

INTERSTATE COMMERCE COMMISSION

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REPORT NO. 3352

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION  
REPORTS UNDER THE LOCOMOTIVE INSPECTION ACT  
OF FEBRUARY 17, 1911, AS AMENDED

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DENVER & RIO GRANDE WESTERN RAILROAD

October 6, 1950

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Accident at Littleton, Colo., on August 17, 1950, caused by  
failure of the locomotive electric lighting system.

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REPORT OF THE COMMISSION<sup>1</sup>

PATTERSON, Commissioner;

On August 17, 1950, about 10:15 p.m., at Littleton, Colo., Denver & Rio Grande Western Railroad locomotive 1518, while hauling a freight train at an estimated speed of 12 to 14 miles per hour, collided with an automobile at a street crossing. The electric lighting system on the locomotive had become inoperative en route and the locomotive was being operated without lights at the time of the accident. The four occupants of the automobile (non-employees) were killed.

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<sup>1</sup>Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.

## DESCRIPTION OF ACCIDENT

Denver & Rio Grande Western Railroad locomotive 1518, hauling northbound freight train No. 68, departed from Pueblo, Colo., at 4:00 p.m., August 17, 1950, and proceeded without any known unusual incident to Larkspur, Colo., 76 miles from Pueblo, where the locomotive electric lighting system failed. After a delay while the crew attempted repairs, the train proceeded without lights to Littleton, 32 miles from Larkspur, where, at about 10:15 p.m. the locomotive collided with an automobile on South Prince Street crossing, while the train was moving at an estimated speed of 12 to 14 miles per hour.

Train 68 consisted of 28 loaded and 5 empty cars. Approaching Littleton, the engineer was in usual position on right side of cab and the fireman was waving a lighted red fusee from left cab window. The head brakeman was in the cabin on top of tender cistern. Track at the Prince Street crossing where the accident occurred was tangent and level. There were four tracks at this point, a northbound main, southbound main, and a passing track for each. Prince Street ran about due north and south and the train approached from the south-southwest at an angle of approximately 30 degrees with the street. The passing tracks were close to their respective main tracks, but, measured along the street, there was a distance of about 90 yards between the two pairs of tracks. At Littleton, the southbound tracks were maintained by the Denver & Rio Grande Western Railroad and the northbound tracks were owned by the Atchison, Topeka & Santa Fe Railway, all tracks from Denver to Pueblo were operated under a joint line agreement which permitted double-track operation. On the north side approach to the southbound tracks there was a railroad crossing sign with the notation "2 Tracks", and on the south side approach to the northbound tracks a crossing sign and bell were mounted on a post approximately 90 feet from the point where a southbound automobile should stop, north of the northbound tracks, to clear northbound trains.

The automobile approached the crossing from the north, and before reaching the crossing the driver had a clear view of the oncoming train for a block or more on the side from which the fireman was waving a lighted red fusee.

Following the collision the front end of the locomotive was only slightly damaged. Right pilot step and brackets were bent back almost to cylinder head, right outer slat on metal pilot was bent, and right uncoupling lever handle was distorted. Track and roadbed were not damaged. The locomotive ran approximately 800 feet beyond the crossing before stopping.

The driver of the automobile and his three children, who were in the automobile at time of collision, were killed in the accident. When the train stopped after the collision, the automobile was impaled on the front of locomotive with the coupler piercing the right side of hood back of front wheel. The bodies of all four victims were wedged between the cowl and front seat of the automobile.

#### DESCRIPTION OF LOCOMOTIVE

Locomotive 1518, a 4-8-2 type, was built by the American Locomotive Company in May, 1923. Cylinders were 28 x 30 inches; diameter of driving wheels with full tires 63 inches; weight on driving wheels 266,700 pounds; weight of locomotive in working order 384,200 pounds; tractive effort 66,640 pounds. Locomotive was equipped with Pyle-National "K-2" turbo-generator; Walschaert valve gear; Duplex stoker; Elesco exhaust steam injector on left side and a Hancock non-lifting injector on right side; power reverse gear; Schmidt Type A superheater, and Nicholson thermic syphons. Mileage since last classified repairs was 62,237. Water capacity of tender was 14,000 gallons; coal capacity 25 tons; loaded weight of tender 277,600 pounds.

#### DESCRIPTION OF PARTS INVOLVED

The headlight generator, a Pyle-National "K-2" turbo-generator, rated at 500 watts and 32 volts, was mounted on a bracket at radius of wrapper sheet on left side of boiler just ahead of the cab at eye level above the running board with the commutator end toward the cab.

The lamp equipment on locomotive and tender consisted of one 250-watt and 16 15-watt bulbs, totaling 490 watts.

The Pyle-National headlight, located at front end of smoke-box, was equipped with a 250-watt incandescent bulb, also a 15-watt bulb to illuminate numbers at sides of headlight. The headlight switch, a single pole double throw type, was located at right side of cab within convenient reach above the engineer's station.

#### EXAMINATION OF PARTS INVOLVED

After the accident a railroad electrician from Denver went to Littleton to make temporary repairs to the lighting system

of locomotive 1518. He found pennies under all fuses, removed them, and replaced two fuses which appeared to be burned out. On examining the turbo-generator, he found that the top brush had worn to extent that the contact spring rested on the brush holder and the brush did not make proper contact with the armature. He folded a slip of paper and placed it on the brush under the spring. The generator then functioned and the locomotive proceeded to Denver, 10 miles away, where the crew tied up at 2:05 a.m., August 18.

Examination by federal inspectors at Denver on that date showed that the turbo-generator would light the headlight and all other lights simultaneously at 100-pound boiler pressure without the folded paper on the top brush, but the arcing at commutator was excessive, especially under this brush. The top spring was practically in contact with brush holder, due to brush being worn to 5/8-inch length from 1-5/16 inch original length. The commutator was considerably discolored and had a flat spot about 5 bars wide. When boiler pressure was raised approximately to allowed working pressure and new brushes applied the voltage at cab reading light was 34 volts with headlight off, 32 with it on; at headlight, voltage was 32 with main light off, 30 with it on. All other parts of turbo-generator and lighting circuits appeared to be in good condition.

#### INSPECTION AND REPAIR REPORTS

Locomotive 1518 received last annual inspection and repairs at Burnham, Colo., on January 1, 1950, and last monthly inspection and repairs at Pueblo, Colo., on August 15, 1950. Daily inspection reports for 30 days prior to date of accident, filed at Pueblo, Denver, and Salida, Colo., were examined. On one of these reports, an inspector reported: "Repair R water glass lite. Globe missing to L steam gauge lite." Repairs were shown made by an electrician and the report was signed by foreman. No other items pertaining to the lights on the locomotive or the locomotive lighting system were shown on these reports.

#### SUMMARY OF EVIDENCE

The engineer stated that the turbo-generator was running when the locomotive left Pueblo at 4:00 p.m., August 17. He first noticed that lights were failing when passing Palmer Lake, 68 miles from Pueblo, and on reaching Larkspur, 8 miles farther

on, the locomotive was operating in almost complete darkness. At that point he examined the fuses and placed coins under them to check for burned out fuses. He opened the generator end of turbo-generator and noted the commutator was turning and producing some sparks at brush contacts. Being unable to effect repairs, he consulted with the conductor, and they decided to continue to Littleton, the first open telegraph station where the dispatcher could be notified. The train had nearly reached that point and had slowed to between 12 and 14 miles per hour, when at South Prince Street crossing an automobile approached from the left side and collided nearly head-on with the locomotive, in spite of the lighted red fusee waved from left cab window. The engineer did not hear the crossing bell, but the train crew told him it was ringing. He had blown his whistle for the crossing as required. Although operating rules did not require it, customarily a white light was displayed at front end of locomotive in case of headlight failure, but he considered this impractical as an oil lantern would be blown out.

The fireman corroborated the above statements. He stated he was unable to estimate the speed of the automobile, as it was approaching so nearly head-on. He was waving a lighted 10-minute fusee as the train approached the crossing.

The electrician who made temporary repairs to lights and generator of locomotive 1518 at Littleton stated that two fuses appeared to be burned out and they were replaced by new ones. Lights still would not burn, and he then found that the spring to top commutator brush was resting on the end of brush holder and that brush had no contact pressure on commutator. After increasing the pressure on top brush by inserting a folded piece of paper between brush and spring, he allowed the locomotive to proceed to Denver without making any other changes.

#### CAUSE OF ACCIDENT

It is found that this accident was caused by an excessively worn commutator brush in the turbo-generator which resulted in failure of the locomotive lighting system.

Dated at Washington, D. C., this 6th day  
of October, 1950.

By the Commission, Commissioner Patterson.

SEAL

W. P. BARTEL,

Secretary.