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INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 3251
ATLANTIC COAST LINE RAILROAD COMPANY
REPORT IN RE ACCIDENT
NEAR MANCHESTER, GA., ON
APRIL 29, 1949

SUMMARY

Date: April 29, 1949
Railroad: Atlantic Coast Line
Location: Manchester, Ga.
Kind of accident: Derailment
Train involved: Freight
Train number: Second 211
Engine number: 7230
Consist: 29 cars, caboose
Estimated speed: 5 m. p. h.
Operation: Timetable and train orders
Track: Single; 4° curve; 0.84 percent ascending grade southward
Weather: Raining
Time: 5:30 a. m.
Casualties: 3 killed
Cause: Displacement of a fill

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 3251

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

ATLANTIC COAST LINE RAILROAD COMPANY

June 10, 1949

Accident near Manchester, Ga., on April 29, 1949, caused
by the displacement of a fill.

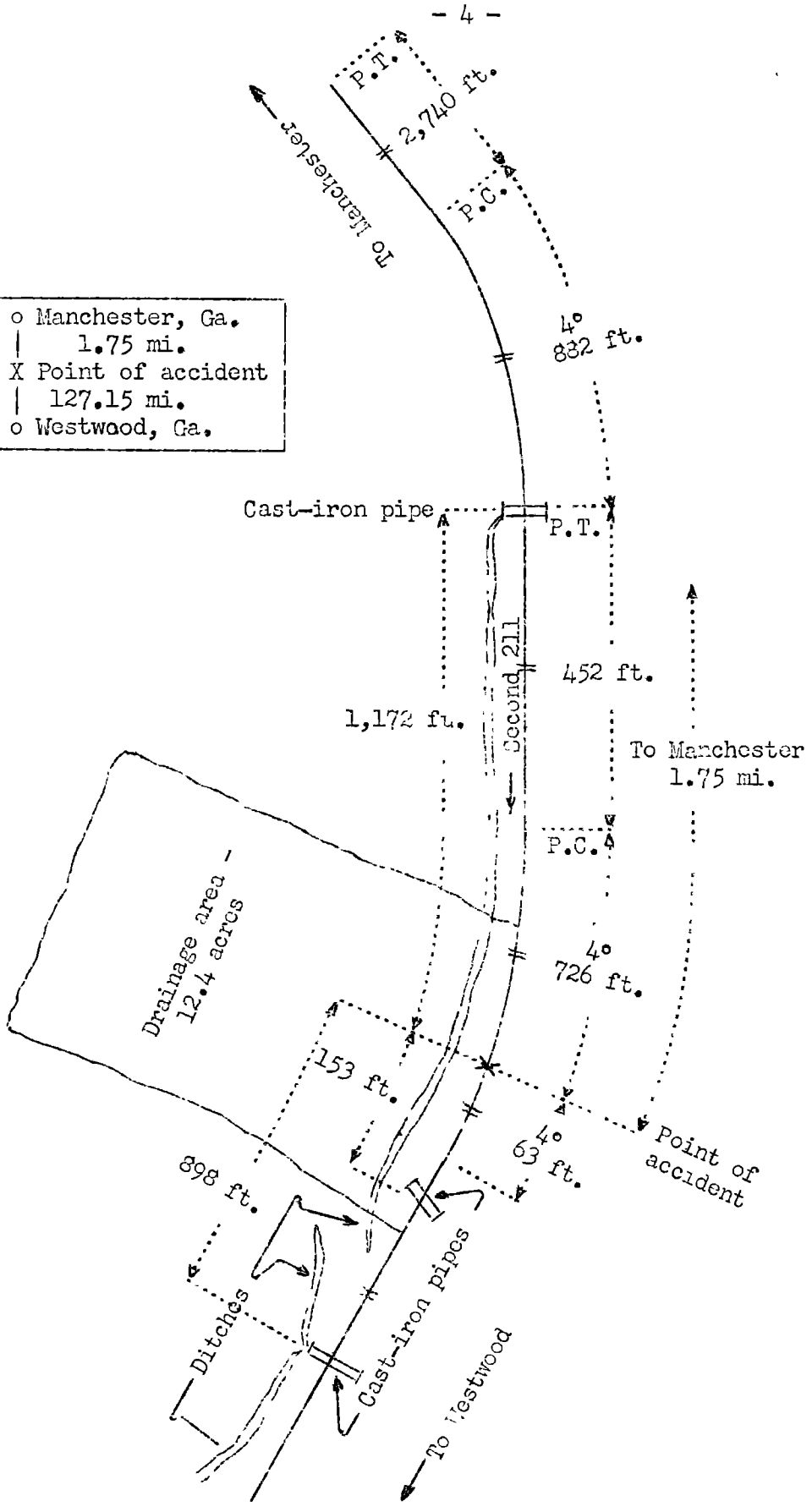
REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On April 29, 1949, there was a derailment of a freight train on the Atlantic Coast Line Railroad near Manchester, Ga., which resulted in the death of three employees.

¹
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.

o	Manchester, Ga.
	1.75 mi.
X	Point of accident
	127.15 mi.
o	Westwood, Ga.



Inv. No. 3251
 Atlantic Coast Line Railroad
 Manchester, Ga.
 April 29, 1949

Location of Accident and Method of Operation

This accident occurred on that part of the Western Division extending between Manchester and Westwood, Ga., 128.9 miles, a single-track line, over which trains are operated by timetable and train orders. There is no block system in use. The accident occurred on the main track 1.75 miles south of Manchester. From the north there are, in succession, a tangent 2,740 feet in length, a 4° curve to the right 882 feet, a tangent 452 feet and a 4° curve to the right 726 feet to the point of accident and 63 feet southward. The grade for south-bound trains varies between 0.80 percent and 1 percent ascending throughout a distance of 4,772 feet immediately north of the point of accident, and is 0.84 percent ascending at the point of accident.

The track structure consists of 100-pound rail, 39 feet in length, laid new in 1945 on an average of 24 ties to the rail length. It is fully tieplated with double-shoulder tie plates, single-spiked, and is provided with 4-hole, head-free joint bars 24 inches in length, and 8 rail anchors per rail. It is ballasted with crushed slag to a depth of 8 inches under the ties. Southward from Manchester the track is laid along the east side of Pine Mountain, which rises to an elevation of approximately 320 feet above the level of the track at the point where the accident occurred. In this vicinity the track is laid on a series of side-hill cuts and fills. The fills are constructed of a micaceous clay, consisting principally of decomposed schist excavated from the cuts. The accident occurred on a fill about 400 feet in length, having a maximum height of 20 feet at the center-line of the track. At the point of accident this fill was 22 feet wide at the top and 111 feet wide at the base. On the west side of the track the toe of the fill was 12 feet below the level of the base of the rail and 29 feet west of the center-line of the track. On the east side of the track the toe of the fill was 42 feet below the level of the base of the rail and 82 feet east of the center-line of the track. This fill was constructed in 1906. In 1929 a portion of the fill north of and adjacent to the portion involved in the accident under investigation failed, and 85 carloads of slag were used to repair the fill. Adjacent to the fill, on the west side, there was a marsh comprising an area of about one-half acre. Surface water from this area was drained through a 30-inch cast-iron pipe, 120 feet in length, which passed through the fill at an angle of about 30 degrees to the track and on a

20-percent descending grade eastward. An intercepting ditch was provided west of the track. Two 30-inch cast-iron pipes located 898 feet south and 1,172 feet north of the point of accident drained water intercepted by this ditch to the east side of the track.

The maximum authorized speed for the train involved was 40 miles per hour.

Description of Accident

Second 211, a south-bound third-class freight train, consisting of engine 7230, 29 cars and a caboose, left Manchester, the last open office, 1.75 miles north of the point of accident, at 5:22 a. m., 3 hours 37 minutes late. While it was moving on an ascending grade at an estimated speed of 5 miles per hour the engine and the first car were derailed.

Engine 7230, a 2-8-2 type, weighed 451,000 pounds in working order. The engine stopped on its right side and down the east side of the fill, with its front end 23 feet and its rear end 5 feet east of the center-line of the track. The top line of the boiler was about 15 feet below the level of the track. The tender remained coupled to the engine and stopped on its right side, with the front end down the fill and about 5 feet east of the track, and the rear end on the roadbed. This position of the tender formed an angle of about 45 degrees to the normal longitudinal alignment, and, as a result, the tender crushed the cab. Both the engine and the tender were badly damaged. The first car was derailed. It stood upright, with the front end against the tender. The front end of this car was considerably damaged. A separation occurred between the first and the second cars.

The engineer, the fireman and the front brakeman were killed.

It was raining and it was dark at the time of the accident, which occurred at 5:30 a. m.

Discussion

The speed of Second 211 was about 5 miles per hour on the ascending grade as it was approaching the point where the accident occurred. The enginemen and the front brakeman were in the cab of the engine and the conductor and the flagman were in the caboose. The headlight was lighted brightly, but

visibility was restricted by a heavy rainfall. The first that the conductor and the flagman knew of anything wrong was when the brakes became applied in emergency and the caboose stopped suddenly. Immediately afterward the conductor heard a loud and prolonged roaring sound toward the front of the train. After the accident the automatic brake valve was found in running position, the independent brake valve was in slow application position, and the sander valve was closed. The throttle was found closed. However, the position of the throttle just before the accident occurred could not be determined, because the throttle lever, its quadrant, and the throttle stem were badly damaged and displaced during the derailment. The reverse lever was about 1 inch back from full forward position.

Examination of the track after the accident occurred disclosed that a section of a fill had become displaced. This section was about 85 feet in length, and it included that portion of the fill which had a maximum height of 20 feet at the center-line of the track. The track was out of normal alinement throughout a distance of about 100 feet north and south of the displaced section. At the point of maximum height, about 92 percent of the cross-sectional area of the fill was displaced. Most of the material was deposited on the slope a distance of about 346 feet east of the track. Trees in the path of the movement of the material of the fill, some of which were 14 inches in diameter, were uprooted and carried with the material to the easterly limit of the slide. At the easterly limit of the slide the deposit of this material was about 4 feet deep. The north end of the fill, which was composed of slag, was not disturbed.

At the point of accident the hill rises above the level of the track to a height of about 320 feet and slopes westward at a ratio of about 3 to 1. The hill is composed principally of Hollis quartzite. This material is permeable and readily absorbs water. The lower portion of the hill is overlaid by Manchester schist, a micaceous material which is impermeable. The material in the displaced section of the fill was decomposed schist, which was capable of absorbing water up to 50 percent of its volume. When saturated, this material becomes semi-fluid and has very little cohesion. Rainfall on the top of the hill enters the permeable layer of quartzite and is impounded by the overlying stratum of schist, except at an outcropping of the quartzite, where it emerges as a spring. There are numerous springs in this vicinity. During excavation work in relocating the track, an outcrop of quartzite west of the

track and at the point of accident was exposed, and impounded water was delivered directly to the area from which the material had been displaced. Apparently the material composing the fill had become saturated by water impounded in the quartzite formation from rains over an extended period until a considerable portion of the section which later became displaced was in a semi-fluid state. Throughout a period of approximately two days immediately prior to the time of the accident, there was heavy rainfall in this vicinity. Apparently, enough water had entered and had been impounded in the quartzite formation during this period to cause sufficient hydrostatic pressure against the saturated fill to force it suddenly outward. At this location it was possible to impound water in the quartzite sufficient to cause an internal pressure on the fill equivalent to a hydraulic head of about 300 feet.

The roadmaster who is in charge of track maintenance in this territory said that he walked over this fill about 6:30 p. m. on the day preceding the accident. At that time the alinement and surface of the track were in good condition and he observed no unusual condition of the fill, nor any water issuing from the toe of the fill. A north-bound freight train passed over this fill about 15 minutes prior to the time of the accident, and members of the crew said that the engine and caboose rode smoothly and no unusual condition was observed at this location.

The intercepting ditch west of the track was adequate to drain an area of more than 12 acres. On the day after the accident no surface water was draining into the ditch, but six small springs were discharging into it. Examination of the three 30-inch cast-iron drain pipes under the track disclosed that no appreciable amount of water recently had flowed through them. An inspection of the fill 9 days after the accident, during which time there had been no appreciable rainfall in this vicinity, disclosed that a considerable amount of water was emerging at three small springs near the bottom of the fill. At the present time the carrier is engaged in construction changes which are expected to provide adequate drainage at this location.

Cause

It is found that this accident was caused by the displacement of a fill.

Dated at Washington, D. C., this tenth
day of June, 1949.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.