

Inv-2199

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT OF THE DIRECTOR
BUREAU OF SAFETY

ACCIDENT ON THE
DENVER & RIO GRANDE WESTERN RAILROAD

GRAND VALLEY, COLO.

SEPTEMBER 8, 1937

INVESTIGATION NO. 2199

SUMMARY

Inv-2199

Railroad: Denver & Rio Grande Western
Date: September 8, 1937
Location: Grand Valley, Colo.
Kind of accident: Head-end collision
Trains involved: Work : Freight-2nd class
Train numbers: Work extra 787 : 2nd 75
Engine numbers: 787 : 1508
Consist: 4 cars : 7 cars and caboose
Speed: 4-8 m.p.h. : 15-40 m.p.h.
Track: 2° curve to the left for east-bound
trains, followed by tangent on which
accident occurred; 0.902 percent
ascending.
Weather: Clear
Time: 5:15 or 5:16 p.m.
Casualties: 3 killed, 5 injured
Cause: Failure of crew of work extra to clear
waiting time designated by train order
of superior train.

Inv-2199

October 15, 1937.

To the Commission:

On September 8, 1937, there was a head-end collision between a work train and a freight train on the Denver & Rio Grande Western Railroad, near Grand Valley, Colo., which resulted in the death of three employees and the injury of five employees.

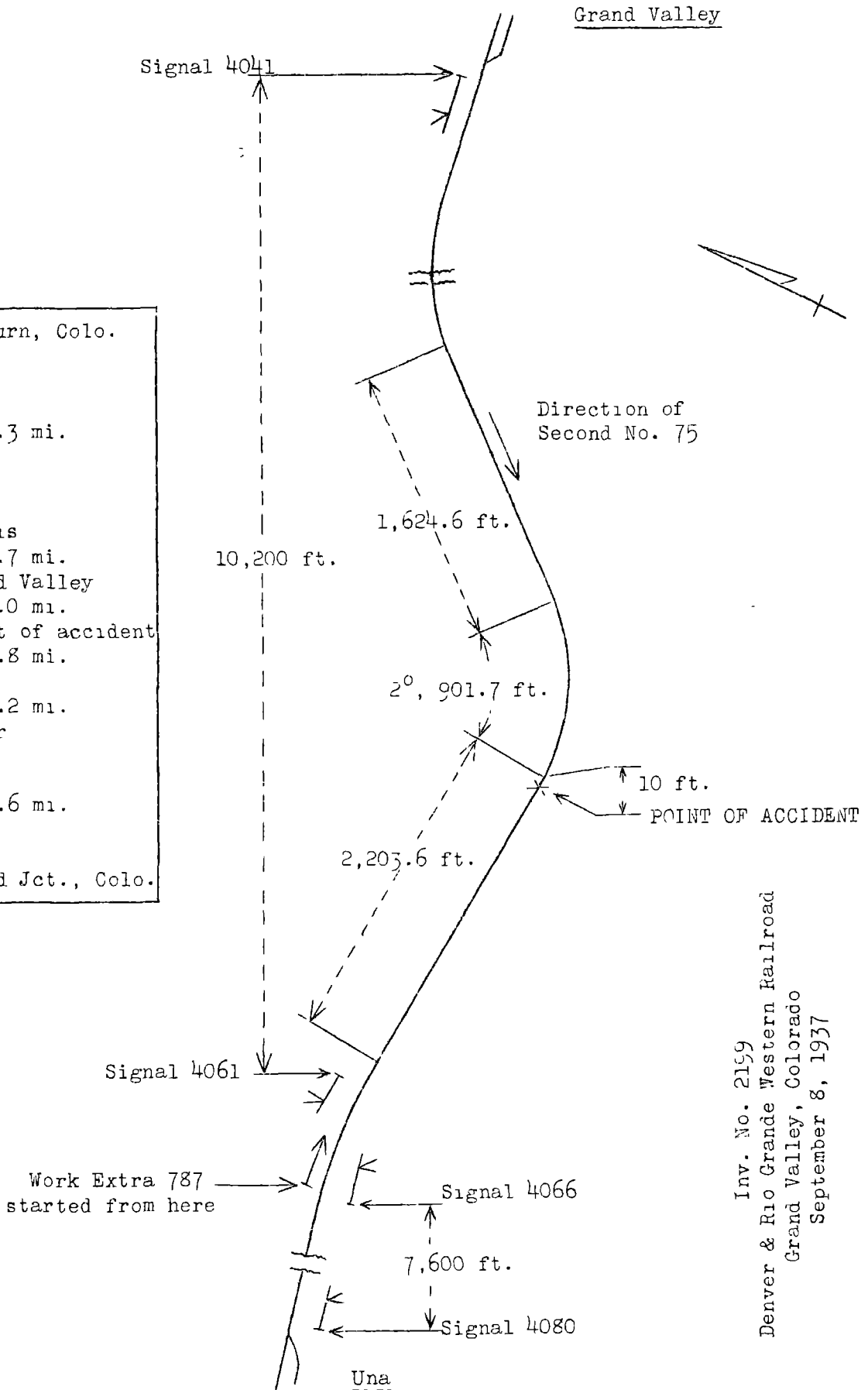
Location and method of operation

This accident occurred on Sub-division 4, of the Grand Junction Division, which extends between Minturn and Grand Junction, Colo., a distance of 147.6 miles. This is a single-track line over which trains are operated by timetable, train orders, and an automatic block-signal system of the absolute-permissive type. The accident occurred at a point approximately 1.6 miles west of the west switch of the siding at Grand Valley. Approaching this point from the west the track is tangent for a distance of 2,203.6 feet and the accident occurred on this tangent at a point about 10 feet from its eastern end; approaching from the east there is a tangent 1,624.6 feet in length, followed by a 2° curve to the right 901.7 feet in length, and then the tangent on which the accident occurred. The grade is 0.902 percent ascending for east-bound trains. The curve just east of the point of accident is in a cut bordered by trees and shrubbery, and the view of an engineman of a west-bound train is restricted to about 1,200 feet until about half way around the curve.

Automatic signal 4041, located near the west switch at Grand Valley, governs west-bound movements while signal 4080, near the east switch at Una, 4.8 miles west of Grand Valley, governs east-bound movements; these are positive signals and are arranged to provide station-to-station blocking for opposing trains. Intermediate signal 4061, governing west-bound movements, is located approximately 10,200 feet west of signal 4041, and intermediate signal 4066, governing east-bound movements, is located approximately 7,600 feet east of signal 4080; these intermediate signals permit stop and go movements and are coordinated with signals 4041 and 4080 in such manner as to provide block-to-block protection for following movements. All signals are of the 3-position color-light type, indications being red, yellow and green for "stop", "approach next signal prepared to stop", and "proceed", respectively. When a west-bound train has passed signal 4061, that signal displays a "red" indication while signal 4041 displays a "yellow" indication.

Grand Valley

| | |
|----------|-------------------|
| o | Minturn, Colo. |
| 93.3 mi. | |
| o | Morris |
| | 8.7 mi. |
| o | Grand Valley |
| | 2.0 mi. |
| x | Point of accident |
| | 2.8 mi. |
| o | Una |
| | 4.2 mi. |
| o | Niger |
| 36.6 mi. | |
| o | Grand Jct., Colo. |



Inv. No. 2159
 Denver & Rio Grande Western Railroad
 Grand Valley, Colorado
 September 8, 1937

Rule 87 specifies in part that extra trains must clear the time of opposing regular trains not less than five minutes.

Freight trains with 1500-class engines are restricted to a maximum speed of 45 miles per hour and engines in backward motion to 15 miles per hour.

The weather was clear at the time of the accident, which occurred at 5:15 or 5:16 p. m.

Description

Work Extra 787 consisted of four cars, hauled by engine 787 in backward motion, and was in charge of Conductor O'Connor and Engineman Doyle. This crew was working under authority of train order 10, form 19, which instructed engine 787 to work extra from 7:30 a.m. until 7:30 p.m. between Morris and Niger protecting against Extra 1181 east after 10:30 a.m. At 1:10 p.m. the crew received train order 77, form 19, which specified in part that Train Second 75 would wait at Grand Valley until 5:10 p.m. for Work Extra 787. After having cleared Extra 1181 east at Grand Valley, the work extra left that point shortly after 4:20 p.m. and unloaded ties a short distance east of signal 4066. At about 5:12 p.m. this train proceeded toward Grand Valley to clear for Train Second 75 and collided with the latter train at 5:15 or 5:16 p.m. while traveling at a speed estimated at from 4 to 8 miles per hour.

Train Second 75, a west-bound second-class freight train, consisted of 7 cars and a caboose, hauled by engine 1508, and was in charge of Conductor Sprott and Engineman Ward. This train passed Rifle, 17.4 miles east of Grand Valley, where it received a copy of train order 77, previously mentioned, at 4:51 p.m., according to the train sheet, 10 hours 25 minutes late, passed Grand Valley at 5:13 or 5:14 p.m., according to the members of the crew, where signal 4041 displayed a "yellow" indication, and collided with Work Extra 787 while traveling at a speed variously estimated to have been from 15 to 40 miles per hour.

Engine 787 was driven back about 245 feet and stopped on its left side on the south side and at the foot of a 12-foot fill. The tender remained coupled to the engine and stopped on its left side with the rear end fouling the main track; the tender was practically demolished while the engine was badly damaged. The first car was destroyed but the three remaining cars were not derailed or damaged. Engine 1508 was derailed but stopped upright in line with the track with its front end, badly damaged, 254 feet west of the point of collision; the

first two cars and the front truck of the third car were derailed but remained in line with the track.

The employees killed were the head brakeman of Work Extra 737 and two extra gang laborers, and the employees injured were the conductor, engineman and fireman of Train Second 75, and two extra gang laborers.

Summary of evidence

Conductor O'Connor, of Work Extra 787, stated that at Grand Valley his crew received train order 10 which authorized engine 787 to work extra 7:30 a.m. until 7:30 p.m. between Morris and Niger protecting against Extra 1181 East after 10:30 a.m. The dispatcher transmitted order 77 to him at Una and he, personally, copied it and made it "complete" at 1:10 p.m.; among other things, this order specified that Train Second 75 would wait at Grand Valley until 5:10 p.m. for the work extra. Conductor O'Connor personally delivered a copy of the order to the engineman and saw the latter read it but had no understanding or conversation with him concerning its contents. Shortly thereafter, the work train went to a point just east of signal 4066 to unload ties and at about 4:10 p.m. continued to Grand Valley to clear Extra 1181 east. Shortly after 4:20 p.m., the work train returned to a point just east of signal 4066 to unload more ties. Conductor O'Connor had in mind that Second 75 would wait at Grand Valley until 5:25 p.m. for his train but was unable to explain what had given him this impression. At 5:10 p.m. when he prepared to start to Grand Valley Head Brakeman Young was standing near him, and he did not see or hear the head brakeman talking with the engineman. The conductor gave a back-up signal at 5:12 p.m. to proceed to Grand Valley and then took a position on top of the car next to the engine; he did not see where the head brakeman was located and said that the flagman was engaged in protecting against east-bound extra trains. Conductor O'Connor saw Second 75 approaching when it was 7 or 8 car lengths distant and knew a collision was inevitable. He estimated the speed of the work extra at the time of the accident at from 4 to 6 miles per hour and said the collision occurred at 5:15 or 5:16 p.m.

Brakeman Shepardon was out flagging at the time of the accident and his statement developed nothing of importance.

Engineman Doyle, of Work Extra 787, corroborated the statements of Conductor O'Connor concerning movements up to 5:10 p.m. He knew the flagman was at Una protecting against east-bound extras and thought that his train would clear Second 75 at that point. About 5:12 p.m. the conductor gave him a back-up signal and then climbed to the top of a car and gave him another

back-up signal, at which time the head brakeman started toward the engine. The engineman said he asked the conductor and brakeman on what authority they were making the movement and the brakeman said that there was a flagman at Grand Valley and that the conductor wanted to clear Second 75 at that point. On receiving this information the engineman said he believed there was a flagman at Grand Valley or he would not have attempted to go there. The work train was proceeding at a speed of about 15 miles per hour when he observed Second 75 approaching at a distance of about 30 or 35 car lengths; he sounded the whistle and applied the brakes in emergency and the accident occurred shortly thereafter. Engineman Doyle fully understood the contents of order 77 and said he should have been in the clear at Grand Valley for Second 75 at 5:05 p.m. or at Una at 5:10 p.m.

Fireman Bryant, of Work Extra 787, stated that he had read order 77 and understood that Second 75 would wait at Grand Valley until 5:10 p.m. He thought the head brakeman had been left at Grand Valley when the work train cleared Extra 1181 East at that point since he had not seen the brakeman after his train returned to the vicinity of signal 4066. The fireman said that after the train had been at signal 4066 for some time he heard the engineman say that they had better move if they were going to clear for Second 75. Apparently the engineman received a signal to back up and then the fireman heard the engineman inquire twice as to what they were going on and someone, not in his sight, whom he thought was the conductor, said there was a flagman at Grand Valley to hold Second 75 for their train. Fireman Bryant estimated the speed of his train at the time of the accident to have been about 8 miles per hour.

Engineman Ward, of Train Second 75, stated that the air brakes were tested and working properly. He received order 77 at Rifle and passed Grand Valley at 5:14 or 5:14½ p.m. Signal 4041 was displaying a "yellow" indication and his train passed it at a speed of 35 or 40 miles per hour. He operated his train prepared to stop at the next signal and in order to check the speed on the descending grade, he made a brake application and had just removed his hand from the brake-valve handle when he saw Work Extra 787 approaching; he sounded the whistle and applied the brakes in emergency. He thought the speed was about 35 or 40 miles per hour at the time of collision.

The statement of Fireman Galligan with reference to the time of passing Grand Valley and the signal indication received there agreed with that of the engineman.

Conductor Sprott, Rear Brakeman Gregg, and Head Brakeman Lowery, of Train Second 75, were on the caboose passing Grand Valley. They observed the "yellow" indication displayed by signal 4041. The conductor said Train Second 75 passed Grand Valley at 5:13 p.m. while the rear brakeman said it was after 5:12 p.m. The conductor said the speed was between 25 and 30 miles per hour when he saw the work extra approaching about 15 carlengths distant, and estimated the speed had been reduced to about 15 miles per hour at the time of the collision.

Signal Maintainer Smith stated that he arrived at the scene of the accident at about 9:00 p.m. and remained until 6:30 the following morning. After the equipment was rerailed and the track repaired, he made tests of the signals and circuits between Grand Valley and Una and observed train movements in both directions and the signals functioned properly.

Discussion

The wait order received by Work Extra 787 required Train Second 75 to wait at Grand Valley until 5:10 p.m.; under the rules, if the work train cleared at Grand Valley it was required to do so not later than 5:05 p.m. However, the work train occupied the main track at a point approximately 2 miles west of Grand Valley until about 5:12 p.m., before it proceeded toward that point. Although the conductor personally had copied the order correctly he had somehow gained the erroneous impression that the waiting time was until 5:25 p.m. instead of 5:10 p.m. When the conductor gave the signal to back up in the direction of Grand Valley, the engineman inquired concerning the authority for the movement and was advised by the head brakeman that there was a flagman at Grand Valley. The fireman said he heard this conversation but did not see the person who replied to the engineman's query. Although the engineman knew that neither brakeman in his crew could be flagging at Grand Valley, since the rear brakeman was out to the west flagging and the head brakeman was at the engine, he made no further effort to make sure that the movement was being properly protected but assumed that the conductor had made arrangements for some other employee to flag at Grand Valley. The engineman said that he understood the requirements of the wait order and would not have made the movement toward Grand Valley had he not thought that it was being protected by a flagman. The conductor knew nothing of the conversation between the head brakeman and the engineman.

The automatic block-signal system operated normally. When the work extra left Grand Valley to go to the vicinity of signal 4066, it passed signal 4061 which caused signal 4041 to display a "yellow" indication; this was the indication received

by Train Second 75 which did not pass Grand Valley until after the wait requirement of order 77 had expired. Under the rules Train Second 75 was permitted to maintain a maximum speed of 45 miles per hour after passing signal 4041 but was required to be able to stop short of signal 4061; the evidence is to the effect that the speed was not greater than 40 miles per hour between these two signals. On the return to Grand Valley the work train did not encounter any automatic signals governing eastward movements.

Conclusion

This accident was caused by failure of the crew of the work train to clear a superior train before the wait requirement set up for that train by train order had expired.

Respectfully submitted,

W. J. PATTERSON,

Director.