RAILROAD ACCIDENT INVESTIGATION

Report No. 4133

SOUTHERN RAILWAY COMPANY

LOCKHART, S. C

AUGUST 23, 1967

DEPARTMENT OF TRANSPORTATION

FEDERAL RAILROAD ADMINISTRATION

Washington

Summary

DATE:	August 23, 1967
RAILROAD:	Southern
LOCATION:	Lockhart, S. C
KIND OF ACCIDENT:	Derailment
TRAIN INVOLVED:	Freight
TRAIN NUMBER:	141
LOCOMOTIVE NUMBER:	Diesel-electric unit 6055
CONSIST:	2 cars
SPEED:	Standing
OPERATION:	Timetable, train orders, yard limits
TRACK:	Single; 6°00' curve; 2.6 percent descending grade westward
WEATHER:	Cloudy with intermittent rain
TIME:	1:35 p m
CASUALTIES:	1 killed
CAUSE:	The sinking of a fill

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RAILROAD SAFETY BOARD

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Synopsis

On August 23, 1967, a westbound Southern Railway freight train derailed near Lockhart, S C , resulting in the death of one train-service employee

The accident was caused by the sinking of a fill

Location and Method of Operation

The accident occurred on that part of the Charlotte-Columbia Division extending between Lockhart Junction and Lockhart, S C , a distance of 13 8 miles In the accident area this is a single-track line over which trains operate by timetable, train orders, and yard-limit rules There is no block-signal system in use. Yard-limit signs are located 4,284 feet east and 465 feet west of the station at Lockhart

The derailment occurred on the main track, within yard limits, 3,694 feet east of the Lockhart station

In the derailment area, State Highway No. 9 parallels the railroad on the south at distances varying between 100 and 450 feet The highway is laid on a fill having an average elevation of 15 4 feet above the rails of the railroad In this area, the main track is laid on a clay fill, which is approximately 7 feet high on the south side and 22 feet high on the north side The grade in this area is 2 6 percent descending westward Two vitrified clay drainage pipes, 20-inches in diameter and 150 feet in length, extend diagonally through the fill about 100 feet east of the derailment point The flow lines through the pipes are 20 to 24 feet below the rails Another drainage pipe, 24 inches in diameter, extends through the fill about 1,176 feet east of the derailment point. Water from an area of about 130 acres between the fills of the railroad and State Highway No 9 drains northward through the railroad fill via the aforesaid three drainage pipes Two additional drainage pipes, each 24 inches in diameter, extend through the railroad fill 790 and 2,141 feet east of the derailment point Water from the north side of the railroad fill flows southward through these pipes into the 130-acre area. A 4'x5'x50' concrete box culvert and four clay drainage pipes, each 24 inches in diameter, extend through the highway fill at points, respectively, 321, 641, 1,803, 2,144 and 2,456 feet east of the derailment point Water from the south side of the highway fill flows northward through the culvert and four drainage pipes into the 130-acre area between the highway and railroad fills

Details concerning the track and other factors are set forth in the appendix

Description and Discussion

No 141, a westbound second-class freight train, consisting of yard-switcher type diesel-electric unit 6055 and 2 cars, left Lockhart Junction at 12:49 p m , 4 hours 19 minutes late, without its brakes having been tested as required by the Power Brake Law of 1958 As the train proceeded westward on the main track, the engineer, fireman, conductor and brakeman, who were in the control compartment at the west end of the locomotive, discussed the possibilities of finding trees and dirt washed onto the track structure as a result of a heavy rainfall About 1:35 p m , while the train was moving westward at 7 miles per hour, as estimated by the crew members, it entered the curve on which the derailment occurred Shortly thereafter, the fireman observed at a distance of about 90 feet, that a portion of the railroad fill had been washed away and called a warning The engineer promptly initiated an emergency application of the train brakes, and the conductor and brakeman alighted from the locomotive Immediately afterward, according to the crew members, the train stopped with the front of the locomotive just short of the washed out portion of the fill That part of the fill under the front portion of the locomotive then collapsed, apparently as a result of being weakened by the washout. The front of the locomotive dropped into the depression caused by the washout The locomotive stopped with its front end 10 feet below the tops of the rails, and

with the rear truck derailed on the track structure at the top of the fill It was slightly damaged The two cars did not derail

The fireman was killed

Examination of the track structure after the accident disclosed that in the derailment area, the fill was washed out and collapsed throughout its width to a depth of approximately 12 feet below the bottom of the ties The depression caused by the washout and collapse was about 32 feet long

According to information furnished by the Lockhart Power Company, an official climatological observation station for the U S Weather Bureau, 6 25 inches of rail fell in the Lockhart area during a 30-hour period beginning 7:00 a m , August 22, 1967 The normal rainfall for the month of August in this area is 3 54 inches

Subsequent to the accident, the carrier placed an additional concrete drainage pipe, 36 inches in diameter, through the railroad fill at a point about 5 feet above the location of the existing two 20-inch drainage pipes This pipe was installed to insure proper drainage of the 130-acre area between the highway and railroad fills

Findings

It is evident that because of the heavy rainfall in the 30-hour period preceding the accident, the flow of water from the 130-acre area between the railroad and State Highway fills exceeded the capacity of the existing drainage pipes extending through the railroad fill As a result, the water impounded in the 130-acre area saturated and weakened the railroad fill, causing a portion of this fill to wash away sometime before the train approached The train was moving on the fill at slow speed and stopped just short of the washout area However, because of the adjacent washout and the saturated condition of the fill, that portion of the fill under the front portion of the train locomotive was weakened to the extent that it collapsed under the weight of the locomotive, causing the accident

Appropriate action has been initiated in connection with the violations of the Power Brake Law of 1958, as disclosed in this case

Cause

This accident was caused by the sinking of a fill

Dated at Washington, D C , this 28th day of June 1968
By the Federal Railroad Administration, Railroad Safety Board

Bette E Holt
Acting Executive Secretary

(SEAL)

Appendix

Track

From the east on the main track there are, in successio a tangent 526 feet in length and a 6°00' curve to the right 430 feet to the derailment point and 284 feet westward The grade for westbound trains in this area is 2 6 percent descending

The structure of the main track in the derailment area consists of 80-pound rails, 33 feet in length, relaid in 1946 on an average of 20 treated ties to the rail length It is fully tieplated with single-shoulder tie plates, spiked with 2 rail-holding spikes per tie plate, and is provided with 4-hole 24-inch joint bars No rail anchors are provided The track structure is ballasted with stone to a depth of 6 inches below the bottoms of the ties

Other Factors

The accident occurred at 1:35 p m It was cloudy and raining intermittently at this time.

The maximum authorized speed for freight trains in the vicinity of the accident point is 25 miles per hour, but is restricted to 15 miles per hour on curves

According to their daily time returns the crew members of No 141 had been on duty 5 hours 20 minutes at the time of the accident, after having been off duty 17 hours

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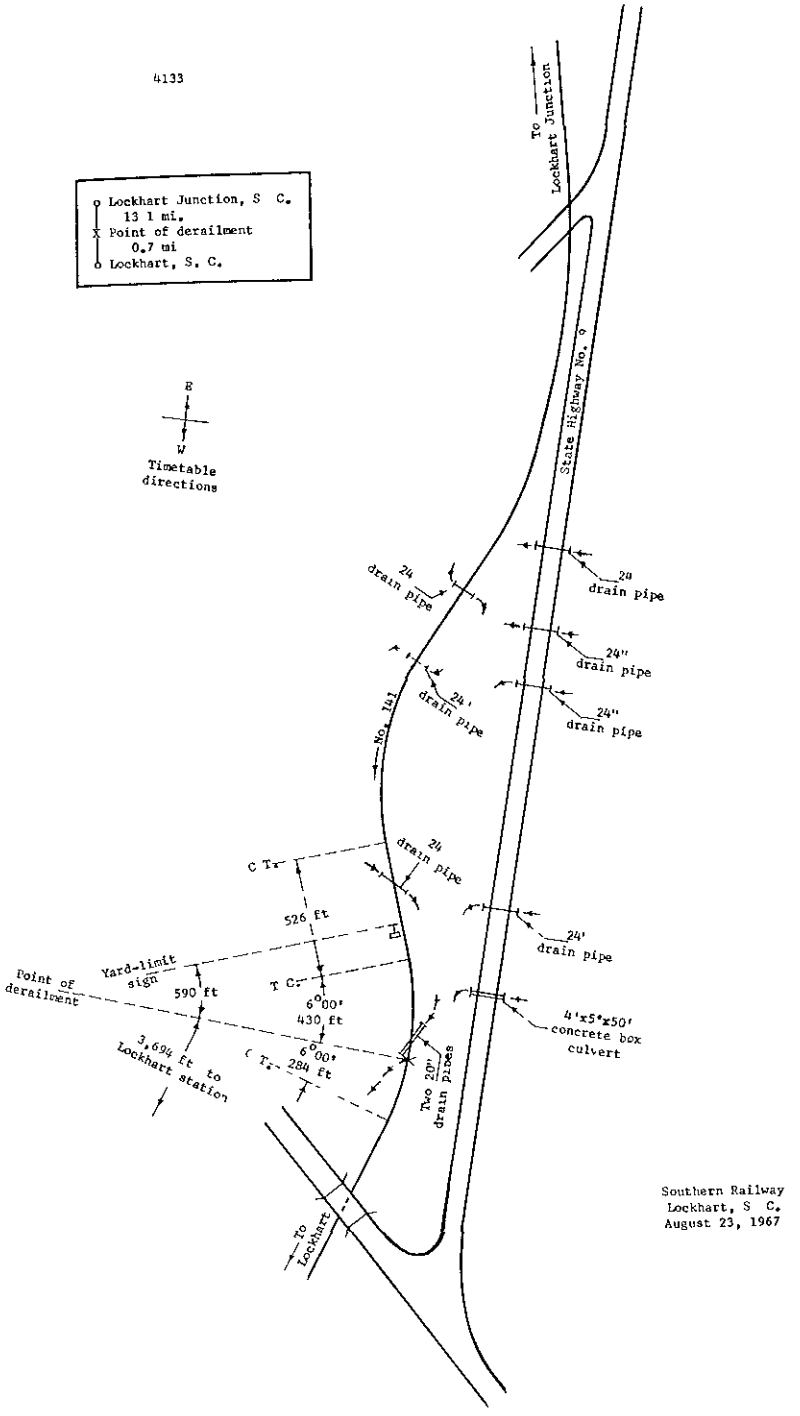

Southern Railway
Lockhart, S C.
August 23, 1967