

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING
INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE
CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC RAILROAD AT
TOMAH, WIS., ON JANUARY 30, 1932.

March 30, 1932

To the Commission:

On January 30, 1932, there was a derailment of a freight train on the Chicago, Milwaukee, St. Paul & Pacific Railroad at Tomah, Wis., which resulted in the death of one employee and the injury of one employee. The investigation of this accident was held in conjunction with a representative of the Public Service Commission of Wisconsin

Location and method of operation

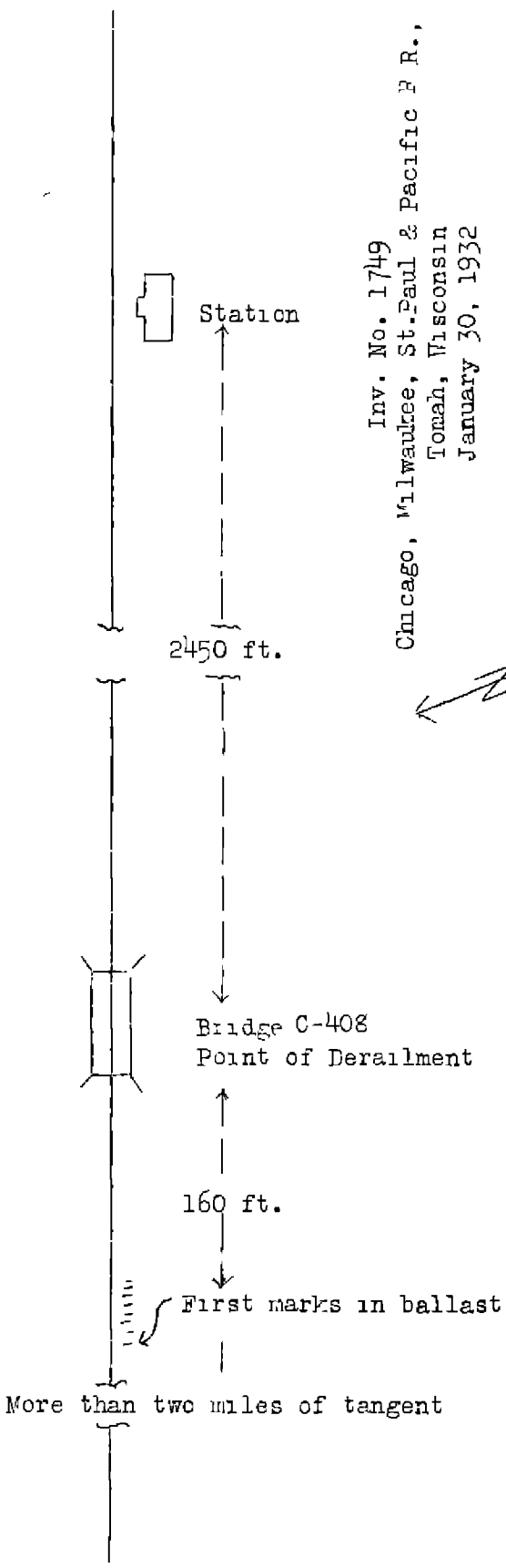
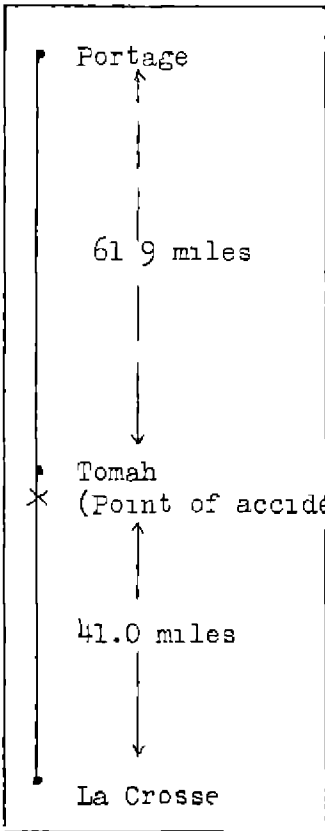
This accident occurred on the La Crosse to Portage Sub-division of the La Crosse-River Division, extending between La Crosse and Portage, Wis., a distance of 102.9 miles, in the vicinity of the point of accident this is a double-track line over which trains are operated by time-table, train orders, an automatic block-signal system, and an automatic train-stop and cab-signal system of the continuous-inductive type. The derailment occurred at bridge C-408, a 4-span concrete trestle 91 feet in length, located approximately 2,450 feet west of the station at Tomah, approaching this point from the west, the track is tangent for a distance of more than 2 miles, and for some distance beyond that point. At the point of accident the grade is 0.35 per cent descending for eastbound trains.

The weather was clear at the time of the accident, which occurred about 10.50 a.m.

Description

Eastbound second-class freight train No. 66 consisted of 76 cars and a caboose, hauled by engines 8637 and 8621, and was in charge of Conductor Colgan and Enginemen Hamele and Corbett. This train passed Tunnel City, 3.4 miles west of Tomah, at 10.43 a.m., 2 hours and 16 minutes late, and was derailed at bridge C-408 while traveling at a speed estimated to have been 35 or 40 miles per hour.

Engine 8637 became detached from engine 8621 during the course of derailment and stopped 770 feet east of bridge C-408 with the two rear pairs of driving wheels and the trailer truck derailed, the tender was derailed but remained practically upright. Engine 8621 was derailed to the right or south side of the track and stopped on its right side about 200 feet east



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of the bridge. Thirty cars in the train were also derailed, some of them passing engine 8621 and stopping between the two engines, while others were piled on top of the overturned engine. The right side of engine 8637 was badly damaged due to a broken main rod, and engine 8621 also was badly damaged, fire destroyed 24 of the derailed cars. The employee killed was the engineman of engine 8621 and the employee injured was the fireman of the same engine.

Summary of evidence

Engineman Hamale, in charge of leading engine 8637 of train No. 66, stated that he inspected his engine at La Crosse before it left the roundhouse, and tested the air brakes on the train after the engine was coupled to it. The only stop made en route was at Sparta, 16.4 miles west of Tomah, and in making this stop the brakes functioned properly, no further application of the brakes was made prior to the accident. He inspected the engine again at Sparta and discovered that the left main pin was slightly warm, but the main pin on the right side of the engine was covered with frost. On account of the weather being very cold he kept the cab windows closed as much as possible, the visibility being good and there being no steam leaks on his side of the engine. There was nothing unusual in connection with the performance of the engine until after it entered the yard limits at Tomah; just as he started to sound a station whistle signal he heard a peculiar noise on his side of the engine, followed by ballast, pieces of iron and splinters striking the running board. He immediately got off the seat box, closed the throttle, which had been in drifting position, and applied the brakes in emergency, but from the sound of the brake-pipe exhaust it appeared that the air pressure was about depleted, the air pipes having been torn off the right side of the engine. He said that when the disturbance first started the engine began rising and falling, which motion increased in intensity until the engine reached the bridge, where it became partially derailed, finally coming to a stop some distance east of the bridge, he estimated the speed of the train at the time of the accident at 40 miles per hour. Some time after the accident he examined the engine and found that the main rod on the right side was broken, the forward portion of which showed signs of a flaw, he did not see the rear end of this rod. Engineman Hamale also said that he did not think the piston had been striking against the cylinder head before the main rod failed for if this had been taking place he would have detected it by the vibration of the engine, nor did he think he could have overlooked the pounding which would have resulted had the liners worked out of the back end of the main rod.

Fireman Wipperman, of engine 8637, stated that he noticed nothing unusual about the operation of the train or the condition of the engine until it reached the bridge, where he felt

a severe jolt, and the engineman said that the engine was derailed

Head Brakeman Heberlein stated that the train was approaching Tomah at a speed of 35 or 40 miles per hour when he heard a clattering sound, followed by a crash, and then a couple lurches of the engine which indicated that it was derailed.

Fireman Dunn, of engine 8621, stated that the position of the engines was reversed after being coupled to the train at La Crosse on account of trouble in pumping up brake-pipe pressure. A stop was made at Sparta, and speed was reduced to 8 or 10 miles per hour while passing a grade signal east of that point, after which the train increased speed to 35 or 40 miles per hour. His first knowledge of anything wrong was when the engine suddenly lurched at the bridge at Tomah, the engine then starting to sway until it finally overturned.

Conductor Colgan stated that when he entered the caboose at La Crosse he observed that the air gauge registered only about 20 pounds pressure. Realizing that something was wrong he started towards the head end of the train and examined the train line, he found one car with a missing gasket, which he replaced, and another car with a defective angle cock. After the latter car was set out by the yard crew and the train recoupled, he returned to the caboose and the air gauge then registered 65 pounds pressure. The brakes were tested and as they appeared to be in proper working order he gave a signal to proceed. Three cars were set out at Sparta, and after leaving that point speed was reduced to 8 or 10 miles per hour when the train passed a grade signal about 1 mile east of Sparta. The speed was later increased, being between 35 and 40 miles per hour as the train approached Tomah, and the first indication of anything wrong was when there was a sudden jar of the caboose and the brake-pipe pressure dropped about 20 pounds, the train coming to a stop about 50 seconds later.

Roadmaster McMahon stated that he inspected the track in the vicinity of the point of accident and found a broken rail about 40 feet west of bridge O-408. Two rails on the bridge, on the right side of the track also were broken, the breaks being about 6 feet from their receiving ends, and the following rail was broken about the same distance from its receiving end, the balance of this latter rail was missing and probably had been carried along with the wreckage. In making his examination he noticed holes in the track about 35 or 38 feet apart, the first one being just west of where the first rail was broken, there also were lighter marks on the track between these holes. He said that he rode over the track where the accident occurred on January 29, while his inspection after the accident disclosed that the track west of where the first marks appeared was in good condition.

Division Engineer Vosburg stated that he arrived at the scene of accident about three hours after it occurred and made an inspection of the track. The first mark was a hole in the gravel ballast 160 feet west of bridge C-408 and east of that point similar holes appeared, about 18 feet apart, they were approximately 8 inches deep, except where the main rod had struck the ties, instead of the ballast, in which cases the ties were broken. After the engine reached the deck of the bridge it marked the ties, but the broken main rod did not penetrate the rock ballast which was on the bridge and it was his opinion that this caused the engine to be lifted from the rail and that when it dropped down it broke the rails, causing the following engine to be derailed.

Master Mechanic Miller stated that after the accident, on account of engine 8621 being covered with cars which were on fire, he was unable to inspect this engine. Upon inspecting engine 8637 he found the right side of it to be badly damaged, the main rod was broken 7 feet $4\frac{1}{2}$ inches from the center of the forward bearing and the rear end of the rod was missing and could not be located, the piston was bent, the bottom guide yoke was broken and the lower guide disconnected and lying alongside the engine, the link bracket was also broken and the main portion of it was found at the western approach to the bridge, while the power reverse cylinder was torn from the boiler and the air pipes were broken. He made a further inspection of the engine after it had been removed to Portage, where he discovered that the frame on the right side was broken under the spring saddle over the main box, this appearing to be a new fracture. The front valve chamber heads were removed and the valves were found to be in normal condition. Both front cylinder heads also were removed, the cylinder head on the right side was fractured, the piston spider ring was cracked in four places, and the heads of the rivets were flattened, and left marks on the cylinder head indicating that this was what had caused it to break, the piston also had been shoved through the spider about one-half inch. He also checked the lateral on the engine and found that it did not exceed one-half inch. At the time he inspected the engine at Tomah he noticed some indications of a flaw in the broken main rod, but due to the presence of ice he was unable to inspect the rod closely. After the engine had been removed to Portage the rod was thoroughly cleaned and a careful inspection was made, but the rod showed no signs of a flaw where the break occurred. The statements of Master Mechanic Miller were agreed to by Traveling Engineer Schmitz, who accompanied him in his inspection of the engine at Tomah.

Engine Inspector Marshall stated that he inspected engine 8637 before it left the roundhouse at La Crosse about 5 a.m. on the morning of the accident and made some minor adjustments, including keying up the front end of the left main rod but he did not find anything wrong with the rods on the right side of

the engine. He did not see the engine after the accident, although he saw the portion of the main rod removed from it, and while the rod showed some discoloration where it was broken he did not think that it broke as a result of a flaw.

An examination of engine 8637 was made by the Commission's inspectors subsequent to the accident, they found it damaged practically as described by Master Mechanic Miller. The nut was removed from the piston rod on the right side of the engine, while the threads were stripped there was grease and also some tool marks on the contact side of the nut which indicated that it had not been subjected to pounding. The brass, back end strap, and the rear end of the main rod were missing and had not been found at the time of this investigation, but the strap was located about one week after the accident, broken between the second and third bolts, 16 inches ahead of the center of the main pin. The break in the strap appeared to be new, with no indication of a flaw, and the bolt heads had been sheared. It also was found that the eccentric crank still was on the main pin, thus eliminating any possibility of the back end of the main rod having moved off the pin laterally.

Engine 8637 is of the 2-8-2 type with a driving-wheel base of 16 feet 9 inches and a total wheel base of 36 feet and 1 inch. The last general repairs made to this engine were during October, 1930, and since that time it had travelled approximately 53,000 miles. In the annual test of the engine, made in December, 1931, the right front and back rod bushings and all knuckle pins were renewed.

Conclusions

This accident was caused by a broken main rod.

According to the statements of the engineman of engine 8637, he noticed nothing unusual about the condition of the engine until it reached a point a short distance west of the bridge near the station at Tomah, at which time he heard a noise on the right side, accompanied by flying ballast, pieces of iron, and splinters. An examination of this engine after the accident disclosed that the right main rod was broken and the rear portion missing, while the right side of the engine was considerably damaged. The broken end of the forward part of the rod indicated that it was a new fracture and showed no signs of a flaw, the rear end of the rod, however, was not found, and the cause of the failure was not determined. The frame on the right side of the engine was also broken, and there were marks or holes on the right side of the track under the line followed by the main rod, as well as broken rails west of and on the bridge. Judging from these conditions it is believed that the main rod broke near where the first mark on the track

was found and that when the engine reached the bridge and a section of the broken rod encountered the frozen rock ballast it caused the engine to be lifted up, breaking the frame, and when it dropped back on the track it broke the rails, resulting in the derailment of the train.

The employees involved were experienced men and at the time of the accident none of them had been on duty in violation of any of the provisions of the hours of service law.

Respectfully submitted,

W. P. Borland

Director.