Inv-2317

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

INTERNATIONAL-GREAT NORTHERN RAILROAD,
MISSOURI PACIFIC LINES

McNEIL, TEX.

DECEMBER 8, 1938

INVESTIGATION NO. 2317

SUMMARY

Inv-2317

Railroad:	International-Great Northern, Missouri Pacific Lines
Date:	December 8, 1938
Location:	McNeil, Tex.
Kind of accident:	Derailment
Train involved:	Passenger
Train number:	2
Engine number:	6620
Consist:	10 cars
Speed:	35-55 m.p.h.
Operation:	Timetable and train orders
Track:	0°30' right curve, then 112 feet of tangent to switch involved; 1 percent ascending grade northward
Weather:	Clear
Time:	11:31 a. m.
Casualties:	4 injured
Cause:	Split switch, due to points opening under moving train as result of broken head rod.

January 7, 1939.

To the Commission:

On December 8, 1938, there was a derailment of a passenger train on the International-Great Northern Railroad, Missouri Pacific Lines, at McNeil, Tex., which resulted in the injury of two railway mail clerks and two railroad employees.

Location and Method of Operation

This accident occurred on that part of the San Antonio Division designated as the Austin District which extends between San Antonio and Taylor, Tex., a distance of 114.3 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable and train orders, no block system being in use. At a point about 743 feet north of the station at McNeil an industrial spur track leads off the main track to the east through a No. 10 turnout and is provided with a facing-point switch for north-bound trains; the accident occurred at this switch. Approaching the switch from the south there is a 0°30' curve to the right 1,150 feet in length, followed by several miles of tangent, the switch being located on this tangent at a point 112 feet from its southern end. The grade at the switch is 1 percent ascending northward.

The switch stand is of the Elliot high-circle type; it is located 6 feet 6 inches east of the east rail of the main track. The switch target is mounted on a mast 5 feet 6 inches above the head block and is painted red; this target is not visible when the switch is lined for the main track.

The main-track structure consists of 90-pound rail, 33 feet in length, laid on an average of 20 ties to the rail length; it is single-spiked, tieplated, ballasted with crushed limestone to a depth of 8 inches below the ties, anchored with anti-creepers, and well maintained. The maximum permissible speed for passenger trains is 65 miles per hour.

The weather was clear at the time of the accident, which occurred about 11:31 a. m.

Description

No. 2, a north-bound passenger train, consisted of one baggage car, one mail-baggage car, two baggage cars, one coach, one chair car, one diner, two Pullman sleepers and one lounge car, in the order named, all of all-steel construction, hauled by engine 6620, of the 4-6-2 type, and was in charge of Con-

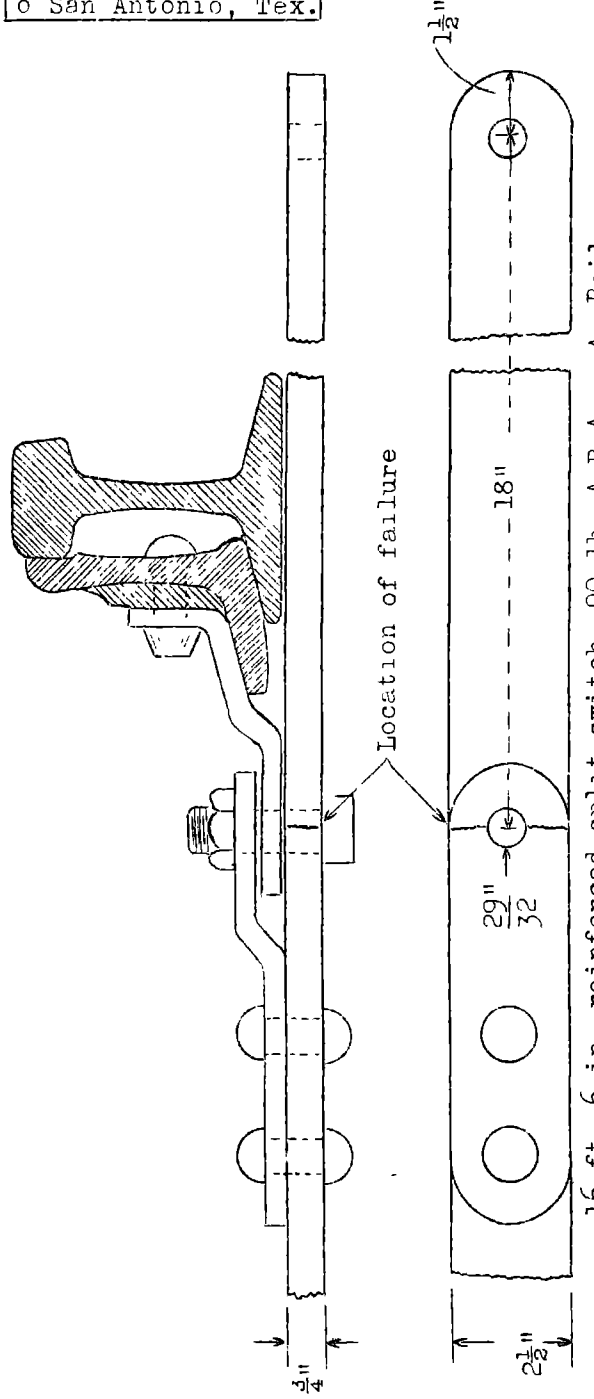
o Taylor, Texas

21.2 mi.

McNeil (P of A)

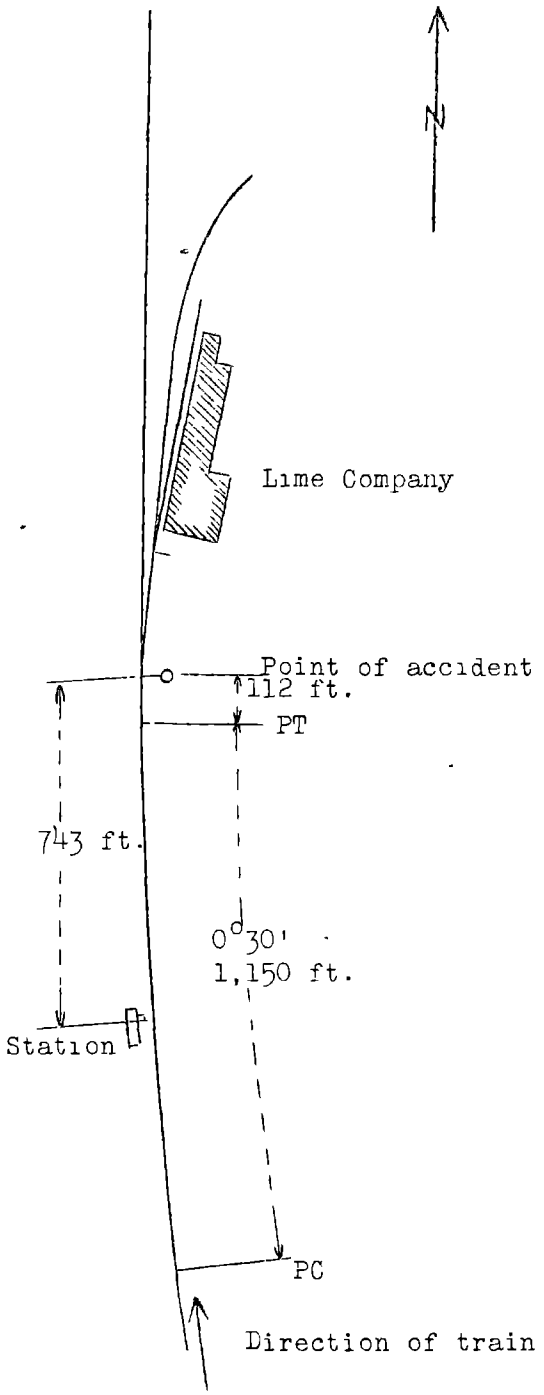
93.1 mi.

o San Antonio, Tex.



16 ft. 6 in. reinforced split switch, 90-lb. A.R.A. - A. Rail

Portion of Rod #1 Lime Company switch, McNeil, Texas.



Inv. No. 2317
International - Great Northern
Missouri Pacific Lines
McNeil, Texas
Dec. 8, 1938

ductor Choate and Engineman White. This train left San Antonio at 9 a. m., according to the train sheet, on time, made stops en route, passed the station at McNeil, 93.1 miles from San Antonio, at 11:31 a. m., 4 minutes late, and was derailed at the industrial spur-track switch while traveling at a speed estimated to have been between 35 and 55 miles per hour.

Engine 6620, its tender, the first seven cars and the forward truck of the eighth car were derailed to the east, and two empty box cars that stood on the spur track were struck, one being destroyed and the other badly damaged. The engine and tender stopped on their right sides, almost parallel with the main track, with the front end of the engine 507 feet north of the switch; the first six cars were badly damaged. The derailed cars stopped in various positions across the main and spur tracks. The railroad employees injured were the engineman and the fireman.

Summary of Evidence

Engineman White stated that the required test of the air brakes was made at San Antonio and they functioned properly en route. The train was traveling at the usual speed of about 55 miles per hour through McNeil and shortly after passing the depot the engine jerked and the derailment occurred at the facing-point switch leading to the industrial spur track. The switch target indicated that the switch was properly lined for the main track. He did not think that the front part of the engine was the first to become derailed; it might have been the trailer wheels but he thought it was either the tender or the first car. When a short distance north of the switch he felt the engine going over as though it were being pulled over by the cars. The engine was in good condition and it did not contribute to the cause of the accident.

Fireman J. K. Brown gave testimony similar to that of Engineman White. He estimated the speed at about 50 miles per hour, and thought the trailer wheels were the first to become derailed.

Conductor Choate and Train Porter Walter Brown, who were in the fifth car, and Brakeman Nunnery, who was in the ninth car, were not aware of anything wrong until the air brakes became applied in emergency and the derailment occurred. Their estimates of the speed ranged from 35 to 55 miles per hour. These employees examined the switch after the rear two cars were pulled back; it was lined for the main track and the

switch points were bent. The brakeman unlocked the switch and lifted the lever from the socket, and then it became known that the switch rod was broken. The break in the rod could not be seen until the switch lever was pulled around. There were neither wheel marks on the ties south of the switch points nor any indication of dragging equipment.

Engineman Worley, of No. 6, the last north-bound train prior to the one involved in the accident, stated that he passed through McNeil at a speed of about 50 miles per hour about 1:17 a. m., approximately 10¼ hours before the occurrence of the accident; the switch light showed clear for the main track and he observed nothing unusual when passing over the switch.

Division Engineer Cook stated that the first indication of derailed equipment was at a point 22 feet 1 inch north of the facing-point switch leading to the spur track where a wheel had dropped off the west rail of the main track and there were similar indications 22 feet 11 inches and 23 feet 9 inches from the point of the switch. The first flange mark appeared on the base of the turnout rail of the switch on the west side 23 feet 6 inches north of the point of switch. This flange mark was 4½ inches from the gauge side of the main track rail. There was a corresponding flange mark on the opposite side and on the outside of the base of the east main-track rail. This flange mark was 4⅝ inches from the gauge side of the turnout rail of the switch. These marks were the first flange marks made by the derailed wheels. Two additional flange marks appeared at a point 3 feet beyond; from this point to the point of the frog ties were marked with three flange marks on the east side and three flange marks on the west side which indicated complete derailment of one truck. The derailed truck came in contact with the guard rail, the frog and the turnout rail where the major derailment occurred; the track was completely torn up a distance of about 400 feet beyond the frog. It was his opinion that the leading truck of the first car was the first to become derailed and the general derailment was caused by this truck splitting the switch. Examination of the switch showed that the No. 1 head rod was broken, the break being through the bolt hole where the rod was bolted to the transit clip which held the main-track switch point in place against the running rail. The breaking of this rod allowed the switch to become loose and free. It was his opinion that the vibration of the engine passing over the switch point after the head rod broke caused the switch point to work open and this allowed the wheels of the car to enter the turnout on the east side while the wheels on the west side continued on the main-track rail, and the wheels became derailed upon reaching the point where the gauge widened sufficiently to permit the wheels to drop between

the turnout rail and the west main-track rail. The track was in good surface and alinement; the switch ties, switch plates, braces and appurtenances were in good condition. The main-line switch point showed no wear and this would indicate that this point had been fitting properly. The spur-track switch point showed very little wear. There was no wear of consequence in the switch-lever socket and there was no lost motion between the connecting rod and the head rod. The switch was a 16-foot-6-inch, No. 10, 90-pound standard turnout and was installed when new rail were laid in 1923. The failed head rod was a standard No. 1 rod, $\frac{3}{4}$ inch by $2\frac{1}{2}$ inches. The break was through the bolt hole where the rod was fastened to the transit clip, approximately three-fourths of the break being old. The fracture started from the top of the lower bar and extended downward. Due to the construction of the head rod, which consisted of a straight rod and arm riveted on top of the bar, the fracture was hidden from view by the top arm and transit clip and could not be detected by inspection while the rod was in service. He said that the metal did not appear to be crystalized and that failure probably was due to fabrication; from the appearance of the metal at the point of fracture he thought that it was poor quality steel. It was his opinion that the derailment was caused by the broken head rod of the switch.

Roadmaster Soechting arrived at the scene of the accident within less than 2 hours after its occurrence. Inspection of the switch showed that the head rod was broken as described by the division engineer. The last regular monthly inspection of the switch was made November 21, 1938, and it appeared to be in good condition at that time. He last passed over this switch on Train No. 1, December 5, in a trailing movement, and noticed nothing wrong with the condition of the switch.

Section Foreman Alexander stated he has been in charge of this section since 1932. He arrived at the scene of the accident about 40 minutes after its occurrence and found the broken head rod as described by the division engineer. He inspects the switches every week by going over them with a gauge and tightening bolts, oiling them and operating them back and forth several times, and every three months makes a general inspection of them. In June 1938, he adjusted the head rod involved by moving it back one hole; on October 1, he removed the bolt from the head rod for inspection; on December 2, he tightened the filler block bolt on the east side and he considered the switch to be in good condition at that time. On the day of the accident, he passed northward over the switch on a motor-car about 8:07 a. m. and did not notice anything wrong. During the six years he had been on this section he had never had occasion to remove the No. 1 head rod and examine it and so far as he knew it had never been inspected at the point of the flaw.

According to information submitted by officials engine 6620 is of the Pacific or 4-6-2 type; the weight on drivers is 187,500 pounds; trailer 57,500 pounds; engine truck, 50,000 pounds; total 295,000 pounds. The overall length of the engine and tender is 86 feet 2 inches. The tender has two six-wheel trucks. Inspection of the engine after the accident indicated that it had been in good mechanical condition prior to the derailment and that there was nothing about its condition that contributed to the accident.

Discussion

Examination after the accident of the switch involved disclosed that the No, 1 rod, which held the main track switch point against the running rail, was broken at the bolt hole under the transit clip of the east point. The failure of the rod permitted the switch to become loose and free. Apparently the vibration of the engine passing over the switch caused the point to work open, resulting in the wheels of the first car entering the industrial spur track. Where the rod failed, the metal indicated an old break over a considerable portion of the area. The fracture was so located that it could not be detected during the course of regular switch inspections, as it was concealed by the transit clip; it could only have been detected by dismantling the rod and subjecting it to thorough examination. The last north-bound train previous to the one involved in the accident passed over this switch about 10¼ hours prior to the occurrence of the accident and nothing irregular concerning the switch was observed.

Conclusions

This accident was caused by a split switch, due to the point opening under a moving train as the result of a broken head rod.

Respectfully submitted,

W. J. PATTERSON

Director.