



National Transportation Safety Board

Railroad Accident Brief

Collision of Two Union Pacific Railroad Freight Trains

Granger, Wyoming

The Accident

On March 14, 2016, at 9:41 p.m. mountain daylight time, westbound Union Pacific Railroad (UP) freight train KG1LAC-13 (5718 West) traveled from the main track through a switch into a controlled siding and collided head on with stopped eastbound UP local freight train LCK41-14 (5155 East).¹ At the time, UP was installing and testing positive train control (PTC) on the main track. While this work was in progress, UP employees suspended signals and established absolute blocks to ensure that trains could move safely through the areas without signals (the suspension). The collision occurred on a siding on the UP Evanston Subdivision near Granger, Wyoming. (See figure 1.) The engineer of the striking train received minor injuries; the conductor was not injured. The crew of the stopped train exited the locomotive before the collision and were not injured. At the time of the accident, it was dark with cloudy sky and light wind; the temperature was 20°F.

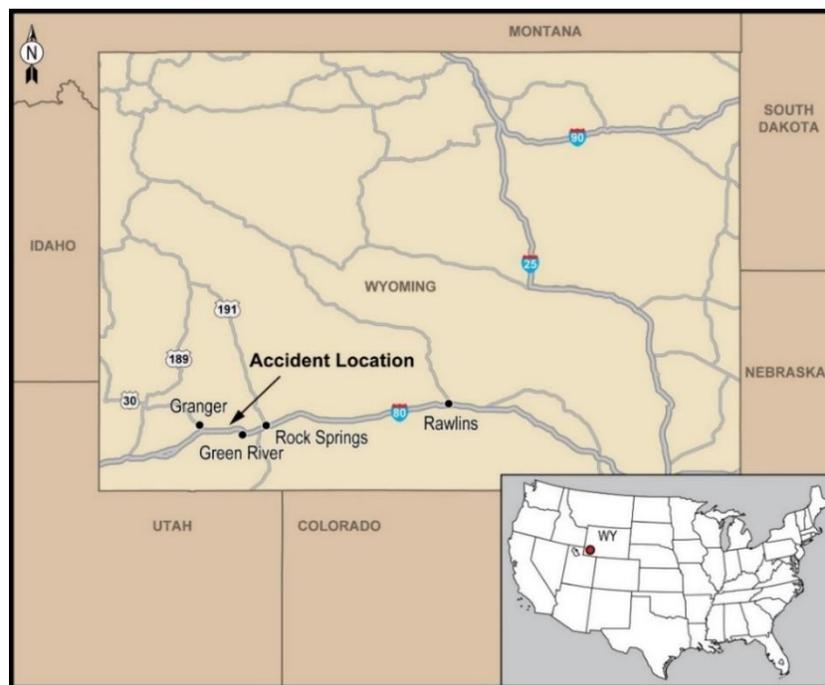


Figure 1. Wyoming map with accident location.

On March 13, 2016, UP issued Track Bulletin Form C, No. 10054, which provided to the operating employees the procedure for operating trains through the suspension.² UP had suspended

¹ (a) All times in this report are mountain daylight time. (b) Each of the two trains is identified by its locomotive number and its direction of travel: 5718 West and 5515 East.

² Track Bulletin Form C No. 10054 is available in the NTSB's docket for this accident, under accident identification number DCA16FR005 at the [NTSB Website](https://www.ntsb.gov).

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the signal system between milepost MP 865.7 and MP 843.9 from March 14, 2016, at 8:00 a.m. to March 15, 2016, at 4:00 p.m.; the collision occurred during this period.

Railroad Operations

To install PTC between MP 865.7 and MP 843.9, UP suspended the signals and established absolute blocks between those mileposts and a procedure to guide trains through the suspension, which was managed by an employee-in-charge (EIC).³ The procedure is described below and shown in figure 2:

1. The train dispatcher talked with the EIC and described the proposed train route through the suspended section.
2. The EIC conferred with the signal EIC to verify that the proposed train movement could be made safely.⁴
3. The signal EIC ensured that employees were clear of the track and told the EIC that it was safe to authorize the train movement.
4. The EIC told the appropriate conductor pilot to authorize the train through the suspended section.
5. The conductor pilot verified that the switches were lined correctly for the proposed train movement.
6. The conductor pilot told the train crew to enter the suspended section and provided the designated route and the maximum speed.

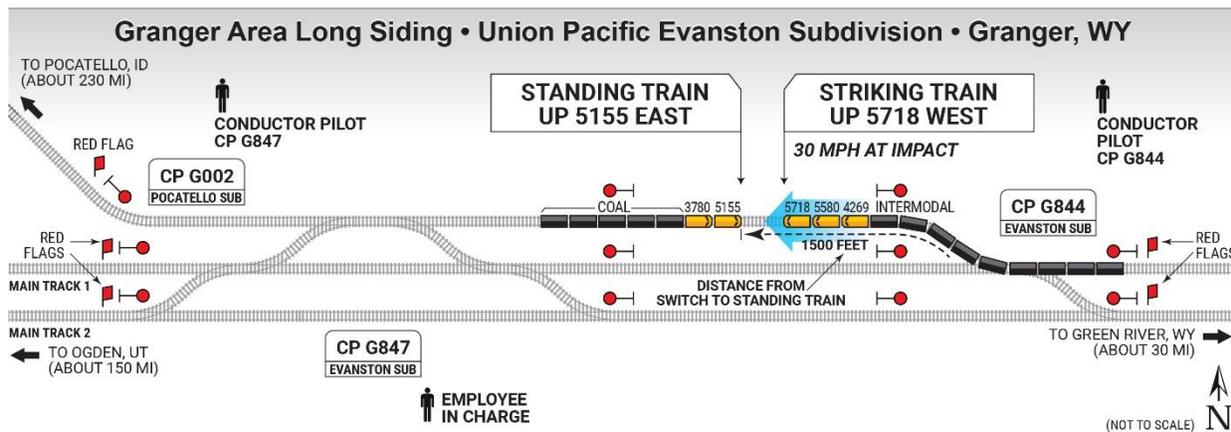


Figure 2. Accident diagram.

³ An *absolute* block is a length of track that no train is permitted to enter while the track is occupied by another train. *General Code of Operating Rules*, Seventh Edition, effective April 1, 2015, updated January 7, 2016.

⁴ The signal EIC is responsible for ensuring that the track is safe (that is, workers are clear of the track) for a train to operate through the suspended signals.

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Red flags at the entrance of the suspension meant train crews should stop their trains before entering the suspended territory unless the conductor pilot had authorized them to enter the limits of the suspension. Although the track speed limit was normally 70 mph (reducing to 65 mph at MP 844.8), Title 49 *Code of Federal Regulations* (CFR) Part 236 states that trains operating in territory without a signal system must not exceed 59 mph for passenger trains and 49 mph for all other trains. This speed restriction also applied during a signal suspension.

Accident Narrative

On the night of the accident, the westbound signals at control point (CP) CP 844 showed red aspects, and the track beyond those signals to the west was “blocked” on the train dispatcher’s terminal. Because the dispatcher did not control the signals, the dispatcher could not allow westbound trains to enter the limits of the suspension by signal indication. The EIC (or the designated conductor pilot located near the suspended limits) authorized all westbound trains to enter the suspension, allowing the train crews to ignore the red signals.

The eastbound signals defaulted to a red aspect; however, the train dispatcher could request that the eastbound signals display a proceed indication for trains departing the suspended territory. The train dispatcher controlled the remote-control switches within CP G844 to allow the dispatcher to line the switches and authorize trains to leave the suspended territory by signal indication at track speed. This was beneficial to operations because eastbound trains could leave the suspension at track speed. If CP G844 had been suspended in both directions, trains departing the territory would have entered a signal system (beyond MP 843.9) without a signal indication, and those trains would have been required to operate at restricted speed until the leading wheels passed the next governing signal.

On the night of the accident, the train dispatcher and the EIC discussed the movement of train 5718 West, which would enter the suspension limits at CP G844 and operate westbound on main track 1. About 15 minutes after this discussion, the EIC told the conductor pilot at CP G844 to authorize 5718 West to enter the limits of the suspension on main track 1 and continue westbound on main track 1. The conductor pilot contacted the crew on 5718 West and authorized them to move through the signal suspension (that is, to continue traveling west on main track 1).

When 5718 West entered the limits of the suspension on main track 1, it was travelling about 46 mph. The crew saw that the switch at CP G844 was lined so that their train would enter the Long Siding instead of continuing on main track 1.⁵ Typically switches were not lined until the dispatcher had decided the next movement through the switch; therefore, the switch was still in position (that is, lined) for the previous train movement. The engineer immediately applied the emergency brakes, and the train slowed to about 30 mph and collided with the stopped 5155 East at 9:41 p.m. When the crew on 5155 East saw the pending collision, they exited their stationary locomotive.

⁵ The Long Siding was parallel to main track 1. Trains coming to or from the Pocatello, Idaho, line could be stationed on the siding to wait for traffic to clear before entering the Pocatello line or main track 1.

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Investigation

Employee Assignments and Communications

On the day of the accident, about 9:16 p.m., the train dispatcher and the EIC spoke by radio about the possible movements of train 5718 West:

EIC: "... we've got that UP 5155 East going through the signal suspension now, any idea on what your next move is?"

Dispatcher: "Well, I've got to wait for his track to open up, so that I can get [5155 East] through [CP G]844. I'm not sure if I can get him through [CP G]844 first, or if we'll go west 1 to 1 there.⁶ I've got a UP 5718 westbound that will go 1 to 1 at [CP G]844 and then 1 to 1 at [CP G]847, over."

EIC: "OK, we've got a UP 5718 [westbound], it's going to be going 1 to 1 at [CP G]844 and 1 to 1 at [CP G]847. Well, **we'll wait to hear back from you if we're going to run him first, over.**" [emphasis added]

The train dispatcher remembered that the EIC repeated that he would wait to hear from her before he authorized any trains to move through the suspension limits at CP G844.

The EIC told investigators the result of his conversation with the train dispatcher: "[The dispatcher will] be bringing [5155 East] [through] CP G002 [to the Pocatello line] main to Long Siding down to CP G844, and we had to hold it [before CP G844]"

According to the EIC, when he understood that 5155 East was going to wait and train 5718 West would be the first movement through the suspension, he contacted the signal EIC and asked if the work would allow the westbound train to operate through the suspension. The signal EIC told the EIC that the workers were clear of track 1 and it was all right to authorize the westbound train through the suspension.

The EIC also explained how he recalled the train dispatcher's instructions relating to the UP 5718 West: "[The train dispatcher told] us that she was going to run two trains. One west and one east. Main 1 to Main 1 at CP G844, Main 1 to Main 1 CP G847. The route the dispatcher described was for 5718 West."

About 15 minutes after the conversation with the train dispatcher and after confirming with the signal EIC that the track was clear, the EIC instructed the conductor pilot at CP G844 to authorize train 5718 West to proceed into the suspended territory on main track 1.⁷ The EIC had taken the information from his conversation with the train dispatcher and used it as the authority for authorizing

⁶ A train going *1 to 1* travels on main track 1, moves through a control point (switch), and continues on the same track, main track 1.

⁷ During his interview, the intermodal train engineer of 5718 East said that he had overheard the initial conversation between the train dispatcher and the EIC concerning his train at CP G844 when he was near MP 825. Using the event recorder data with time and distance indicated that about 15 minutes later, the flagman at CP G844 had authorized train 5718 East through the suspended limits.

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5718 West into the suspension. At the time of the accident, UP did not require the EIC to maintain a written record of authorizations and train movements.

Following the EIC's instructions, the conductor pilot at CP G844 authorized train 5718 West to continue without stopping at the red flag at MP 843.9. The conductor pilot was in a highway vehicle on a nearby knoll away from the entry switch. The conductor pilot said that the radio reception was better at this higher location. He also told investigators that he did not check the switch position before he authorized the train movement.

Job Briefing

On March 13, 2016, the day before the accident, UP held a formal job briefing for the employees involved with the upcoming signal suspension, including the EIC and the conductor pilot at CP G844. During this job briefing, employees learned that before authorizing a train movement they were to examine the switches at the entrance to the suspension. However, on the day of the accident, the conductor pilot assumed the siding switch was lined for main track 1, because the train dispatcher, who had given the original instructions, controlled that switch. When the NTSB investigators asked the conductor pilot whether he needed to check the position of the switches, he said he did not, and he "was told at any job briefing that the dispatcher had control of that switch" The conductor pilot said that this was the job briefing he had received from the employee he had relieved at CP G844 at the beginning of his shift, not the job briefing that he had attended on the day before the accident.

Switch Positions

The last train movement through CP G844 was an eastbound train that had departed the long siding and entered main track 1. Since the train dispatcher had not decided the order of the next train movements, she had not changed the position of the switches. If the conductor pilot had checked the switches at CP G844 before authorizing UP 5718 West to enter the suspension, he would have realized that the switch was not lined properly for the movement.

Personnel Information

Employment Records

Employee-in-Charge. UP hired the 51-year-old EIC on January 23, 1995. The EIC had been certified as a conductor on July 11, 2012, and recertified on May 7, 2014. According to the EIC's operational testing records, railroad supervisors observed him while he performed his duties 12 times in the previous 12 months. There were no entries for noncompliance with UP rules and procedures.

Conductor Pilot (CP G844). UP hired the 31-year-old conductor pilot on November 1, 2004. He was certified as a conductor on July 11, 2012, and recertified on August 10, 2015. The conductor pilot's operational testing records indicated that railroad supervisors observed him performing his duties 19 times in the previous 12 months. On three occasions, he required coaching from a railroad supervisor.

Train Dispatcher. UP hired the 30-year-old train dispatcher on June 21, 2013. The train dispatcher's operational testing records indicated that she had been observed 14 times in the previous 12 months.

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Cell Phone Records

Investigators obtained the cell phone records of all employees involved in the accident and found no inappropriate use of the cell phones.

Postaccident Toxicological Testing

All operating employees and the train dispatchers submitted specimens for postaccident toxicological testing as required by 49 *CFR* Part 219, Subpart C, Post-Accident Toxicological Testing. All employees involved in this accident tested negative for alcohol and other tested-for drugs.

Hours of Service and Rest Cycle

Title 49 *CFR* Part 228, Hours of Service of Railroad Employees, requires that railroad operating employees (1) do not work more than 12 hours in a shift and (2) have a minimum of 10 hours off duty between shifts. The duty hours of the operating employees involved in this accident were within the requirements of the regulation.

Training

UP records showed that all employees involved with the accident had taken and completed training courses covering various aspects of railroad operations.

Postaccident Actions

After the accident, UP changed its operating procedures for signal system suspensions throughout the UP system. Conductor pilots are now responsible for verifying the position of switches before talking trains through the limits; the EIC must complete a standard form with the times a train has been authorized into the limits; and a railroad supervisor must be on duty at a signal suspension to oversee the safety of the operations.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the accident was that the employee-in-charge incorrectly used information from a conversation with the train dispatcher as authorization to send a train into the signal suspension territory. Contributing to the accident was the failure of the conductor pilot at CP G844 to check the switch position before authorizing the train to enter the signal suspension territory.

For more details about this accident, visit the [NTSB Docket](#) and search for NTSB accident identification number DCA16FR005.

Issued: December 5, 2017

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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 *United States Code* Section 1131 - *General authority*)

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person.” 49 *Code of Federal Regulations*, Section 831.4. Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report. 49 *United States Code* Section 1154(b).
