

**SUMMARY FOR FE-13-02**  
**SELECTED AND POSSIBLE CONTRIBUTING FACTORS**

**SELECTED FACTORS**

**Railroad:** Burlington Northern Santa Fe Corporation  
**Location:** Sedalia, Colorado  
**Region:** 6

**Month:** May  
**Date:** May 29, 2002  
**Time:** 11:15 a.m., MST

**Data for Fatally Injured Employee(s)**

Rail Track Grinder Operator  
36 years old  
Five years of service  
Last rules training: May 15, 2002  
Last safety training: May 2, 2002  
Last physical: Unknown

**Data for All Employees (Craft, Positions, Activity)**

**Craft of Fatally Injured Employee and Crew: Maintenance of Way**

**Positions:**

**Crew of Work Train WDENDEN-1-29**

Locomotive Engineer  
Conductor  
Brakeman

**MOW Work Crew**

Welder  
Rail Track Grinder Operator  
  
Road Master  
Section Foreman  
Foreman in Charge of the Ballast  
BNSF Dispatcher  
UP Flag Man  
UP Truck Driver  
UP Moffat Tunnel Subdivision Dispatcher  
UP Colorado Springs Subdivision Dispatcher

## **SUMMARY FOR FE-13-02 CONTINUED**

### **SELECTED FACTORS CONTINUED**

UP Track Inspector  
Two UP Tie Markers

Douglas County Deputy Sheriff

**Activity:** Track Maintenance

### **EVENT**

A Rail Track Grinder Operator was fatally injured when struck by a freely rolling gondola car while he was maintaining track.

### **POSSIBLE CONTRIBUTING FACTORS**

#### **PCF No. 1**

Investigators concluded the crew of Work Train WDENDEN-1-29 failed to ensure the gondola car was coupled to the work train prior to the incident. They failed to stretch the slack to ensure that all couplings were made.

#### **PCF No. 2**

Investigators concluded that the crew of Work Train WDENDEN-1-29 failed to ensure sufficient hand brake tension was applied to the gondola car when it was left on the main line. Consequently, the car's brake system lost the air required to keep tension on the brakes, and the gondola car traveled freely downgrade towards Sedalia, Colorado, striking the Rail Track Grinder Operator.

**REPORT:** FE-13-2002

**RAILROAD:** Burlington Northern Santa Fe Corporation (BNSF)

**LOCATION:** Sedalia, Colorado

**DATE & TIME:** May 29, 2002 ; Approximately 11:15 a.m., MST

**EVENT<sup>1</sup>:** A Rail Track Grinder Operator was fatally injured when struck by a freely rolling gondola car while he was maintaining track.

**EMPLOYEE:**

Craft:	Maintenance of Way (MOW)
Activity:	Track Maintenance
Occupation:	Rail Track Grinder Operator
Age:	36 years
Length of Service:	Five years
Last Rules Training:	May 15, 2002
Last Safety Training:	May 2, 2002
Last Physical:	Unknown

### **CIRCUMSTANCES PRIOR TO THE ACCIDENT**

The crew of work train WDENDEN-1-29 went on duty at Denver, CO, at 7:50 a.m., May 29, 2002. The crew comprised a Locomotive Engineer, Conductor, and Brakeman. Prior to the fatality, the work train left Denver with an engine, EMDX 799. It proceeded south to Big Lift where it picked up one loaded gondola car, ATSF 73362. The work train then proceeded south to Castle Rock, Colorado. At Castle Rock, the Brakeman and Conductor went on the ground to perform switching moves. They were working under Track Warrant protection which covered MP 24.0 to Palmer Lake on Main Track No. 1. (It should be noted that directional traffic was used here and the majority of all traffic on Main Track No. 1 was south). The Engineer was seated in his normal position on the right side of the cab, which was on the west end of the train.

An MOW work crew, comprising a Welder and a Rail Track Grinder Operator, went on duty at Big Lift, Colorado, at 7:30 a.m. They attended a job briefing held by the local Road Master and the Section Foremen for that area. After the job briefing, the Welder and Rail Track Grinder

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<sup>1</sup> "Event" is defined as "occurrence that immediately precedes and directly results in the fatality." Possible contributing factors are identified in the following report and attached summary.

Operator drove to Sedalia, Colorado, to work at MP 25.1 on the South Sedalia crossover frog, which is on Main Track No. 1. They were working under the protection of a Form "B", a type of exclusive track protection that gives an employee-in-charge exclusive rights on a portion of track, meaning all movements on this portion of track must be done only under his or her direction. The Form "B", which the Welder had acquired the night before from the UP Train Dispatcher, comprised limits MP 24.5 to MP 33.0 on Main Track No.1, from 9 a.m. until 3:30 p.m. Just prior to the incident, the Rail Track Grinder Operator was seated facing south, straddling the frog and grinding on it. He was wearing all his protective gear, which comprised safety toe boots, a hard hat, safety glasses, goggles, and ear plugs.

At about 10:41 a.m., the Brakeman of work train WDENDEN-1-29 at Castle Rock, MP 32.2, was instructed by the Conductor to cut off car No. ATSF 73362, leaving it on Main Track No. 1. The work train proceeded onto the back track and picked up one loaded ballast car (BN 957673), five air-dump cars (BNSF 902853, BN 964763, ATSF 186263, BNSF 902333, and BN 965243), and two empty gondola cars (BN 566073 and ATSF 74163). The Brakeman then took off the end-of-train telemetry device from car No. ATSF 73362 and stated he had applied the hand brake. The work train then proceeded out of the back track and made a shove north and onto the ATSF 73362, under the guidance of the Conductor. The work train then cut off all the cars behind BN 95763, the one car load of ballast, and proceeded south to dump the car.

The crew of the work train dumped ballast south on Main Track No. 1, through the back track switch. The train then proceeded north onto the back track, dumping onto it. The work train came to a stop and a job briefing was held with the train crew, the Foreman in charge of the ballast, and the local Road Master. While they were discussing the next move, the Road Master got a call from the Welder at Sedalia, MP 25.1. The Welder informed him that a runaway gondola car just struck and fatally injured his partner and was traveling north at a high rate of speed towards Denver.

At the time of the incident, the weather was clear. The temperature was 80° F, and visibility was unrestricted.

### **THE ACCIDENT**

At about 11:15 a.m., the Rail Track Grinder Operator was still seated facing south, straddling the frog and grinding on it. The Welder was standing about 30 feet to the north, between the rails of Main Track No. 1, evaluating the work and the next step in the restoration of the frog.

The Welder looked up just in time to see gondola car, ATSF 73362, rolling toward the Rail Track Grinder Operator. He said he didn't have time to warn him and was barely able to get out of the way. The gondola car struck the Rail Track Grinder Operator, killing him instantly and continued traveling north towards Denver. The Welder immediately called the Road Master on his cell phone and informed him of the incident. The Road Master stated he had tried to call the UP Dispatcher several times, and after failing, was able to contact the BNSF Dispatcher and inform him about the runaway car.

The car traveled north onto the UP at MP 24.9. It continued on through a construction site at Titan Road, MP 18.4, which was under the protection of a UP Flag Man. The Flag Man did not

have working time on the track, and everybody was clear. He had no knowledge of the runaway car. According to a hot box detector located at MP 18.5, the car was traveling at 58 mph.

The car proceeded north, and at approximately 11:45 a.m., at MP 13.1, it passed a UP Truck Driver who was cutting and loading pieces of rail into his truck. The rail was stationed adjacently to Main Line No. 1 and was far enough away from the track so that he did not require any type of on-track protection. He stated he was about seven to eight feet from the track and never heard or saw the car. The Truck Driver estimated the car's speed at 60 to 70 mph and indicated that the only thing he heard was the wind whistle through the car as it passed. He immediately ran to his radio and interrupted the UP Moffat Tunnel Subdivision Dispatcher who was talking to a train, and informed her about what was happening. She in turn informed the UP Colorado Springs Subdivision Dispatcher who was responsible for the movement of traffic in the area the car was traveling. The car proceeded at a high rate of speed north into Centralized Traffic Control Territory at MP 12.5.

A UP Track Inspector, who had Track and Time protection on Main Track No. 1 from Littleton to Englewood, which he had received from the BNSF Dispatcher, and a track warrant from Littleton to MP 19.2 on Main Track No. 1, which he had received from the UP Dispatcher, was inspecting north (against the flow of traffic) towards Military Junction, MP 9.2. When he arrived at Military Junction, he continued onto the yard tracks to do a monthly yard inspection. After leaving Main Track No. 1, he lined the switch back to the main. While performing his inspection, he heard the BNSF Dispatcher talking on the radio about the car. This was the first he had heard of it. The Dispatcher then called him and informed him about the car and asked if he could clear up his track and time. After he did that, he went to the UP channel and spoke with the UP Dispatcher and cleared his track warrant. At approximately 11:55 a.m., the car passed by, heading north.

A BNSF employee who was working at MP 4.3 as a Flag Man was informed of the runaway car by his Road Master and cleared the tracks. The car passed him at approximately 12:03 p.m. It continued north, and at 12:10 p.m., was recorded at a speed of 29.4 mph at MP 1.7.

Two UP Tie Markers were walking down Main Track No. 1 at MP 0.2 (20<sup>th</sup> Street). They were using Watchman/Lookout protection. They had a portable radio, and they overheard the conversations about the movements of the runaway car. They cleared the tracks and the car went by them at approximately 12:15 p.m. It continued north, and after traveling about 33 miles, it came to rest approximately 12:16 p.m., under the I-25 highway overpass in the BNSF Rennex Yard near MP 1.0, in the Front Range Subdivision.

### **POST-ACCIDENT INVESTIGATION**

The Douglas County Deputy Sheriff arrived at the scene at approximately 11:55 a.m. and conducted an on-site investigation and interview of the victim's co-worker. At the scene, no FRA-mandatory toxicological tests were performed. However, a toxicological test was ordered on the work train crew at Castle Rock. Crew members were transported to Big Lift where the tests were performed. The deceased was tested as part of the autopsy. The results of all tests were negative.

FRA's post-accident investigation included interviews with BNSF personnel who were at the scene and the crew and personnel who were at the work train scene. Also included was an investigation by BNSF personnel, the Douglas County Sheriff's Department, and the Brotherhood of Maintenance-of-Way Employees Union.

The fatality was caused by ATSF 73362, a gondola car associated with the work train. The car, traveling under its own power (gravity) moved uncontrolled, striking the Rail Track Grinder Operator.

On June 4, 2002, BNSF performed a "Gold Shoe Test" on the ATSF 73362, which measured pressure/square inch of brake shoe against the car's wheel surface. The results of this tests were positive, with no failures or defects.

On June 4, 2002, BNSF performed a brake system and hand brake test. Included in this test was a Dynamometer Test performed by Wabtec. The test was performed at all four applied positions, and the data was recorded. The results of this test were all within the required standards with no failures.

On June 5, 2002, BNSF did a hand brake impact test using a switch engine. It impacted the car at speeds of 2 mph and 5 mph. All four measured positions of hand brake applications were impacted. No failures were recorded.

On June 11, 2002, BNSF did a car coupling mechanism test. The test was performed using every conceivable scenario of knuckle positions. Each test was performed numerous times by making a joint and stretching the cars. No failures were recorded.

FRA investigators concluded that the crew of Work Train WDENDEN-1-29 failed to insure that there was sufficient hand brake tension applied to ATSF 73362 when it was left on the main line. The crew then failed to insure that the car was coupled to the work train when they failed to stretch the train when a joint was made. When the car's brake system eventually lost the air required to keep tension on the brakes, which is normal, it traveled freely downgrade towards Sedalia, Colorado, and eventually into Denver, Colorado.

A formal investigation was performed by the BNSF at the Globeville Yard Division Office on June, 18, 2002, at 9 a.m. The defendants were the Conductor, Locomotive Engineer, and Brakeman of Work Train WDENDEN-1-29. The findings of the investigation resulted in discipline being assessed. The Conductor's employment was terminated. He was cited with violating two General Code of Operating Rules, 1.6 and 7.4. The Engineer was given a Level S, 30-Day Record Suspension. He was cited with violating two Air Brake and Train Handling Rules, 101.5.2 and 101.10.1. The Brakeman was issued a formal reprimand. He was sited with violating one Air Brake and one Train Handling Rule, 101.23.

No other discipline was administered to other employees.

## **APPLICABLE RULES**

### **General Code of Operating Rules (GCOR) 1.6 “Conduct”**

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Employees must not be:

1. Careless of the safety of themselves or others.
2. Negligent.
3. Insubordinate.
4. Dishonest.
5. Immoral.
6. Quarrelsome.  
Or
7. Discourteous.

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### **General Code of Operating Rules (GCOR) 7.4 “Precautions for Coupling or moving Car or Engines”**

Before coupling to or moving cars or engines, verify that the cars or engines are properly secured and can be coupled and moved safely.

Make couplings at a speed of not more than 4 mph. Stretch the slack to ensure that all couplings are made.

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### **Air Brake & Train Handling Rules 101.5.2 “Brake Pipe Leakage Method”**

The brake pipe leakage method is performed by measuring the amount of leakage in a closed system.

When to Use the Brake Pipe Leakage Method:

If the train does not meet Air Flow Meter (AFM) test conditions or is equipped with distributed power, conduct a brake pipe leakage test.

### **Procedures for Conducting Brake Pipe Leakage Test**

1. Charge the train brake system to the appropriate pressure.
2. Wait for the signal to apply the brakes.
3. When you receive the signal, reduce brake pipe pressure by 20 psi.
4. Allow brake pipe exhaust to stop.
5. Wait 60 seconds.
6. Cut out or lap the automatic brake valve.
7. Wait 60 seconds.

8. Time the brake pipe leakage for 60 seconds.
  - a. Make sure leakage does not exceed 5 psi during the 60-second test.
  - b. Do not actuate during the leakage test.
9. Use the appropriate air brake test to inspect the cars.
10. When you receive the signal to release the brakes, move the automatic brake valve to the RELEASE position and cut the automatic brake valve in.

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### **Air Brake & Train Handling Rules 101.10.1 “Adding Cars not Pretested”**

Conduct an air brake test if cars are added to the train when:

- The train is not at the initial terminal.
- One or more cars have not been pretested by the initial terminal air brake test (see Rule 101.6).

To Conduct the test:

1. Test brake pipe leakage with the AFM or brake pipe leakage method.
2. Make a 20 psi brake pipe reduction with the automatic brake valve.
3. Verify that the brakes apply on the rear car and cars added.
4. Place the automatic brake valve handle in RELEASE position.
5. Verify that the brakes release on the rear car and the cars added and that the brake pipe pressure is being restored at the rear of the train.

NOTE: When performing the brake pipe leakage test, verify that the brake system is charged to at least 60 psi.

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### **Air Brake & Train Handling Rules 101.23 “Detached Locomotive or Cars”**

When any part of a train is left standing and no train brake inspection is required, do not depend on the air brake system to secure the cars.

When detaching locomotives or locomotives and cars:

1. Make a 20 psi brake pipe reduction and wait for exhaust to cease.
2. Secure equipment against undesired movement as required.
3. Close angle cock on rear locomotive or last car to be detached from portion left standing. Leave angle cock open on portion left standing.
4. Detach the locomotive or locomotive and cars, and move at least 50 feet from the cars left standing.
5. Allow brakes on any standing portion to apply in emergency.

6. When available, use the end-of-train telemetry device to make sure that brake pipe pressure drops to 0 psi.

Do not bottle air or maintain air pressure in the brake pipe when locomotives are detached or yard air is uncoupled.

Exception: When separating a train in temperatures below 25° F and the train is on a grade of less than 1 percent, follow the steps in rule 101.12(B) (Inbound Train Inspection) to prevent vent valves from sticking open.

Note: After the brake pipe pressure has completely exhausted, the angle cock on the standing portion of the train may be closed to allow a locomotive to switch the cars from the opposite end.