

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 2989
GULF, MOBILE AND OHIO RAILROAD COMPANY
REPORT IN RE ACCIDENT
AT WINFORD JUNCTION, KY., ON
MAY 1, 1946

SUMMARY

Railroad: Gulf, Mobile and Ohio

Date: May 1, 1946

Location: Winford Junction, Ky.

Kind of accident: Head-end collision

Trains involved: G.M. & O. freight : I.C. freight

Train numbers: 28 : Extra 1203 South

Engine numbers: 457 : 1203

Consist: 40 cars, caboose : 24 cars, caboose

Estimated speed: 8 m. p. h. : 25 m. p. h.

Operation: Interlocking

Tracks: G.M. & O.: Single; tangent; 0.52
percent ascending grade northward
I.C.: Double; tangent; 0.375 percent
descending grade southward to
junction switch

Weather: Raining

Time: 5:35 a. m.

Casualties: 2 killed; 5 injured

Cause: Interlocking home signal displaying
false proceed indication for I.C.
train

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2989

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

GULF, MOBILE AND OHIO RAILROAD COMPANY

July 24, 1946.

Accident at Winford Junction, Ky., on May 1, 1946, caused
by an interlocking home signal displaying a false
proceed indication for the Illinois Central train.

REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On May 1, 1946, there was a head-end collision between a Gulf, Mobile and Ohio Railroad freight train and an Illinois Central Railroad freight train on the line of the Gulf, Mobile and Ohio Railroad at Winford Junction, Ky., which resulted in the death of two employees and the injury of five 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.

Location of Accident and Method of Operation

This accident occurred on that part of the Gulf, Mobile and Ohio Railroad extending between Iselin, Tenn., and Winford Junction, Ky., 100.74 miles, a single-track line over which trains are operated by timetable and train orders. There is no block system in use. Within interlocking limits at Winford Junction, this line connects with the southward main track of a double-track line of the Illinois Central Railroad, which extends between Ballard and Fulton, Ky., 41.1 miles. Winford Junction is 8.4 miles south of Ballard. Trains moving with the current of traffic on the I.C. between Ballard and Winford Junction are operated by signal indications, and trains of the G.M. & O. are regularly operated over this line. The junction switch is 519 feet north of the tower, and is designated as switch 14. The south and the north switches of a trailing-point crossover, which connects the southward and northward I.C. main tracks, are, respectively, 569 and 911 feet north of the tower, and are designated as switch 15 and switch 16. The accident occurred within interlocking limits on the G.M. & O. main track at a point 199 feet south of switch 14. From the south on the G.M. & O. there are, in succession, a 2° curve to the left 4,177 feet in length, a tangent 1,097 feet to the point of accident and 38 feet northward, and a No. 15 turnout to the left 161 feet to switch 14. On the G.M. & O. the grade for north-bound trains is 0.13 percent descending 975 feet, then it is ascending, successively, 0.034 percent 600 feet, 0.52 percent 500 feet to the point of accident and 199 feet to switch 14. From the north on the I.C. southward main track, there is a $0^{\circ}30'$ curve to the right 950 feet in length, which is followed by a tangent 4,192 feet to switch 14. The grade for south-bound trains is 0.70 percent descending 2,800 feet, then it is 0.375 percent descending 1,350 feet to switch 14.

Approach signal 1 and home signals 2 and 3, governing north-bound movements from the G.M. & O. main track through switch 14 to the I.C. southward main track thence through the crossover to the I.C. northward main track, are, respectively, 3,183, 1,219 and 328 feet south of switch 14. Approach signal 32 and home signal 31, governing south-bound movements on the I.C. southward main track, are, respectively, 5,837 and 713 feet north of switch 14. Signal 1 is of the two-indication, color-light type. Signal 2 is of the one-arm, two-position, lower-quadrant, semaphore type, and is mechanically operated. Signal 3 is of the one-arm, two-position, lower-quadrant, semaphore type, and is electrically operated. Signals 32 and 31 are of the semi-automatic, color-light type. All the signals mentioned are continuously lighted. 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>
1	Yellow	Proceed, prepared to stop at next signal.	Approach Signal.
	Green	Proceed.	Clear Signal.
2 and 3	Red, horizontal	Stop.	Stop Signal.
	Green, vertical	Proceed.	Clear Signal.
32	Yellow	Proceed, preparing to stop at next signal. Train exceeding medium speed must at once reduce to that speed.	Approach.
31	Red	Stop.	Stop.
	Green	Proceed.	Clear.

The interlocking at Winford Junction consists of a mechanical machine having 20 working levers in a 36-lever frame. Electric time, indication and route locking and mechanical locking are provided. Time releases in connection with the time locking are provided. A miniature semaphore indicator which indicates the aspects displayed by signal 31 is located in the tower. An audible annunciator is actuated to indicate approaching movements on the I.C. southward main track when a train enters the circuit 2.5 miles north of the tower. The controlling circuits are so arranged that, when the route is lined for movement from the G.M. & O. main track through switch 14 to the I.C. southward main track and thence through the crossover to the I.C. northward main track, signal 32 displays proceed-preparing-to-stop-at-next-signal, signal 31 displays stop, and signals 1, 2 and 3 display proceed. The route locking circuit on the G.M. & O. main track extends 324 feet south of switch 14. The time release is arranged to operate in 2 minutes 30 seconds.

G.M. & O. operating rules read in part as follows:

34. 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.

If, after * * * signal has been called in clear indication, the train or engine stops or is delayed before the signal is reached, the engineman and fireman must again call to each other the indication of such signal before it is passed.

98. Trains and engines must approach * * * junctions, * * *, prepared to stop. * * *

615. When necessary to change any route for which the signals have been cleared for an approaching train or engine, switches, * * * must not be changed or signals cleared for any conflicting route until the train or engine for which the signals were first cleared has stopped.

661. If a signal indication, permitting a train or engine to proceed, after being accepted, is changed to a Stop-indication before it is reached, the stop must be made at once. * * *

I.C. operating rules read in part as follows:

DEFINITIONS

* * *

Medium Speed.--A speed not exceeding thirty miles per hour.

* * *

34. 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.

98. Trains and engines must approach * * * junctions * * * prepared to stop, unless the switches are properly lined, signals indicate proceed, and track is clear. * * *

615. When necessary to change any route for which the signals have been cleared for an approaching train * * * switches * * * must not be changed or signals cleared for any conflicting route until the train * * * for which the signals were first cleared has stopped.

621. Signalmen must observe, as far as practicable, whether the indications of the signals correspond with the position of the levers.

661. If a signal indication, permitting a train * * * to proceed, after being accepted, is changed to a Stop-indication before it is reached, the stop must be made at once. * * *

663. Trains * * * must stop at an interlocking signal indicating stop * * *.

I.C. rules governing the maintenance of interlocking plants read in part as follows:

423. Sealing of Apparatus.--Signal maintainers must keep all route locking apparatus sealed with the proper seals and must keep their sealing iron and supply of seals locked. They must promptly make report to supervisor when seals are broken, giving particulars.

The maximum authorized speed for the G.M. & O. train through the interlocking was 20 miles per hour, and the maximum authorized speed for the I.C. train was 50 miles per hour.

Description of Accident

No. 28, a north-bound G.M. & O. second-class freight train, consisting of engine 457, 40 cars and a caboose, passed Columbus, 14.66 miles south of Winford Junction, at 5:10 a. m., 4 hours late, passed signal 1, which displayed proceed-prepared-to-stop-at-next-signal, and stopped on the main track at Winford Junction about 5:28 a. m., with the front of the engine immediately south of signal 2, which displayed stop. Immediately afterward, the indication of signal 2 was changed to proceed, and about 5:32 a. m. this train proceeded, passed signal 3, which displayed stop, and while moving at an estimated speed of 8 miles per hour it collided with I.C. Extra 1203 at a point 129 feet north of signal 3.

Extra 1203 South, a south-bound I.C. freight train, consisting of engine 1203, 24 cars and a caboose, passed Ballard at 5:20 a. m., passed signal 32, which displayed proceed-preparing-to-stop-at-next-signal, passed signal 31, which displayed proceed as the train approached it and then changed to display a stop indication, and while moving at an estimated speed of 25 miles per hour it proceeded from the southward main track to the G.M. & O. main track through switch 14, which was lined for movement through the switch, and collided with No. 28 at a point 912 feet south of signal 31.

The front end of the engine of each train was badly damaged. The tender of engine 1203 and the first three cars of Extra 1203 were derailed, and stopped down an embankment west of the track. The front truck of the fourth car was derailed. The front end of this car stopped on the deck of engine 1203, and the cab of the engine was demolished. The tender of the

engine of No. 28, the front truck of the first car, the fourth car and the front truck of the fifth car were derailed and considerably damaged.

It was raining at the time of the accident, which occurred about 5:35 a. m.

The engineer and the fireman of Extra 1203 were killed. The front brakeman and the flagman of Extra 1203, and the engineer, the fireman and the front brakeman of No. 28 were injured.

Discussion

The investigation disclosed that about 5:29 a. m., immediately after No. 28 stopped at signal 2, which displayed stop, the operator-leverman lined the route for this train to proceed from the G.M. & O. main track through switch 14 to the I.C. southward main track and thence through the crossover to the I.C. northward main track. The lever in control of signal 31 was in position for this signal to display stop for south-bound movements on the I.C. southward main track. The enginemen of No. 28, and the front brakeman, who was on the engine, observed the proceed indications displayed by signals 2 and 3 when the route was lined, and they called the indications to each other. However, because the enginemen were attempting to stop a steam leak from the right cylinder, an interval of several minutes elapsed before No. 28 proceeded. In the meantime, Extra 1203 South entered the annunciator circuit, which extended about 2.5 miles north of the tower, but the operator-leverman said he made no attempt to change the route to permit Extra 1203 South to proceed through the interlocking. However, Extra 1203 South passed signal 31, entered the G.M. & O. main track at switch 14 and collided with No. 28 at a point 199 feet south of the switch.

The enginemen of Extra 1203 South were killed in the accident. The front brakeman said that signal 32 displayed proceed-preparing-to-stop-at-next-signal, and the enginemen and the front brakeman called the indication to each other. Then the engineer made a service brake-pipe reduction, which reduced the speed of Extra 1203 from about 50 miles per hour to about 25 miles per hour. Soon afterward these employees observed that signal 31 was displaying proceed, and they called the indication. The engineer opened the throttle, and the speed of the train had increased to about 35 miles per hour when the engine reached a point about 300 feet north of signal 31. Then the enginemen and the front brakeman observed the indication displayed by signal 31 change from proceed to stop. The engineer immediately moved the brake valve to emergency position, but the collision occurred before the train could be stopped.

The enginemen and the front brakeman of No. 28 said they thought signal 3 continued to display proceed until their engine

passed this signal. Immediately after the accident, examination disclosed that the switches of the crossover were lined in normal position, but the levers which control these switches were in position for the switches to be lined for movement through the crossover, and the seal of the electric lock for the time locking of lever 3, which controls signal 3, was broken. In addition, further examination disclosed that the electric locks of the facing-point lock-levers for the crossover switches bore evidence that indicated recent tampering, which would permit these levers to be moved to reverse position after the accident occurred. However, because of damage to the pipe lines to the crossover switches, the switches remained in normal position. From this it is evident that the electric locking was tampered with, that an attempt was made to change the route to permit Extra 1203 to proceed through the interlocking and that the crossover switches were lined back to normal position, but that No. 28 entered the route-locking circuit for switch 14 before this switch could be lined back to normal position. The indication displayed by signal 3 was changed from proceed to stop immediately prior to the time the crossover switches were lined back to normal position and when the engine of No. 28 was a short distance south of this signal. Regardless of any attempt to change the route, the controlling circuits were so arranged that under the conditions present, signal 31 should have displayed stop for Extra 1203. However, in tests after the accident it was found that a .22-caliber bullet had become imbedded in the aerial cable between the tower and signal 31, and there was an intermittent cross between wires in this cable. As a result of this condition signal 31 displayed a false proceed indication for Extra 1203 until the engine of that train was within a distance of about 300 feet north of the signal, then the indication changed to stop. There was evidence that this condition had resulted in interference with normal operation of this interlocking prior to the occurrence of this accident. However, adequate inspection and tests to determine the cause of this trouble had not been made.

Cause

It is found that this accident was caused by an interlocking home signal displaying a false proceed indication for the Illinois Central train.

Dated at Washington, D. C., this twenty-fourth day of July, 1946.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.