



**NATIONAL TRANSPORTATION SAFETY BOARD
OFFICE OF RAILROAD, PIPELINE & HAZARDOUS MATERIALS
INVESTIGATIONS WASHINGTON, D.C. 20594**

RAILROAD SIGNAL & TRAIN CONTROL SIGNAL ANALYSIS

DCA17FR004

Roadway Worker Employee Fatalities

Edgemont, SD

January 17, 2017

Prepared by: Timothy J. DePaepe, Signal Group Chairman

1. ACCIDENT

LOCATION: Edgemont, SD
TRAIN: Westbound E-DOLEBM0-01E
OPERATOR: BNSF Railway
DATE: January 17, 2017
TIME: 10:09 a.m. Mountain Standard Time
NTSB #: DCA17FR004

A. ACCIDENT SUMMARY

For a summary of the accident, refer to the *Accident Summary* report, within this docket.

The parties to the investigation include Federal Railroad Administration (FRA), BNSF Railway Company (BNSF), Brotherhood of Locomotive Engineers and Trainmen (BLET), Sheet Metal Aviation, and Railroad Transportation Union – Transportation Division, (SMART), and Brotherhood of Maintenance of Way Employees (BMWED).

B. ANALYSIS

Post-accident inspections of the signal equipment in the accident area showed that all signals and highway rail grade crossing warning systems were operating as designed and intended. A complete review of the BNSF signal maintenance reports for the accident area was conducted. Investigators reviewed the maintenance records and all signal tests and inspections were conducted in accordance with BNSF protocols and FRA regulatory requirements. Investigators collected and reviewed the trouble tickets for the Blacks Hills Subdivision with no exceptions taken.

On January 19, 2017, representatives from the FRA, BNSF and the NTSB began inspecting and testing the signal system. The post-accident inspection found all signal units and the signal cases at CP East Edgemont and intermediate signal 477 locked with no indications of tampering or vandalism to any of the signal equipment.

The post-accident signal investigation determined the signal system to be displaying the proper signal sequence for train movements in either direction. Controls and indications between the signal system field equipment and the BNSF Dispatch Center were in accordance with the requested routes and the physical conditions of the wayside equipment. **The train dispatching activities were appropriate in the use of the signal system to coordinate train movements. (Conclusion No. 1).**

Investigators simulated the westbound train movement on main one through East Edgemont Interlocking and continued the train movement through Intermediate Signal 477.

At intermediate signal 477 and the West Leg switch at the Deadwood Wye. Intermediate signal 477 track circuits 1ET and 1WT, which are east and west of the intermediate signal 477, were .06 ohm shunted and verified for proper operation.

Investigators simulated track inputs on the 1W track at intermediate signal 477 using a Track Input Simulator (TIS) and input vital codes, 2, 3, 4, and 7 to display all aspects westbound. Checked all bulb voltages on main one track top and bottom aspects, verified at 9.0 volts on each.

Investigators simulated westbound train movement on main track one through intermediate signal 477 with both green and yellow aspects lit and verified westbound stick circuit set and westbound signals turned red with west track shunted. The group tested for grounds in the area and verified all circuits were ground free.

The BNSF signal system was operating as designed and did not cause or contribute to the accident. (Conclusion No. 2)

C. **CONCLUSIONS**

1. The train dispatching activities were appropriate in the use of the signal system to coordinate train movements.
2. The BNSF signal system was operating as designed and did not cause or contribute to the collision.

Recommendations:

None

END OF REPORT