

INTERSTATE COMMERCE COMMISSION

WASHINGTON

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REPORT NO. 3283

ST. LOUIS-SAN FRANCISCO RAILWAY COMPANY

IN RE ACCIDENT

AT BRIDGE JCT., ARK., ON

OCTOBER 6, 1949

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SUMMARY

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Date: October 6, 1949

Railroad: St. Louis-San Francisco

Location: Bridge Jct., Ark.

Kind of accident: Head-end collision

Trains involved: Freight : Freight

Train numbers: 131 : 834

Engine numbers: Diesel-electric : 4162  
units 5224A,  
5312B, and  
5225A

Consists: 63 cars, caboose : 112 cars,  
caboose

Estimated speeds: Standing : 15 m. p. h.

Operation: Signal indications

Track: Single; tangent; level

Weather: Clear

Time: 4:30 p. m.

Casualties: 1 killed; 3 injured

Cause: Failure to operate north-bound train  
in accordance with a signal  
indication

INTERSTATE COMMERCE COMMISSION

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REPORT NO. 3283

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

ST. LOUIS-SAN FRANCISCO RAILWAY COMPANY

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November 28, 1949

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Accident at Bridge Jct., Ark., on October 6, 1949, caused  
by failure to operate the north-bound train in  
accordance with a signal indication.

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REPORT OF THE COMMISSION<sup>1</sup>

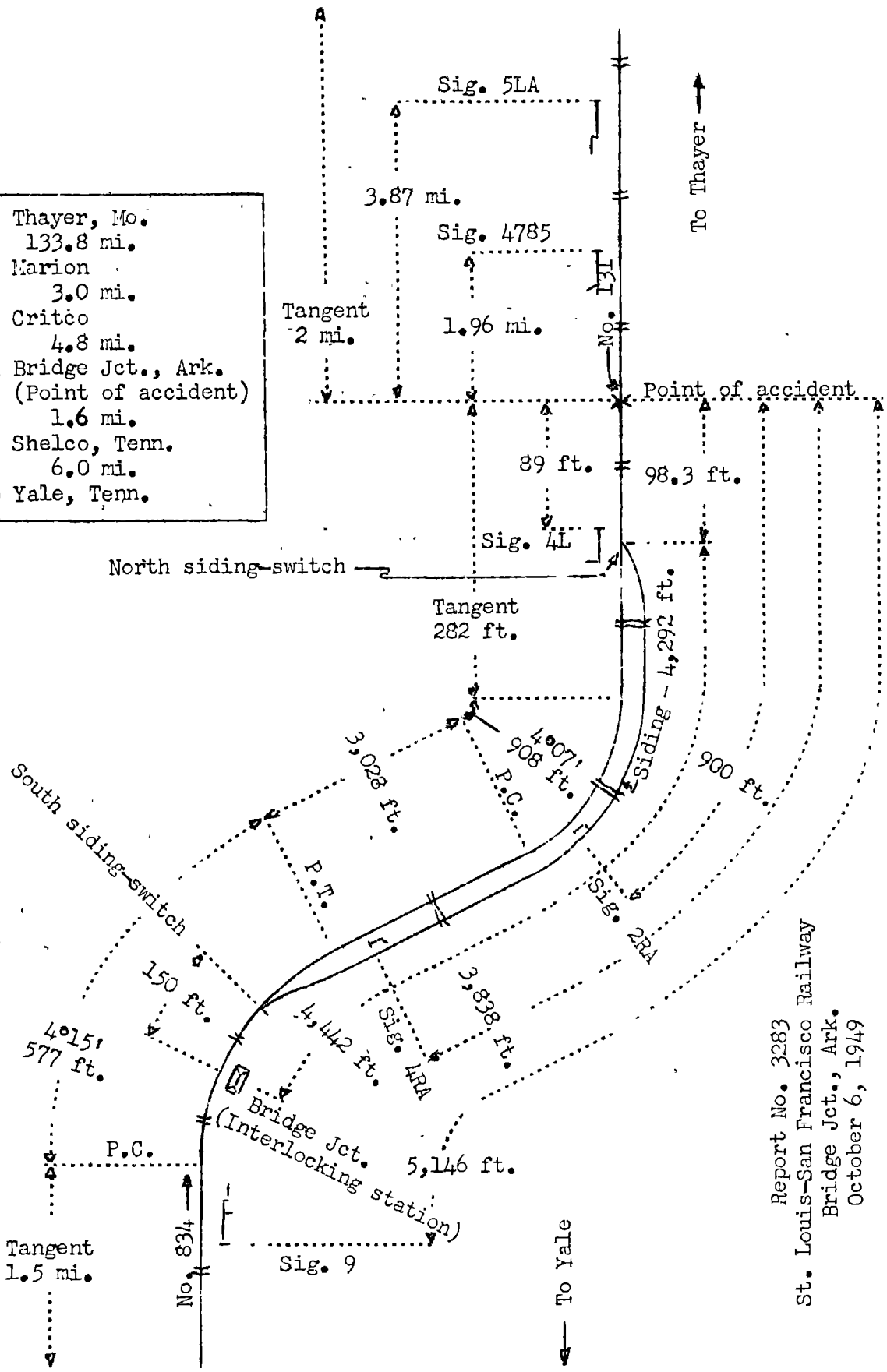
PATTERSON, Commissioner:

On October 6, 1949, there was a head-end collision  
between two freight trains on the St. Louis-San Francisco  
Railway at Bridge Jct., Ark., which resulted in the death  
of one employee, and the injury of three employees.

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<sup>1</sup>  
Under authority of section 17 (2) of the Interstate Com-  
merce Act the above-entitled proceeding was referred by the  
Commission to Commissioner Patterson for consideration and  
disposition.

- Thayer, Mo. | 133.8 mi.
- Marion | 3.0 mi.
- Critco | 4.8 mi.
- X Bridge Jct., Ark. (Point of accident) | 1.6 mi.
- Shelco, Tenn. | 6.0 mi.
- Yale, Tenn.



Report No. 3283  
 St. Louis-San Francisco Railway  
 Bridge Jct., Ark.  
 October 6, 1949

Location of Accident and Method of Operation

This accident occurred on that part of the Eastern Division extending between Thayer, Mo., and Yale, Tenn., 149.2 miles. In the vicinity of the point of accident this is a single-track line, over which trains are operated by signal indications. At Bridge Jct., 141.6 miles south of Thayer, a siding 4,292 feet in length parallels the main track on the east. The south siding-switch is interlocked and is controlled from Bridge Jct. interlocking station, located 150 feet south of the south siding-switch. The north siding-switch is a spring switch. It is normally lined for main track movements and is 4,442 feet north of the interlocking station. The accident occurred on the main track 98.3 feet north of the north siding-switch. From the north the track is tangent a distance of more than 2 miles to the point where the accident occurred and 282 feet southward. From the south there are, in succession, a tangent 1.5 miles in length, a 4°15' curve to the right 577 feet, a tangent 3,028 feet, a 4°07' curve to the left 908 feet, and the tangent on which the accident occurred. The grade is practically level.

Semi-automatic signal 5LA, automatic signal 4785, and semi-automatic signal 4L, governing south-bound movements, are located, respectively, 3.87 miles north, 1.96 miles north, and 89 feet south of the point of accident. These signals are of the one-arm semaphore type, and display three aspects in the upper quadrant. A take-siding indicator, governing south-bound movements into the siding, is mounted on the mast of signal 4L. Semi-automatic signals 9, 4RA, and 2RA, governing north-bound movements, are located, respectively, 5,146 feet, 3,838 feet, and 900 feet south of the point of accident. Signals 4RA and 2RA are dwarf signals of the one-arm semaphore type, and display three aspects in the upper quadrant. Signal 9 is of the two-arm semaphore type, and displays four aspects in the upper quadrant. The involved aspects and corresponding indications and names of these signals are as follows:

<u>Signal</u>	<u>Aspect</u>	<u>Indication</u>	<u>Name</u>	<u>Rule No.</u>
5LA	Vertical	Proceed	Clear Signal	281
9	Vertical- over- horizontal	Proceed	Clear Signal	281

4785 4RA	Diagonal	Proceed at a speed reduced to not exceeding one-half the maximum at point involved prepared to stop at next signal	Approach Signal	284
4L	Horizontal; illuminated letter "S" on signal mast	Stop and line siding switch for movement into siding	Take siding indicator	291
2RA	Horizontal	Stop	Stop and Stay Signal	288

These signals form a part of a centralized-traffic-control system, which extends between Critco, Ark., and Shelco, Tenn., points 4.8 miles north and 1.6 miles south of Bridge Jct. This system is controlled from an electro-mechanical machine in the interlocking station at Bridge Jct. The machine is equipped with levers for controlling the signals and power-operated switches, and for establishing the direction of traffic. It is provided with electrical and mechanical locking to insure the proper sequence of lever movements. Visual indicators are provided to show the established direction of traffic, track occupancy, and the position of power-operated switches and controlled signals. Approach, indication, and electric switch locking are provided.

The controlling circuits and the mechanical locking are so arranged that before a controlled signal can be caused to display an aspect to proceed a direction of traffic must be established between that signal and the opposing controlled signal, the opposing controlled signal and intermediate controlled signals must be displaying their most restrictive aspects, and the block must be clear of opposing trains. When a direction of traffic is established it is maintained automatically while a controlled signal is displaying an aspect to proceed or while any track circuit in the block is occupied. Opposing signals governing movements into the same block cannot simultaneously display aspects to

proceed. When the route is lined for a south-bound movement from signal 5LA into the siding at Bridge Jct., and for a north-bound movement from signal 4RA to signal 2RA, signal 5LA indicates Proceed, signal 4785 indicates Approach, signal 4L indicates Take Siding, signal 4RA indicates Approach and signal 2RA indicates Stop.

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

34. All members of train and engine crews must, when practicable, communicate to each other the indication displayed by each signal affecting the movement of their train or engine. Indication of such signal must be called by member of train or engine crew who first observes such signal, and must be called by other members of crew when signal is observed by them. \* \* \*

331. In C.T.C. territory, signals will govern the movement of trains or engines, over routes and through blocks and unless otherwise provided, signal indications supersede time-table superiority and take the place of train orders. \* \* \*

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353. Trains or engines finding "STOP AND STAY" signal displaying stop indication must stop short of the signal. \* \* \*

The maximum authorized speed for the north-bound train was 50 miles per hour, but it was restricted to 25 miles per hour over a railroad crossing immediately south of the interlocking station at Bridge Jct.

#### Description of Accident

No. 131, a south-bound second-class freight train, consisted of Diesel-electric units 5224A, 5312B and 5225A, coupled in multiple-unit control, 63 cars and a caboose. This train passed Marion, the last open office, 7.8 miles north of Bridge Jct., at 4:18 p. m., passed signal 5LA, which indicated Proceed, passed signal 4785, which indicated Approach, and stopped 89 feet north of signal 4L, which indicated Take Siding. About 2 minutes later and before this train started to enter the siding the front end was struck by No. 834.

No. 834, a north-bound second-class freight train, consisted of engine 4162, 112 cars and a caboose. This train departed from Yale at 3:40 p. m., 5 hours 40 minutes late, passed signal 9, which indicated Proceed, passed signal 4RA, which indicated Approach, passed signal 2RA, which indicated Stop, and while moving at an estimated speed of 15 miles per hour it collided with No. 131.

The Diesel-electric units of No. 131 were driven northward about 7 feet by the force of the impact. The first Diesel-electric unit and the second car of this train were badly damaged. No separations occurred between the units of the train, and no unit was derailed. The engine of No. 834 was badly damaged. The tender remained coupled to the engine, but the cistern was torn from the frame and stopped against the cab of the engine. The first three cars were derailed and stopped in various positions west of the track. The front end of the fourth car was projected upward, and the car stopped in line with the track and against the cistern of the tender. The first, third, and fourth cars were badly damaged, and the second car was destroyed. The fifth car was not derailed, but was badly damaged.

The engineer of No. 834 was killed, and the fireman, the front brakeman, and the swing brakeman of this train were injured.

The weather was clear at the time of the accident, which occurred at 4:30 p. m.

#### Discussion

In this territory the movements of trains are authorized by signal indications. The signals are controlled by the operator at Bridge Jct. interlocking. The operator is under the supervision of the train dispatcher.

The train dispatcher instructed the operator at Bridge Jct. to arrange a meeting point between No. 131 and No. 834 at Bridge Jct., and to arrange for No. 131 to enter the siding. About 4:20 p. m. the operator lined the route for No. 131 to move from Critco to the north siding-switch at Bridge Jct. and then into the siding, and for No. 834 to move northward to signal 2RA.



No. 131 entered the centralized-traffic-control territory at Critco, where the governing signal indicated Proceed. The enginemen and the front brakeman were in the control compartment at the front of the first Diesel-electric unit, and the conductor, the swing brakeman, and the flagman were in the caboose. Signal 5LA indicated Proceed, signal 4875 indicated Approach, and signal 4L indicated Take Siding. In preparing to enter the siding at Bridge Jct., the train was stopped with the front of the first Diesel-electric unit 89 feet north of signal 4L. Immediately thereafter the enginemen and the front brakeman observed No. 834 approaching at a distance of about 800 feet. The engineer sounded a warning on the pneumatic horn, and all employees alighted from the engine immediately before the collision occurred.

As No. 834 was approaching Bridge Jct. the speed was about 15 miles per hour. The enginemen were in their respective positions on the engine, the front brakeman and the swing brakeman were in the brakeman's booth on the tender of the engine, and the conductor and the flagman were on the rear platform of the caboose. The brakes of this train had been tested and had functioned properly when used en route. Signal 9 indicated Proceed, and the indication was called by the enginemen. Because of track curvature signal 4RA was not visible from the left side of the cab. Signal 2RA was visible from the left side of the cab at a distance of 1,750 feet but, because the signal is of the dwarf type with a small semaphore blade, the day aspects were not clearly visible at a distance greater than about 900 feet. The fireman first observed No. 131 when it was about 900 feet distant. He called a warning to the engineer, who immediately placed the brake valve in emergency position. The brakemen in the brakeman's booth on the tender first observed No. 131 when the brakes of their train were applied.

None of the surviving employees on the engine of No. 834 observed the aspect displayed either by signal 4RA or by signal 2RA. The fireman was making his first north-bound trip over this portion of the railroad. He was not familiar with the locations of signals or other physical characteristics of the railroad. He said that the engineer did not call the indication of either signal. The operator said he delivered some train orders to the engineer while No. 834 was passing Bridge Jct. interlocking, and that signal 4RA was indicating Approach at that time. After the accident occurred, the throttle of the engine of No. 834 was found in closed position, the reverse lever was in position for forward motion, the sander valve was open, and the automatic brake valve was in emergency position.

Inspections and tests of the signal apparatus in the vicinity of the point of accident were begun by signal forces of the carrier about 2 hours 30 minutes after the accident occurred. The signal maintainer said that the lever used to establish the direction of traffic between southward signal 5LA and northward signal 2RA was in position for south-bound movement, and it was locked electrically in that position by occupancy of one or more track circuits in the route. The lever controlling northward signal 2RA was in position for that signal to indicate Stop, and it was locked in that position by the mechanical locking of the control machine. The mechanical locking of the control machine, the approach locking and traffic locking circuits, all track circuits, and the control circuits of the involved signals were tested, and were found to be operating properly. The operating characteristics of relays, electric locks, and signal mechanisms were within the limits within which they were designed to operate. All circuits were tested for grounds. There was no condition found that would have caused an improper operation of the signal system. The annual tests of mechanical, approach, indication, and traffic locking were completed on September 30, 1949. The quarterly test of time releases also was completed on September 30, 1949. At that time all of the apparatus was functioning as intended.

Cause

It is found that this accident was caused by failure to operate the north-bound train in accordance with a signal indication.

Dated at Washington, D. C., this twenty-eighth day of November, 1949.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,  
Secretary.