

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 2688
THE NORFOLK SOUTHERN RAILWAY COMPANY
REPORT IN RE ACCIDENT
NEAR FENTRESS, VA., ON
MARCH 29, 1943

SUMMARY

Railroad: Norfolk Southern
Date: March 29, 1943
Location: Fentress, Va.
Kind of accident: Derailment
Train involved: Freight
Train number: 64
Engine number: 602
Consist: 32 cars, caboose
Estimated speed: 10 m. p. h.
Operation: Timetable and train orders
Track: Single; tangent; level
Weather: Clear
Time: 6:20 a. m.
Casualties: 1 killed; 2 injured
Cause: Accident caused by failure to provide adequate safeguards for movements approaching drawbridge, and by failure to obey stop signal
Recommendation: That the Norfolk Southern Railway Company provide adequate protection for movements over its drawbridges

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2688

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

THE NORFOLK SOUTHERN RAILWAY COMPANY

May 26, 1943.

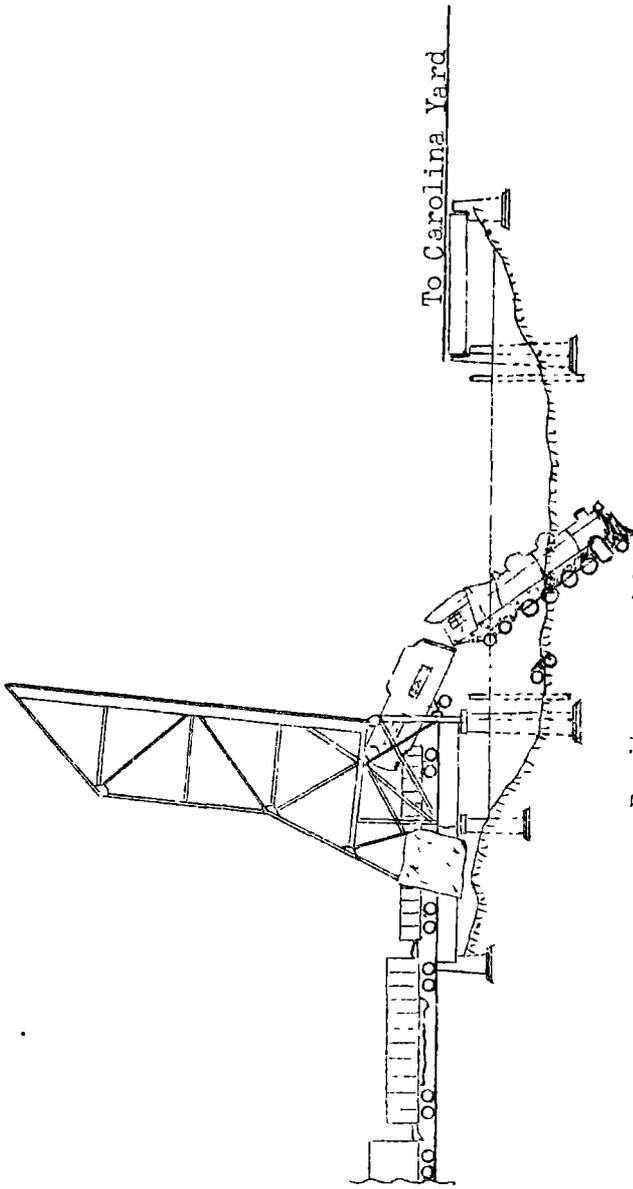
Accident near Fentress, Va., on March 29, 1943, caused by failure to provide adequate safeguards for movements approaching a drawbridge, and by failure to obey a stop signal.

REPORT OF THE COMMISSION¹

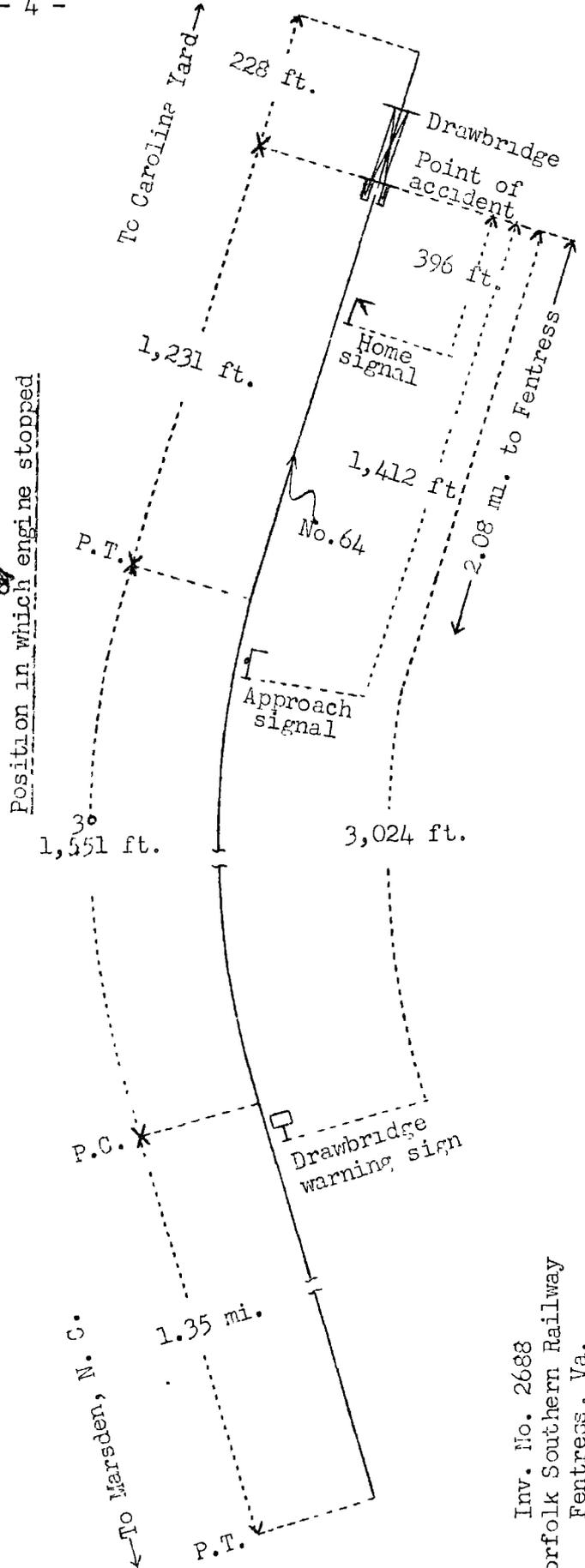
PATTERSON, Commissioner:

On March 29, 1943, there was a derailment of a freight train on the Norfolk Southern Railway near Fentress, Va., which resulted in the death of one employee and the injury of two employees.

¹Under 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.



- | | | |
|---|-----------------------|-----------|
| o | Carolina Yard, Va. | 6.42 mi. |
| X | Point of accident | 2.08 mi. |
| o | Fentress, Va. | 33.50 mi. |
| o | Elizabeth City, N. C. | 33.40 mi. |
| o | Marsden, N. C. | |



Inv. No. 2688
 Norfolk Southern Railway
 Fentress, Va.
 March 29, 1943

Location of Accident and Method of Operation

This accident occurred on that part of the Northern District extending between Marsden, N. C., and Carolina Yard, Va., 125.4 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable and train orders. There is no block system in use. The accident occurred 2.08 miles north of the station at Fentress, Va., at a drawbridge which spans the Albemarle and Chesapeake Canal. Approaching from the south there are, in succession, a tangent 1.35 miles in length, a 3° curve to the right 1,551 feet and a tangent 1,231 feet to the south end of the drawbridge and 228 feet beyond. At the point of accident the grade is level.

The railroad crosses the canal at right angles. The draw-bridge is of the single-track, single-leaf, rolling bascule type. The fixed end is supported on two piers 37 feet and 63 feet 6 inches north of the south backwall. The distance from the south backwall to the north backwall is 195 feet. At each end of the draw-span there are deck-plate girder-spans 37 feet in length. The draw-span is 94 feet 6 inches in length and is operated by a gasoline engine. At the time of the accident the draw-span was open for traffic through the canal and was perpendicular to the track. The mean low level of the water under the draw-span was 11 feet 8-3/4 inches below the base of the rails and the water was approximately 15 feet deep. The drawbridge is equipped with a mechanical bridge-lock and self-aligning devices.

A warning sign, an approach signal and a home signal, governing north-bound movements, are located, respectively, 3,024, 1,412 and 396 feet south of the point of accident. The warning sign is rectangular in shape, 18 inches wide and 30 inches long, mounted on a post 6 feet high, and bears the words "3000 FEET TO DRAWBRIDGE" in black letters on a white background. The approach signal is of the one-arm, semaphore type, fixed in horizontal position and is oil lighted. The home signal is of the one-arm, two-position, lower-quadrant, semaphore type, and is oil lighted. The home signal and the bridge lock are operated by one lever, and are controlled from a drawbridge tender's cabin located on piling east of the draw-span and adjacent to its south end. The involved aspects and indications of these signals are as follows:

<u>Signal</u>	<u>Day Aspect</u>	<u>Night Aspect</u>	<u>Indication</u>
Approach	Horizontal	Yellow	Caution
Home	Horizontal	Red	Stop

When the draw-span is in position for movement on the railroad the home signal displays proceed. When the draw-span is in position for movement on the canal the home signal displays stop.

Operating rules read in part as follows:

AUDIBLE SIGNALS.

14. ENGINE AND MOTOR WHISTLE SIGNALS.

Note - The signals prescribed are illustrated by "o" for short sounds and "___" for longer sounds. * * *

Sound.	Indication.
* * *	
(m) _____	Approaching * * * drawbridges.

34. The engineman and fireman must, when practicable, communicate to each other by its name the indication of all signals affecting the movement of their train.

98. Trains must approach * * * draw-bridges, prepared to stop unless * * * signals are right and the track is clear. * * *

A bulletin made effective on February 1, 1929, reads in part as follows:

* * *

The position of the distant semaphore signals is fixed horizontally. The distant semaphore signals are equipped with green lights for caution. The normal position of the home semaphore signals is horizontal. RED-STOP. The home semaphore signals are equipped with red and white lens. Horizontal position of semaphore - RED for STOP. Downward position of semaphore - WHITE for PROCEED.

All trains will be under control at the distant signal and will stop before passing the home signal unless the home signal is clear white for PROCEED and it is known that the drawbridge is closed for train operation. * * *

A bulletin made effective August 18, 1941, reads in part as follows:

The home semaphore light signals at all interlocking plants and drawbridges will be changed from clear white roundels or lens for PROCEED to green roundels or lens indicating "PROCEED," on or about Monday August 18, 1941. * * * At the same time the distant signals will be changed from green roundels or lens to yellow roundels or lens for caution. * * *

* * *

Time-table special instructions read in part as follows:

Conductors and flagmen, engineman and fireman, will distinctly call to each other the color of all semaphores, "white board," or "red board" (as the case may be), day and night.

In the vicinity of the point of accident the maximum authorized speed for freight trains is 40 miles per hour, and on drawbridges, 15 miles per hour.

Description of Accident

No. 64, a north-bound second-class freight train, consisted of engine 602, 19 loaded and 13 empty cars and a caboose. This train departed from Marsden, N. C., 116.9 miles south of Fentress, at 10:55 p. m., March 28, according to the dispatcher's record of movement of trains, 55 minutes late, departed from Elizabeth City, N. C., 33.5 miles south of Fentress and the last open office, at 4:45 a. m., March 29, 1 hour 10 minutes late, passed the warning sign and the approach signal at a speed of 39 miles per hour, as indicated by the tape of the speed recorder, passed the home signal, which displayed stop, and while moving at an estimated speed of 10 miles per hour the engine dropped into the canal. The brakes had functioned properly at all points where used en route. There was no condition of the engine that distracted the attention of the members of the crew on the engine or obscured their vision.

From the right side of a north-bound engine the view of the home signal is restricted to 1,730 feet, and from the left side to 887 feet, because of trees and track curvature.

The engine stopped, badly damaged, upright and at an angle of 45 degrees to the plane of the track, with its front end and its rear end, respectively, 80 and 10 feet north of the fixed end of the draw-span. All of the engine except the cab was submerged. The tender remained coupled to the engine and stopped in the bridge opening with its rear truck on the fixed-end pier. The front end of the first car was considerably damaged.

It was clear and day was breaking at the time of the accident, which occurred at 6:20 a. m.

The employee killed was the engineer, and the employees injured were the fireman and the front brakeman.

Data

During the 30-day period preceding the day of the accident there was an average daily movement of 6.7 trains and 8.96 snips at the bridge involved.

Discussion

The drawbridge involved is protected by approach signals fixed in caution position, and by home signals which are so arranged that when the bridge lock is released the home signals display stop. The rules governing operation on this line provide that all trains must approach drawbridges prepared to stop unless the signals indicate proceed and the way is clear.

About 3:01 a. m. the drawbridge over the A. & C. Canal was raised for the passage of a boat through the canal and it was not closed after the passage of the boat.

As No. 64 was approaching the bridge, the speed was 39 miles per hour, the throttle was open, the headlight was lighted and the engineer and the fireman were in their usual positions in the cab. The front brakeman was seated to the rear of the engineer. When the engine was about 1,000 feet south of the bridge the fireman observed simultaneously the draw-span in perpendicular position and the home signal displaying stop. He warned the engineer of these conditions and, observing that the engineer did not heed him, warned him again. When the engine was about 150 feet south of the home signal, or about 550 feet south of the bridge, the engineer applied the brakes in emergency just before the fireman jumped. The front brakeman said that because of being inexperienced he was studying the timetable as the train was approaching the bridge. He first became aware of the stop indication displayed by the home signal about the time that the fireman called a warning. The brakeman said that he touched the engineer in order to attract his attention. The engineer immediately moved the brake valve to emergency position and closed the throttle. The first that the conductor and the flagman were aware of anything being wrong was when the brakes were applied in emergency and the train stopped abruptly. Since the speed line of the tape of the speed recorder was blotted by immersion, the speed at the time of the accident could not be established definitely; however, the estimated speed was about 10 miles per hour. The drawbridge tender said that he first became aware of the approach of No. 64 when he observed the headlight. He attempted to lower the draw-span, but he was able to lower it only a short distance before the accident occurred.

Under the rules one long blast of the engine whistle is required to be sounded when a train is approaching a drawbridge.

In addition, enginemen must communicate to each other the indication of signals which affect the movement of their train. The investigation disclosed that the engine whistle was last sounded for a highway crossing about 2 miles south of the bridge and the speed was not reduced until the train was a short distance south of the home signal. The fireman said that he was not alarmed when the engineer failed to sound the required whistle signal and to reduce speed, because the curve was to the right and the engineer had a view of the home signal throughout a greater distance than he; furthermore, the engineer did not always call the indication displayed by signals. If the fireman had warned the engineer that their train was closely approaching the drawbridge this accident could have been averted. No other member of the crew observed either the failure to sound the proper signal or the failure to control the speed properly. The engineer died from injuries sustained in the accident and it could not be determined why he failed to operate his train in compliance with the stop indication displayed by the home signal.

The investigation disclosed a lack of definite rules and instructions which are necessary for safe operation of trains. The book of operating rules contains rules for movement of trains in accordance with indications of fixed signals, but no illustrations of aspects and indications are given. The indications are mentioned but not defined. A bulletin issued in August, 1941, specifies that the night aspects of signals were being changed so that green would indicate proceed; however, time-table special instructions issued in October, 1942, require that employees communicate a proceed indication to each other on a white board. A bulletin issued in February, 1929, requires a train to be under control at distant signals; however, control is not defined. In the instant case, the maximum authorized speed for No. 64 between the approach signal and the home signal, a distance of 1,016 feet, was 40 miles per hour and on the drawbridge, 15 miles per hour. Operating officials stated that engineers are expected to begin the reduction of speed near the drawbridge sign so that the train will be under such control when the engine reaches the approach signal that the train can be stopped short of the home signal. However, there are no written instructions covering this matter, and there was no evidence introduced to show that engineers had been so instructed. The investigation developed that engineers varied considerably in their handling of trains approaching the drawbridge. The operation of trains approaching drawbridges depends entirely upon the varied judgment of engineers.

There was no normal position for the draw-span, and it remained in the position last used until it was changed for traffic on the other route. The bridge had been left open about 3 hours before the accident occurred, and during this time no boat passed. If the bridge had been closed for rail traffic immediately after the last boat passed, this accident

would have been averted. The drawbridge tender said the practice had been the same for at least 16 years, and the reason was to save wear on the bridge and power in operating it. There is no annunciator signal to warn the drawbridge tender of the approach of a train. When the draw-span is open he depends upon hearing engine-whistle signals, then, if no boat is approaching on the canal, he closes the draw-span for movement on the railroad. If he starts to lower the draw-span after the drawbridge signal is sounded, and if the train is approaching at normal speed, he cannot close and lock the draw-span in time to prevent stopping the train.

The investigation of this accident disclosed that this railroad has ten drawbridges in use. Of these, five are normally closed, one is normally closed between 7 a. m. and 11 p. m., three are normally open, and the one at which this accident occurred has no normal position. The distance between the approach and the home signals varies between 893 and 1,283 feet. One bridge is not provided with approach signals, and one bridge is not provided with any signals or signs. The time required in closing these draw-spans varies from 1-1/2 to 20 minutes. The home signals of the bridges having these signals are so arranged that they can be changed to stop position and the draw-spans opened at any time unless a train is on the draw-span. No bridge is provided with approach locking or time locking. Under these conditions a train could accept a proceed indication at a home signal and yet there would be ample time for the draw-span to be opened sufficiently to cause the train to be derailed.

Cause

It is found that this accident was caused by failure to provide adequate safeguards for movements approaching a drawbridge, and by failure to obey a stop signal.

Recommendation

It is recommended that the Norfolk Southern Railway Company provide adequate protection for movements over its drawbridges.

Dated at Washington, D. C., this twenty-sixth day of May, 1943.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.