

## INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE PENNSYLVANIA RAILROAD AT ELLENDALE, DEL., ON OCTOBER 10, 1925.

February 17, 1926.

To the Commission:

On October 10, 1925, there was a derailment of a freight train on the Pennsylvania Railroad at Ellendale, Del., resulting in the death of one employee and the injury of two employees.

Location and method of operation

That part of the Delaware Division on which this accident occurred extends between Harrington, Del., and Franklin City, Va., a distance of 78.2 miles, and is a single-track line over which trains are operated by time-table, train orders, and a manual block-signal system. The derailment occurred within the limits of the mechanical interlocking plant at Ellendale, at a split-switch derail located on the east rail at a point about 300 feet south of a railroad crossing at grade. The track is tangent and practically level for a considerable distance in either direction from the point of accident.

The interlocking tower is close to the crossing, while the station is about 600 feet north of the crossing. The interlocking signal governing northbound movements over the crossing is about 357 feet south of the crossing and is a two-arm signal; the top arm operates in the upper quadrant and normally displays a proceed indication, while the bottom arm is fixed and is used as a marker, displaying a red light at night. Night indications of the top arm are green and red, for proceed and stop, respectively. This signal is pipe-connected with the derail. The approach to this signal is governed by a slow board located 2,997 feet south of the signal.

There is a manual block signal at the station which is on the same side of the track as the interlocking signal and is practically in line with the interlocking signal. This block signal is of the three-position type, night indications being green, yellow, and red, for proceed, caution,

and stop, respectively. There is no marker arm on this mast, but there is a red marker light. With this arrangement of signals, therefore, the crew of an approaching northbound train, at night, with the interlocking signal in the normal position and the block clear, would receive a green indication at the interlocking signal, with a red marker light, and would also encounter the same color combination at the block signal location. At the time of the accident, however, the interlocking signal was in the stop position while the light was not burning. The distance between these signals is about 1,000 feet, while the lamps on the interlocking signal mast are about 4 feet higher than the corresponding lamps on the block signal mast.

It was dark and cloudy at the time of the accident, which occurred at 7.12 p.m.

#### Description

Northbound freight train extra 5213 consisted of 32 cars and a caboosc, hauled by engine 5213, and was in charge of Conductor Day and Engineman Hastings. After the station work was performed at Georgetown, 8.2 miles south of Ellendale, an air-brake test was made and the train departed, passed the home interlocking signal at Ellendale, which was displaying a stop indication and was derailed at the split-switch derail while traveling at a speed estimated to have been about 10 miles an hour.

Engine 5213, together with its tender and the first two cars and the forward truck of the third car, were derailed to the right, the engine and first car coming to rest on their right sides, parallel to the track. The employee killed was the engineman.

#### Summary of evidence

Fireman Knox stated that when approaching Ellendale he was looking out of the gangway on his side of the engine for the purpose of observing the indication of the home interlocking signal and when the engineman called this indication as clear he repeated in the affirmative. Fireman Knox continued to look ahead until he got close enough to see that it was not the interlocking signal he saw displaying a proceed indication but rather that it was the manual block signal, located on the same side of the track as the interlocking signal, opposite the passenger station, approximately 600 feet north of the crossing. On definitely ascertaining that the interlocking signal lamp was not burning, when between 15 and 30 car-lengths south of the signal, he crossed over to the engineman's side of the cab and informed Engineman Hastings accordingly, and the engineman at once applied the air brakes in emergency, the accident occurring shortly afterwards, at which time he estimated the speed to have

been about 10 miles an hour. Fireman Knox further stated that the headlight was turned on fully; he did not think it was burning as brightly as it should but at the same time stated that an object the size of a man could have been seen a distance of about six telegraph poles. He said the marker light on the interlocking signal was burning dimly and that he did not see it until he had gotten down on the steps on the engineman's side, preparatory to getting off.

Head Brakeman Bradley stated that he was riding on the fireman's seat box approaching Ellendale, the engineman called the interlocking signal indication as clear and the fireman acknowledged it; the train was then between 225 and 300 feet south of the slow board and the speed was about 30 or 35 miles an hour, and he said it was at about this time that the engineman shut off steam. Head Brakeman Bradley said that he was also maintaining a lookout for the interlocking signal but did not see it and was unaware that the lamp was not burning until Fireman Knox gave warning of danger, when about eight carlengths from the signal; Engineman Hastings immediately applied the air brakes in emergency, at which time the speed was about 15 miles an hour and had reduced the speed to about 10 miles an hour at the time of the accident.

Conductor Day stated that he was riding in the caboose when approaching Ellendale; the engineman shut off steam at about the slow board and permitted the train to drift and the first knowledge he had of anything wrong was when the air brakes were applied in emergency at a speed of about 15 miles an hour, and he thought the train traveled a distance of about 10 car-lengths before coming to a stop. After the accident he saw that the interlocking signal light was not burning. The statements of Middle Brakeman McCready and Flagman Gosloe, who were riding in the caboose at the time of the accident, practically corroborated those of Conductor Day; Middle Brakeman McCready further stated that he was looking out of the cupola window watching for signal indications, and that he mistook the manual block signal for the interlocking signal.

Agent Baker, on duty at Ellendale, stated that at about 6.55 p.m. an eastbound freight train arrived over the track of the Maryland & Delaware Coast Railroad. He lined the route for that train at about 6.58 p.m., and then went outside to furnish flag protection at a street crossing, remaining at that point until the train departed, at about 7.09 p.m. Agent Baker then went into the station to report the departure of this train and it was while he was so engaged that extra 5213 approached. At first he thought the glare from the headlight was caused by an automobile, and the accident occurred while he was looking through the station window trying to determine the nature of the light.

Supervisor of signals Harmstead inspected the interlocking signal lamp within an hour after the accident; there was plenty of oil in the cup and the wick was slightly crusted, but the lamp was not burning probably due to the high wind.

### Conclusions

This accident was caused by the failure of Engineman Hastings, of extra 5213, properly to observe and obey signal indications.

The evidence indicated that the proceed indication displayed by the manual block signal was mistaken for the interlocking signal, the top light of which was not burning at the time of the accident, and when the mistake was finally discovered it was too late to avert the accident. Had Engineman Hastings operated his train prepared to stop at the home interlocking signal, which the rules required him to do on passing the slow board, he would have been in position to comply with the rule which provides that the absence of a signal at a place where a signal is usually shown must be regarded as the most restrictive indication that can be given by that signal.

References were made in the investigation which indicated that there had been derailments previously at this point, while statements were made that the clear indication of the block signal was difficult to distinguish from the proceed indication of the interlocking signal. It appeared that there had been two previous derailments, one in April, 1922, and the other in December, 1924; on the first occasion, in daylight, the engine crew mistook the indication of the interlocking signal, while on the second occasion the engine man said his view was obscured by steam leaks. Careful investigation was made for the purpose of ascertaining the extent to which the signal layout might confuse an approaching engine crew, and the results of that investigation lead to the conclusion that if the speed of a train were properly controlled in accordance with the requirements of the rule governing the slow board, then the distance between the signal locations, together with the difference in height, should be sufficient to enable an engine crew to distinguish between the two sets of signals.

Had an adequate automatic train stop or train control device been in use, this accident would not have occurred.

The employees involved were experienced men, and at the time of the accident they had been on duty less than 10 hours, previous to which they had been off duty more than 9½ hours.

Respectfully submitted,

W. P. BORLAND,  
Director.