1931

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN ACCIDENT ON THE NORFOLK SOUTHERN RAILROAD NEAR KNIGHTDALE, N.C., ON SEPTEMBER 13, 1934.

November 9, 1934.

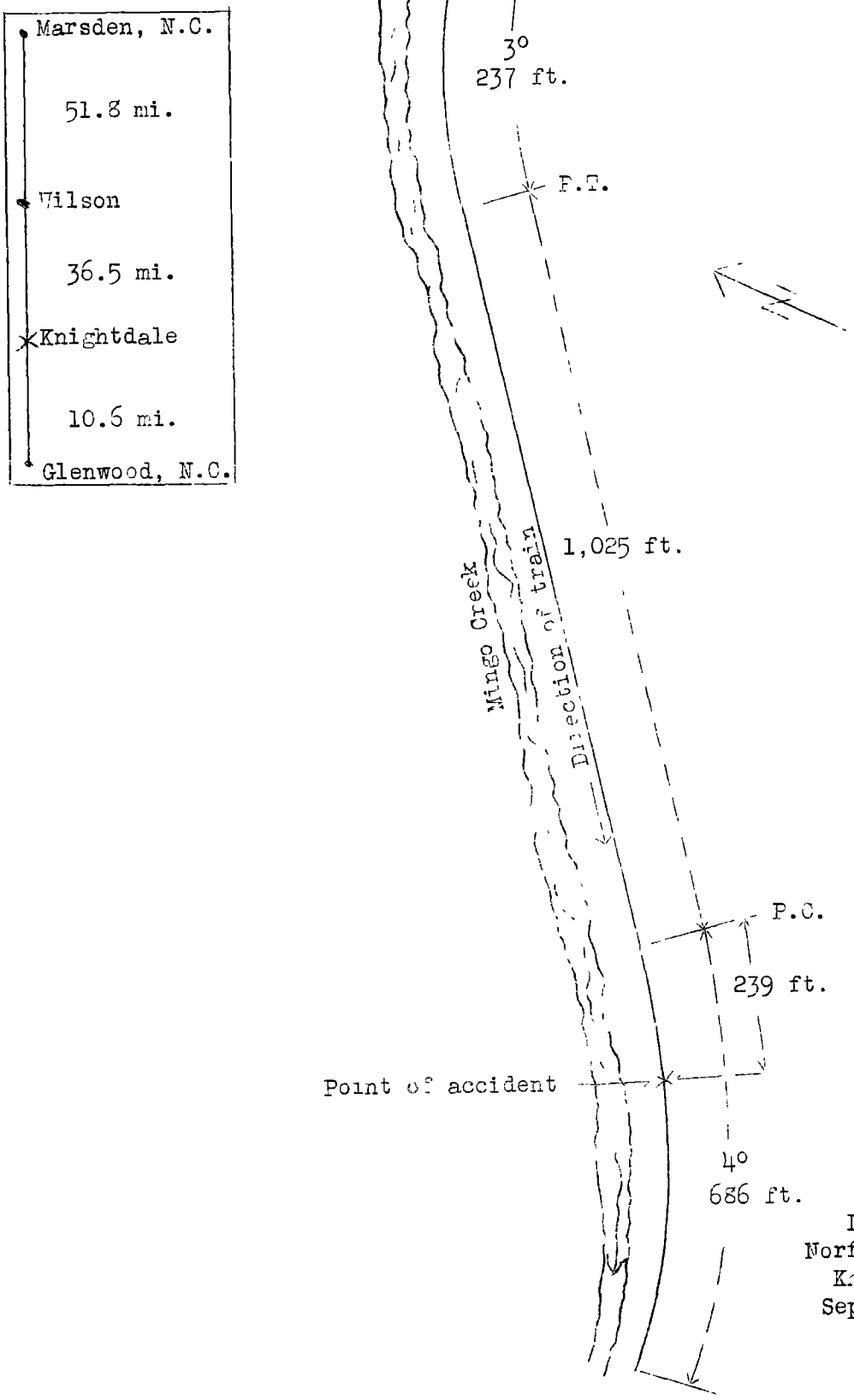
To the Commission:

On September 13, 1934, there was a derailment of a freight train on the Norfolk Southern Railroad near Knightdale, N.C., which resulted in the death of 1 employee and the injury of 2 employees.

Location and method of operation

This accident occurred on the Raleigh District of the Western District, which extends between Marsden and Glenwood, N. C., a distance of 98.9 miles; in the vicinity of the point of accident this is a single-track line over which trains are operated by time table and train orders, no block-signal system being in use. The accident occurred at a point approximately 2 miles south of Knightdale; approaching this point from the north, there is a 3° curve to the left 237 feet in length and then the track is tangent for a distance of 1,025 feet, followed by a 4° curve to the right 686 feet in length, the accident occurring on this latter curve at a point 239 feet from its northern end. The grade is generally descending for south-bound trains, being 0.83 percent at the point of accident.

The track is laid with 85-pound rails, 33 feet in length, with an average of 21 ties to the rail length, tieplated, and is ballasted with sand and rock screenings to a depth of 10 to 14 inches; the track was well maintained. In the vicinity of the point of accident the track is laid on numerous fills and cast-iron pipe of various diameters extend under these fills for the purpose of draining water into Mingo Creek, a small swamp stream paralleling the right of way on the west side of the track. At the point of accident the track is on a fill about 6 feet in height with a pipe 36 inches in diameter under the fill.




Inv. No. 1931
Norfolk Southern RR,
Knightdale, N.C.
September 13, 1934.

The weather was slightly cloudy at the time of the accident which occurred about 2:45 a.m.

## Description

South-bound freight train Extra 530 consisted of 44 stock cars and a caboose, hauled by engine 530, and was in charge of Conductor Bunch and Engineman Sullivan. The train passed Wilson, 36.5 miles north of Knightdale, at 12:45 a.m., and was derailed shortly after passing Knightdale while traveling at a speed estimated to have been between 12 and 18 miles per hour.

The engine, tender, the first eight cars and the forward truck of the ninth car were derailed; the engine and tender stopped on their right sides west of the track with the head end of the engine 245 feet south of the point of derailment. The derailed cars were in various positions on each side of and across the track. The engine was considerably damaged and three of the cars were destroyed. The employee killed was the engineman and the employees injured were the fireman and head brakeman.

## Summary of evidence

Head Brakeman Cox stated that approaching the point of accident he was on the seatbox ahead of the fireman and both noticed water alongside the track. The fireman then crossed over to the opposite side of the cab and apparently told the engineman about the water, at which time the engineman, who had been applying the brakes, still had his hand on the brake-valve handle. Upon seeing more water alongside the track, which appeared to be running, the fireman again talked to the engineman and about 2 minutes later the engine became derailed, ran about three car lengths, and then turned over. He estimated the speed of the train at the time of the accident to have been between 12 and 15 miles per hour, but said that the train had almost stopped when the engine overturned. He also said that after leaving Marsden there was a light rainfall but he encountered no rain between Wilson and the point of accident.

Conductor Bunch stated that on the north-bound trip to Marsden his train passed the point of accident at 6:55 p.m., arriving at Marsden at 10:25 p.m. After picking up stock cars the return trip was started at 11 p.m., and while descending the grade south of Knightdale the brakes were applied,

released, and then applied again just before the train stopped. He estimated the speed at the time of the accident at not more than 25 miles per hour. There had been a light rain approximately 20 miles north of Knightdale during the trip northward and it was raining very lightly about 14 miles north of the point of accident during the south-bound trip, but it was not raining when the train passed Knightdale. Conductor Bunch did not see any high water in the vicinity of the point of accident and did not feel a jolt of the caboose when it passed over a slight washout just north of where the caboose stopped, and he said that during his experience of 20 years on this railroad he had never known of high water at the particular point where the accident occurred.

Trainmaster and Road Foreman of Engines Bobbitt rode in the caboose from Marsden to the point of accident and noticed nothing unusual about the handling of the train. The brakes were applied as the train was descending the grade south of Knightdale and then released, being applied again after speed had increased and were still applied when the derailment occurred; he estimated the speed at 18 miles per hour after the second application was made. On going to the head end of the train he saw water about knee deep along the right side of the track, and a short distance south of where the engine turned over the roadbed was washed out and water was running over the rails, while one of the culverts was clogged with tree limbs and grass. He continued southward along the track and found the ballast washed out in several places and at one point the ties and rails were swinging. No rain had been encountered between Marsden and Knightdale except a light mist at the latter point.

Engineman Rochelle, of north-bound Train No. 62, the last train to pass prior to the accident, stated that his train passed the point of derailment about 10:50 or 10:55 p.m., and at that time he noticed no unusual track condition and no indication of a storm in the vicinity, except that a light mist was falling at Knightdale. He has been running trains over this territory for 24 years but never had seen high water in the vicinity of the point of accident. Fireman Adams, also of Train No. 62, stated that he did not see any high water in the vicinity.

Section Foreman Harrall, who has charge of the section on which the accident occurred, passed that point about 5 p.m., at which time the track was in normal condition with no evidence

of an unusual flow of water. He was at his home in Knightdale during the night but did not know that it had rained until he was called by the flagman of the derailed train about 3 a.m. Upon examining the track at the scene of accident he found about 240 feet of the fill washed out to a depth of about 18 inches, and there was evidence that water had flowed between the rails at several places for a distance of about one-half mile north of where the train was derailed, but this portion of the track was not badly washed. Washouts also were found at different points within a distance of about 2 miles south of where the derailment occurred, one of which was 165 feet in length and necessitated the construction of a trestle.

Track Supervisor Lilley, while en route to the scene from the south, saw where water had washed over the track at mile post 227, but no damage was done; at mile post 225 there was about 100 feet of fill washed out, but he could not determine its depth as water was still present; just north of mile post 224 water was still flowing over the track, and near mile post 223, or at the point of accident, the ballast was washed out practically the entire distance around the curve, and 127 feet of track was off the roadbed. He had never known of high water in that particular territory before.

Assistant Chief Engineer Blake stated that he accompanied Supervisor Lilley and that in addition to the fill being washed out at mile post 225, the track was washed out at two places a short distance north of that point and water had been over Mingo Creek bridge, about half a mile south of the point of accident, to a depth of from 18 to 24 inches.

Chief Engineer Nicholson stated that he has been with this railroad for 44 years and during that time has been in charge of track construction, maintenance and reconstruction of the entire line. In constructing the track through the territory involved the water sheds were thoroughly investigated and provisions made for ample drainage, and he had never experienced any trouble with water at this point. The original culvert at the point of accident was an 18-inch terra-cotta pipe installed in 1910, but this pipe became crushed and recently was replaced with a cast-iron pipe. He examined the track after the accident and found the fill washed out to the ends of the ties and almost vertical with the location of the pipe, and the pipe had been carried about 30 feet distant, which indicated that water had flowed over the pipe and cut away the sandy embankment until it caused the entire washout.

Assistant Superintendent Cox said it was his opinion that the track had been washed out to a depth of about 20 inches, was about half off the roadbed for a distance of about 100 feet, and was in a swinging condition when the engine encountered it. The first mark was a flange mark on the third tie south of the culvert which he thought was caused by a rear driving wheel, and from indications the engine had practically stopped when it turned over as there was no dirt accumulated ahead of it.

Five farmers who were interviewed had lived in the vicinity of the point of accident for a considerable length of time and they said that a veritable cloudburst occurred, starting about 11:30 p.m. and continuing for approximately 2 hours. One of the farmers said it was the heaviest rain that fell in that locality since 1888 and two of them said the heaviest rainfall appeared to be between Knightdale and the Neuse River, which embraces the territory in which this accident occurred.

Inspection of the locality by the Commission's inspectors disclosed there is a small clay pit located on the east side of the track approximately 2,144 feet north of the point of accident, drained through an 18-inch pipe to the west side of the fill. Indications were that this pit had filled to a depth of 8 or 10 feet and that the water had flowed across the track and then alongside the track, scouring out the fill about 18 inches from the west rail and for a distance of about 6 feet. From this point southward the ditches were scoured out from 8 to 12 inches deeper and there was evidence that water had run on the track and washed out the ballast from under the rails, but not leaving the track in a dangerous condition. At the point of accident the fill and ballast had been replaced, but from appearances all of the ballast and about one-half of the fill had been washed out for a distance of approximately 250 feet; from this point southward the track had been washed out in various degrees, the largest washout occurring about $2\frac{1}{2}$ miles south of the point of accident.

## Conclusions

This accident was caused by a washout.

The evidence indicated that an unusually heavy storm occurred a short time prior to the accident, resulting in washouts at several points within a distance of 2 or 3 miles, one of these being sufficiently serious to necessitate the erection of a trestle. At the point where Extra 530 was derailed it appeared

that the culvert under the fill had not been adequate to drain the flood waters, with the result that a portion of the fill was cut away, the culvert itself displaced and the ballast washed from the roadbed, a portion of the track being found half way off the roadbed. It further appeared that the storm was local in character and that no one connected with the railroad knew of its having occurred; members of the crew on the engine observed water along the side of the track but had no advance warning that the track was not in safe condition.

Respectfully submitted,

W. J. PATTERSON,

Director.