

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT OF THE DIRECTOR
BUREAU OF SAFETY

ACCIDENT ON THE
DENVER AND RIO GRANDE WESTERN RAILROAD

RIVERTON, UTAH

DECEMBER 1, 1938

INVESTIGATION NO. 2315

SUMMARY

Inv-2315

Railroad: Denver and Rio Grande Western
Date: December 1, 1938
Location: Riverton, Utah
Kind of accident: Derailment after striking bus
Equipment involved: Freight : School bus
Train number: 31
Engine number: 3708
Consist: 50 cars, caboose
Speed: 52 m.p.h. : undetermined
Operation: Centralized-traffic-control
Track: Single; 2° left curve; 0.16 percent
descending grade for west-bound trains
Highway: Paralleled track on the left and then
crossed track at right angles with
gradual rise of 3 feet within approxi-
mately 70 feet.
Weather: Fine snow
Time: 8:43 a. m.
Casualties: 24 killed, 15 injured
Cause: School bus driven upon a highway grade
crossing directly in front of approach-
ing train

January 26, 1939.

To the Commission:

On December 1, 1938, there was a derailment of a freight train on the Denver and Rio Grande Western Railroad as a result of striking a school bus at a highway grade crossing near Riverton, Utah, which resulted in the death of 23 pupils and the driver of the bus and the injury of 15 pupils.

Location and Method of Operation

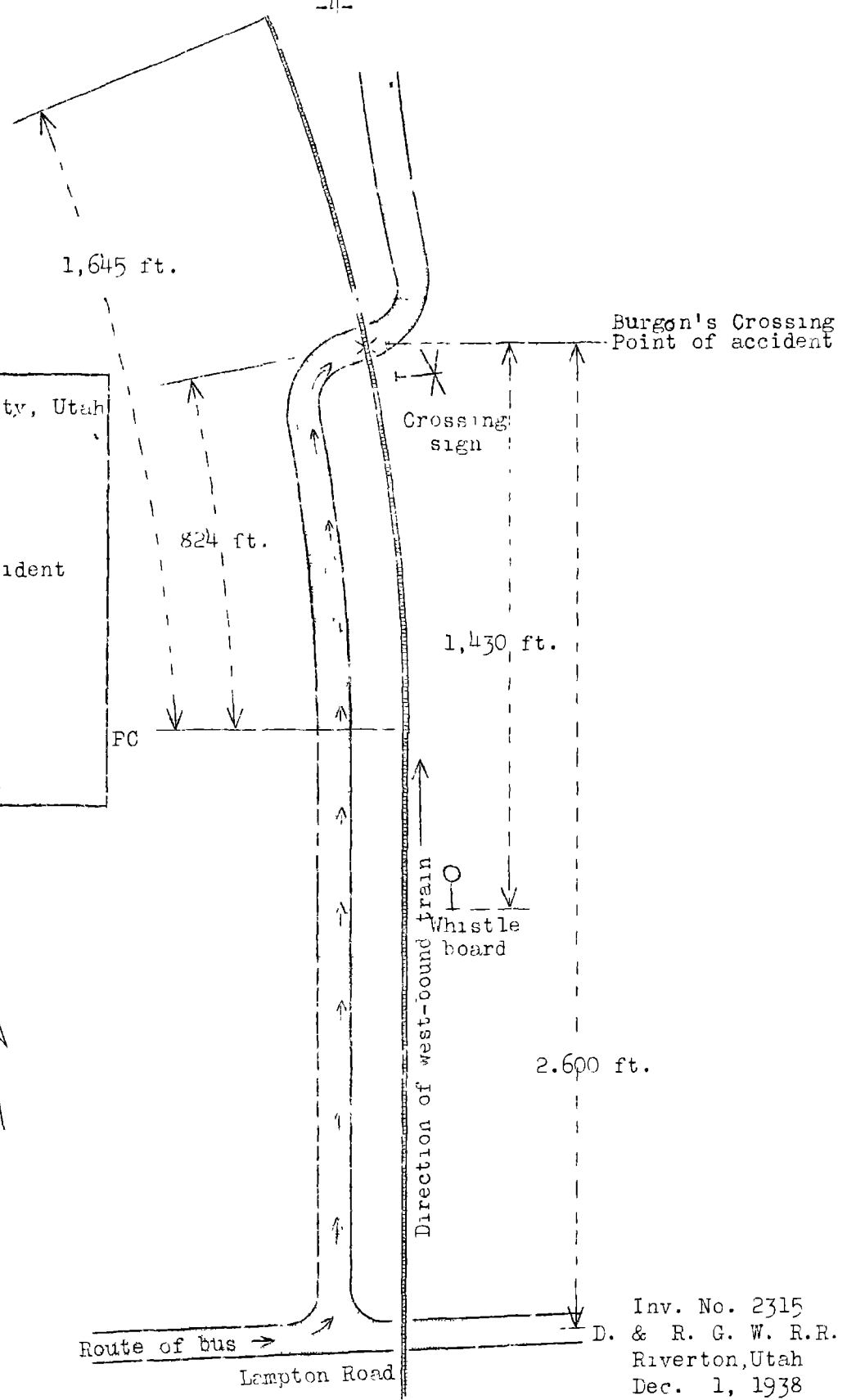
This accident occurred on that part of the Salt Lake Division designated as Sub-division 6 which extends between Helper and Salt Lake City, Utah, a distance of 119.6 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by a centralized-traffic-control system. The track extends north and south according to compass directions, but time-table directions which are used in this report are west and east, respectively. The accident occurred at a county road crossing, known as Burgon's crossing, located about 2.7 miles west of Riverton. Approaching on the railroad from the east there is a long tangent, followed by a 2° curve to the left 1,645 feet in length; the accident occurred on this curve at a point 824 feet from its eastern end. The grade for west-bound trains is 0.16 percent descending. A whistle board for west-bound trains is located 1,430 feet east of the crossing, and the maximum authorized speed for freight trains in this territory is 50 miles per hour.

The highway parallels the track on the south from Lampton crossing westward a distance of approximately 2,600 feet to Burgon's crossing, where it crosses the track at right angles and then parallels the track on the north a short distance. The distance from the center line of the highway to the center line of the track is approximately 83 feet. The highway is 18 feet wide and surfaced with oil mulch; the crossing also is of oil mulch with the surface about 1½ inches below the top of the rails. The grade is undulating and at the turn just south of the crossing the road is 3 feet below the level of the track and slopes gradually to the track level. The highway is in good condition.

A standard cross-buck sign, bearing the words "RAILROAD CROSSING", is located in the northeast corner of the crossing approximately 24 feet from the center line of the track and about 11 feet from the center line of the highway. This crossing is in open country and there is nothing in the vicinity to obstruct the view eastward.

Paragraph 252, Article 11, Regulation of Traffic, Motor

o Salt Lake City, Utah	2.6 mi.
o Roper	11.2 mi.
X Point of accident	2.7 mi.
o Riverton	103.1 mi.
o Helper, Utah	



Inv. No. 2315
 & R. G. W. R.R.
 Riverton, Utah
 Dec. 1, 1938

Vehicle Laws, State of Utah, reads in part:

The driver of any motor bus carrying passengers for hire, or of any school bus carrying any child,*** shall, before crossing at grade any track of a railway stop such vehicle *** not less than 10 feet or more than 50 feet from the nearest rail of such track, and while so stopped shall listen, and look in both directions along such track for approaching railway trains or cars and for whistles or other warning indicating the approach of a train, and shall not proceed until he can do so safely.***

Paragraph d, Vehicle (B), of the Regulations Governing Pupil Transportation, State Road Commission of Utah, reads as follows:

All school buses shall be brought to a full stop at all railroad crossings at least 10 feet and not more than 50 feet from the nearest rail until the driver has ascertained that it is safe to cross. After making the stop the buss shall be kept in low gear until the tracks have been crossed.

Rule 7, Duties of Bus Drivers, Jordan School District, reads as follows:

All busses must be brought to a full stop at least 25 feet from any steam or electric railway crossing. Before proceeding on his way, the driver must be certain that no train is approaching from either side,

It was snowing at the time of the accident, which occurred at 8:43 a.m.

Description

No. 31, a west-bound second-class freight train, consisted of 12 loaded and 38 empty cars and a caboose, hauled by engine 3708 of the 4-6-6-4 type, and was in charge of Conductor Ryan and Engineman Rehmer. This train left Helper, 102.1 miles east of Riverton, at 3:33 a.m., according to the train sheet, 3 hours 48 minutes late, passed Provo, the last open office, 27.4 miles east of Riverton, at 7:54 a. m., 4 hours 19 minutes late, and struck the school bus at Burgon's crossing while traveling at a speed of 52 miles per hour as shown by the valve pilot with which the engine was equipped.

The school bus involved was owned and operated by the Jordan School District of Salt Lake County and was driven by F. H. Silcox. It was occupied by 38 pupils and was on its

regular route to the Jordan High School, picking up pupils en route. The bus proceeded westward on the county road, stopped at Burgon's crossing and as it was moving over the track it was struck by No. 31.

The bus was demolished. The body, torn from the chassis with its right side sheared off, was thrown to the left and stopped 101 feet west of the crossing and 16 feet south of the track. The chassis was carried a distance of 2,310 feet west of the crossing to the point where the engine stopped, and parts of the bus were scattered along the track within this distance. The lead pair of engine-truck wheels was derailed to the right; the first mark of derailment was 195 feet west of the center line of the crossing. The pilot was bent downward and the headlight and the front of the engine were somewhat damaged. It was necessary to use torches to cut portions of the bus chassis from underneath the front of the engine.

Summary of Evidence

Engineman Rehmer stated that approaching Burgon's crossing the whistle signal was sounded and was still being sounded when the fireman called a warning, at which time he thought the train was about an engine and a car length from the crossing. He immediately applied the air brakes in emergency. The engine bell was ringing and the headlight burning. At no time was he in position to observe the bus. A light snow was falling and he estimated the range of vision to be about 2,500 feet. Engineman Rehmer stated that he frequently saw school busses in this territory, but he had never noticed any carelessness on the part of the drivers.

Fireman Elton stated that after passing over Lampton crossing he saw the school bus proceeding westward on the highway quite a distance ahead of the train, possibly within 50 or 100 feet of the turn to Burgon's crossing. He was looking through the side storm window and saw the bus make the turn and stop at a point about a bus length from the track and as he saw it start toward the crossing he warned the engineman. His engine was then about an engine and two car lengths from the crossing; the engine struck the bus at its center. He stated that visibility was such that he could see the rear of his train at any time. The statements of Head Brakeman Kelley, who was sitting behind the fireman, corroborated those of the fireman.

Conductor Ryan stated that visibility was such that he could see the engine plainly at all times and when passing through Riverton the signal given by the flagman was seen and answered by the engineman. The emergency brake application made near the point of accident was effective. He had frequently seen school busses on the highways in this vicinity and could

not remember of ever observing lack of caution on the part of any driver.

Glenn Kump, a pupil, age 15, stated that as the bus approached the crossing involved he was sitting on next to the last seat in the rear in the center section facing the front. A light snow was falling but there was no wind. All the windows were closed and were so steamed that it was impossible to see through them. The wind-shield was equipped with a defrosting window and the wind-shield wiper was operating. The bus was stopped after it had made the complete turn to the right; he heard the driver shift the gears but did not know whether the driver looked up and down the track; so far as he knew the side door was not opened at the time the stop was made. There have been times when the driver would open the side door, but on the morning of the accident one of the pupils, who was sitting beside the driver, was handling the door as the pupils entered. With the windows closed it was impossible to hear any whistle signal sounded by the train, but he thought he heard it about the time of the crash. The driver did not experience any difficulty in the operation of the bus at any time. He was very strict with the pupils in their conduct and there was no rowdiness at any time. The pupils who were members of the school band had piled their instruments in the front of the bus to the left of the driver and no one played them at any time while in the bus. No one was standing in the bus. Glenn Kump further stated that a train had been met at this crossing on only one occasion during the current school year which was on a morning trip early in the fall. At the time the driver stopped and waited for the train to pass; the weather conditions were more favorable, the windows were clear and every one in the bus saw the train approach.

The statements of eleven other surviving pupils were to the effect that the ground was covered with snow, with the exception of the highway which was clear because of traffic; the highway was not slippery and the bus did not slip or skid at any stop on the entire trip. It was hazy or foggy with a light snow falling, and the windows in the bus were foggy and steamed and it was impossible to see through them. The pupils for the most part were occupied in conversation or their studies, and at no time was there any unusual noise, loud talking, laughing or singing, as Driver Silcox maintained strict discipline in the bus. None of the pupils heard a train whistle, but one of them hear a pupil who sat near the front call out the word "train" just before the collision occurred.

June Wynn, a pupil, whose home is located about 300 feet north of the track and about one-quarter mile west of the crossing, stated that she was standing on the porch of her home waiting for the bus when the accident occurred. She saw both the train and the bus approach the crossing with the headlights

on each burning. When she saw the bus stop she expected it to stay there until the train had passed, and as she walked out to the highway to be picked up by the bus she heard the crash. The snow was fine and it was foggy; she could not see as far as Lampton. She did not hear any whistle signals or the engine bell ringing.

Three residents who lived in the vicinity of the crossing stated that they heard a shrill whistle sounded by the train.

Lote Kinney, Special Investigator for the County Attorney of Salt Lake County, stated that when he arrived at the scene of the accident about 9:15 a. m., he had no difficulty in distinguishing a beet-dump frame at Lampton more than one-half mile distant, and from the information given by witnesses the conditions at that time were very much the same as at the time of the accident.

Air Brake Supervisor Rawlings stated that a test of the air brakes of No. 31 was made on its arrival at Roper shortly after the accident, and all brakes were found operative and the air-brake equipment in first-class condition. The sanders were operative, the automatic bell ringer was functioning properly and the steam whistle was in good condition. The valve-pilot tape showed a speed of 52 miles per hour at the time of the accident, and it indicated that an emergency application was made and that the train stopped within a distance of 2,640 feet.

Bus Driver Silcox, age 29, entered the service of the Jordan School District in January, 1936. His application showed he had had about 10 years' previous experience driving automobiles and coal trucks. His record as school bus driver was clear.

The records in the office of the Utah State Tax Commission show that Driver Silcox had been examined for a chauffeur's license on December 23, 1935, and had passed with a grade of 95 percent. He had held licenses for the years 1936, 1937, and 1938, and had received the licenses for the last two years without further examination. His record was clear at this office, there being no entries for traffic violations.

C. R. Nelson, Transportation Supervisor for the Jordan School District, stated that the schedule outlined for Driver Silcox was to leave Riverton at 8 a. m., pick up pupils over a route of approximately 15 miles, arrive at the Jordan school about 8:50 a. m., leave the school grounds at 10 a. m., and return by 3:30 p. m. to return the pupils to their homes. Every third week he was required to make an extra trip daily between 2:30 and 3:30 p. m. and, in addition, frequent trips were made at various times for special curricular activities.

He was required under school rules to spend at least one hour daily inspecting and taking care of his bus. An average of fifty pupils per day was hauled by Driver Silcox. This school operates 13 busses under salaried operators and 7 busses under contract. An average of over 2,000 pupils are carried.

The school bus involved was 28½ feet long, 8 feet wide and 8 feet high. The body was of all-steel construction, build by Superior Body Company of Lima, Ohio; it was about 22½ feet in length and was equipped with eight rows of seats in the center and facing the front, with longitudinal seats along each side, the total seating capacity being 54. The driver's seat was located about 8 feet behind the bumper and to the left of the center of the body and had one seat adjoining it to the right. There was no heater in the bus. Safety glass was used throughout. The windshield was 58 by 15 inches and was equipped with a frost shield measuring 36 by 7½ inches, and a single, upper-quadrant, windshield wiper located at the bottom of the windshield in front of the driver's seat. The left front side window was on a slight angle and measured 29 by 16 inches; it also had a frost shield. The front door, which measured 28 inches by 5 1/3 feet, was on the right side and at a slight angle; it was of the mechanically folding type, operated manually, and folded inward. The window of the front section of the door measured 15½ by 7 inches and was equipped with a frost shield; the window of the rear section of the door measured 15 by 13¼ inches. The view through the front and side windows was good with the exception of corner post locations which measured about 9 inches at the top and 10 inches at the bottom, and the blind space between the glass panels of the door of approximately 4 inches. An emergency door was located at the rear end. The bus weighed 9,450 pounds and was equipped with four-wheel hydraulic brakes with "BK" Booster. The motor was a 6-cylinder G.M.C. 1935, T-18-H model, with four speeds forward and one in reverse.

The bus was inspected by E. R. McDonald, of the State Highway Patrol, on September 14, 1938, and was found to be in good condition.

Observations of Commission's Inspectors

A traffic check made by the Commission's inspectors for the 24-hour period from 12:01 a. m., December 12, to 12:01 a. m., December 13, showed a total of 17 trains and 95 motor vehicles, 4 of which were busses. The maximum hourly traffic over the highway was between 9 and 10 a. m. and between 3 and 4 p. m.; during each of these periods 15 vehicles passed. The maximum train movement was between 2 and 3 a. m. and between 4 and 5 a. m.; during each of these periods two trains passed. Train movements covering a 30-day period show an average daily movement of 22.2 trains.

A test to determine audibility of engine whistles was made by the Commission's inspectors at this crossing. An automobile with the doors and windows closed and the motor running, was stopped in the approximate location at which the school bus stopped just prior to the accident and the whistle of an approaching engine was not audible inside the automobile until the engine was 300 feet from the crossing; with the automobile door open, however, the whistle could be heard clearly when the engine was at the whistle board 1,430 feet distant.

Discussion

The investigation disclosed that the school bus was en route to the Jordan High School, located a short distance beyond the crossing involved, and the majority of the pupils on this route had been picked up prior to the accident. The crossing involved is located in open country with nothing to obstruct the eastward view of a driver. The windows were covered with steam, making it impossible for the pupils to see through them; the windshield and front side windows, however, were equipped with frost shields, or clear-vision windows, through which the driver had a clear view, and the evidence indicated that the range of visibility was about one-half mile, although a fine snow was falling. A stop was made about 25 feet from the track and as the bus started toward the crossing the train was between 200 and 300 feet distant.

According to the evidence the crossing whistle-signal was sounded and was heard by various residents in the vicinity; the whistle was still being sounded when the fireman saw the bus start toward the crossing and he warned the engineman to apply the brakes. The brake application was effective but the distance was insufficient to stop short of the crossing. Had the driver taken proper precautions he could have seen or heard the train as it approached. If he was unable to see a sufficient distance through the window to determine whether it was safe to proceed, he should have opened the side door and he then could have seen or heard the train. The driver was killed in the accident and no reason can be given for his failure to see the train. No one was standing in the bus; there was no unusual noise, loud talking, laughing or singing; the pupils for the most part were engaged in conversation and their studies, and none of them saw or heard the train prior to the accident, with the possible exception of a pupil in the forward part of the bus who called out "train". There had been only one previous occasion during the current school year when the bus had met a train at this crossing, and it is possible that the infrequency with which trains were met caused Driver Silcox to make the stop a routine matter and lose sight of the important purpose of the stop, namely, to ascertain if a train is coming. Driver

Silcox was a qualified driver and had a clear record. He had driven over this crossing during the previous school year as well as the current school year at least twice daily, five days a week. Mere stopping of busses at railroad crossings at grade is not sufficient to insure safety. The Motor Vehicle Laws of the State of Utah provides that the driver of any school bus carrying any child shall before crossing at grade any track of a railroad stop such vehicle not less than 10 feet or more than 50 feet from the nearest rail of such track, and while so stopped shall look in both directions along such track for approaching trains and listen for whistles or other warning indicating the approach of a train, and shall not proceed until he can do so safely. It cannot be considered that a driver is adhering strictly to the requirements of this provision when he stops and listens with all windows and doors closed, as it is impossible to hear a sufficient distance with the bus entirely closed. A provision should be incorporated in the regulations governing pupil transportation that the driver should open the front side door to enable him to listen for approaching trains, and this provision strictly enforced.

Within the past 10 years this Bureau has investigated five accidents in addition to this one involving busses at highway grade crossings. As a result of these accidents a total of 89 persons were killed and 66 injured; four of these involved school busses with 58 killed and 50 injured.

According to a census of school bus operations conducted by "Bus Transportation" of New York City as of January 1, 1938, there was a total of 84,061 school busses operated in the United States, carrying daily 3,225,361 children over 1,017,056 miles of route, as compared with commercial bus operations which consist of 41,581 busses over 337,796 miles of route. The transportation of more than three million school children daily is a responsibility which has not been given sufficient supervision and regulation, as shown by the occurrence of the accident as here under investigation.

Conclusion

This accident was caused by a school bus being driven upon a highway grade crossing directly in front of an approaching train.

Recommendations

The following recommendations are made:

That more stringent rules covering the operation of school busses over grade crossings should be prescribed and strictly enforced.

That all drivers of school busses be required to open the front side door when the stop is made at each railroad crossing at grade.

That, whenever practicable, busses should be routed so as to avoid grade crossings which are not protected by watchmen or devices to give visual warning when a train is approaching.

Respectfully submitted,

W. J. PATTERSON

Director.