INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3562

NEW YORK CENTRAL RAILROAD COMPANY

IN RE ACCIDENT

NEAR COPY, IND., ON

FEBRUARY 5, 1954

SUMMARY

Date:	February 5, 1954
Railroad:	New York Central Railroad
Location:	Near Cory, Ind.
Kind of accident:	Main steam pipe failure
Train involved:	Freight
Train number:	Extra 1989
Locomotive number:	1989
Consist:	A helper locomotive, locomotive 1989, 56 loaded coal cars, and caboose
Speed:	35 m. p. h.
Operation:	Freight service
Track:	Curved and ascending grade
Time:	10:20 a. m.
Casualties:	2 injured
Cause:	Failure of left main steam pipe; a thin and defective section approximately 6 x 16-1/2 inches was broken from pipe wall.

INTERSTATE COMMERCE COMMISSION

REPORT NO 3562

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION
REPORTS UNDER THE LOCOMOTIVE INSPECTION ACT
OF FEBRUARY 17, 1911, AS AMENDED

NEW YORK CENTRAL RAILROAD

May 4, 1954

Accident near Cory, Ind., on February 5, 1954, caused by failure of a main steam pipe.

REPORT OF THE COMMISSION[1]

CLARKE, Commissioner:

On February 5, 1954, about 10:20 a.m., near Cory, Ind., a piece, approximately 6 x 16-1/2 inches, broke from the left main steam pipe on New York Central Railroad locomotive 1989 while this locomotive and a helper locomotive were hauling a freight train at an estimated speed of 35 miles per hour. The fireman and brakeman were seriously injured.

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[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Clarke for consideration and disposition.

DESCRIPTION OF ACCIDENT

New York Central Railroad locomotive No. 1989, hauling northbound freight train No. Ex. 1989, departed from Petersburg, Ind., at 3:00 a.m., February 5, 1954. At Worthington, Ind., 54.4 miles from Petersburg, a helper locomotive was attached at front end to assist the train up ascending grade to Cory, Ind., approximately 24.3 miles. The train proceeded without any known unusual incident to a point about 2 miles south of Cory, a distance of approximately 77 miles from Petersburg, where, about 10:20 a.m., the left main steam pipe on locomotive 1989 failed while the train was moving at an estimated speed of 35 miles per hour.

The train consisted of the two locomotives, 56 loaded coal cars, and caboose, estimated at 3080 tons. Tonnage rating for this class of locomotive is 5092 tons. The engineer, fireman, and head brakeman were occupying their respective cab seats in locomotive 1989 at the time of the accident. The track approaching and at the point of the accident curved to the left and was on ascending grade.

An irregular-shaped piece of the steam pipe located near the top end and next to the smokebox wall, approximately 6 x 16-1/2 inches in area, was blown out. The cab was filled with smoke, fire, and hot gases.

The engineer escaped through a cab window to the safety step. He unsucessfully attempted to reenter the cab and close the throttle but did succeed in reaching the whistle lever and signaled the crew of the leading locomotive to stop the train. The fireman left through a cab window and climbed to the top of the cab, but not before his hands and face were badly burned. The badly injured brakeman was found on the right of way approximately 20 car lengths back of the caboose. His injuries included burns, broken back and ribs, and a dislocated shoulder. He was placed in an ambulance and taken to a hospital.

DESCRIPTION OF LOCOMOTIVE

Locomotive 1989, type 2-8-2, was built by the American Locomotive Company in November 1920; cylinders 27 x 30 inches; driving wheels 63 inches in diameter when new; weight in working order 343,100 pounds; weight on driving wheels 250,900 pounds; tractive effort, engine 59,000 pounds and booster 11,000 pounds, total 70,000 pounds. The wagon-top type boiler, built by the American Locomotive Company in 1920, was of three-course construction; inside diameter of first course 84-5/16

inches, second course 86 inches, and third course 87-11/16 inches; thickness of courses 27/32 inch, 27/32 inch, and 7/8 inch, respectively. Boiler was equipped with 295 2-inch and 43 5-3/8 inch flues, 21 feet in length. Working steam pressure was 200 pounds per square inch. Locomotive was equipped with a Standard H.T. stoker, All-Service power reverse gear, Franklin butterfly-type mechanically operated fire door; Walschaert valve gear and Elesco feedwater system. Tender had capacity for 16 tons of coal and 10,000 gallons of water; total loaded weight 276,000 pounds.

DESCRIPTION OF STEAM PIPE INVOLVED

The left main steam pipe which failed was located in the smokebox and extended from the superheater header to its bottom seat on the cylinder saddle. The pipe was bent at an approximate 45-degree angle near the top end, otherwise it was practically straight. It measured 77 inches from the bottom seat to the center of the opening at the top end.

An irregular-shaped piece of the steam pipe wall, having maximum width of 6 inches and length 16-1/2 inches, was blown out and broken into several pieces. This broken portion was located near the bend at top end and next to the smokebox wall. The bottom edge of the failed part was 44 inches from the cylinder saddle seat. Nine pieces of the broken out area were recovered and when placed in position showed that some small parts were missing.

Ten test holes had been drilled and plugged in the pipe; five located on the front side and five on the side facing the nozzle. There were no test holes on the side of the pipe which failed, nor any on the rear side. The test holes were approximately 11/16 inch in diameter and were spaced at distances varying from 8-1/4 to 10-1/2 inches with bottom hole located 28 inches from the bottom seat of the pipe. The thickness of steam pipe wall at test holes varied from 1-1/4 inches at the top end to from 3/4 to 1 inch at other holes. Thickness of the wall directly opposite the broken out portion was 1 inch.

The minimum thickness found in the broken out area was 7/16 inch and in that portion a cold-shut 2-5/16 inches in length was found which extended from a feather edge on the inside to within 3/64 inch from the outside. The fissure was distinct and showed definite absence of fusion of the metal at this point. From the fissure there were two old fractures, one 3-1/4 inches in length which extended downward and the other 1-3/8 inches in length which extended upward. Other breaks were new and in some places through material which was 3/4 inch in thickness.

INSPECTION AND REPAIR REPORTS

The last annual inspection was made on June 22, 1953, at Beech Grove, Ind. Last monthly inspection was made on January 22, 1954, at Terre Haute, Ind.

Daily inspection and repair reports at Petersburg, Ind., and Terre Haute, Ind., from January 1, 1954 to date of the accident were examined and the following items were found reported that may have bearing on the accident:

January 9, Terre Haute, Ind., reported by engineer:
"Test engine for blows." Notation: "Tested O. K."
Report approved by foreman.

January 16, Petersburg, Ind., reported by engineer:
"Leaking water at front end bad."
Explanation: "Reported to Duane."
Report approved by foreman.

January 16, Petersburg, Ind., reported by engineer:
"Engine will not steam free. Inspect front end."
Report approved by foreman.

January 18, Petersburg, Ind., reported by engineer:
"Engine blowing." Explanation: "Reported to Duane."
Report approved by foreman.

January 23, Terre Haute, Ind., reported by inspector:
"Engine blowing." Explanation: "Tested."
Report approved by foreman.

January 25, Petersburg, Ind., reported by engineer:
"Test for blows." Explanation: "Reported to Duane."
Report approved by foreman.

January 26, Petersburg, Ind., reported by engineer:
"Test for blows." Explanation: "Tested."
"Engine blows very bad." Explanation: "Reported to Duane."
Report approved by foreman.

January 27, Petersburg, Ind., reported by engineer:
"Engine blowing bad." Explanation: "Reported to Duane."
Report approved by foreman.

SUMMARY OF EVIDENCE

The engineer stated that he had not noticed anything unusual in the performance of the locomotive prior to the accident

and that it appeared to be in good condition. When about 2 miles south of Cory, while traveling at estimated speed of 35 miles per hour, working a full throttle, with reverse lever about 2 notches ahead of center and with full boiler pressure, the steam pipe failed and the cab was filled with smoke, fire, and hot gases. Because of fire and intense heat he was forced out of the cab window to the safety step. He was unable to return to the cab and close the throttle but groped around until he found the whistle lever and blew a stop signal to notify the crew of the lead locomotive who were not aware of the accident. After the train was stopped he walked back to the caboose and notified the conductor and flagman of the accident and that the head brakeman was missing. He then returned to the cab and closed the throttle though cab was still filled with steam and very hot. He afterward learned that the brakeman had been found on the right of way approximately 20 car lengths back of the caboose.

The fireman stated that when he heard the noise and noted steam and gases filling the cab he attempted to leave the cab through the rear exit but some one, presumably the brakeman, was between him and the cross curtain. He then went through the cab window and climbed to the top of the cab.

The brakeman stated that he remembered very little pertaining to the accident except that he experienced difficulty in opening the cab curtain that extended from one rear cab wall to the other. He did not know whether he jumped or stepped from the gangway. Because of the serious injuries an ambulance was brought to the scene of the accident and he was taken to a hospital.

CONTRIBUTORY DEFECTS FOUND

The failure of the steam pipe occurred in an area where pipe wall was very thin, a fissure existed, and the metal contained old fractures. The thinnest part of the failed section was 7/16 inch in thickness. There were no test holes on the side of the pipe where failure occurred; however, thickness at test holes in other parts of the pipe varied from 1-1/4 inches to 3/4 inch. Apparently this variation resulted from a shifted core when the pipe was cast.

DISCUSSION

When the steam pipe was manufactured the variation in wall thickness should have indicated necessity for proper distribution of exploratory test holes but this evidence had been overlooked as test holes were concentrated on only two sides of the pipe.

Difficulty with the front end had been reported 8 times in the 26 days preceeding the accident. It has been repeatedly pointed out in previously published accident reports that continued reports of a defective condition are indication that the cause of the defect had not been ascertained and corrected or that repairs made had been ineffectual. Had proper determination of the defective front end condition been made this accident could have been avoided.

CAUSE OF ACCIDENT

It is found that this accident was caused by a piece, approximately 6 x 16-1/2 inches in area, breaking out of a main steam pipe where pipe wall was of insufficient thickness and material defective.

Dated at Washington, D. C., this 4th day of May, 1954.

By the Commission, Commissioner Clarke.

SEAL

GEORGE W. LAIRD,

Secretary.