



National Transportation Safety Board

Railroad Accident Brief

Train Collision with End of Track
Felton, California

The Accident

On December 28, 2015, about 11:55 a.m., Pacific standard time, a Roaring Camp & Big Trees Narrow Gauge Railroad (RCBT) tourist/excursion train struck a wooden bumper at the end of a switchback track in Felton, California.¹ The train had 39 passengers, six of whom received minor injuries. The weather at the time of the accident was partly sunny with the wind out of the east at 5 miles per hour (mph) and the temperature was 49°F.



Figure 1. Accident location at the end of the switchback.

¹ (a) Although the term *gage* is used in the railroad industry, RCBT spells it *gauge*. (b) A *switchback track* is a zig-zag section of railroad track used mainly in mountainous territory to gain elevation in a limited amount of territory.

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from the accident indicated that passengers were standing and then fell to the floor when the train suddenly stopped.

Railroad Operations

The Roaring Camp Railroads, Inc., which constructed the RCBT in 1963 as a replica of an 1880s-era logging railroad, operated a tourist/excursion train over a track route of about 1.5 miles. In addition to the RCBT, Roaring Camp Railroads, Inc. also runs the Santa Cruz, Big Trees & Pacific Railway (SCBG). The SCBG is a standard-gage railroad connected to the general railroad system and is regulated by the Federal Railroad Administration (FRA) and the California Public Utilities Commission (CPUC).⁵ The RCBT is a narrow-gage railroad, not connected to the general railroad system, and not regulated by either the FRA or the CPUC.

The RCBT has 20 employees assigned to work on the trains, four of whom are part-time or seasonal. Each of the 20 employees have different assignments and qualifications. Not all of the RCBT-qualified operating crewmembers could operate on the SCBG because they did not meet all of the certification requirements for engineers and conductors working on railroads regulated by the FRA.⁶

At the time of the accident, SCBG followed BNSF Railway's updated version of the *General Code of Operating Rules* (GCOR), effective April 1, 2015, and the Union Pacific Railroad *Safety Rules*, effective July 2, 2013.⁷ The RCBT had its own operating rulebook, but no specific safety rules for operations.

Safety Oversight

The California Department of Industrial Relations Division of Occupational Safety and Health (DOSH), Amusement Ride and Tramway Unit has regulations to govern permanent amusement ride operations in California.⁸ The state regulations were separated into three sections: the labor code, administrative regulations, and technical regulations. The technical regulations contain references to several *American Society for Testing and Materials* standards which were enforced as law in California. Prior to the accident, the Amusement Ride and Tramway Unit had not exercised regulatory oversight of the RCBT.⁹

⁵ SCBG is the official FRA-designated reporting mark for this railroad.

⁶ See Title 49 *Code of Federal Regulations* (CFR) 240 and 242 for additional information.

⁷ BNSF Railway Company, *General Code of Operating Rules*, Seventh edition, effective April 1, 2015, (Fort Worth, Texas: 2015); Union Pacific Railroad, *Union Pacific Railroad Safety Rules*, effective July 2, 2013, (Omaha, Nebraska: 2013).

⁸ State of California, Department of Industrial Relations Division of Occupational Safety and Health, Amusement Ride Unit, *Permanent Amusement Rides Administrative Regulations*, Title 8, Chapter 3.2, Article 6, Sections 344.5 - 344.17, and *Permanent Amusement Ride Safety Orders*, Title 8, Chapter 4, Subchapter 6.2, Sections 3195.1 - 3195.14.

⁹ DOSH does not have regulatory authority over the SCBG.

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The passenger car and caboose involved in this accident were built specifically for the Roaring Camp Railroad tourist operations in the mid-1960s. Roaring Camp Railroad, Inc. acquired a used locomotive that was first put in service in 1958.

Train Inspections

The train crewmembers stated that they performed a Class I air brake inspection and general safety check of their train before beginning their trip. The train crew did not note any defects and did not document the predeparture inspection.

On January 5, 2016, the train consist was reassembled as it was on the day of the accident and an air brake test was performed. The air brakes and control valves operated as intended and air leakage was determined to be minimal. This test exceeded the requirements for an FRA Class I air brake test.

The throttle assembly, connecting rods, and governor mechanism were inspected for proper operation, as well as the pneumatic clutch control valves and emergency stop lever. All of the systems functioned as intended.

Postaccident testing of the control stand determined that the friction shoe prevented the throttle lever from returning to the idle position when the throttle lever was twisted, applying the friction shoe. As designed, the friction shoe would not allow placement of the throttle lever in idle while engaged. The only way to recreate the scenario from the day of the accident, as described by the engineer, was by applying the friction shoe on the throttle lever and attempting to manipulate the throttle lever back to the idle position. However, the friction shoe prevented the engineer from returning the throttle lever to the idle position. No exception to the operation of the throttle lever was noted.

During the postaccident interview, the engineer stated that when he operated the locomotive, he usually used his hand to hold the throttle lever in the desired position instead of using the friction shoe. The throttle lever did not have any indications or markings to indicate to the engineer when the friction shoe was engaged.

On January 6, 2016, a complete running gear and brake component inspection was conducted on the accident train. Mechanical deficiencies were noted on the locomotive, passenger car, and caboose, but the deficiencies were determined to not be causal or contributory to the accident.

Postaccident Actions

DOSH Amusement Ride Unit

Following the accident, DOSH began exercising its jurisdiction and initiated the process to certify RCBT in accordance with California regulations for permanent amusement ride properties. In its December 29, 2015, amusement ride field inspection report, DOSH ordered that RCBT place the train equipment involved in this accident out of service pending specific corrective action. DOSH released the locomotive for service on January 12, 2016, after a follow-up inspection. DOSH released the passenger car and caboose on March 9, 2016, following an inspection.

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For more details about this accident, visit www.nts.gov/investigations/dms.html and search for NTSB accident identification DCA16FR002.

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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 U.S. Code § 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).
