

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE
NEW YORK, CHICAGO & ST. LOUIS RAILROAD

BLUFFTON, OHIO

MAY 22, 1940

INVESTIGATION NO. 2428

SUMMARY

Inv-2428

Railroad: New York, Chicago & St. Louis
Date: May 22, 1940
Location: Bluffton, Ohio
Kind of accident: Rear-end collision
Trains involved: Freight : Freight
Train numbers: 65 : 49
Engine numbers: 641 : 646
Consist: 30 loaded and 72 empty cars, and caboose : 37 loaded and 8 empty cars, and caboose
Speed: Standing : 12-30 m. p. h.
Operation: Timetable, train orders, and manual block system for following movements only
Track: Single; tangent; 0.5 percent ascending grade westward
Weather: Clear
Time: 9:20 p. m.
Casualties: 3 injured
Cause: Failure to control speed of following train properly in manual-block territory in accordance with permissive indication

June 26, 1940

To the Commission:

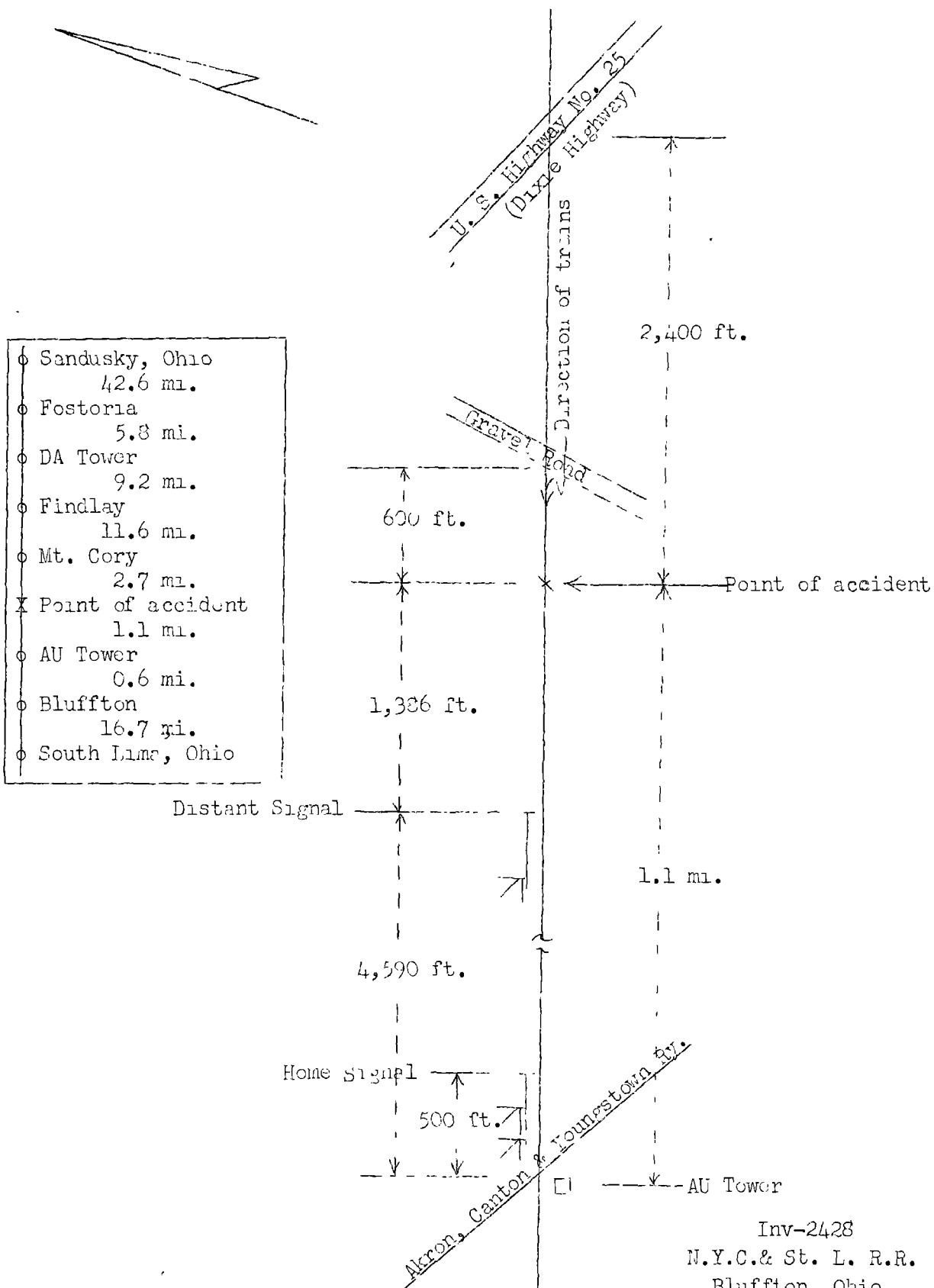
On May 22, 1940, there was a rear-end collision between two freight trains on the New York, Chicago & St. Louis Railroad near Bluffton, Ohio, which resulted in the injury of three employees. This investigation was made in conjunction with a representative of the Ohio Public Utilities Commission.

Location and Method of Operation

This accident occurred on that part of the Sandusky Division which extends between Sandusky and South Lima, Ohio, a distance of 20.3 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 a manual block-system for following movements only. The accident occurred at a point 1.1 miles east of AU Tower, which is located 0.6 mile east of the station at Bluffton. Approaching this point from the east the track is tangent more than 15 miles to the point of accident and a considerable distance beyond. The grade for west-bound trains is, in succession, 0.03 percent ascending a distance of 750 feet, 0.28 percent descending a distance of 1,800 feet, and 0.5 percent ascending a distance of 1,550 feet to the point of accident.

The Akron, Canton & Youngstown Railway crosses the New York, Chicago & St. Louis Railroad at AU Tower. This crossing is protected by an interlocking controlled from the tower. The home signal and the distant signal governing west-bound movements are semi-automatic signals and are located, respectively, 500 feet and 4,590 feet east of the crossing. The track circuit for the distant signal begins at a point 3,786 feet east of the signal, approximately at Highway U. S. 25, which crosses the track at grade and is known as Dixie Highway. The accident occurred at a point 1,386 feet east of the distant signal, which is of the color-light type, approach lighted. The aspects and the indications displayed by the distant signal and their corresponding names are as follows:

Aspect	Indication	Name
Green	Proceed	Clear-Signal
Yellow	Approach home signal with caution	Caution-Signal
Red	Stop	Stop-Signal



- Sandusky, Ohio
42.6 mi.
- Fostoria
5.8 mi.
- DA Tower
9.2 mi.
- Findlay
11.6 mi.
- Mt. Cory
2.7 mi.
- ✕ Point of accident
1.1 mi.
- AU Tower
0.6 mi.
- Bluffton
16.7 mi.
- South Lima, Ohio

Inv-2428
 N.Y.C. & St. L. R.R.
 Bluffton, Ohio
 May 22, 1940

The following rules of the operating department read in whole or in part as follows:

14. ENGINE AND MOTOR WHISTLE SIGNALS

Note.- The signals prescribed are illustrated by "O" for short sounds; "—" for longer sounds. * * *

* * *

S-(e) ———— Flagman may return from east or north, as prescribed by Rule 99.

35. The following signals will be used by flagmen:

* * *

Night signals - A red light,
A white light,
Torpedoes and
Fusees.

99. When a train stops under circumstances in which it may be overtaken by another train, the flagman must go back immediately with flagman's signals a sufficient distance to insure full protection, placing two torpedoes, and when necessary, in addition, displaying lighted fusees.

When signal * * * 14 S - (e) * * * has been given to the flagman and safety to the train will permit, he may return. When the conditions require he will leave the torpedoes and a lighted fusee.

* * *

711. Permissive-Signal. Indication - Proceed with caution, prepared to stop short of train or obstruction.

948. * * *

A train other than a passenger train may be permitted to follow a train other than a passenger train into a block under Permissive-signal or with Permissive Card and Clearance Card.

962. When a Permissive-signal is provided it must be used instead of Permissive Card.

1327. FIREMEN. If engineman fails to regulate speed of train when approaching a signal indication or other condition requiring that speed be reduced, they must communicate with him at once, and, if necessary, stop the train.

The following time-table special instructions read in whole or in part as follows:

11. Rule 11 is modified as follows:

(a) A train finding a fusee burning red upon or near its track, will stop and then proceed with caution prepared to stop short of a train or obstruction.

* * *

19. Markers.

* * *

(c) By night, yellow lights to the front and side and red lights to the rear; * * *

34. Rule 34 is modified as follows:

All members of train and engine crews must when practicable communicate to each other by its name the indication of all signals affecting the movement of their train.

Clearance card Form A is used in lieu of a permissive card to permit a freight train to follow another freight train in a block under a permissive block indication.

At the time of the accident, the block involved extended between Findlay and AU Tower, a distance of 15.4 miles.

The maximum authorized speed for freight trains is 50 miles per hour.

The weather was clear and visibility was good at the time of the accident, which occurred at 9:20 p. m.

Description

No. 65, a west-bound freight train, with Conductor Shuman and Engineman Smith in charge, consisted of 30 loaded and 72 empty cars, and a caboose, hauled by engine 641. This train departed from DA Tower, 24.6 miles east of AU Tower, at 5:17 p. m., according to the train sheet, 3 hours 7 minutes late, left Findlay, the last open office, 15.4 miles east of AU Tower, at 7:10 p. m., stopped at AU Tower at 8:57 p. m. to pick up 4 cars, and about 23 minutes later its rear end was struck by No. 49.

No. 49, a west-bound freight train, with Conductor Minzey and Engineman Howarth in charge, consisted of 37 loaded and 8 empty cars, and a caboose, hauled by engine 646, of the 2-8-2 type. This train departed from DA Tower at 8:48 p. m., according to the train sheet, 33 minutes late. At Findlay the train-order signal displayed a yellow aspect and the crew received a message and, in addition, a clearance card Form A, reading as follows:

Stop signal is displayed for message No. 65
is in block.

This train passed Findlay at 9:01 p. m., and, while moving at a speed variously estimated to have been between 12 and 30 miles per hour, struck the rear end of No. 65.

The caboose of No. 65 was demolished. The last four cars were derailed; the first car from the caboose was derailed to the south of the track; the second and third were buckled to the north, and the fourth remained in general line with the track. Engine 646, of No. 49, stopped on the south side of the track with its front end buried in the embankment; it was badly damaged. The tender was derailed but remained in line with the track. The first two cars were not derailed, but the third and fourth cars were buckled to the north of the track.

The employees injured were the engineman, the fireman and the front brakeman of No. 49.

Summary of Evidence

Engineman Smith, of No. 65, stated that his train stopped at AU Tower to pick up cars, and to clear a road crossing he stopped his engine 30 or 35 car lengths east of the home signal. About

25 minutes later, when his train was about ready to depart, he recalled the flagman; at that time he saw the reflection of the headlight of No. 49 and also a burning red fusee to the rear of his train. About 5 minutes later the air brakes became applied in emergency.

The statements of Fireman Forney, Front Brakeman Main, and Flagman Golding brought out nothing additional of importance.

Conductor Shuman, of No. 65, stated that his train stopped at AU Tower to pick up four cars and as the flagman was at the head end of the train to assist in this work the conductor assumed the duties of the flagman. About 5 minutes after the train had stopped he saw the reflection of the headlight of the following train about 10 miles distant, and he started back to flag, taking with him two 10-minute fusees, torpedoes and a red and a white lantern. He was about 20 car lengths to the rear of his train when he flagged the approaching train with a red fusee; the engineman acknowledged his signal by dimming his headlight twice; the train at that time was about 1 mile distant or about 3/4 mile east of Dixie Highway; the train had not entered on the circuit which begins at a point 2,013 feet east of the crossing and controls the flashing lights at the crossing. He did not know whether the engineman sounded the whistle signal in answer to his flag; however, it is a common practice to acknowledge a flag at night by blinking the headlight. He did not think it was necessary to place torpedoes but he left the burning fusee on the track and started back toward his caboose. At a gravel-road crossing, about 600 feet from his caboose, he lighted another fusee when he observed that the approaching train was not reducing speed. When he lighted the second fusee he thought the train was just east of Dixie Highway crossing. Fire was flying from the wheels as the train passed him at a speed of 25 or 30 miles per hour; this indicated to him that the air brakes were applied. The marker lights on his caboose were burning and the distant signal was displaying a red aspect; the light on this signal did not obscure the caboose marker-lights.

Engineman Howarth, of No. 49, stated that two tests of the air brakes were made at Bellevue, their initial terminal. The fireman operated the brake valve during the first test while the engineman was absent from the engine, but when he returned he received a signal from the air-brake inspectors to make a second test; later, the air brakes were reported as functioning properly. He did not know the reason for the second test. A stop was made near Fostoria, located 30.4 miles east of AU Tower, and the brakes operated normally. Cars were set off and picked up at this point, and the air brakes were left applied on the train while the work was being performed. The engineman made a 10-pound

brake-pipe reduction on the cars picked up and then released the brakes; after the engine and cars were coupled to the remainder of the train and the air admitted to the rear portion, the brakes on the front end became applied in emergency. The brakes functioned properly at Findlay when he made two 10-pound brake-pipe reductions, and he did not observe anything unusual in the brake-pipe exhaust; he did not stop the train at that point. The train-order signal displayed a yellow aspect, and he received a message advising him to pick up cars at Bluffton and also a clearance card advising that No. 65 was in the block. As the train passed Mt. Cory, 3.8 miles east of AU Tower, he saw the red aspect displayed by the distant signal at AU Tower, and the front brakeman and the fireman called its indication. The speed of the train was about 45 miles per hour, and when the engine was about 1 mile from the distant signal he saw a red fusee being lighted and made a 10-pound brake-pipe reduction. He answered the flagman by sounding the whistle signal, but as the flagman continued to give stop signals he blinked his headlight as he thought the flagman probably did not hear the whistle. It seemed several minutes before the brakes took hold and before the speed was reduced; as soon as the brake-valve exhaust ceased he made another 10-pound brake-pipe reduction and opened the sanders. He had just made the second reduction and completed the crossing whistle-signal when the engine passed over the Dixie Highway crossing; he placed the brake valve in emergency position, but it did not seem to have any effect. He did not see the marker lights until his engine was 5 car lengths from the caboose, because the fusee blinded him. The fusee was stuck in a tie near the rear of the preceding train and his engine passed over it; he did not recall passing the flagman. He saw only one fusee. He jumped off at a point about 4 car lengths from the caboose. The speed of his train was about 12 miles per hour at the time of the accident. Engineer Howarth stated that when he first saw the red aspect of the distant signal he expected to stop at the signal, although he realized that a train could be standing either east or west of it, and that when he saw the fusee he was unable to determine whether it was east or west of the signal. He said that to operate the brakes in accordance with the rules, by making a 10-pound brake-pipe reduction and then when the exhaust ceased to make another 10-pound reduction, it would take at least 1 mile for a train of such tonnage as the train involved to be brought to a stop from a speed of 45 miles per hour.

Fireman Crockett, of No. 49, stated that when the first air-brake test at Bellevue was made he observed that there was 1 pound of leakage and it seemed that the brake-pipe exhaust was longer than usual. As his train passed Mt. Cory he saw the red aspect of the distant signal, which indicated that a train was within the interlocking limits, or between the Dixie Highway

crossing and AU Tower. When the engine was 45 or 50 car lengths east of the crossing the engineman made the first reduction and when the brake-valve exhaust ceased he made a second reduction, but before the exhaust of the second reduction had ceased he placed the brake valve in emergency position. The engine was then passing over the crossing at a speed of 30 miles per hour, but the emergency application did not seem to take effect, and the speed was reduced to only 15 or 18 miles per hour at the time of the accident. As the brakeman was sitting in front of him on the seatbox, the fireman had not seen the burning fusee prior to the time the first reduction was made. He heard the brakeman call "red flag," but he did not know whether the engineman acknowledged it and he did not observe the blinking of the headlight. He saw the fusee when his engine was about 30 car lengths from the caboose, although he did not see the caboose until his engine was 12 or 15 car lengths from it. The caboose marker-lights were burning, but he thought that the reflection of the signal light prevented him seeing them sooner than he did, and he was unable to say where the burning fusee was located in relation to the caboose. After the accident he walked back and observed that near the last derailed car there was a burning fusee, which he picked up and threw away. Fireman Crockett stated that prior to the time of the emergency application the brakes had functioned properly and no difficulty was experienced in stopping the train within a distance of 4,000 feet near Fostoria. He thought that if the emergency application had been made when the red fusee was first seen the train could have been stopped in time to avert the accident. He said that his engineman appeared to be normal and alert.

Front Brakeman Detrick, of No. 49, stated that after cars were picked up near Fostoria he coupled the air hose and was certain the angle cocks were open. He saw the clearance card received at Findlay and observed the red aspect of the distant signal as his engine passed Mt. Cory. The engineman made the first brake-pipe reduction when the red fusee was seen about 1 mile distant and when the engine was about 60 car lengths east of Dixie Highway crossing. The speed was not reduced very much, and a second reduction was made; the engine passed over Dixie Highway crossing at a speed of 35 or 40 miles per hour. He did not see the caboose until the engine was 40 or 50 car lengths from it, and he stated that the reason probably was on account of reflection of the fusee and of the distant signal. He heard the whistle sounded in acknowledgment of the flag and saw the headlight blink. He was unable to say where the flagman was located when the latter flagged his train, but thought he was in the vicinity of the gravel-road crossing. The brakeman jumped off at a point 10 or 15 car lengths from the caboose; the speed

of his train at that time was between 20 and 30 miles per hour. It has been his observation that when clearance cards advising of a train in the block are received, following trains are operated at their usual speed, depending on the characteristics of the track and visibility. He did not think that a speed of 45 miles per hour was excessive on the night of the accident.

Conductor Minzey, of No. 49, stated that the air gauge registered 70 pounds pressure when the train left Blair yard, near Fostoria, and the brakes functioned properly en route. The maximum speed attained between Findlay and the point of accident was between 45 and 50 miles per hour. He was on the left side of the cupola but on account of a high car ahead of the caboose he was unable to see the signals ahead. When his train was east of Dixie Highway crossing he felt an application of the air brakes; but he could not say positively whether the engine had passed over the crossing at that time. Just after the caboose passed over the crossing he felt a run-in of slack as though the train had parted; the speed was then between 25 and 30 miles per hour. The train stopped with the caboose 6 or 7 car lengths west of Dixie Highway crossing. As soon as the train stopped, at 9:20 p. m., the air gauge showed 58 pounds pressure, which gradually reduced to zero. He did not think that, in view of the train ahead being in the block, and in view of the track and weather conditions, his train was operated at an unusual rate of speed after leaving Findlay.

Flagman Vernon, of No. 49, practically corroborated the statement of his conductor.

Acting Chief Dispatcher Brown stated all train and engine employees are instructed that under a permissive block indication trains may run at normal speed where the view is clear and unrestricted, but where the vision is obstructed by track curvature or weather conditions the speed must be reduced to enable a stop to be made within range of vision.

Yard Conductor Quinlan, in charge of engine 352, which pulled the rear portion of No. 49 back to DA Tower, stated that two stops were made en route and the air brakes functioned properly.

Engine Inspector Kearney inspected engine 646 before its departure from Bellevue on the day of the accident, and found it in good condition.

Machinist Ireson, at Bellevue, tested the brake equipment on engine 646 before its departure on the trip involved. He found that the brake equipment and the devices for regulating pressures were in suitable condition for service.

Car Inspectors Heltman, Tibboles, Dendinger, Hamblin and Toomey made the air-brake test on No. 49 before its departure from Bellevue. A leaky brake pipe on one of the cars was found; this car was taken out of the train, and the test was again made and the air brakes were found to function properly.

Air Brake Supervisor Steinmetz stated that, on account of the damaged condition of the air-brake piping on engine 646 as a result of the accident, the equipment could not be tested on that engine. The brake valves, feed valves, distributing valve and vent valve were applied to engine 641, an engine of the same class as engine 646. Before the air gauges were applied to engine 641, these gauges were tested on a dead weight tester; it was found that on the large gauge the main-reservoir pressure was correct but the equalizing-reservoir pressure was 2 pounds light; on the small gauge the brake-pipe pressure was 4 pounds light but the brake-cylinder pressure was correct. The composition gaskets in both feed valves, which were F-4 type, had melted and run down around the pistons, causing leakage. Two other F-4 feed valves were applied to engine 641. The gauges indicated 100 pounds main-reservoir pressure, 70 pounds equalizing-reservoir pressure, and 70 pounds brake-pipe pressure. The results of the tests are as follows:

10-pound brake-pipe reduction in 3 seconds;
25 pounds brake-cylinder pressure.

20-Pound brake-pipe reduction in 9-1/2 seconds;
57 pounds brake-cylinder pressure.

Feed valve fluctuation of 1 pound with 1/16" orifice
in test device coupled to air hose at rear of tank.

With a 20-pound brake-pipe reduction the vent valve
did not open.

With an emergency reduction, vent valve opened;
68 pounds brake-cylinder pressure.

Independent brake-valve in slow application, zero to
47 pounds in 8 seconds.

Independent brake-valve in quick application, zero to
47 pounds in 3-1/2 seconds.

Discussion

According to the evidence, No. 65 stopped at AU Tower at 8:57 p. m. and after cars were picked up and the train was about ready to start the rear end was struck by No. 49 at 9:20 p. m.

The conductor of No. 65, who was acting as flagman at the time of the accident, flagged No. 49 with a red fusee at a point 20 car lengths to the rear of his train when No. 49 was about 1 mile distant and moving at a speed of 45 miles per hour. The engineman of the following train acknowledged the flagman's signals by sounding the engine whistle but the conductor continued to give flagging signals and the engineman then acknowledged the signals by blinking the headlight. The conductor placed the burning fusee on a tie and started toward his caboose, but when he saw that the train was not reducing speed properly he lighted another fusee. The conductor was about 600 feet from his caboose when the train with the brakes applied passed him at a speed of 25 or 30 miles per hour. The track was tangent several miles and visual conditions were good. At a distance of about 2.5 miles the engineman and the fireman of No. 49 observed the red aspect displayed by the distant signal at AU Tower. The engineman of No. 49 made a 10-pound brake-pipe reduction when he first saw the burning fusee and when the exhaust of this reduction ceased he made another 10-pound reduction. About the time the exhaust of the second reduction ceased, at which time the engine was at a point about 2,400 feet from the rear of the preceding train, the brake valve was placed in emergency position but an emergency effect was not obtained. There was considerable discrepancy in the estimates of the speed of No. 49 at the time of the accident; the engineman of No. 49 estimated it to be 12 miles per hour but the preponderance of evidence indicated that the speed was considerably higher. The engineman said that when he first saw the red aspect displayed by the distant signal he expected to stop his engine in the vicinity of that signal, although he realized a train could be standing east of the signal; however, he was unable to determine the location of the fusee in relation to the signal and was unable to see the caboose of the preceding train until his engine was 5 car lengths distant, because the glare of the fusee blinded him.

The air brakes on the train of No. 49 were tested at the initial terminal; subsequent to the accident the brakes on the undamaged portion were tested; in both tests the brakes functioned properly. Tests of the air-brake equipment on the engine of No. 49 disclosed no defective condition. From the foregoing it appears that the engineman either did not make the first brake-pipe reduction soon enough or did not make a sufficiently heavy reduction.

No. 49 was being operated under a permissive indication because of No. 65 occupying the block. Under this indication No. 49 was required to proceed with caution prepared to stop short of train or obstruction. Train and engine employees had been instructed that a train operating under a permissive indication could proceed at normal speed where the view was clear and unrestricted. In the case involved, the following train was moving at a speed of about 5 miles per hour less than the maximum authorized speed when the crew first saw the burning fusee, the track was tangent about 15 miles and the visual conditions were such that the conductor of the preceding train saw the reflection of the headlight of the following train a distance of about 10 miles.

Conclusion

This accident was caused by failure to control the speed of the following train properly in manual-block territory in accordance with a permissive indication.

Respectfully submitted,

S. N. MILLS,

Director.