



National Transportation Safety Board Washington, D.C. 20594

Railroad Accident Brief

Accident No: DCA-03-FR-001
Railroad: Union Pacific Railroad Company
Trains: Trains MPRSS-21 and AJAPRB-21
Location: Des Plaines, Illinois
Date and Time: October 21, 2002, 10:38 p.m.
Accident Type: Sideswipe collision and derailment
Injuries: 2
Property Damage: \$1.02 million

Synopsis

About 10:38 p.m., central daylight time, on October 21, 2002, westbound¹ Union Pacific Railroad (UP) train MPRSS-21 struck eastbound UP train AJAPRB-21, which was moving through a crossover at Norma Interlocking in Des Plaines, Illinois. The lead 3 locomotives of the striking train, as well as 6 cars positioned 20 cars behind the locomotives, derailed. Three cars of train AJAPRB-21 derailed, and three others were damaged. About 5,000 gallons of diesel fuel from the derailed locomotives spilled onto the ground. The two crewmembers of the striking train sustained non-life-threatening injuries. Damages were \$1.02 million.

Events Before the Accident

The engineer and conductor of westbound train MPRSS-21 went on duty at 5:00 p.m., about 5 hours and 38 minutes before the collision. After acquiring their paperwork and train bulletins, they inspected the locomotives and began assembling their train in Proviso Yard in Northlake, Illinois. The train consisted of 6 locomotives, 47 loads, and 93 empties, a total of 140 cars. The train had a gross weight of 7,604 tons and a length of 9,109 feet. The crew departed Proviso Yard and onto No. 1 track en route to Butler, Wisconsin.

As the train was underway and passed Grand Avenue, the engineer called the UP train dispatcher and advised him of their departure time and train nomenclature. The

¹ Directions used in this accident brief are railroad timetable directions, which may vary from actual compass direction. UP timetable directions are westward and eastward, even though UP's two main tracks lie predominantly in a north/south orientation. Thus, "westward" trains are actually traveling north, and "eastward" trains are actually traveling south.

engineer also contacted the operator at Deval Tower, who told him to proceed under signal indication. The tower operator also informed the crew that he had the “B train [AJAPRB-21] to get out of the way.” This communication served to inform the crew that eastbound train AJAPRB-21 would be crossing over.

Train AJAPRB-21 was an auto train made up of 8 loaded and 44 empty tri-level autorack cars. It was powered by 4 locomotives, weighed 2,733 tons, and was 4,448 feet in length. Norma Interlocking is at milepost 11.0 on the UP’s Milwaukee Subdivision. The timetable speed for a train crossing over from No. 1 track to No. 2 track at Norma Interlocking is 10 mph. Locomotive event recorder data for train AJAPRB-21 indicated that the train was moving at 10 mph as it was crossing over.

The MPRSS-21 engineer also contacted the Canadian Pacific train dispatcher to gain permission to pass through the Bryn Mawr Interlocking at milepost 7.3. The engineer and conductor told investigators that they had not discussed the information that was derived from communications with the dispatchers and the operator.

The engineer operated the train at 10 mph until the end of the train cleared the yard limit at milepost 7.0. Event recorder data indicate that the train gradually gained speed and passed through Bryn Marw Interlocking at 24.1 mph in throttle position 2. Although the normal maximum authorized speed was 50 mph for this location, the train was required to be at 25 mph for a speed restriction that was in effect at milepost 7.5.

Event recorder data indicated that as the train went by Touhy Avenue at milepost 8.7, the throttle position was moved from notch 2 to notch 3. The train passed Touhy Avenue at about 21 mph. The engineer stated that he did not remember seeing the intermediate signal at Touhy Avenue, and he could not explain why. The event recorder data depicted a change of throttle position from notch 3 to notch 4 for 2 seconds, after which the throttle was returned to notch 3. The speed of the train remained constant at about 24 mph. The engineer stated that he remembered seeing the crossing lights for Howard Street (milepost 9.4) and ringing the bell for the crossing, but he remembered nothing else before the accident.

The Accident

The conductor stated that when the head-end of the train was about 40 to 45 car lengths² south of the Norma Interlocking, he saw the eastbound train on No. 2 track and looked up and saw the stop indication at the interlocking signal. He said that he did not take any action to operate the emergency brake handle. The conductor said that he was frightened and intended to activate emergency braking, but before he could do so, the train struck train AJAPRB-21 at the interlocking crossover and derailed.

The engineer said that he remembered nothing after passing the Howard Street crossing until he saw the end door of an automobile carrier freight car and heard the

² For a train with cars averaging 55 feet in length, this would have been about 2,200 feet.

sound of metal rubbing against metal. He said that he next recalled the locomotive derailing to the west side of the track and that he fell across the cab to the conductor's side of the locomotive.

According to event recorder data for the striking train, the throttle was in notch 3 at the time of the collision. Throughout the entire trip, the brake-pipe pressure remained steady at about 90 psi, indicating no application of the train brakes. Event recorder data indicated that neither service nor emergency brakes, nor other forms of braking, were used before the collision. The train was traveling about 24 mph when the collision occurred. Investigators noted that the event recorder recorded no control inputs of any kind in the 4 minutes before the collision.

The conductor told investigators that the engineer was talking on his cell phone in the moments before the collision; however, this could not be substantiated by a review of cell phone records. A review of those records did show that the cell phone was used about 1 1/2 hours before the collision and again about 1 hour after the collision.

Each of the two injured employees received medical attention at a different local hospital, and both were treated and released. Each crewmember was toxicologically tested as required after a train accident under 49 *Code of Federal Regulations* Part 219. The results for tested illegal substances were negative in each case. The Safety Board arranged for further testing at the Civil Aerospace Medical Institute in Oklahoma City, Oklahoma.

Equipment Tests

Investigators confirmed the stop indication of the interlocking signal by reviewing the signal data from the wayside recorders. The data showed that the signals were working as intended. The engineer of the eastbound train told investigators that he observed the stop indication for the westbound accident train as he looked back to inspect his train as it was moving through the crossover.

The striking train had received an air brake inspection at Proviso Yard; postaccident inspections did not find any problems with the braking system that would have prevented the crew from stopping the train. The engineer told investigators that the locomotive brakes and the train brakes were effective and that he did not have any concerns with braking ability. The lead locomotive was not equipped with a crew alerter.³

Crew Rest and Medications

The engineer told investigators that the crew caller had called him at 12:15 a.m. on the morning of the accident to report for duty at 1:45 a.m. He was assigned to operate

³ An *alerter* is a device that monitors the control inputs or other responses by the engineer. If no inputs are received during a preset time period, the alerter sounds an alarm. If no response is received during a preset time after the alarm, the alerter causes the train brakes to automatically apply.

a train from Butler, Wisconsin, to Proviso Yard in Northlake, which is near Chicago. After arriving at Proviso Yard, he went off duty at 7:30 a.m. The engineer explained that because of the morning rush hour traffic, he arrived at his residence between 10:30 and 10:40 a.m. He further told investigators that he attended a parent-teacher meeting with his son that lasted until about 1:00 p.m.

The engineer said he then sought some rest, but after napping between 30 minutes and 1 hour, he was called for train MPRSS-21. The engineer was called because another engineer who had been ahead of him on the extra board (the list from which crews are called, in turn, as needed) had not accepted the assignment. The engineer said he informed the crew caller that he had not received rest and was tired, but he agreed to report to work at 5:00 p.m. Investigators reviewed the audiotape of the crew caller's phone call and confirmed that the engineer expressed displeasure at being called to work and indicated that he had not had meaningful rest. The engineer nonetheless accepted the work assignment, drove back to Proviso Yard, met with the conductor, and began his tour of duty. Except for the short nap described above, he had been awake in excess of 22 hours when the accident occurred.

The engineer told investigators that he had been under a doctor's care for a mood disorder and was taking regular doses of three medications: lorazepam, Lithobid, and Celexa. A side effect of lorazepam (trade name Ativan) is sedation.⁴ The level of lorazepam detected in a urine sample provided by the engineer in postaccident drug testing was consistent with routine use of the drug. A second medication, Lithobid, can cause drowsiness depending on dosage and accumulation⁵ level. The engineer told investigators that he took these medications on the night of the accident, between 8:30 and 9:30 p.m., as was his normal routine.

The railroad's work records for the conductor indicated that he had been called to begin work on October 20, the day before the accident, at 11:45 a.m. and that he had gone off duty 12 hours later at 11:45 p.m. He told investigators that he returned to his residence and received rest beginning about 2:00 a.m. until he was called at 3:00 p.m. Before going on duty on the day of the accident, the conductor had been off duty 17 hours and 15 minutes.

Probable Cause:

The National Transportation Safety Board determines that the probable cause of the collision of train MPRSS-21 with train AJAPRB-21 was the train MPRSS-21 engineer's falling asleep at the controls of his locomotive and the unexplained inattentiveness and inaction of the conductor in the moments before the collision. Contributing to the engineer's falling asleep was likely his use of prescription

⁴ When interviewed, the engineer told investigators that he knew that drowsiness was a concern but that he did not usually experience drowsiness with this drug.

⁵ Because of the specific technical requirements for blood collection, it was not possible to evaluate the levels of this medication.

medications that may cause drowsiness, as well as his lack of sleep in the 22 hours preceding the accident.

Adopted: May 27, 2004