



# PRELIMINARY REPORT

## RAILROAD

### Collision Between BNSF Intermodal Train and Rail Unloading Machine Vehicle at the Rear of a BNSF Work Train

near Kingman, Arizona

June 5, 2018

RRD18FR009

*The information in this report is preliminary and will be either supplemented or corrected during the course of the investigation.*

On June 5, 2018, about 2:50 p.m. mountain standard time, a westbound BNSF Railway (BNSF) intermodal train, S MEMSCO1 02 (intermodal train), operating in double-track centralized traffic control (CTC) territory collided with a rail unloading machine (RUM) vehicle at the rear of a ribbon rail work train, W NEESGM1 05 (work train).<sup>1</sup> The accident occurred in Crozier Canyon, about 33 miles east of Kingman, Arizona. At the time of the accident, the sky was clear, the wind was from the southwest about 25 mph, and the temperature was 97°F. One Herzog Railroad Services, Inc. (Herzog) employee died and another was seriously injured.<sup>2</sup> Damages were estimated to be over \$1 million. Figure 1 shows the accident scene.



**Figure 1.** Accident scene. (Photograph courtesy of BNSF.)

<sup>1</sup> (a) *Centralized traffic control* is a signaling system that uses block signal systems to authorize train movements. Positive train control (PTC) was operational in this area. Both trains had PTC engaged at the time of the accident. (b) A *rail unloading machine* attaches to the end railcar of a train and unloads rails that are about .25 miles long while being pulled by the train. (c) *Ribbon rail* is continuous welded rail.

<sup>2</sup> Herzog Railroad Services, Inc. is a company that performs contract rail work.

The work train was 1,800 feet-long and consisted of 29 loaded railcars and 2 forward-facing locomotives. It was originally a westbound train, but while unloading the rail on main track 1, moved in both directions between signals. The work train was making a reverse movement while ascending (shoving) the 1.5-percent grade traveling about 9 mph while approaching the 8° curve in Crozier Canyon. The operating crew consisted of an engineer, a conductor, and a brakeman. The brakeman was sitting at the driver's seat in the cab of the RUM vehicle to protect the point of the shoving move. Two Herzog employees were in the unloading cab of the RUM vehicle and three other BNSF employees were on the tie-down platforms on the railcars.

The loaded intermodal train was 6,574 feet-long, had 72 railcars, and weighed 8,156 tons. At the front of the train was one forward-facing locomotive and two rear-facing locomotives.

The dispatcher lined the intermodal train on main track 1 behind the work train, believing the work train was traveling west to drop off the work crew. The intermodal train was stopped at an intermediate restricting signal on main track 1. The crew noticed two westbound trains pass on main track 2 and heard on the radio that the work train would clear the block in 45 minutes. Believing the work train was headed west, the intermodal train crew proceeded past the red restrictive signal at a restricted speed of 15 mph.

There were trees on the inside of the curve, causing a short line of sight distance. (See figure 2.) Because of this, the intermodal train descended the 1.5-percent grade using dynamic braking and reached a top speed of 15 mph before arriving at the curve in Crozier Canyon.



**Figure 2.** Viewpoint of the approaching intermodal train entering the 8° curve just before the point of collision.

According to preliminary information downloaded from event recorders, the emergency brake of the intermodal train was applied at 14 mph and the train stopped about 24 seconds later, about 363 feet from where the emergency brake was applied. The work train was traveling at 9 mph

when the emergency brake of the work train was applied. The work train stopped 9 seconds later. The brakeman in the RUM vehicle was able to exit the vehicle seconds before the collision.

The NTSB formed the following technical investigative working groups:

- Operations
- Track
- Mechanical
- Signal

Parties to the investigation include the Federal Railroad Administration; BNSF Railroad; the Brotherhood of Locomotive Engineers and Trainmen; the International Association of Sheet Metal, Air, Rail and Transportation Workers; Herzog Railroad Services, Inc.; the Brotherhood of Maintenance of Way Employees; and Arizona Corporation Commission.<sup>3</sup>

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<sup>3</sup> This is the way the Brotherhood of Maintenance of Way Employees spells its name.