IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE UNION PACIFIC RAILROAD NEAR KNIGHT, WYOMING, ON JANUARY 28, 1921.

March 15, 1921.

On January 28, 1921, there was a head-end collision between a freight train and a work extra on the Union Pacific Railroad near Knight, Wyoming, which resulted in the death of 1 employee and the injury of 11 employees. After investigation of this accident the Chief of the Bureau of Safety reports as follows:

Location.

This accident occurred on that part of the Western Division extending between Green River and Evanston, Wyoming, a distance of 100.2 miles, which in the vicinity of the point of accident is a single-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. The accident occurred at a point about 75 feet west of westbound distant signal 9083, near the center of a curve of 1° 30' which is 3,301 feet in length; this curve leads to the right for westbound trains. The grade is .77 per cent descending for westbound trains. At the time of the accident it was snowing.

Description.

Work extra 1336 consisted of 4 cars and a caboose, hauled by engine 1336, and was in charge of Conductor Feigh and Engineman Gates. At about 10.20 a.m. it passed Knight eastbound, slowing up to let Flagman Baker get off. This flagman, according to the conductor, had verbal instructions

to remain at Knight, stopping all trains and notifying them that the work extra was between Knight and Altamont, 4.9 miles distant and the next station to the east. These instructions provided that such trains were to drive the work extra into clear at Altamont; this arrangement was to continue until 11.30 a.m., after which Flagman Baker was to hold all trains in order that the work extra might return to Knight for dinner. After leaving the flagman at Knight, work extra 1336 worked between that point and Altamont until about 11.25 a.m., when it heard an eastbound fruit train approaching and proceeded to Altamont for the purpose of allowing that train to pass. After the passage of the fruit train, at 11.48 a.m., work extra 1336 backed out on the main track and started to back to Knight, depending on Flagman Baker to hold all trains. It was while this return movement to Knight was being made that the accident occurred. The evidence indicates that work extra 1336 had stopped or nearly stopped at the time of the accident.

Eastbound freight train extra 5013 consisted of 3 cars and a caboose, hauled by engine 5013 and was in charge of Conductor Young and Engineman Ritchie. In addition to carrying freight, it was also engaged in renewing the batteries at all automatic block signals. It left Evanston at 11 a.m., left Knight, according to the operator, at 11.55 a.m., stopped at the east switch to change the batteries of eastbound signal 9086 and westbound signal 9085 and then proceeded toward the next signal, westbound distant

signal 9083, and had nearly reached that signal when it collided with work extra 1336 while travelling at a low rate of speed.

The caboose of work extra 1336 was badly damaged and the car next to it destroyed. Engine 5013 was practically undamaged, while no damage was sustained by any of the equipment in its train. The employee killed was a pile-driver man riding on the work extra.

Summary of evidence.

Flagman Baker said his only instructions were to "Tell them to come up and drive us in to Altamont." When extra 5013 arrived at Knight, he boarded the engine and on finding Fireman Holmes handling the engine, with the engineman on the fireman's side, he delivered his instructions so that both of them could hear him. According to the engine crew these instructions were to the effect that the work extra had gone to Altamont for the fruit train and that it would probably be there for extra 5013, but if not, then they were to drive it to Altamont. Engineman Ritchie did not observe the indications of eastbound signals 9086, but Fireman Holmes said it was displaying a clear indication up until the time his engine passed it, when it changed to a stop indication. Conductor Young did not know his train had been flagged and knew nothing about the work extra until the accident occurred. He had not noticed signal 9086 except before leaving the station at Knight, at which time the signal was displaying a clear indication. None of the

other members of the crew of extra 5013 was able to give any further evidence of importance regarding the indication displayed by the signals. After the train departed from signal 9086, Engineman Ritchie was engaged in firing the engine and did not look out until Fireman Holmes applied the air brakes just before the accident occurred; Fireman Holmes had seen the caboose of the work train when apparently about 60 feet distant. Fireman Holmes said he had realized that the work extra might be encountered at any point and that some one should have been looking out of the engine on the inside of the curve, but that he had not paid any particular attention to what the engineman was doing.

The last westbound signal approaching westbound distant signal 9083 is intermediate signal 9063, located 10,331 feet east of signal 9083. Conductor Feigh, of work extra 1336, said he was riding on the rear platform of the caboose while his train was making the back-up movement from Altamont. He saw signal 9063 displaying a clear indication, this being when it was about $\frac{1}{4}$ mile distant. Approaching westbound distant signal 9083 he was unable to see it until about 10 car-lengths from it; it was displaying a caution indication, and he said he at once went inside the caboose, up into the cupola, and applied the air brakes by means of the conductor's valve, stopping the train within a distance of 10 or 12 car-lengths, just before it was struck by extra 5013. Engineman Gates and Fireman Carpenter, also of work extra 1336, said that they saw signal 9063 displaying a clear

indication. The engineman did not see signal 9083 on account of the curvature of the track, but the fireman told him it was against them and the engineman then made an application of the air brakes and he thought that at about this time some one else also applied the air brakes. The engine crew of this train verified the statement of the conductor that their train had stopped when the accident occurred.

Conclusions.

This accident was caused by a misunderstanding of flagging instructions issued to Flagman Baker by Conductor Feigh, of work extra 1336, due to failure to comply with the rules governing the issuance of flagging instructions. A contributing cause was the failure of Engineman Ritchie, of extra 5013, to maintain a proper lookout while proceeding into the territory known to be occupied by the work extra.

Rule 99D reads as follows:

> "On single track, when a flagman is sent out with instructions affecting a train's authority to proceed, three copies of the instructions (Form 2511) must be made, one copy to be given to the flagman, one copy to the engineman of the train he is sent on (if sent on a train), and the other copy to be retained by the conductor who will send it to the proper official with his train orders. When a flagman is sent to a siding on a train, he will ride on the engine and the engineman must stop and let him off at the first switch at the station to which he is sent."

Conductor Feigh thought this rule applied only when sending a flagman on a train or engine, and did not consider that he had violated the rule.

Although Fireman Holmes was a promoted man and was

running the engine at the time of the accident, Engineman Ritchie was also on the engine and was fully cognizant of the existing conditions and was in no way relieved of his duties of supervising the movement of his train through the territory known to be occupied by the work extra. It is clear that extra 5013 was not being operated at a high rate of speed, but in view of the stormy weather conditions prevailing, resulting in the view being materially obscured, Engineman Ritchie should have been particularly careful to maintain a proper lookout on the inside of the long curve around which his train was proceeding, had he done so it is probable that this accident would **not** have occurred.

The arrangement of the signal system in this vicinity is such that with proper functioning of the signals it was impossible for both trains to have received clear indications, but the margins of time are so small that it is doubtful which crew failed to observe and be governed by signal indications.

Conductor Feigh was employed as a brakeman in 1909 and promoted to conductor in 1910; he was discharged in January, 1913, for improper flagging, being reinstated in October of the same year. After about 7 years in engine service, Flagman Baker was employed as a brakeman in 1914 and promoted to conductor in 1917. Engineman Ritchie was employed as a fireman in 1905 and promoted to engineman in 1911. Fireman Holmes was employed as a fireman in 1916, transferred to service as brakeman in 1918 and

back to firing in January, 1919; in November, 1920, he was promoted to engineman.

At the time of the accident the crew of work extra 1336 had been on duty about 4½ hours, after about 14½ hours off duty; the crew of extra 5013 had been on duty about 2½ hours, after 26 hours or more off duty.