

INTERSTATE COMMERCE COMMISSION  
WASHINGTON

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INVESTIGATION NO. 3041  
SOUTHERN RAILWAY SYSTEM  
REPORT IN RE ACCIDENT  
AT PINE KNOT, KY., ON  
NOVEMBER 24, 1946

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SUMMARY

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Railroad: Southern

Date: November 24, 1946

Location: Pine Knot, Ky.

Kind of accident: Side collision

Trains involved: Freight : Freight

Train numbers: Second 54 ; Third 54

Engine numbers: 6370 : 6325

Consists: 49 cars, caboose : 55 cars, caboose

Estimated speeds: Standing : 25 m. p. h.

Operation: Timetable, train orders and automatic block-signal and automatic train-stop systems

Tracks: Double; 1° curve; vertical curve

Weather: Clear

Time: 1:33 p. m.

Casualties: 1 killed; 1 injured

Cause: Train fouling main track immediately in front of approaching train

Recommendation: That the Southern Railway Company install automatic signals to govern movements from sidings to main tracks on its lines where automatic block-signal system is in use

INTERSTATE COMMERCE COMMISSION

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INVESTIGATION NO. 3041

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

SOUTHERN RAILWAY SYSTEM

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December 27, 1946

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Accident at Pine Knot, Ky., on November 24, 1946, caused by  
a train fouling the main track immediately in front of  
an approaching train.

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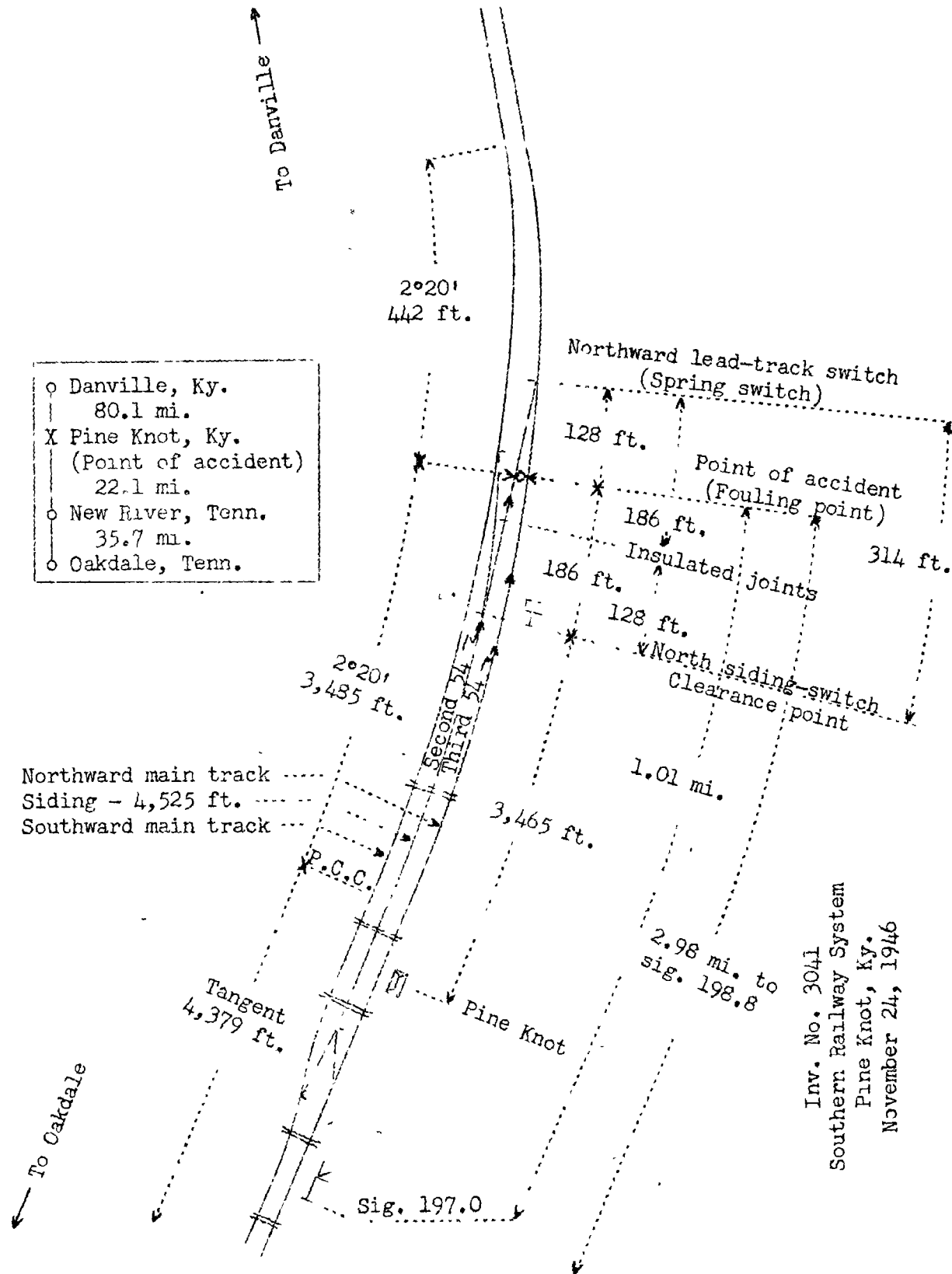
REPORT OF THE COMMISSION<sup>1</sup>

PATTERSON, Commissioner.

On November 24, 1946, there was a side collision between  
two freight trains on the Southern Railway at Pine Knot., Ky.,  
which resulted in the death of one employee, and the injury  
of one employee.

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<sup>1</sup>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. No. 3041  
Southern Railway System  
Pine Knot, Ky.  
November 24, 1946

### Location of Accident and Method of Operation

This accident occurred on that part of the Cincinnati, New Orleans & Texas Pacific Railway extending between Oakdale, Tenn., and Danville, Ky., 137.9 miles. In the vicinity of the point of accident this is a double-track line over which trains moving with the current of traffic are operated by timetable, train orders and an automatic block-signal system and an automatic train-stop system. At Pine Knot, 57.8 miles north of Oakdale, a siding 4,525 feet long lies between the main tracks. The north switch of the siding is 3,465 feet north of the station. Two lead tracks extend from the north end of the siding to the main tracks. The northward lead track to the northward main track is 314 feet long. The north siding-switch is hand-operated, and the northward lead-track switch at the northward main track connection is a spring switch. The accident occurred at the fouling point of the northward main track and the northward lead track, at a point 186 feet north of the clearance point and 128 feet south of the northward lead-track switch. From the south on the northward main track there is a tangent 4,379 feet in length, which is followed by a compound curve to the left, the maximum curvature of which is  $2^{\circ}20'$ , 3,485 feet to the point of accident and 442 feet northward. The grade for north-bound trains is 0.22 percent descending 1,550 feet, then there is a vertical curve 1,000 feet, followed by a 0.97 percent ascending grade 143 feet and a vertical curve 932 feet to the point of accident and 75 feet northward.

Automatic signals 198.8 and 197.0, governing north-bound movements on the northward main track, are, respectively, 2.98 and 1.01 miles south of the point of accident. These 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:

<u>Aspect</u>	<u>Indication</u>	<u>Name</u>
Vertical, green	Proceed	Clear signal
45 degrees, yellow	Proceed, preparing to stop at next signal. Train exceeding medium speed must at once re- duce to that speed	Approach signal
Horizontal, red	Stop; then proceed at restricted speed	Stop and pro- ceed signal

The automatic train-stop system is of the intermittent-inductive type. Engines are provided with acknowledging devices. Train-stop inductors for the northward main track are located about 45 feet south of each northward automatic block signal.

The track circuit of the fouling section of the northward lead track extends 186 feet south of the lead-track switch. The controlling circuits of the automatic signals and the automatic train-stop system are so arranged that when any portion of the fouling section of the northward lead track is occupied, or when the spring switch at the north end of the northward lead track is hand-operated to open position, signal 198.8 displays proceed-preparing-to-stop-at-next-signal and signal 197.0 displays stop-then-proceed-at-restricted-speed. There is no signal governing movements from the siding to the main track. A sign indicating the clearance point of the northward main track and the northward lead track is located immediately east of the northward main track, 314 feet south of the lead-track switch and 128 feet south of the insulated joints of the fouling section of the lead track.

Operating rules read in part as follows:

#### DEFINITIONS

\* \* \*

Section--One of two or more trains running on the same schedule \* \* \*

\* \* \*

Medium Speed.--One-half authorized speed, at point involved, but not exceeding 30 miles per hour.

\* \* \*

Restricted Speed.--Proceed prepared to stop short of train, obstruction, or switch not properly lined and look out for broken rail.

11. A train finding a fusee burning on or near its track must stop and extinguish the fusee, and then proceed with caution prepared to stop short of train or obstruction.

\* \* \*

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

34. The following signals will be used by flagmen:

Day signals      (A red flag,  
                  (Torpedoes and  
                  (Fusees.

\* \* \*

85. \* \* \*

A section may pass and run ahead of another section of the same schedule, first exchanging train orders, signals and numbers with the section to be passed. The change in sections must be reported from the next available point of communication.

99. \* \* \*

\* \* \*

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. \* \* \*

\* \* \*

517. Within automatic block signal territory, unless otherwise provided, before a train or engine enters on or fouls a main track, \* \* \*, trainmen will operate all switches involved, and in addition to other precautions, trains and engines will wait three minutes before the movement is made, \* \* \*

At spring switches, \* \* \* the switch must be thrown for the siding and after waiting three minutes the train or engine will proceed to the frog when the switch will be thrown and locked for the main track and the movement completed.

This will not relieve employees of the duty of promptly and properly protecting the movement.

In this territory the maximum authorized speed for passenger trains is 65 miles per hour and for freight trains, 55 miles per hour.

During the 30-day period preceding the day the accident occurred, the average daily movement on this district was 47.6 trains.

#### Description of Accident

Second 54, a north-bound second-class freight train, consisted of engine 6370, 49 cars and a caboose. About 1:33 p. m., after this train had moved northward on the siding at Pine Knot and had stopped with the engine fouling the northward main track on the northward lead track, the engine was struck by Third 54.

Third 54, a north-bound second-class freight train, consisting of engine 6325, 55 cars and a caboose, passed New River, the last open office, 22.1 miles south of Pine Knot, at 12:08 p. m., 3 hours 56 minutes late, passed signal 196.8, which displayed approach, passed signal 197.0, the indication of which

changed from approach to proceed when the engine was closely approaching that signal, and while moving on the northward main track at an estimated speed of 25 miles per hour it collided with Second 54.

The engines of both trains, the first car of Second 54 and the first seven cars of Third 54 were derailed and damaged.

The weather was clear at the time of the accident, which occurred about 1:33 p. m.

The engineer of Third 54 was killed, and the front brakeman was injured. The engineer of Second 54 became ill and died soon after the accident occurred.

#### Discussion

Second 54, a north-bound second-class train, stopped into clear on the siding at Pine Knot about 1:10 p. m. to permit No. 16, a north-bound first-class train, to pass. No. 16 passed Pine Knot about 1:25 p. m. About 1:32 p. m. Second 54 proceeded northward on the siding, entered the northward lead track and stopped with the front end of the engine standing on the lead track 186 feet north of the clearance point of the northward main track and the lead track. About 1 minute later the engine was struck by Third 54, a north-bound second-class train.

Under the rules, in order to provide signal protection, before Second 54 proceeded from the siding to the northward main track the spring switch at the north end of the lead track was required to be operated by hand to open position, then Second 54 was required to wait 3 minutes before it was permitted to foul the main track. In addition, flag protection was required to be furnished before the movement from the siding was started. The surviving employees concerned understood these provisions.

When the accident occurred the conductor, the flagman and the front brakeman of Second 54 were in the vicinity of the rear end of their train. The fireman said that soon after No. 16 passed the north lead-track switch, Second 54 moved northward on the siding and stopped with the engine standing in the immediate vicinity of the clearance sign and south of the insulated joints of the fouling section of the northward lead track. About 3 minutes later the train again moved northward and was about to enter the northward main track at the lead-track switch when the fireman saw Third 54 closely approaching. The fireman immediately called a warning to the engineer, and Second 54 was stopped with the engine standing on the lead track and fouling the northward main track. Then the engineer and the fireman ran toward the approaching train, and were giving stop signals from a point about 150 feet south of their engine when the engine of Third 54 passed them. The members of the train crew of Second 54 said that immediately after No. 16 passed their caboose the flagman placed a lighted fusee on the northward main track a short distance south of the caboose. They



first saw Third 54 when the engine of that train was about 1,200 feet distant. Although Second 54 had moved northward on the siding, no further action was taken by any member of the train crew to protect the movement of their train from the siding to the main track. The conductor said that immediately after the engine of Third 54 passed his caboose he opened the conductor's valve on the caboose, but this action was not taken soon enough to stop Second 54 before the engine had fouled the main track. The fireman of Second 54 said that, because he was not instructed to do so by the engineer, he took no action to operate the spring switch by hand. The engineer was not injured in the accident. However, he became ill and died soon afterward, and it could not be determined why action was not taken by him to protect the movement in compliance with the rules. After the accident, remains of a freshly burned fusee were found in the vicinity of the point where the flagman said he placed a burning fusee. The sun was shining brightly at the time the accident occurred, and the position in which the remains of the fusee were found indicated that it was not in an upright position while burning; therefore, it is possible that under these conditions the burning fusee might not have been seen by the enginemen of Third 54.

As Third 54 was approaching Pine Knot the speed was about 30 miles per hour, in compliance with approach indications displayed by signals 198.8 and 197.0, located, respectively, 2.98 and 1.01 miles south of the point where the accident occurred. These signals were actuated by No. 16, which was preceding Third 54 on the northward main track. The fireman of Third 54 said that the indications of these signals were called to him by the engineer, and that the acknowledging lever was operated at the train-stop inductor at signal 198.8. When the engine was a short distance south of signal 197.0 the indication of this signal changed to proceed, and the enginemen called the indication. When the engine was in the vicinity of the south siding-switch, the fireman saw the caboose of the train on the siding and he informed the engineer that a train was occupying the siding. No fusee or other flagging signal was seen in the vicinity of the caboose. Soon afterward, the fireman observed that the train on the siding was moving northward, then he saw stop signals being given in the vicinity of the engine of that train about 400 feet distant. He immediately called a warning to the engineer, then jumped from the engine. The fireman did not observe what action was taken by the engineer to stop the train. The engineer was fatally injured in the accident. The front brakeman was in the brakeman's booth on the tender, and he was not aware that Second 54 had fouled the northward main track until immediately before the accident occurred. The conductor and the flagman of Third 54 were in the caboose. The flagman, who was in the cupola, said that when he first saw the caboose of the train on the siding the brakes of his train had been applied in emergency. He estimated the speed of his train as 30 miles per hour when the brakes were applied in emergency, and 25 miles per hour when the collision occurred. The surviving members of the crew of Third 54 understood that, under the rules,

Third 54 was required to exchange train orders, signals and train numbers with Second 54 if their train passed Second 54. These employees said they were not aware of the identity of the train on the siding until immediately before the collision occurred.

Third 54 passed signal 197.0, located approximately 1 mile south of the insulated joints of the fouling section of the northward lead track, approximately 2 minutes before the engine of Second 54 entered the track circuit of the fouling section of the lead track. Protection for the movement of trains entering the main track through the spring switch depended entirely upon compliance with the flagging rule and the rule which requires that the switch must be hand-operated and an interval of 3 minutes elapse before a train or engine may foul the main track. If the crew of Second 54 had followed the prescribed procedure, signal 197.0 would have displayed stop-then-proceed-at-restricted speed for Third 54, and flagging signals in addition to the fusee would have been given by members of the crew of Second 54.

The purpose of the 3-minute rule is to insure that the signals governing trains on the main tracks approaching a switch will display restrictive indications for a sufficient time interval to protect movements from sidings to main tracks. This requirement does not provide adequate protection. Had a signal been provided governing movements from siding to main track, a definite indication would have been given that a following train was closely approaching and that it was not safe for the train on the siding to foul or to enter the main track.

#### Cause

It is found that this accident was caused by a train fouling the main track immediately in front of an approaching train.

#### Recommendation

It is recommended that the Southern Railway Company install automatic signals to govern movements from sidings to main tracks on its lines where an automatic block-signal system is in use.

Dated at Washington, D. C., this twenty-seventh day of December, 1946.

By the Commission, Commissioner Patterson.

W. P. BARTEL

(SEAL)

Secretary.