

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT NO. 3443
UNION PACIFIC RAILROAD COMPANY
IN RE ACCIDENT
AT WYUTA, WYO., ON
NOVEMBER 12, 1951

SUMMARY

Date: November 12, 1951

Railroad: Union Pacific

Location: Wyuta, Wyo.

Kind of accident: Rear-end collision

Trains involved: Passenger : Passenger

Train numbers: 104 : 102

Engine numbers: Diesel-electric : Diesel-electric
units 998, 988B units CNW 5007B,
and 985B UP 928B and UP
987B

Consists: 12 cars : 13 cars

Speeds: 2 m. p. h. : 77 m. p. h.

Operation: Signal indications

Tracks: Double; tangent; 0.80 percent
descending grade eastward

Weather: Snowing

Time: 11:27 a. m.

Casualties: 17 killed; 159 injured

Cause: Failure to operate following train in
accordance with signal indications

Recommendation: It is recommended that the Union
Pacific Railroad Company extend
its automatic cab-signal system
to the remainder of its line be-
tween Ogden and Omaha

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3443

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS
UNDER THE ACCIDENT REPORTS ACT OF MAY 6, 1910.

UNION PACIFIC RAILROAD COMPANY

February 11, 1952

Accident at Wyuta, Wyo., on November 12, 1951, caused by
failure to operate the following train in accordance
with signal indications.

REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On November 12, 1951, there was a rear-end collision between two passenger trains on the Union Pacific Railroad at Wyuta, Wyo., which resulted in the death of 11 passengers, 3 Pullman employees, 1 mechanical department employee, and 2 train-service employees, and the injury of 142 passengers, 2 Pullman employees, 1 railway-mail clerk, 10 dining-car employees, and 4 train-service employees. This accident was investigated in conjunction with representatives of the Wyoming Board of Equalization and Public Service Commission.

¹

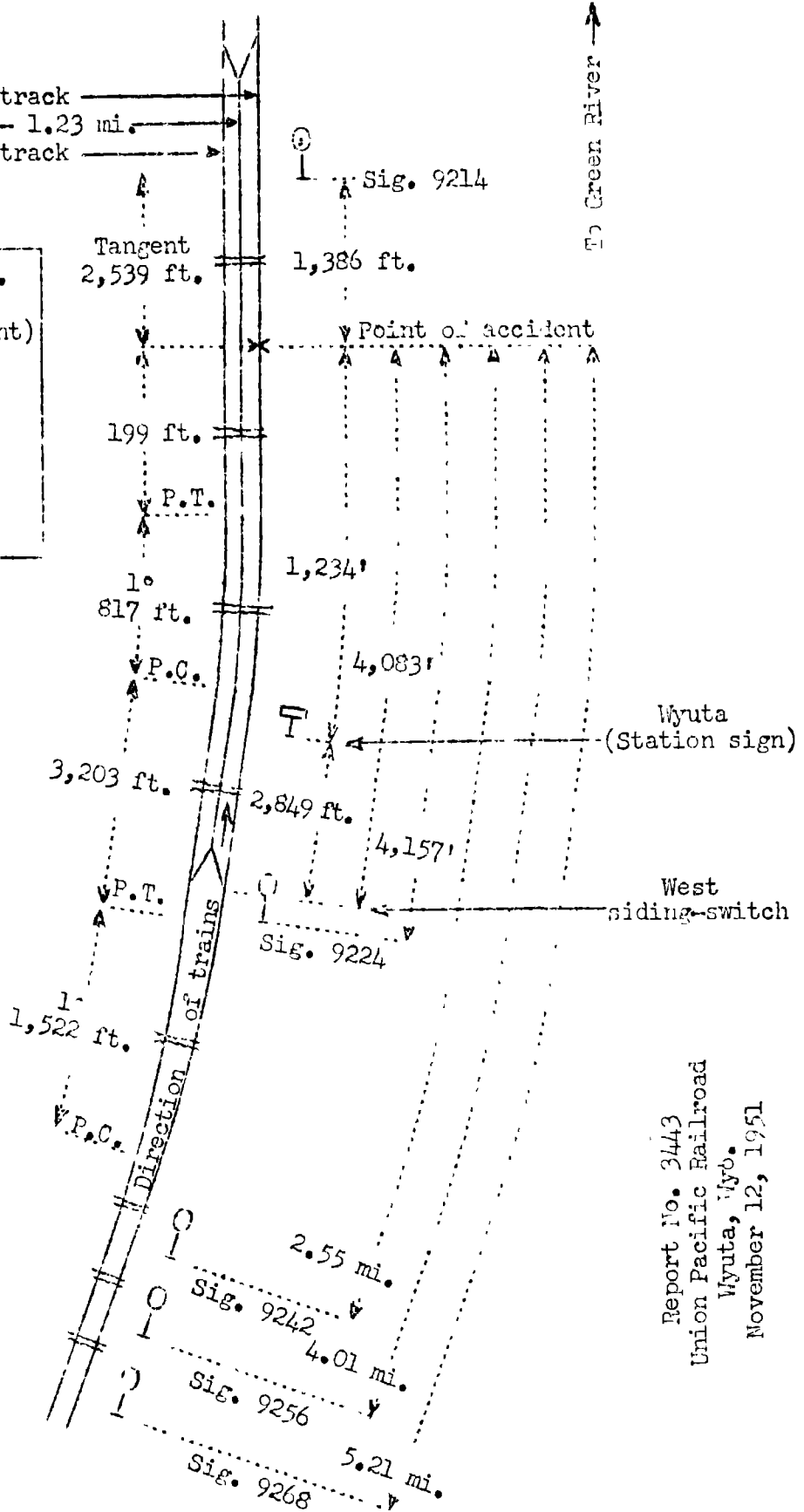
Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.

Eastward main track
Center siding - 1.23 mi.
Westward main track

↑ To Green River

- o Green River, Wyo.
| 104.7 mi.
- X (Point of accident)
| Wyuta, Wyo.
| 5.9 mi.
- o Wahsatch, Utah
| 25.1 mi.
- o Echo
| 39.9 mi.
- o Ogden, Utah

← To Ogden



Report No. 3443
Union Pacific Railroad
Wyuta, Wyo.
November 12, 1951

Location of Accident and Method of Operation

This accident occurred on that part of the Wyoming Division extending between Ogden, Utah, and Green River, Wyo., 175.6 miles, a double-track line, over which trains moving with the current of traffic are operated by signal indications. At Wyuta, Wyo., 70.9 miles east of Ogden, a siding 1.23 miles in length is located between the main tracks. The west siding-switch in the eastward main track is 2,849 feet west of the station sign. The accident occurred on the eastward main track at a point 4,083 feet east of the west siding-switch and 1,234 feet east of the station sign. From the west there are, in succession, a 1° curve to the left 1,522 feet in length, a tangent 3,203 feet, a 1° curve to the left 817 feet, and a tangent 199 feet to the point of accident and 2,539 feet eastward. The grade varies between 0.02 percent and 0.80 percent descending eastward throughout a distance of 6.04 miles immediately west of the point of accident, and it is 0.80 percent descending eastward at that point.

Automatic signals 9268, 9256, 9242, 9224, and 9214, governing east-bound movements on the eastward main track, are located, respectively, 5.21 miles west, 4.01 miles west, 2.55 miles west, 4,157 feet west, and 1,383 feet east of the point of accident. These signals are of the three-indication color-light type and are approach lighted. The red, yellow, and green aspects appear at distances of 17 feet, 18 feet, and 19 feet, respectively, above the level of the tops of the rails. Aspects applicable to this investigation and the corresponding indications and names are as follows:

<u>Aspect</u>	<u>Indication</u>	<u>Name</u>
Green	Proceed.	Clear signal.
Yellow	Immediately reduce speed to 20 miles per hour, and as much slower as necessary in order to be able to stop before passing the next signal.	Approach signal.
Red	Stop.	Stop signal.

The controlling circuits of these signals are so arranged that, when the block of signal 9224 is occupied, signal 9224 displays a red aspect and signal 9242 displays a yellow aspect.

This carrier's operating rules read in part as follows:

DEFINITIONS

Restricted Speed.--Proceed prepared to stop short of train, obstruction, or switch not properly lined, and be on lookout for broken rail, or anything that may affect movement of train.

27. A signal imperfectly displayed or the absence of a signal at a place where a signal is usually displayed, must be regarded as the most restrictive indication that could be given by that signal, except that when a light is not burning on a color light signal other than a Permissive signal, it must be regarded as a Stop signal.

* * *

34. All members of engine, train and yard crews, when practicable, must communicate to each other by its name the indication of each signal affecting the movement of their train or engine.

99. When a train stops, except when clear of the main track, the flagman must go back immediately with flagman's signals, a sufficient distance to insure full protection. * * *

* * *

If the flagman is recalled before reaching the required distance, he will, if necessary, place two torpedoes on the rail; by night, or during foggy or stormy weather, he must display a lighted fusee in addition, to protect his train while returning.

When a train is moving under circumstances in which it may be overtaken by another train, the flagman must take such action as may be necessary to insure full protection. By night, or by day when the view is obscured, lighted fusees must be thrown off at proper intervals.

Flagman's signals:

Day signals--A red flag, not less than ten torpedoes and six fusees.

* * *

99 (A). * * *

Conductors and engineers are responsible for protection of their train, and when protection is necessary, they must see that it is provided with utmost promptness and in strict accordance with the rules.

* * *

489. In foggy or stormy weather, engineers must approach all signals with great care, prepared to respect indication given, stopping if necessary to determine the indication.

509. When a train or engine is stopped by a Stop indication of an automatic block signal, it may proceed when signal changes to Approach or to Proceed indication; or if signal remains at Stop--

* * *

(d) On double track, train or engine may proceed * * * but must move at restricted speed to the next home signal.

The maximum authorized speed for passenger trains was 79 miles per hour.

Description of Accident

No. 104, an east-bound first-class streamlined passenger train, known as the City of Los Angeles, consisted of Diesel-electric units 998, 988B, and 985B, coupled in multiple-unit control, one baggage-mail car, one dormitory car, two coaches, two dining cars, one lounge car, four sleeping cars, and one observation-sleeping car, in the order named. All 12 cars were of lightweight steel construction and were equipped with tight-lock couplers. This train departed from Ogden at 9:45 a. m., on time, and passed Wahsatch, the last open office, 65 miles east of Ogden, at 11:09 a. m., 8 minutes late. It stopped at signal 9242, at signal 9224, and at signal 9214, because the lenses of those signals were covered with ice and snow and the enginemen were unable to determine the indications. Immediately after the train was started at signal 9214 the rear end was struck by No. 102 at a point 4,157 feet east of signal 9224 and 4,083 feet east of the west siding-switch at Wyuta.

No. 102, an east-bound first-class streamlined passenger train, known as the City of San Francisco, consisted of CNW Diesel-electric unit 5007B and UP Diesel-electric units 928E and 987B, coupled in multiple-unit control, two mail cars, one

dormitory car, two coaches, two dining cars, one lounge car, and five sleeping cars, in the order named. All 13 cars were of lightweight steel construction and were equipped with tight-lock couplers. This train departed from Ogden at 10:07 a. m., 12 minutes late, and passed Wahsatch at 11:21 a. m., 10 minutes late. It passed signals 9242 and 9224 and while moving at a speed of 77 miles per hour it struck the rear end of No. 104.

All cars of No. 104 were derailed. Separations occurred at each coupling of the rear six cars. The tenth, eleventh, and twelfth cars were demolished. The ninth car stopped on its right side, with its rear end about 45 feet south of the track and its front end on the track structure. The other cars stopped upright and approximately in line with the track. The eighth and ninth cars were badly damaged, the fourth, fifth, sixth, and seventh cars were somewhat damaged, and the first and second cars were slightly damaged.

The entire train of No. 102, except the rear car and the rear truck of the twelfth car, was derailed. Separations occurred between adjacent units of the train from the first Diesel-electric unit to the fifth car. The first Diesel-electric unit stopped on its right side, with its front end on the track structure and 365 feet east of the point of accident and its rear end about 45 feet south of the track and on top of the tenth car of No. 104. The second unit stopped on its right side, with its front end near the rear end of the first unit and its rear end on the track structure. The third unit stopped on its right side, with its front end against the rear end of the second unit and its rear end about 40 feet south of the track. None of the derailed cars was overturned. The first car stopped at the rear of the third Diesel-electric unit, approximately at right angles to the track, with its front end toward the south and its rear end on the track structure. The second car stopped with its front end near the rear end of the first car and its rear end about 50 feet south of the track. The third car stopped with its front end against the rear end of the second car and its rear end on the track structure. The fourth car stopped in line with the track. The fifth car stopped with its front end on the track structure and its rear end about 20 feet south of the track. The sixth car stopped with its front end against the rear end of the fifth car and its rear end on the track structure. The other derailed cars stopped approximately in line with the track. The three Diesel-electric units, the first car, and the fifth to the ninth cars, inclusive, were badly damaged. The second, third, fourth, tenth, and eleventh cars were somewhat damaged.

Extra 1475 East, an east-bound freight train consisting of Diesel-electric units 1475, 1484B, and 1484C, coupled in

multiple-unit control, 89 cars and a caboose, was occupying the siding at Wyuta when the accident occurred. The rear end was standing approximately 380 feet east of the west siding-switch. The thirty-sixth to the forty-third cars, inclusive, of this train were struck by the derailed equipment of Nos. 104 and 102 and were derailed.

Heavy wet snow was falling, and there was a strong wind from the west at the time of the accident, which occurred at 11:27 a. m.

The flagman of No. 104, the engineer of No. 102, and the Diesel-electric maintainer of No. 102 were killed. The front brakeman of No. 104 and the fireman, the conductor, and the flagman of No. 102 were injured.

The locomotive of No. 102 consisted of one 2000-horsepower Diesel-electric unit, which was provided with a control compartment at the front, one 2250-horsepower unit, and one 2000-horsepower unit. The first Diesel-electric unit was provided with a safety-control feature actuated by a foot pedal. The control compartment of the first Diesel-electric unit was so badly damaged as a result of the accident that the position of the controls at the time the accident occurred could not be determined.

Discussion

On the day of the accident Extra 1475 East departed from Ogden at 5:45 a. m. Members of the crew said that rain and snow were falling intermittently as the train proceeded from Ogden to Echo, 39.9 miles east of Ogden, and heavy wet snow was falling from the time the train departed from Echo until after the accident occurred. Because snow was sticking to the lenses of the signals in the vicinity of Wahsatch the crew experienced difficulty in distinguishing their aspects. The train departed from Wahsatch at 10:55 a. m. The employees on the locomotive said that the green aspects of the signals between Wahsatch and Wyuta were very obscure. It was necessary for the engineer to restrict the speed of the train to between 20 and 25 miles per hour in order to be certain of the indications of the signals. The conductor and the flagman said that the red aspects of some of the signals between Wahsatch and Wyuta were visible from the cupola of the caboose, but the aspects of others were not. At Wyuta visibility was restricted by falling snow to a distance of about 200 feet, and there was between 8 and 10 inches of new snow on the ground. The train entered the siding at Wyuta to permit Nos. 104 and 102 to pass. When the train stopped to enter the siding the flagman placed a lighted 5-minute red fusee on the track, and as the train proceeded into the siding he

threw off a second fusee. The train stopped on the siding at 11:20 a. m. The flagman said that No. 104 stopped at signal 9224 soon after he closed the siding switch. As No. 104 passed him he observed that the flagman was standing in the rear vestibule of the eleventh car and that the markers and the red oscillating signal light at the rear of the rear car were lighted. A short time later No. 102 passed signal 9224 without stopping, and he assumed that No. 104 had passed signal 9214. He watched No. 102 pass, but he did not notice whether any one was visible in the control compartment of the locomotive. After Extra 1475 East stopped on the siding the conductor proceeded eastward along the north side of the train. He heard No. 104 start from signal 9224 and proceed eastward, but he did not know that that train stopped at signal 9214. He was about 250 feet east of the caboose when No. 104 passed, and was about 800 feet farther east when No. 102 passed. He said that the sound of the Diesel engines of No. 102 indicated that the engines were working under load and he did not think that they were shut down until the collision occurred.

The engineer, the fireman, and the Diesel-electric maintainer of No. 104 said that they were in the control compartment at the front of the locomotive from the time the train passed Wahsatch until the accident occurred. They said they could distinguish the aspect of signal 9268, which indicated Proceed, and the aspect of signal 9256, which indicated Approach. As the train approached signal 9242 they could see the mast, but they could not see a light in the signal. After the train was stopped at the signal they still were unable to determine the indication. A short time after leaving signal 9242, No. 104 overtook Extra 1475 East. The employees on the locomotive of No. 104 observed the flagman of Extra 1475 East close the siding switch after that train entered the siding at Wyuta, but they were unable to distinguish the aspect of signal 9224 either before or after he closed the switch. The train was stopped at signal 9224. It then proceeded to signal 9214, and, because the enginemen could not see a light in the signal, it was stopped at that signal also. The employees on the locomotive said that the train was started forward immediately after it stopped. The rear end was struck by No. 102 immediately after the train began to move. The conductor and the front brakeman were in the vestibule between the third and the fourth cars from the time the train passed Wahsatch until the accident occurred. They said that visibility was restricted to the extent that they were unable to see either end of their train when it stopped at the signals between Wahsatch and Wyuta. They looked at each of these signals as the train passed them, but they could not see a light in any of them. There were no surviving witnesses as

to what action was taken by the flagman between Wahsatch and Wyuta. The rear car had an enclosed observation compartment at the rear end with a door but without steps, and flagmen alighted from and re-entered this car only at the vestibule at the front end. The flagman of Extra 1475 East observed that the flagman of No. 104 was standing in this vestibule when No. 104 passed the west siding-switch at Wyuta.

Surviving members of the crew of No. 102 said that the brakes of the train were tested at Ogden and functioned properly when used en route. The fireman said that he had no difficulty in determining the aspects of the block signals until after the train passed Wahsatch. The snow then became heavier, and the power windshield wiper failed to keep the windshield on the left side of the control compartment of the locomotive clear of slush. He said that signal 9256 indicated Proceed at a distance of about 1 mile but he could not distinguish the aspect when the train was closely approaching the signal. He said he did not see the aspect of either signal 9242 or 9224 but both the engineer and the Diesel-electric maintainer, who was in the control compartment, called each signal as indicating Proceed. He assumed that they could see through the windshield from the right side of the control compartment more distinctly than he could from the left side. The fireman did not observe a fusee or hear the explosion of a torpedo between Wahsatch and the point of accident. The fireman said that because of track curvature to the left and Extra 1475 East occupying the center siding at Wyuta, the employees on the locomotive of No. 102 could not see the red oscillating signal light at the rear of No. 104 until they were closely approaching the rear end of that train, and that the engineer made an emergency application of the brakes immediately after the light became visible to them. The collision occurred before the speed of the train had been reduced. The engineer and the Diesel-electric maintainer were killed in the accident. The members of the train crew said that after leaving Ogden they noticed nothing unusual in the operation of the train until the accident occurred. The tape of the speed recording device on the locomotive of No. 102 indicated that the speed was reduced in compliance with a speed restriction at Wahsatch and then was increased in the usual manner. The train approached Wahsatch at a speed of about 48 miles per hour. The speed was reduced from 48 miles per hour to 30 miles per hour within a distance of about 700 feet, and was then increased from 30 miles per hour to 77 miles per hour within a distance of 4 miles. A speed of about 77 miles per hour was then maintained until the accident occurred.

Immediately after the accident occurred the flagman of No. 102 proceeded westward to provide flag protection. He said that when he reached signal 9224 he observed that the signal indicated Stop. The lenses of the signal were completely covered by snow, but he could distinguish the red aspect by standing at the side

of the signal. He then proceeded westward to a point a short distance west of signal 9242. By this time the storm had abated somewhat, and he could see that the signal indicated Approach. The signal lighting circuits are so arranged that these signals were lighted due to a freight train occupying the main track at Wahsatch after No. 102 passed that station.

The signal maintainer arrived at Wyuta about 1 hour 25 minutes after the accident occurred and immediately proceeded to signal 9224. He found that the lenses of the signal were covered with ice and snow to a depth of 3 or 4 inches. He said that it was necessary for him to remove the ice and snow before he could determine that the signal was displaying a red aspect. He then proceeded to signal 9242 and then to signal 9214. He found the lenses of each signal covered with ice and snow to approximately the same extent that the lenses of signal 9224 were covered. When the automatic block-signal system was tested after the accident occurred, it functioned as intended.

When No. 104 stopped at the signals in the vicinity of Wyuta, and while it was moving between these signals, the flagman was required to take such action as was necessary to insure full protection, and the conductor was required to see that protection was provided. There were no surviving witnesses as to the action taken by the flagman. Any fuses which he may have left or thrown off were not seen by the fireman of No. 102 or by the flagman of Extra 1475 East. The flagman was fully experienced, and the conductor said that from his observance of the flagman's work on previous occasions he was confident that the flagman would perform his duties properly without specific instruction. For this reason he did not consider it necessary to proceed to the rear of the train to ascertain that protection was being provided. According to the statements of the surviving witnesses, immediately prior to the time of the accident the lenses of signals 9242 and 9224 were covered with ice and snow to the extent that the intended aspects were not visible. Under the rules, No. 102 was required to stop before passing each signal and then proceed through the block at restricted speed. The engineer of No. 102 was killed in the accident, and it could not be determined why he did not operate the train in accordance with the most restrictive indications of these signals.

Weather conditions similar to those which prevailed on the day of the accident are not unusual along the line of this carrier in this vicinity. The automatic block signals on this line are equipped with hoods which serve as snow shields, but when wet snow is blown directly against the lenses of the signals, as it was on the day of the accident, the snow shields are not effective in preventing the snow from covering the lenses of the signals. The rules of this carrier provide that when the indication of a signal cannot be determined, the signal must be regarded as displaying

its most restrictive aspect. They also provide that when a train stops or is moving under circumstances in which it may be overtaken by another train the flagman must take such action as may be necessary to insure full protection. However, the investigation disclosed that in the instant case the following train was not operated in accordance with the most restrictive indications of signals 9242 and 9224, and adequate flag protection was not provided for the preceding train. On the line of the Union Pacific between Ogden, Utah, and Omaha, Nebr., an automatic cab-signal system is superimposed upon the automatic block-signal system between Green River and Laramie, Wyo., 251 miles, and between Cheyenne, Wyo., and Columbus, Nebr., 425 miles, a total of 676 miles, and this installation is now being extended from Columbus to Omaha. This system provides a continuous aspect in the cab of a locomotive to indicate track conditions ahead, and the locomotives which are operated on these portions of the line now are equipped with this device. Some of these equipped locomotives are also operated over that portion of the line on which this accident occurred. This system provides a substantial increase in protection as compared with a system using roadway signals only. If a cab-signal system had been in service it is probable that this accident would have been averted.

Cause

It is found that this accident was caused by failure to operate the following train in accordance with signal indications.

Recommendation

It is recommended that the Union Pacific Railroad Company extend its automatic cab-signal system to the remainder of its line between Ogden and Omaha.

Dated at Washington, D. C., this eleventh day of February, 1952.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.