INTERSTATE COMMERCE COMMISSION

WASHINGTON

INVESTIGATION NO. 2576

THE ST. LOUIS-SAN FRANCISCO RAILWAY COMPANY

REPORT IN RE ACCIDENT

AT GRANBY, MO., ON

MARCH 7, 1942

SUMMARY

Railroad:	St. Louis-San Francisco	
Date:	March 7, 1942	
Location:	Granby, Mo.	
Kind of accident:	Head-end collision	
Trains involved:	Passenger	: Passenger
Train numbers:	Extra 1516 West	: 4
Engine numbers:	1516	: 1528
Consist:	8 cars	: 7 cars
Estimated speed:	5-40 m. p. h.	: 30-60 m. p. h.
Operation:	Timetable, train orders and automatic block-signal system	
Track:	Single; tangent; level	
Weather:	Cloudy	
Time:	About 4:58 p. m.	
Casualties:	7 killed; 82 injured	
Cause:	Accident caused by an inferior train occupying main track on the time of an opposing superior train, and by an inadequate automatic block-signal system	

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2576

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

THE ST. LOUIS-SAN FRANCISCO RAILWAY COMPANY

July 16, 1942.

Accident at Granby, Mo., on March 7, 1942, caused by an inferior train occupying the main track on the time of an opposing superior train, and by an inadequate block-signal system.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On March 7, 1942, there was a head-end collision between two passenger trains on the St. Louis-San Francisco Railway at Granby, Mo., which resulted in the death of 4 passengers, 1 railway-mail clerk, 1 Pullman employee and 1 train-service employee, and the injury of 60 passengers, 2 railway-mail clerks, 5 Pullman employees, 7 dining-car employees, 2 train porters and 6 train-service employees.

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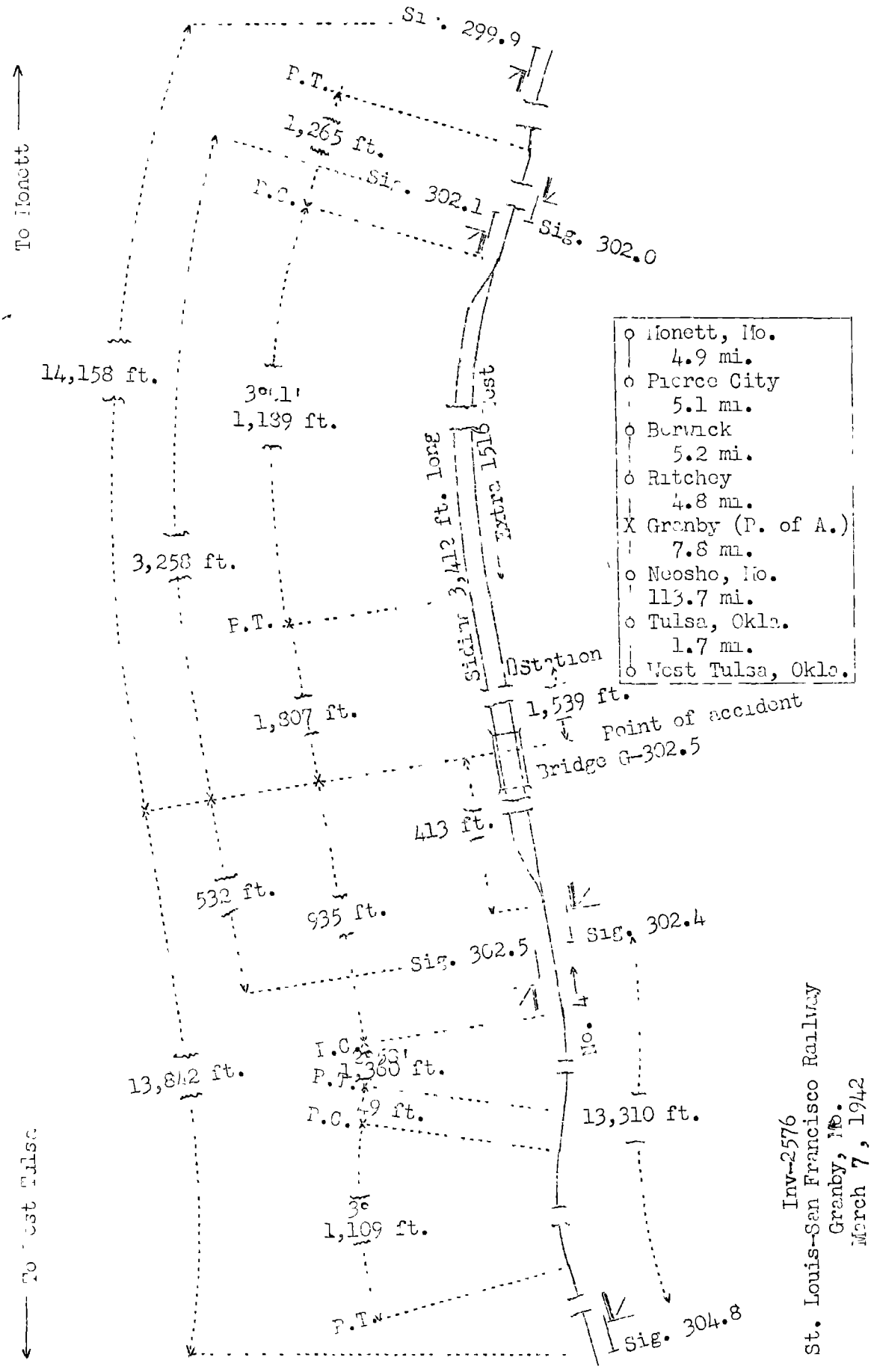
[1]Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Inv-2576
St. Louis-San Francisco Railway
Granby, Mo.
March 7, 1942

Location of Accident and Method of Operation

This accident occurred on that part of the Southwestern Division designated as the Cherokee Sub-division, which extends between Monett, Mo., and West Tulsa, Okla., a distance of 143.2 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable, train orders and an automatic block-signal system. At Granby a siding 3,412 feet in length parallels the main track on the north. The west switch of this siding is located 1,952 feet west of the station. The accident occurred on Bridge G-302.5 at a point 413 feet east of the west siding-switch. As the point of accident is approached from the east there are, in succession, a tangent 1,265 feet in length, a 3°01' curve to the left 1,189 feet and a tangent 1,807 feet to the point of accident. As the point of accident is approached from the west there are, in succession, a 3° curve to the right 1,109 feet in length, a tangent 49 feet, a 2°58' curve to the left 1,360 feet and a tangent 935 feet to the point of accident. At the point of accident the grade is level.

Bridge G-302.5, which spans a dry wash, is a 14-panel, open-deck, pile trestle, 190 feet in length, and has a maximum height of 8 feet. The accident occurred 41.6 feet west of the eastern end of this bridge.

The automatic block-signal system is of the overlap type and consists of double-location signals near the ends of sidings and intermediate signals between stations. The signals are of the one-arm, three-position, upper-quadrant, semaphore type, and are approach-lighted. The aspects and corresponding indications and names of these signals are as follows:

Aspect	Indication	Name
Green	Proceed	Clear Signal
Yellow	Proceed at a speed reduced to not exceeding one-half the maximum authorized at point involved, prepared to stop at next signal	Approach Signal
Red	Stop	Stop Signal

Signals 299.9, 302.1 and 302.5, governing west-bound movements, are located, respectively, 14,158 and 3,258 feet east and 532 feet west of the point of accident. Signals 304.8, 302.4 and 302.0, governing east-bound movements, are located, respectively, 13,842 and 532 feet west and 3,258 feet east of the point of accident. The controls of these signals are so arranged that when an east-bound train reaches a point 26,110 feet west of signal 302.5, signals 302.5 and 302.1 display yellow, and signal 299.9 displays green; when the train reaches a point 16,560 feet west of signal 302.5, signals 302.5, 302.1 and 299.9, respectively, display red, yellow and green; and when the train reaches a point 3,860 feet west of signal 302.5, signals 302.5 and 302.1

display red, and signal 299.9 displays yellow. When a west-bound train reaches a point 19,300 feet east of signal 302.0, signals 302.0 and 302.4 display yellow, and signal 304.8 displays green; when the train reaches a point 12,900 feet east of signal 302.0, signals 302.0, 302.4 and 304.8, respectively, display red, yellow and green; and when the train reaches a point 3,350 feet east of signal 302.0, signals 302.0 and 302.4 display red, and signal 304.8 displays yellow.

Operating rules read in part as follows:

87. On single track, an inferior train must keep out of the way of opposing superior trains and failing to clear the main track by the time required by rule must be protected as prescribed by Rule 99.

Extra trains must clear the time of opposing regular trains not less than five minutes, unless otherwise provided, * * *

* * *

509. Train on single track finding automatic block signal at "stop" indication, will stop before entering block, and immediately send flagman in advance, wait five minutes, and then follow flagman through the block at restricted speed.

DEFINITIONS

Restricted Speed. Proceed prepared to stop short of train, obstruction, or anything that may require the speed of a train to be reduced.

In the vicinity of the point of accident the maximum authorized speed for passenger trains on tangent track is 70 miles per hour, and on curves, 60 miles per hour.

Description of Accident

Extra 1516 West, a west-bound passenger train, consisted of engine 1516, one coach, one baggage car, and six Pullman tourist cars, in the order named. All cars were of steel construction. At Monett, 20 miles east of Granby, the crew received copies of train order No. 138, Form 19, which read as follows:

Eng 1516 run extra Monett to Neosho
has right over No 440 Eng 1332 and
Extra 4414 East Pierce City to Neosho
and wait at Berwick until 433 pm
Ritchey 438 pm Granby 443 pm

After a terminal air-brake test was made this train departed from Monett at 4:20 p. m., according to the dispatcher's record of movement of trains. Soon after it departed a running test of the brakes was made and they functioned properly en route. This train departed from Pierce City, 15.1 miles east of Granby and the last open office, at 4:44 p. m., passed signal 299.9, which displayed proceed, passed signal 302.1, which according to the

engineer's statement was displaying approach, and while moving at an estimated speed of 5 to 40 miles per hour it collided with No. 4 at a point 413 feet east of the west siding-switch at Granby.

No. 4, an east-bound first-class passenger train, consisted of engine 1528, one baggage-mail car, one baggage car, one passenger-baggage car, one chair car, one cafe-lounge car, and two Pullman sleeping cars, in the order named. All cars were of steel construction. This train departed from Tulsa, 121.5 miles west of Granby, at 2:25 p. m., according to the dispatcher's record of movement of trains, on time, departed from Neosho, 7.8 miles west of Granby and the last open office, at 4:50 p. m., 10 minutes late, passed signal 304.8, which displayed proceed, passed signal 302.4, which displayed stop, and while moving at an estimated speed of 30 to 60 miles per hour it collided with Extra 1516 West. The brakes of No. 4 were used to control the speed at various points en route, and they functioned properly.

Between points 5,318 feet and 2,782 feet west of signal 302.4, this signal can be seen from the right side of an east-bound engine at intervals, then, because of track curvature, it is lost to view until the engine is 403 feet west of the signal. The view of signal 302.4 from the left side of an east-bound engine is unrestricted throughout a distance of 2,878 feet. The view of signal 302.1 from the right side of a west-bound engine is unrestricted throughout a distance of about 2,500 feet, and from the left side, 1,050 feet.

Engines 1516 and 1528 were derailed and stopped, practically demolished, upright on Bridge G-302.5 and in line with it. The front end of the tender of engine 1516 was telescoped a distance of 15 feet. The first car of Extra 1516 was slightly damaged. The second car telescoped the front end of the third car a distance of about 40 feet. The third car was derailed but remained upright on the roadbed and was badly damaged. The right side and the roof were torn out a distance of 40 feet. The tender of engine 1528, of No. 4, was torn loose from the engine and was demolished. The first car of No. 4 was derailed to the north and stopped, demolished, across the main track and the siding. The second car was derailed to the south of the bridge and stopped, badly damaged, upright on the bed of the dry wash. The third car, remaining coupled to the second car, was derailed to the south and stopped upright, slightly damaged, with its rear end on the bridge and its front end in the dry wash.

The weather was cloudy at the time of the accident, which occurred about 4:58 p. m.

The train-service employee killed was the fireman of No. 4, and the train-service employees injured were the conductor, the engineer, the flagman and the baggage-messenger of No. 4, and the conductor and the engineer of Extra 1516 West.

Data

During the 30-day period preceding the day of the accident, the average daily movement in the vicinity of the point of accident was 24.67 trains.

After the accident two braking tests were conducted in the vicinity of the point of accident. Passenger-equipment trains were used in these tests. The east-bound train consisted of 7 cars and the same class of engine as the engine of No. 4. This train was stopped from a speed of 65 miles per hour by an emergency application of the brakes in a distance of 2,340 feet. The west-bound train consisted of 8 passenger-equipment cars and an engine of the same class as that of Extra 1516 West. This train was stopped from a speed of 65 miles per hour by an emergency application of the brakes in a distance of 2,496 feet.

Signal Data

In tests after the accident the involved signals functioned as intended.

Discussion

The rules governing operation on the line involved require an inferior train to keep out of the way of an opposing superior train. An extra train must clear the time of an opposing regular train by not less than 5 minutes, or, failing to comply with this requirement, it must furnish flag protection. All surviving members of both crews involved understood these requirements.

No. 4, an east-bound first-class train, was due to leave Granby at 4:49 p. m., Ritchey, 4.8 miles east of Granby, at 4:54 p. m., Berwick, 10 miles east of Granby, at 4:59 p. m., and Pierce City, 15.1 miles east of Granby, at 5:05 p. m. No train order restricting the movement of No. 4 had been issued. Extra 1516 West departed from Pierce City at 4:44 p. m. and, based on the average speed of the fastest first-class west-bound schedule, this train should have reached Berwick about 4:50 p. m., where it should have entered the siding for No. 4, but it proceeded beyond Berwick, passed Ritchey, and collided with No. 4 at Granby 14 minutes after it was required to be into clear at Granby, if it had proceeded to that station to clear for No. 4.

According to the statement of the engineer of Extra 1516 West, at 4:17 p. m. the conductor and he compared time before their train departed from Monett and there was a variation of 6 seconds in their watches. A train order received at Monett specified that Extra 1516 would wait at Berwick until 4:33 p. m., at Ritchey until 4:38 p. m., and at Granby until 4:43 p. m. At Pierce City the engineer remarked to the fireman that the times specified in the wait order had expired. Looking at his watch some time later he thought it indicated 3:42 p. m., and he remarked to the fireman that sufficient time remained to proceed to Neosho, 7.8 miles west of Granby, to clear for No. 4. In explanation of his failure to observe a discrepancy in the times he read on his watch at Monett and Pierce City, he said that at

Monett he thought only of the wait order, and at Pierce City he thought only of clearing No. 4, and at no time did he associate these matters. The fireman said that he knew No. 4 was due to leave Neosho at 4:40 p. m., but he did not look at his watch when the engineer commented about proceeding to that station to clear for No. 4; also, he failed to consider that his train had departed from Monett at 4:30 p. m. and that the distance between Monett and Neosho is 27.8 miles.

As Extra 1516 was approaching the point where the accident occurred, the speed was about 50 miles per hour and both enginemen were maintaining a lookout ahead. Brake-pipe pressure of 90 pounds was being maintained. All signals east of the east siding-switch at Granby displayed proceed for their train. Signal 302.1 displayed a yellow aspect, which the enginemen called to each other, and the engineer sounded the whistle in acknowledgment of the approach indication, as required by the rules. He then made an 8-pound brake-pipe reduction, which was not released, and made a further reduction of 4 pounds. The enginemen said that signal 302.1 continued to display approach until the engine passed it. The engineer said that when his engine entered tangent track at a point about 900 feet west of the east siding-switch, he observed that signal 302.5 was displaying stop. He made a further brake-pipe reduction of 8 pounds in order to stop short of this signal. When the engine reached a point about 1,750 feet east of signal 302.5, the fireman observed a section foreman giving stop signals from a point south of the main track, and informed the engineer; however, the engineer understood the fireman to say something about the stop indication of signal 302.5. Soon afterward the engineer observed No. 4 approaching but he did not move the brake valve to emergency position as he expected No. 4 to stop short of signal 302.4. The speed of Extra 1516 was considerably reduced, but the distance was not sufficient for either train to stop before the collision occurred. The engineer and the fireman of Extra 1516 jumped just before the collision occurred.

According to the statements of the conductor, the flagman and the train porter of Extra 1516, each forgot the schedule of No. 4. The conductor said that as his train was approaching Granby, he was in the first car and was occupied with clerical duties. He said the speed was gradually reduced but he did not observe if the brakes were applied. The train porter said that the brakes were applied in service and that the speed was reduced from about 55 miles per hour to 5 or 10 miles per hour at the time of the collision.

The section foreman at Granby was south of the track and about 1,500 feet west of signal 302.1 when Extra 1516 was approaching the east siding-switch. He first observed that signal 302.1 displayed an approach indication and, soon afterward

when the engine was a short distance east of this switch, signal 302.1 changed to display stop. Hearing a train approaching from the opposite direction, he looked westward and observed that signal 302.5 was displaying stop. When No. 4 was about 1,300 feet west of signal 302.4, the exhaust of the engine ceased and smoke drifted down along the engine. When the engine of Extra 1516 passed him he gave a stop signal to the fireman. As this train passed him he observed that the train brakes were applied.

The engineer of No. 4 stated that he and his fireman observed signal 304.8 displaying proceed for No. 4. When his engine was about 1,100 feet west of signal 302.4, the speed of the train was 60 or 62 miles per hour, and the fireman warned the engineer that this signal was displaying stop. Because of track curvature to the left, the engineer was unable to see signal 302.4 at the time the fireman called the stop indication; however, he immediately moved the brake valve to emergency position, opened the sander valve and closed the throttle, but he was unable to stop his train short of signal 302.4. The brakes on his train functioned properly. The engineer said that often a train approaching a meeting point will receive a clear indication at the approach signal and then a stop indication at the next signal. He stated that if his train had received an approach indication at signal 304.8 he would have expected to receive a stop indication at signal 302.4, and would have controlled the movement of his train accordingly. The conductor of No. 4 said that as his train was approaching the point where the accident occurred the speed was about 60 miles per hour. He was not aware of anything being wrong until the collision occurred. The flagman said the brakes were applied throughout a distance of 1,000 feet before the collision occurred. In his opinion, the brakes were applied in emergency.

There was evidence to the effect that it is not unusual on this line for opposing trains approaching a meeting point to receive a clear indication at the approach signal and a stop indication at the next signal; however, double-approach signals are now provided at certain points on this line. Under the system existing at the time and point of this accident, signal 304.8 would not display an approach indication for No. 4 until after Extra 1516 West had reached a point 3,350 feet east of the east siding-switch, and signal 299.9 would not display an approach indication for Extra 1516 West until after No. 4 had reached a point 3,960 feet west of the west siding-switch. Since No. 4 received a clear indication at signal 304.8, the crew of No. 4 had no warning of the approach of the opposing train until the fireman saw signal 302.4 displaying stop. After this observation was made the distance was too short to stop No. 4 short of signal 302.4. Extra 1516 West received a clear indication at signal 299.9, and the enginemen of this train said that signal 302.1 displayed approach for their train. The section

foreman thought this signal changed to display stop shortly before Extra 1516 passed it. The collision occurred before Extra 1516 reached the next signal.

Section 207 of the rules, standards and instructions for the installation, inspection, maintenance and repair of automatic block-signal systems, prescribed by the Commission's order of April 13, 1939, which became effective September 1, 1939, provides as follows:

> 207. On track signaled for movements in both directions, signals shall be so arranged and controlled that proper restrictive indications will be provided to protect both following and opposing movements.

The automatic block-signal system at this location was in violation of section 207 of the Commission's order of April 13, 1939. If proper approach indication had been displayed for No. 4, this accident would not have occurred.

Cause

It is found that this accident was caused by an inferior train occupying the main track on the time of an opposing superior train, and by an inadequate automatic block-signal system.

Dated at Washington, D. C., this sixteenth day of July, 1942.

By the Commission, Commissioner Patterson.

W. P. BARTEL,
Secretary.

(SEAL)