INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3405

ILLINOIS CENTRAL RAILROAD COMPANY

IN RE ACCIDENT

NEAR WOODBINE, IOWA, ON

MAY 31, 1951

SUMMARY

Date:	May 31, 1951
Railroad:	Illinois Central
Location:	Woodbine, Iowa
Kind of accident:	Derailment
Train involved:	Freight
Train number:	74
Engine number:	1569
Consist:	Auxiliary water car, 64 cars, caboose
Estimated speed:	40 m. p. h.
Operation:	Timetable and train orders
Track:	Single; tangent; level
Weather:	Cloudy
Time:	5:55 a. m.
Casualties:	3 killed; 1 injured
Cause:	Collapse of a bridge

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3405

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

ILLINOIS CENTRAL RAILROAD COMPANY

July 31, 1951

Accident near Woodbine, Iowa, on May 31, 1951, caused by the collapse of a bridge.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On May 31, 1951, there was a derailment of a freight train on the Illinois Central Railroad near Woodbine, Iowa, which resulted in the death of three employees, and the injury of one employee. This accident was investigated in conjunction with representatives of the Iowa State Commerce Commission.

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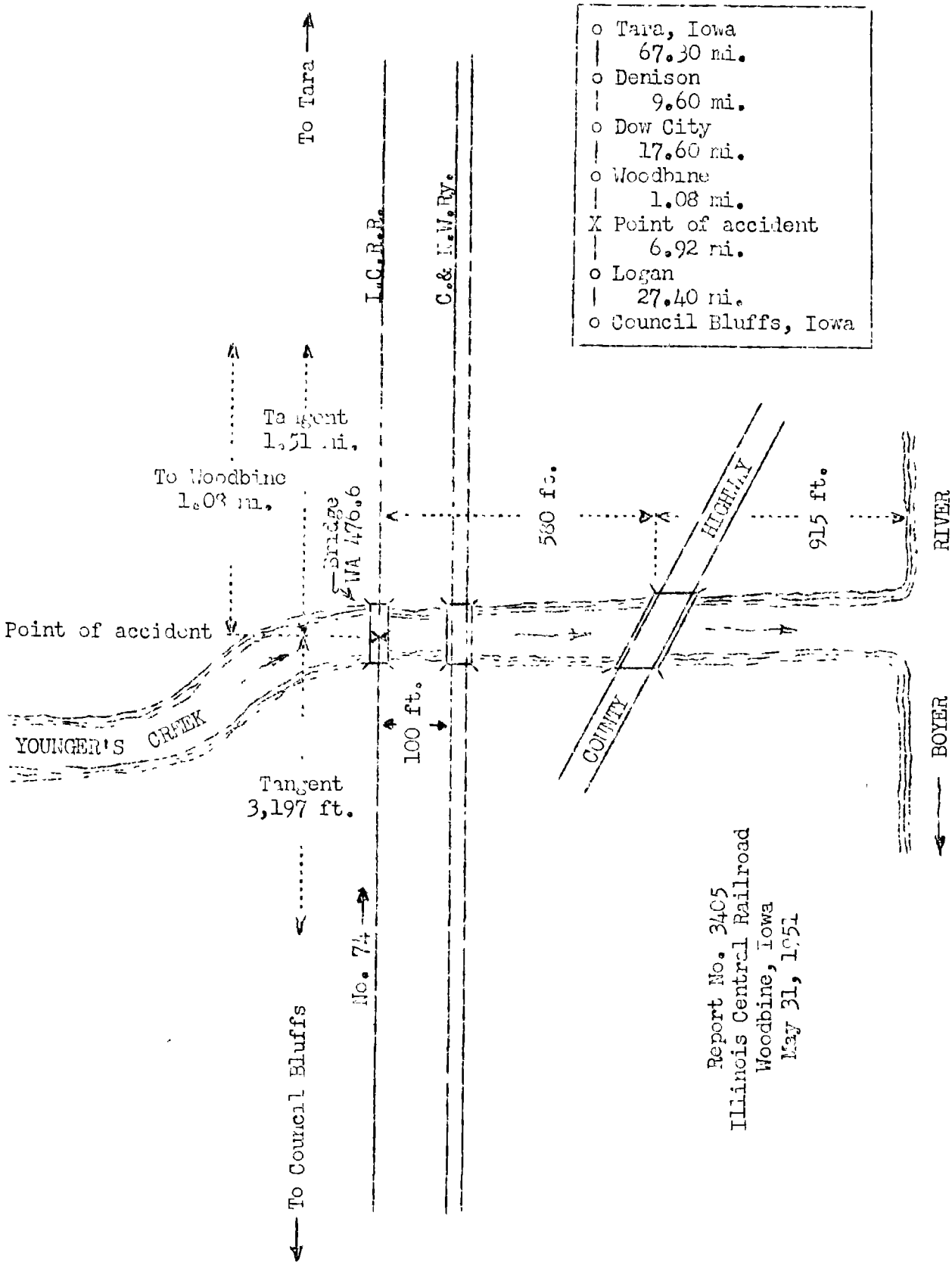
[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.


o Tara, Iowa
67.30 mi.
o Denison
9.60 mi.
o Dow City
17.60 mi.
o Woodbine
1.08 mi.
X Point of accident
6.92 mi.
o Logan
27.40 mi.
o Council Bluffs, Iowa
To Tara
I.C.R.R.
C.& N.W.Ry.
Tangent
1.51 mi.
To Woodbine
1.08 mi.
Bridge
WA 476.6
560 ft.
915 ft.
HIGHWAY
RIVER
Point of accident
YOUNGER'S CREEK
100 ft.
COUNTY
BOYER
Tangent
3,197 ft.
No. 74
To Council Bluffs
Report No. 3405
Illinois Central Railroad
Woodbine, Iowa
May 31, 1951

Location of Accident and Method of Operation

This accident occurred on that part of the Iowa Division extending between Council Bluffs and Tara, Iowa, 129.9 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 at Bridge WA 476.6, located 34.32 miles east of Council Bluffs, and 1.08 miles west of the station at Woodbine. From the west the track is tangent throughout a distance of 1.51 miles to the point of accident and 3,197 feet eastward. The grade for east-bound trains is, successively, level a distance of 2,000 feet, 0.29 percent ascending 2,900 feet and level 759 feet to the point of accident and a considerable distance eastward.

The track structure consists of 90-pound rail, 39 feet in length, laid new in 1925 on an average of 24 treated ties to the rail length. It is fully tieplated, single-spiked, and is provided with 4-hole joint bars and an average of 10 rail anchors per rail length. It is ballasted with chats to a depth of 6 inches on top of 12 inches of gravel. In the immediate vicinity of the point of accident the track is laid on a fill having an average height of about 4 feet.

Bridge WA 476.6 was an open-deck, 5-span, creosoted-pile trestle, 83 feet in length, and consisted of a center span with 2 approach spans on either end. It was constructed in 1920. The opening of each of the approach spans was 12 feet in length and the center span was 27 feet. The two approach spans on each end were supported on bents, each of which consisted of 6 creosoted piles, spaced 2 feet between centers at the top. The center piles were driven plumb and the other piles were driven with a batter varying between 1 inch in 12 inches for quarter piling to 2 inches in 12 inches for the outside piles. Each bent was provided with a 12-inch by 14-inch cap, drift-bolted to each pile. The bents were connected to each other by eight 7-inch by 16-inch creosoted stringers, four under each rail. The four stringers under each rail were bolted together and were drift-bolted to the caps of the approach-span bents. The center span was supported on each end by a bent consisting of 13 piles, driven vertically in the center of the bent and batter-driven on the sides. Each bent was provided with a 12-inch by 14-inch cap, drift-bolted to each pile, and a 7-inch by 14-inch timber block supporting a steel bearing plate. Sway braces were provided on the center bents. The bents of the center span were connected by eight 24-inch 80-pound I-beams, 30 feet in length,

four under each rail. The I-beams were separated by 3-1/2 inch by 3-1/2 inch angles spaced laterally on 4-foot-4 inch-centers. On the outer side and between the I-beams, 8-inch by 12-inch timber blocks were drift-bolted through the block beneath the bearing plate to the cap of each center bent. The inner ends of the 7-inch by 16-inch stringers of the intermediate approach spans were supported on the blocks between the I-beams, and were drift-bolted to the timber block on the cap of each center bent. Every sixth bridge tie over the I-beams was dapped and was secured to the I-beams with 4 hook bolts. The piles of the center bents were 35 feet in length and were driven to a penetration of from 20 to 25 feet. The piles of the end bents were driven to a penetration of about 20 feet. The piles of the intermediate bents were about 30 feet in length and were driven to a penetration of about 25 feet.

The normal ground level under the bridge was about 17 feet below the base of the rail. The drainage area of the stream spanned by Bridge WA 476.6 is about 2.58 square miles, and the bridge opening was approximately two to three times larger than was necessary to admit the normal run-off from this area. The stream flows southward in the immediate vicinity of the point of accident and empties into the Boyer River at a point 1,495 feet south of Bridge WA 476.6. A double-track bridge of the Chicago and North Western Railway and a county highway bridge span the stream at points, respectively, 100 feet and 580 feet south of Bridge WA 476.6. Normally the water course under this bridge is dry.

This carrier's special instructions to train dispatchers provide that train crews should be notified, by train order when practicable, of severe wind or rain storms, or any other unusual condition which might affect the track.

This carrier's rules for the maintenance-of-way and structures read in part as follows:

SECTION FOREMEN

246. Watching in Bad Weather.--During heavy rain and windstorms every precaution must be taken to prevent accidents. Each section foreman must be out and have with him a sufficient number of men to insure safety to trains. Proper watching on the part of section foremen and men should prevent trains running into washouts. Men going out to watch track in storms must have with them the necessary signal equipment to stop trains. During heavy storms, culverts and drains must be inspected, and all drift material removed from them.

The maximum authorized speed for freight trains is 49 miles per hour.

Description of Accident

No. 74, an east-bound second-class freight train, consisted of engine 1569, a 2-8-2 type, 1 auxiliary water car, 64 cars and a caboose. This train departed from Council Bluffs at 4:45 a. m., 1 hour 45 minutes late, passed Logan, the last open office, 6.92 miles west of the point of accident, at 5:42 a. m., 1 hour 57 minutes late, and while moving at an estimated speed of 40 miles per hour over Bridge WA 476.6 it was derailed.

Engine 1569 was derailed to the south. It stopped on its left side, with the front end of the engine on the east bank of the stream and in line with the track. The rear of the engine was in the stream bed and about 17 feet below the level of the track. The tender telescoped the engine cab. The auxiliary water car was derailed and stopped at right angles to the track, on the east bank of the stream and in front of the engine. The first to the fourteenth cars, inclusive, were derailed and stopped at various angles either in the channel of the water course or on the east bank of the stream. The front truck of the fifteenth car was derailed. The engine, the tender and the auxiliary water car were badly damaged. The first to the fourteenth cars, inclusive, were destroyed and the fifteenth car was slightly damaged.

The engineer, the fireman and the front brakeman were killed. The conductor was injured.

It was cloudy at the time of the accident, which occurred about 5:55 a. m.

Engine 1569 is of the 2-8-2 type, and its total weight, including the tender, is 527,000 pounds.

Discussion

The investigation disclosed that on the day of the accident a heavy rain occurred in the vicinity of Woodbine, beginning about 1:30 a. m. At 2:30 a. m., the dispatcher received information of a heavy rainfall at Dow City, 17.6 miles east of Woodbine, and information that there was no heavy rain at Denison and Logan, respectively, 27.2 miles east and 8 miles west of Woodbine. A section foreman who patrolled his section in the vicinity of Dow City reported that there was no damage to the track as a result of the storm. No. 74 departed from Council Bluffs at 4:45 a. m.

and passed Logan at 5:42 a. m. As No. 74 was approaching the point where the accident occurred the speed was about 40 miles per hour. The enginemen and the front brakeman were on the engine. The conductor and the flagman were in the caboose. The brakes of this train had been tested and had functioned properly when used en route. The conductor said that the brakes were not applied before the accident occurred. The flagman, who was riding in the cupola, said that the caboose gauge indicated no reduction of brake-pipe pressure immediately before the derailment occurred.

Examination of the bridge after the accident occurred disclosed that the intermediate and center bents of the bridge had collapsed and that the piles were broken. The I-beams were found in the channel of the stream about 80 feet south of the I. C. track and under the C. and N. W. bridge. There was a mark on a girder of the C. and N. W. bridge on the upstream side where it apparently was struck with considerable force by a metallic object. There was no indication of excessive scouring around the piles of Bridge WA 476.6. The high-water mark was approximately 5 feet below the bottom of the I-beams of the center span.

The stream bed descends toward the Boyer River at a rate of about 26 feet per mile. On the day of the accident, a heavy rainfall occurred in the vicinity of Woodbine, starting about 1:30 a. m. and continuing approximately 4 hours. There is no record of the rainfall in the drainage area of Bridge WA 476.6, but a U. S. Weather Observation Station, located about 9 miles west of Woodbine, recorded a rainfall of 1.5 inches between 1 a. m. and 5 a. m. on the day of the accident. South of Bridge WA 476.6 there were marks and abrasions on trees along the banks of the stream and above the level of the tops of the banks. The county highway bridge to the south of the C. and N. W. bridge was washed out. After the water subsided a large tree was found partially imbedded in the channel about 300 feet below the point where the stream empties into the Boyer River. The trunk of the tree was about 4 feet in diameter and much of its root structure and the stubs of its branches were still attached. Apparently this tree had floated downstream to Bridge WA 476.6 and the pressure of the water against the tree displaced the I-beams of the center span without dislodging the track structure. As no action was taken to stop the train, the track apparently was intact and in normal alinement and surface as No. 74 approached it, and the members of the crew on the engine probably were not aware that the bridge had been damaged.

The rules provide that section foremen shall patrol their sections when they consider it necessary. The section foreman at Woodbine had been in charge of that section throughout a period of 7 years and he did not consider the storm severe enough to make patrolling of the track necessary. He said no damage had resulted at Bridge WA 476.6 during previous periods of high water.

This bridge was inspected by a bridge inspector on July 6, 1950, and it was found to be in good condition. Minor repairs were made to this bridge in August, 1950. The section foreman last inspected the bridge when he passed this location on May 28, 1951. The supervisor of track said that he made a routine inspection of the track and Bridge WA 476.6 from a track motor-car on May 29, 1951, at which time he found no unusual condition. No. 76, an east-bound freight train, passed over Bridge WA 476.6 about 9 hours 30 minutes before the accident occurred, and no unusual condition was observed by members of the crew.

Cause

It is found that this accident was caused by the collapse of a bridge.

Dated at Washington, D. C., this thirty-first day of July, 1951.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,

Secretary.