



National Transportation Safety Board

Washington, D.C. 20594

Railroad Accident Brief

Accident No.: DCA-05-FR-004
Location: San Antonio, Texas
Date: November 10, 2004
Time: 9:10 a.m. central standard time¹
Railroad: Union Pacific Railroad
Train: YEY55-10
Type of Accident: Collision and derailment into the Crystal Cold Storage warehouse maintenance building
Injuries: 1
Fatalities: 1
Property Damage: \$308,637

Synopsis

On November 10, 2004, about 9:10 a.m., Union Pacific Railroad (UP) train YEY55-10 collided with a track car mover and four refrigerated boxcars that were parked at Crystal Cold Storage track in San Antonio, Texas. The engineer lost radio communication with the conductor, who was controlling the train movement, and failed to stop the train in time to avoid the collision. An employee of a rental car company was killed as one of the parked cars was shoved over a pair of wheel stops² and into the Crystal Cold Storage maintenance building. (See figure 1.) A Crystal Cold Storage employee was injured while he was unloading frozen food from one of the parked boxcars. Damages totaled \$308,637.

The Accident

The three crewmembers³ for train YEY55-10 reported for duty at the Kirby yard office at 7:00 a.m. in San Antonio, Texas. At the yard office, the conductor called the work center and got the work report⁴ for the day, and the train crewmembers held a job briefing to discuss how they were going to proceed. The crewmembers loaded ice and water into the conductor's personal vehicle and drove to train YEY55-10 located on the East Side Industrial Lead, which is about 3 miles away from the yard office.

¹ All times in this brief are central standard time.

² A *wheel stop* is placed on each rail across from each other near the end of the track to prevent a freight car from rolling off.

³ The crew consisted of an engineer, a conductor/foreman, and a brakeman/switchman.

⁴ The *work report* listed the industries and the cars that were to be switched.



Figure 1. Damage to Crystal Cold Storage maintenance building.

The engineer inspected the locomotives, and the other crewmembers checked the train consist and compared it to the switch list.⁵ The train crew confirmed that the brake system was charged, and the brakeman released the hand brakes. The conductor checked the list to see if the car sequence was in the right order, but it was reversed. Further, the brakeman told investigators that the original consist showed 48 cars, but when the crew checked the train, there were 50 cars. Because of these inconsistencies, the crew had to adjust the work plan they had agreed upon earlier.

The crew held a second job briefing to discuss how they were going to switch the freight cars for their respective industries. They decided to use some of the nearby industry tracks for temporary storage because of the limited room available for switching cars. The conductor checked the area, and two nearby industries, Wright Oil Company and Crystal Cold Storage, had room on their tracks. The crew intended to use these two industry tracks to store cars even though both tracks already had cars parked on them.

The conductor cut⁶ the train behind the 15th car, backed it into the Wright Oil Company track, and coupled it to 4 parked cars. The train crew then pulled the 19 cars back onto the main track, moved them to the Crystal Cold Storage track, and coupled them to 10 cars already parked there. The crew planned to temporarily leave all 29 cars at that location.

⁵ The *switch list* is the part of the work report that states which freight car goes to a specified industry.

⁶ *Cut* is a railroad term that means to uncouple cars at a specific location.

The train crew stated they then needed additional room to store some of the remaining cars parked on the main track, so they decided to shove the 29-car train farther down the Crystal Cold Storage track. The crew further stated that they were going to stop their train just short of a track car mover and four cars that were parked at the Crystal Cold Storage loading docks. The conductor positioned himself between the track and the Crystal Cold Storage building concrete wall (on the south side of the track) and just east of the track car mover. The brakeman was standing where he had connected the air hose to join the 19 cars to the 10 cars, about 25 car lengths (1,250 feet) east of the conductor. The engineer was in the lead locomotive unit about 46 car lengths (2,300 feet) east of the conductor. The conductor, the engineer, and the brakeman could not see each other; therefore, radio communications were used to control the train movements.

The engineer was going to shove his train westward down a steep descending grade to within 1 car length of the track car mover. The conductor instructed the engineer to shove the train 15 car lengths (the unoccupied distance between the track car mover and the end car being shoved). The engineer began to shove the train, but he did not repeat the instructions. The conductor informed the engineer that he had 10 car lengths before he needed to stop. The conductor told investigators that he thought the engineer repeated the instructions, but he was not sure. The conductor then informed the engineer that he had 6 car lengths left, after which he overheard the engineer ask the brakeman if he had heard the last instructions. At that point, the conductor said he ran toward the train and repeatedly instructed the engineer to make an emergency brake application. About that same time, the brakeman answered the engineer and told him that he should stop the train if he had not heard the conductor.

Event recorder data indicate that the train was traveling 5 mph and the engineer tried to stop the train with a 13-pound brake pipe reduction, but it was too late. The train had already collided with the car mover and the cars parked at Crystal Cold Storage. Brake testing and inspection found nothing remarkable.

When the moving train collided with the car mover and the parked freight cars, an employee of a rental car company was killed as one of the cars was shoved over a pair of wheel stops and into the Crystal Cold Storage maintenance building. A Crystal Cold Storage employee was injured while he was unloading frozen food from one of the parked boxcars.

UP Operating Rules

UP operating rules require that when radio communication is used to make train movements, crewmembers must respond to specific instructions given for each movement. In addition, radio communication for backing and shoving movements must specify the direction and distance and must be acknowledged when the distance specified is more than four cars. Train movement must stop within half of the distance specified unless additional instructions are received.

Radio Testing

Because the train crewmembers reported a loss of radio communication, investigators field-tested the handheld radios and the radio and antenna on the lead locomotive, UP 1966. These field tests determined that the handheld radios and the locomotive radio were functioning properly, but the radio antenna on locomotive UP 1966 was not fully functional because of a corroded cable connection.⁷ (See figure 2.) All field radio and antenna tests were verified during further laboratory analysis.

Thirty-seven transmission tests were conducted between the locomotive radio and the handheld radios used by the conductor and the brakeman. There were 16 radio communication failures. Fourteen of those failures occurred when the radio was placed near the conductor's reported position at the time of the accident, alongside the concrete wall of the Crystal Cold Storage building.



Figure 2. Corroded cable connection on locomotive UP 1966.

Postaccident Actions

Since the accident, UP has installed a derail at the entrance to Crystal Cold Storage track, and only Crystal Cold Storage employees can unlock the derail. Further, the following instructions are now issued to all train crews working at Crystal Cold Storage:

⁷ UP has replaced the corroded cable on UP 1966.

When entering the [Crystal] Cold Lead, crew must contact employee at the facility to unlock the derail. The derail will be locked with private lock. After completion of work, the crew needs to again notify the facility so that the derail can be secured. A cell phone will be provided for the foreman [conductor] to use daily at Kirby. The numbers will be entered into the memory of the phone for convenience.

When switching Crystal Cold Storage, handle only cars coming from or designated for the Crystal Cold Storage facility. Any cars remaining on the lead after switching must be properly secured.

When using a handheld radio to direct movements while switching and spotting Crystal Cold Storage, the person giving signals must place themselves away from the building when practicable to avoid interference.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the Union Pacific Railroad accident on November 10, 2004, at Crystal Cold Storage in San Antonio, Texas, was the failure of the engineer to stop the train as required by Union Pacific Railroad radio communication operating rules.

Adopted: August 31, 2005