



Note that 49 U.S.C. § 20903 provides that no part of an accident or incident report, including this one, made by the Secretary of Transportation/Federal Railroad Administration under 49 U.S.C. § 20902 may be used in a civil action for damages resulting from a matter mentioned in the report.

Federal Railroad Administration, Office of Railroad Safety

Accident Investigation Summary Report HQ-2021-1445

Canadian Pacific Railway Company (CP) – Collision and Derailment
St. Paul, Minnesota
August 25, 2021

1. EXECUTIVE SUMMARY

On August 25, 2021, at 5:08 p.m., CST, a collision involving three freight trains occurred at Milepost (MP) 429.752 on BNSF Railway Company's (BNSF) St. Paul Subdivision, St. Paul, Minnesota. The trains involved were:

- **Train 1:** A Canadian Pacific Railway (CP) eastbound mixed freight train with 4 head end locomotives, 117 cars (89 loaded, 28 empty), and 9,838 trailing tons.
- **Train 2:** A Union Pacific Railroad (UP) westbound mixed freight train with 3 head end locomotives, 161 cars (106 loaded, 55 empty), and 15,356 trailing tons.
- **Train 3:** A BNSF eastbound mixed freight train with 2 head end locomotives, 114 cars (80 loaded, 34 empty), and 11,344 trailing tons.

The Federal Railroad Administration (FRA) investigation determined that the primary cause of the accident was the crew of Train 1's failure to stop at a red signal at Control Point Division Street, as required.

2. CIRCUMSTANCES PRIOR TO THE ACCIDENT

Train 1, operated by CP, had undergone a Class 1 airbrake test at Alyth Yard, Calgary, Alberta, on August 23, 2021. Additional cars were added at five locations, with the final Class 1 airbrake test conducted at the CP Moose Jaw facility. On August 25, 2021, Train 1 reported a Positive Train Control (PTC) failure at 8:58 a.m., CST, on the Elbow Lake Subdivision at MP 185 and as allowed under regulations, the train was instructed to proceed with PTC cut out until it could be serviced in St. Paul, the next forward servicing point.

Train 2, operated by UP, was performing yard movements on the BNSF St. Paul Subdivision Main Track 2 near Control Point Division Street.

Train 3, operated by BNSF, was stationary on Main Track 1 at Control Point Division Street.

The BNSF St. Paul Subdivision utilizes a Traffic Control System (TCS) with a PTC overlay.

3. THE ACCIDENT

At 5:08 p.m., the crew of Train 1 received a diverging approach signal indication at Seventh Street, directing it to proceed to the next signal, Control Point Division Street, at which point they needed to be prepared to stop. The engineer engaged the dynamic brakes and released the automatic brakes, which was not enough to slow the train down, and thus the train accelerated to 21 miles per hour (MPH) instead of slowing down. Reapplying the automatic brakes were not successful at rapid decelerating the train.

The view of the signal at Control Point Division Street was obstructed by Train 3 on Main Track 1, complicating the situation. As Train 1 navigated a curve approaching Control Point Division Street, the signal came in view. The engineer saw the stop signal and applied the emergency brakes while traveling at 19.9 mph.

Train 1 continued past the signal, colliding with Train 2 at 7.4 mph, striking its second locomotive. The impact then caused Train 1 to hit Train 3, resulting in the derailment of the 26th car from the locomotive.

Damage estimates were as follows: CP reported \$275,646 in damages; UP reported \$2,381 in damages; and BNSF reported \$67,110 in damages.

There were no injuries reported as a result of this incident.

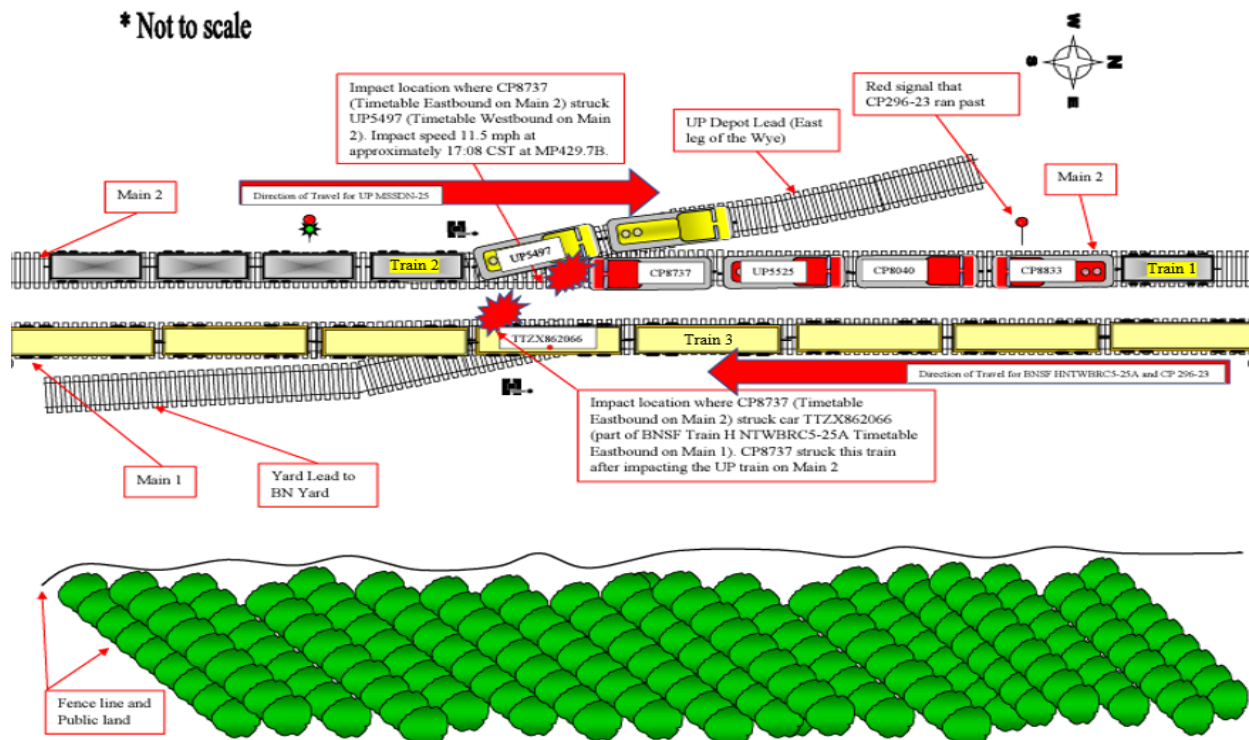


Figure 1: Collision Sketch

4. INVESTIGATION AND ANALYSIS

FRA's investigation, initiated on August 25, 2021, found no deficiencies or irregularities in the track, signal system, or equipment. Fatigue analysis of the crew's work/rest schedules indicated no fatigue risk.

CP did not conduct required post-accident toxicology on Train 1's crew, leaving the potential for drug or alcohol impairment undetermined. As this was an Impact Accident resulting in \$150,000 in railroad damages, testing was required. Accordingly, FRA will take appropriate enforcement action for failing to not comply with Title 49 Code of Federal Regulations (CFR) § 219.201(a)(1).

Train 1 Crew

The certification, employment history, efficiency testing, train handling, and disciplinary records of both the engineer and conductor of Train 1 were reviewed as part of the investigation.

Engineer: Certified on January 2, 2019. Employment records date back to January 1, 2010. Efficiency testing was conducted 17 times between August 4, 2020, and August 21, 2021, with one failure on November 28, 2020, related to securing equipment. The engineer had seven instances of formal or informal discipline since 2011.

Conductor: Certified on October 22, 2019. Employment records start from August 28, 2013. Efficiency testing was performed 19 times between August 8, 2020, and August 10, 2021, with two failures on August 10, 2021, concerning riding equipment and job briefing.

Conclusion: The crew handling Train 1 failed to comply with train handling requirements after passing the Diverging Approach Signal at Seventh Street, by failing to reduce speed in preparation of stopping at Control Point Division Street.

Signal & Train Control Analysis

FRA evaluated the signal and train control system in the area of the derailment. The investigation included interviews with personnel from BNSF, CP, and UP, including the BNSF Signal Supervisor, Signal Inspector, and Signal Maintainer. FRA also reviewed signal logs and other pertinent records related to the incident.

Key findings include:

PTC Failure: At 8:59 a.m. CST, an en-route PTC failure occurred at MP 185 on the Elbow Lake Subdivision. This failure involved a Locomotive Interface Gateway issue and lead to instructions for the train crew to operate with PTC cutout to the next forward maintenance location. CP adhered to all relevant PTC regulations and FRA found no compliance issues related to the en-route PTC failure.

Signal System Inspection: FRA conducted comprehensive tests and inspections of the signal

system, including signal logs, track circuits, insulated joints, signal software, and physical components like signal heads and wiring. Ground tests, locking tests, and visibility assessments of the signal were also performed. It was noted that the approach to CP Division Street includes a slight downhill grade and a slight curve.

Signal Visibility and Equipment: The signal at CP Division Street was displaying a stop aspect (red over red) at the time of the accident. FRA determined that both the sight and stopping distance were adequate and in compliance with design specifications. No deficiencies were found in the equipment or testing results. It is worth noting that at the time of the accident, a UP train was obstructing the preview of the signal at CP Division Street for a portion of the approach while traversing the curve.

Conclusion: A non-compliant condition or malfunction of the Signal and Train Control System did not cause or contribute to the severity of this derailment.

5. CONCLUSION

The FRA investigation determined that the primary cause of the accident was the failure of Train 1 to stop at a red signal at Control Point Division Street, resulting in a collision between Train 1 and Train 2, a derailment of Train 1 and a subsequent collision between Train 1 and Train 3. This accident was PTC preventable, as PTC would have enforced a stop prior to the train passing the absolute Stop signal at Control Point Division Street, however, at the time of the accident, PTC was cut-out due to an enroute failure. The train was operating to the next forward maintenance facility, as allowed under FRA regulations, when the accident occurred.