

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA RAILWAY

NORTHLINE, WIS.

SEPTEMBER 9, 1938.

INVESTIGATION NO. 2289

SUMMARY

Inv-2289

Railway: Chicago, St. Paul, Minneapolis & Omaha
Date: September 9, 1938
Location: Northline, Wis.
Kind of accident: Derailment
Train involved: Passenger
Train number: 515
Engine number: C. & N. W. 2909
Consist: 11 cars
Speed: 30-35 m.p.h.
Operation: Timetable, train orders and automatic
block-signal system
Track: Double; tangent; 1.286 percent descending
grade for west-bound trains.
Weather: Cloudy
Time: 8:44 a.m.
Casualties: 2 killed, 22 injured
Cause: Washout at culvert

October 11, 1938

To the Commission:

On September 9, 1938, a passenger train on the Chicago, St. Paul, Minneapolis & Omaha Railway was derailed near Northline, Wis. resulting in the death of 1 employee and 1 person carried under contract, and the injury of 16 passengers, 1 employee, 4 postal mail clerks and 1 express messenger.

Location and method of operation

This accident occurred on that part of the Eastern Division designated as the Hudson Sub-division which extends between Altoona, Wis., and Minneapolis, Minn., a distance of 99.37 miles. This is a double-track line over which trains are operated by timetable, train orders and an automatic block-signal system. The accident occurred on the westward track at a culvert known as bridge 408-3/32, located 4,932 feet west of the station at Northline. Approaching from the east there is a series of short tangents and curves, followed by 2,771 feet of tangent track, a 2° curve to the left 674 feet long and then a tangent for a distance of 764 feet, the accident occurring on this latter tangent at a point 226 feet from its eastern end. The grade for west-bound trains is generally descending, being 1.286 per cent at the point of accident.

The track structure consists of 100-pound rail, 33 feet in length, laid on an average of 18 treated ties to the rail-length. It is single-spiked, tie-plated, provided with rail anchors, ballasted with gravel, and is well maintained.

Bridge 408-3/32, a culvert 56 feet in length, is constructed of 14 sections of reinforced concrete pipe, each 4 feet in length and 5 feet in diameter. At the outlet or north end of the culvert a ditch was provided extending almost to the north right-of-way line. The floor of this ditch was paved with riprap from a point about 2 feet south of the outlet to a point 16 or 18 feet north of outlet. This riprap was 4 to 6 feet deep and was laid practically level with the flow line of the culvert.

The maximum authorized speed for passenger trains on curves between Northline and Hudson is 60 miles per hour.

Rule 548 of the rules for the maintenance of way and structures reads in part:

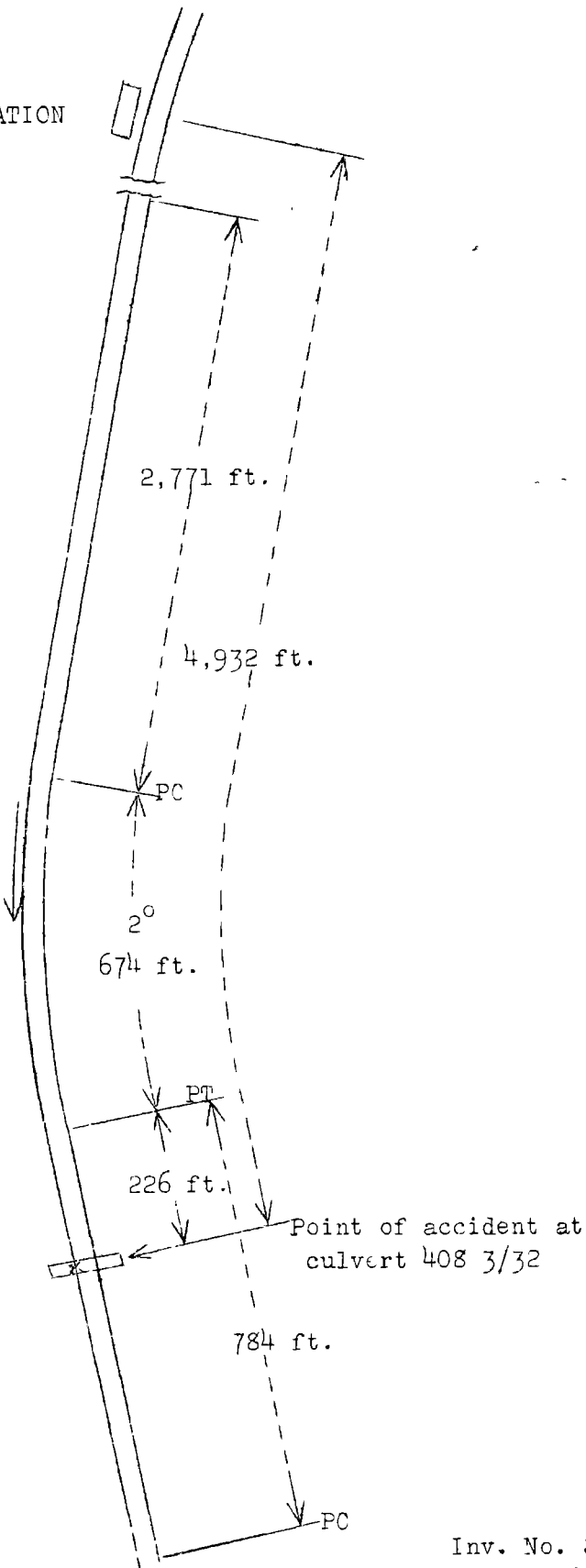
During heavy storms, high water or other unusual weather conditions, whether by day or night, whereby



o	Altoona, Wis.
	3.3 mi.
o	Eau Claire
	38.1 mi.
o	Hersey
	25.1 mi.
o	Northline
	0.9 mi.
X	Point of accident
	1.0 mi.
o	Mile Post 20
	1.1 mi.
o	Hudson, Wis.
	29.8 mi.
o	Minneapolis, Minn.

Direction of train

STATION



Inv. No. 2289
 C. St. P. M. & O. Ry.
 Northline, Wis.
 Sept. 9, 1938

tracks or structures are liable to be damaged, section foremen and such of their forces as they deem necessary must go over their sections to make sure that the track and bridges are safe, taking flagging equipment with them.

It had been raining for several days and during the night preceding the accident, and a heavy rain fell between 5 and 6 a.m.; however, it was not raining at the time of the accident, which occurred about 8:44 a.m.

Description

No. 515, a west-bound passenger train, consisted of one baggage-express car, one mail car, one baggage car, two coaches, two Pullman sleeping cars, one cafe-lounge car, two Pullman sleeping cars and one coach, in the order named, hauled by C. & N.W. engine 2909, of the 4-6-2 type, and was in charge of Conductor Laughlin and Engineman Reick. All of the cars were of all-steel construction with the exception of the eighth car, the cafe-lounge car, which was of steel underframe construction. This train departed from Altoona, 66.5 miles east of Northline, at 5:48 a.m., according to the train sheet, 19 minutes late, left Exu Claire, 3.3 miles beyond, at 6:08 a.m., 23 minutes late, and was detained 1 hour 5 minutes at Hersey, 25.1 miles east of Northline, due to a track washout; it passed Northline at 8:42 a.m., 1 hour 37 minutes late, and was derailed at a washout at a point 0.9 mile beyond while traveling at a speed estimated to have been between 30 and 35 miles per hour.

The engine was derailed near the west end of the fill over the culvert, and stopped on its right side parallel with, and to the right of, the westward track, 317 feet beyond the culvert; the tender stopped on its right side behind the engine. The first car stopped on its right side about 30 feet to the rear of the tender, the second, third and fourth cars stopped practically parallel with each other and across the main tracks; the second and third cars remained in an upright position while the fourth car was on its right side. The fifth car stopped in a diagonal position across both tracks; the sixth car remained in upright position with its front end projecting over the cavity caused by the washout at the culvert; the remaining cars were not derailed or damaged. The employee killed was the engineman, and the employee injured was the baggageman.

Summary of evidence

Fireman Moore stated that at Eau Claire the engineman received verbal information from the dispatcher that there were heavy rains between that point and St. Paul, and as they proceeded they found that the water was high in the nearby streams and at Hersey they were flagged, and were detained more than an hour due to the track being washed out. Clear indications were received at the block signals en route and the engineman operated the train in a safe manner. In the vicinity of Northline Fireman Moore did not see any indication of high water in the ditches and as they approached the point of accident the track appeared to be in normal condition. The speed was between 30 and 35 miles per hour, and apparently the engineman did not see anything wrong with the track, as the brakes were not applied prior to the accident.

Conductor Laughlin stated that the dispatcher informed him verbally that a heavy rain was falling at Northline and instructed him to be careful; the dispatcher also informed him that the section men were out but none of them had as yet reported. Due to the warning and the high water in the ditches observed en route the train was not operated at its usual speed. At Menomie Junction he cautioned the engineman to be careful, and he again cautioned the engineman when the stop was made at Hersey where they were detained by a washout. Passing Northline, Conductor Laughlin was in the fourth car, looking out the window, and noted that the speed was between 30 and 35 miles per hour when the derailment occurred. The usual speed in that vicinity is about 50 miles per hour. He further stated that information relative to weather conditions is not given them in train order form, but information relative to track conditions is usually issued in train order form. He considered that the information conveyed to him by the dispatcher concerned weather conditions and not track conditions.

Head Brakeman Preston stated that they encountered rain practically the entire trip, but he thought that it had ceased when they reached Northline. He did not think that the speed had been at any time as high as 60 miles per hour, and he estimated it to be 30 miles per hour at the time of the accident.

Section Foreman Clark, located at Northline, stated that his section includes 5 miles of main track and his crew consists of four men. He was called by the operator at 5 o'clock on the morning of the accident; he called two of his men and they left Northline between 5:20 and 5:30 a.m., and proceeded westward on a motor car. They stopped and examined Bridge 408-3/32 and found that there was very little water running through the culvert at that time and no indication of the north end of the culvert washing

any more than usual; the track had not settled and he considered it safe. At the west end of his section, mile post 20, he found a washout at the north shoulder of the westward track; it extended 6 feet deep and to the ends of the ties. He then went back to Northline and told the operator not to let any trains pass on the westward main until notified, and also to notify the dispatcher; it was then about 6:40 a.m. He patrolled the eastern end of his section which extended 3 miles east of Northline and did not find any bad conditions. On returning to Northline about 7 a.m. he picked up the other members of his crew, but due to the rain the motor car failed and they proceeded to the washout at mile post 20 in an automobile. There he found men of the adjoining section working on the washout, and was informed that their foreman had proceeded to Northline. Foreman Clark and his men assisted in repairing the track and while so doing the section foreman who had gone to Northline returned and reported the track between Northline and that point to be in good condition. Section Foreman Clark left three of his men at mile post 20 and he and one laborer went back to Northline in the automobile to repair the motor car. He notified the dispatcher that the track was all right from Northline to Hudson; it was then about 8:30 a.m. Section Foreman Clark stated that he had been in charge of this section for 11 years and had never experienced any trouble in the vicinity of Bridge 408-3/32. This culvert had always provided drainage for any water running in the ditches on the south side of the track.

The statements of Section Laborers Letts and Grass corroborated those of Foreman Clark as to conditions found on their section on the morning of the accident.

Section Foreman Martinson, in charge of the adjoining section to the west, which extends between mile posts 15 and 20, stated that the operator at Hudson called him about 4:45 a.m. on the day of the accident and he and his men started out about 5 a.m., first covering the western end of his section. At a point about $1\frac{1}{2}$ miles west of Hudson he repaired a small washout on the eastward track, and at Lakeland Junction, one-half mile west of Hudson, he cleared some sand from the track. When he returned to Hudson about 7 a.m. the operator informed him of a washout at mile post 20. He picked up the other members of his crew and they proceeded eastward to mile post 20, expecting to find Foreman Clark, but he was not there. As the operator at Hudson had instructed him to get information relative to the eastward track, he assigned three men to work on the washout and with the remaining members of his crew he proceeded to Northline on the westward track. On his way to Northline he passed slowly over Bridge 408-3/32. The water running through the culvert was not high; it was running over the riprap at the mouth of the culvert and there was no indication of a washout. Due to wire trouble caused by the

rain, he was unable to call by telephone at Northline and he returned to Hudson where he reported the eastward track in good condition. He thought it was about 7:40 a.m. when he returned westward. He had never known of washouts at this point, except on the eastward track caused by the water running along the ditch. It was his opinion that due to the rain the water in a small lake located about 100 feet south of the tracks had overflowed and caused the washout at Bridge 408-3/32, as there was not enough water in the ditches to cause such damage when he passed over the track at that point and the rain had ceased.

Operator Gullickson, on duty at Northline from 11:30 p.m. to 7:30 a.m., stated that prior to 5 a.m. it had been raining hard intermittently, but he did not think it was as hard as on the previous night. In accordance with the dispatcher's instructions he called the section foreman about 5 a.m., and for about an hour after that time it rained unusually hard and he so advised the dispatcher. After being instructed by Section Foreman Clark to hold all trains on the westward track he notified the dispatcher and placed the interlocking signal and the train order board in stop position. At the time he went off duty, at 7:30 a.m., Foreman Clark had not reported the track as having been repaired. He further stated that the wires had been struck by lightning, but he was able to communicate with the dispatcher.

Operator Donahue, who relieved Operator Gullickson at Northline, stated that as soon as Foreman Clark handed him the message "Westbound track OK Northline to Hudson", he transmitted it to Eau Claire; this was at 8:39 a.m. The dispatcher then released No. 515. It passed Northline at 8:42 a.m., and he estimated its speed to have been 15 or 20 miles per hour. Operator Donahue stated that it was not raining when he went on duty and it appeared to be clearing.

Dispatcher Mills, at Eau Claire, stated that after receiving information that there had been hard rains at Northline he called the chief train dispatcher who advised him that he would talk personally with Engineman Reick and inform him of the conditions. While it is customary to inform enginemen and conductors relative to weather and track conditions by message, No. 515 had cleared at Altoona and it would have been necessary for Dispatcher Mills to leave the tower to deliver a message to that train; he did not think this necessary inasmuch as the chief train dispatcher had advised that he would talk with the crew relative to conditions. Dispatcher Mills stated that after being advised of the washout near mile post 20 about 6:40 a.m., he instructed the operator at Northline to display the train order signal. At the time he went off duty he had been unable to locate No. 515 as there were no open offices between there and Northline and no train order was issued.

Dispatcher Stubbs, who relieved Dispatcher Mills at 7:50 a.m., stated that he first received a message from Section Foreman Martinson at Hudson that the track was in good condition from Northline to Hudson and a few minutes later, about 8:37 a.m., he received the same information from Section Foreman Clark at Northline. He then instructed the operator at Northline to clear No. 515; the operator reported No. 515 as passing Northline at 8:42 a.m.

Night Chief Train Dispatcher Gramenz stated that he went off duty about 6:15 a.m., after he had instructed the engineman and conductor of No. 515 relative to the heavy rains between Northline and East St. Paul; he informed them that the section crews were out in that territory but that he could not tell them how much it had rained east of Northline; however, if the engineman ran into rain he was to take his time. He stated that he did not think it was necessary to put this information in train order form inasmuch as he advised the crew personally as to the conditions west of Northline. He did not know what the conditions were east of Northline as there were no open offices. He also stated that he did not think it necessary to issue a hold order for west-bound trains at Northline inasmuch as they could depend on the operator at Northline to hold the trains with the train order board and interlocking signals; the section men were out and getting over the track was just a matter of a few minutes. No report relative to track conditions had been received up to the time he went off duty.

Supervisor Gunderson of the Bridge and Building Department stated that Bridge 408-3/32 was one of a number of culverts which were installed in the vicinity of the point of accident as a result of a washout that occurred at a nearby point in 1934. Owing to a slight washing away of soil at the outlet end during a rain storm on August 30, 1933, about one and one-half carloads of riprap was placed there immediately afterward. He had not inspected Bridge 408-3/32 since that time. This culvert had been adequate to take care of the water that flowed along the ditches on the south side of the track, the nearby pond had taken care of the water from the hillside, and he had never known the pond to overflow.

Roadmaster Hendrickson stated that there had been water in the nearby pond all summer; he did not measure it, but it appeared to be about 1 foot deep. As a result of an inspection made some hours after the accident he concluded that water coming down the hillside, had overflowed the pond, and rushed through the bridge with such force that it washed out the ditch leading from the outlet on the north side; in his opinion this occurred within a very short period of time. There was no indication that water from the

ditch along the north side of the tracks had washed it out. After the accident dirt was placed at the end of the pond to prevent it from overflowing toward the track again.

Assistant Chief Engineer Strother stated that when Bridge 408-3/32 was installed it was found necessary to ditch from the outlet end of the culvert almost to the right-of-way line. At that time no riprap was placed at the outlet end, but as a result of heavy rainfall during August of this year a considerable wash took place at the outlet end of the culvert and 26 cubic yards of riprap were placed by hand to pave the ditch at the outlet end for a distance of 16 to 18 feet from the end of the culvert. This riprap was 4 to 6 feet deep and was placed practically level with the flow line at the outlet end. Out of this same 26 cubic yards a head wall was placed at the end of the culvert, and a sluiceway was built to connect the ditch along the north side of the track with the east side of the culvert-outlet ditch. Assistant Chief Engineer Strother also stated that all records indicate that prior to the day of the accident no water had ever flowed through Bridge 408-3/32 from the 250 acre drainage area south of the inlet end of the culvert and the only water that had flowed through this culvert was the water from the south track ditch east of the culvert, the drainage area of such territory being 2.5 acres. The reason that the water from the 250 acre drainage area south of the culvert had never reached it was due to a small dam being placed outside of the southerly right-of-way fence which held the water back until most of it seeped away through the sandy sub-soil.

Observations of Commission's Inspectors

A large volume of water had flowed through the culvert from the south and had washed and undermined the lower or north end of the culvert so that the concrete pipe under the westward track had sagged. Six of the concrete pipe sections remained in place under the eastward track.

There was nothing about the track or equipment to indicate that derailment had occurred before the culvert was reached.

Discussion

The evidence indicates that a great quantity of rain had fallen during the two-day period prior to the accident. Apparently drainage water from the hillside south of the right-of-way overflowed a pond located from 75 to 100 feet south of the tracks and ran through the culvert in such volume and with such force that it washed and undermined the north end of the culvert, and permitted the concrete pipe to settle under the westward track

which then collapsed under the weight of the train. According to the statements of the fireman there was no indication of high water in the ditches in the vicinity of Northline, and as they approached the point of accident the track appeared to be in normal condition. The engineman apparently did not see anything wrong with the track, as the brakes were not applied prior to the accident.

The section crews at both Hudson and Northline had been called and between 5:30 and 7:40 a.m. Bridge 408-3/32 had been inspected at different times by the foreman of each section. Each found the track in good condition, and no high water was seen running through the culvert. During the inspection of his section, Foreman Clark found a washout at mile post 20, located about 1 mile west of Bridge 408-3/32; he notified the operator at Northline to hold all westbound trains, and after patrolling the remainder of his section he returned to mile post 20 in an automobile as his motor car had failed. In the meantime, however, Foreman Martinson, of the Hudson section, who had been ordered by the dispatcher to assist in repairing the washout at mile post 20, patrolled the tracks to Northline and back to mile post 20 and found the tracks in good condition. The last passage over Bridge 408-3/32 was by Foreman Martinson about 7:40 a.m. Foreman Martinson returned to Hudson, and Foreman Clark to Northline in an automobile; each then reported the track to be in good condition, the latter at 8:39 a.m. After both had reported, the signals were cleared and No. 515 passed Northline shortly thereafter. This washout therefore must have taken place after the last inspection approximately one hour prior to the accident.

Conclusion

This accident was caused by a washout.

Respectfully submitted,

W. J. PATTERSON,

Director.