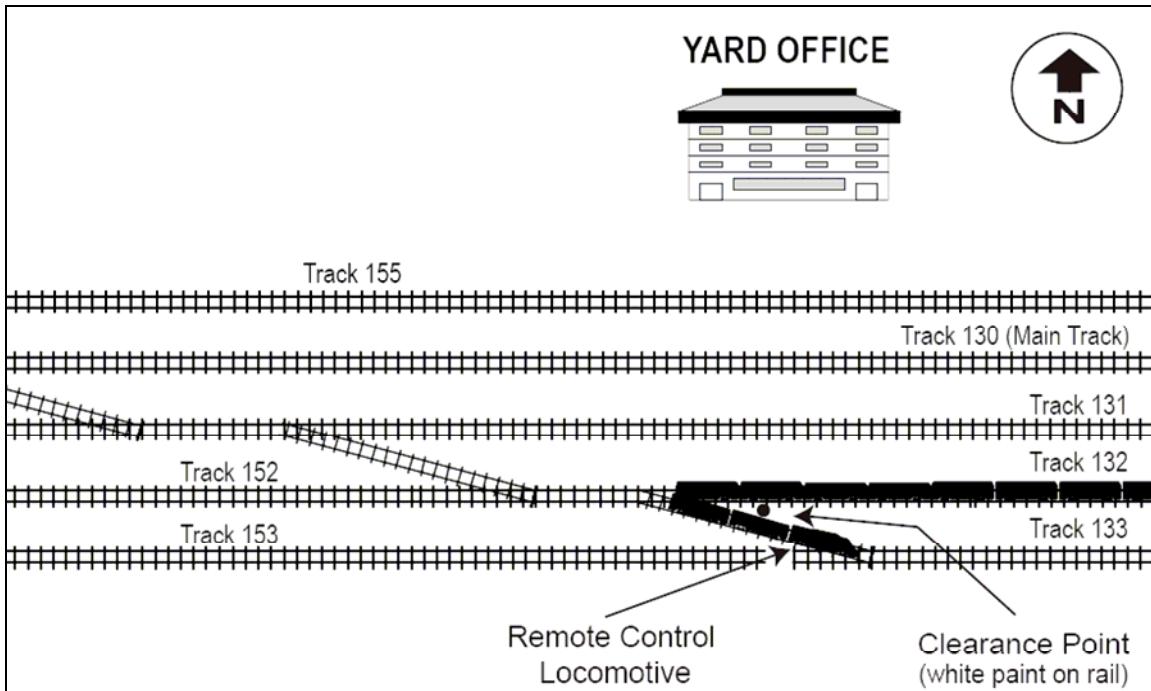


Figure 1. Map of accident.

At 12:30 a.m., on August 30, about 4 1/2 hours before the accident occurred, the yard trainmaster radioed the remote control crew to advise them that a local train crew was about to move rail cars from the main track and place them on track 132. The remote control crew helper replied to the yard trainmaster that they were going to use the crossover between tracks 133 and 132. The trainmaster acknowledged the helper.

About 12:45 a.m., the local train crew moved the rail cars from the main track to track 132 and set them off. The last two rail cars moved onto track 132 were left about 1 1/2 car lengths short of the crossover clearance point.³ (See figure 1.)

The local train's conductor radioed the yard trainmaster about 12:55 a.m. and stated the following:

Hey, do I need to clear these crossovers completely here? How does this work on this track? Because right now, the way they set, we're going to have to tie-on to whatever's down there on the east end and shove it all. Is it possible I can cut off them off right here where it's at now?

The yard trainmaster replied, "Yeah, that's OK, over." Therefore, the local train crew uncoupled their locomotive from the rail cars on track 132 and left the area to complete other assignments. The remote control crew would not have heard this conversation between the local

³ Railroad cars placed on a track near a switch or a crossover must be left far enough beyond the crossover to prevent collision with equipment being moved through the crossover. The nearest point to the crossover, where equipment can be safely placed without being struck by other equipment, is referred to as the clearance point.

train crew and the yard trainmaster because local train crews and yard crews routinely use separate radio channels for their assigned work.

Meanwhile, the remote control crew was working in another part of the yard. About 4:46 a.m., the foreman transferred control of the locomotive to the helper. The foreman instructed the helper to couple the locomotive to two cars that were standing on track 133 at the east end of the yard and to shove the cars through the crossover and onto track 152.⁴

At 4:52 a.m., the foreman again radioed the helper and told him to couple the locomotive to the cars on track 133 and to shove the cars westward onto track 152, so that the cars would be clear of the crossover. The foreman then walked to the crossover and lined both switches of the crossover so that the helper could move equipment from track 133 to track 152. Two of the cars on the west end of track 132 that had been set off by the local train crew were fouling the crossover. One minute later, the foreman radioed the helper and told him to shove the cars through the crossover.

The remotely controlled locomotive was positioned at the east end of the two cars. The helper rode a side ladder on the leading car's northwest corner to provide visual point protection while using his remote control transmitter. At 4:56 a.m., he radioed the foreman that he was moving west to the crossover.

Upon hearing the helper's message, the foreman walked to an open area on the west side of the yard office and started talking with fellow employees. The recorded speed at the time of impact was 6 mph. An overhead security camera mounted on the yard office recorded the helper using his lantern to sweep the area ahead of his movement. At 4:58 a.m., the foreman radioed the helper to say that he was walking to assist the helper in securing the cars and the locomotive; however, the foreman said that he received no response from the helper. After the foreman radioed the helper a second time, he heard a brief but unidentified radio transmission. Seconds later, the car that the helper was riding collided with the last car that had been set out on track 132. (See figure 2.)

Guidelines for Operation of Remote Control Locomotives

On February 14, 2001, about 6 years before the accident, the Federal Railroad Administration (FRA) issued Safety Advisory 2001-1 to establish guidelines for the operation of remote control locomotives. The FRA recommended that railroads establish written standard operating procedures, including a requirement that remote control operators not ride on a freight rail car under any circumstances when operating a remote control locomotive. This advisory was neither mandatory nor a Federal regulation.

⁴ Track 152 and track 132 are physically adjacent; however, the two tracks have different designations at either side of the crossover switch.



Figure 2. View of accident scene looking east. (White square shows white paint mark on side of track 132 rail that identifies east clearance point for crossover from track 133. White circle shows point of collision.)

In March 2006, the FRA issued a report titled “Safety of Remote Control Locomotives (RCL) Operations” to the Senate Committee on Commerce, Science, and Transportation. The report was the FRA’s assessment of the impact of remote control locomotive operations on railroad safety. In the report, the FRA cited its safety advisory, which recommended that remote control operators refrain from riding cars under any circumstances while actively engaged in operating locomotives. The FRA went on to say that older remote control transmitters required a hand to operate the throttle and another hand to operate the brake. The FRA stated that the new remote control transmitters have a speed control feature, which allows the operator to grasp a rail car ladder with one hand. The other hand may then be used to hold a lantern or operate a radio.

Railroad and labor organizations have stated that this operation can be performed safely, and, as an added safety measure, industry practices allow employees to choose when it is safe to ride a car. As a result, BNSF rules leave the decision to the operator whether to ride the side of the car while operating a remote control locomotive.

Postaccident Action

Following this accident, the FRA revised its regulations to prohibit employees from lining crossover switches that result in a fouled condition. On February 13, 2008, the FRA added 49 *Code of Federal Regulations* Section 218.103, “Hand-operated switches, including crossover switches,” to require that employees operating or verifying the position of a hand-operated switch visually determine that switches are properly lined for the intended route and that no equipment is fouling the switch.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the August 30, 2007, collision between a BNSF Railway yard train and standing rail cars at a crossover between tracks 132 and 133 in Stockton, California, was the remote control foreman's failure to ensure that the crossover was not fouled when he lined switches to allow the helper to move the remotely controlled train through the crossover. Contributing to the accident was the yard trainmaster's failure to inform the remote control crew that a local train crew had left rail cars on track 132 that were not clear of the crossover. Contributing to the severity of the accident was the remote control helper's position on a side ladder of the train's leading rail car as he was controlling the train through the crossover.

Adopted: December 5, 2008