

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN
 RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED
 ON THE ST. LOUIS-SAN FRANCISCO RAILWAY AT
 HENRYETTA, OKLA., ON AUGUST 18, 1929

December 3, 1929.

To the Commission:

On August 18, 1929, there was a derailment of a passenger train on the St. Louis-San Francisco Railway at Henryetta, Okla., resulting in the death of 12 passengers and 2 employees, and the injury of 27 passengers, 2 mail clerks and 2 express messengers.

Location and method of operation

This accident occurred on the Creek Subdivision of the Southwestern Division, extending between Francis and Sapulpa, Okla., a distance of 101.9 miles, in the vicinity of the point of accident this is a single-track line over which trains are operated by time-table and train orders, no block-signal system being in use. The accident occurred within the yard limits of Henryetta, at a switch located 2,382 feet north of the south yard-limit board or 4,439 feet south of the station, the switch is a facing-point switch for northbound trains and leads off the main track to the right or east to an industrial spur track, which is about 830 feet in length. Approaching the switch from either direction the track is tangent for a considerable distance; the grade for northbound trains is descending, varying from 0.34 to 0.72 per cent to within about 650 feet of the switch, from which point it is level to and beyond the switch.

The switchstand is of the Elliott high-revolving type and is located on the east side of the main track, when the switch is closed no target is visible, but when the switch is open a disk, 12 $\frac{3}{4}$ inches in diameter, is displayed, this disk is painted bright

red, with a white center about 5 inches in diameter, and the center of the target is 5 feet 8 inches above the head-block ties. The view of the switchstand is entirely unobstructed.

The weather was clear at the time of the accident, which occurred about 5.59 a.m.

Description

Northbound passenger train No. 118 consisted of one baggage car, one combination mail and baggage car, one coach, one chair car, and three Pullman sleeping cars, in the order named, hauled by engine 1056, of the 4-6-2 type, and was in charge of Conductor McCaughan and Engineman Wolfe. The cars were of all-steel construction, with the exception of the third and fourth cars, which were of steel-underframe construction, with steel sheathing on the superstructures. This train left Weleetka, 13.6 miles south of Henryetta, at 5.42 p.m., according to the train sheet, two minutes late and was derailed on encountering a cocked or partly-open switch at Henryetta while traveling at a speed estimated to have been between 50 and 60 miles per hour.

The entire train, with the exception of the last car, was derailed. Engine 1056 came to rest on its right side, between the main and spur tracks, with its forward end about 365 feet north of the switch, the engine was badly damaged, the cab and all of the appurtenances being stripped from the boiler. The tender was also on its side, to the left of the engine. The baggage car came to rest on top of the engine and tender, leaning toward the left, the mail car was east of the spur track, headed northeast, but remained upright, the coach was in line with and back of the mail car, coupled to it, with its left side leaning against the rear end of the boiler of the engine, directly opposite the broken off safety valves, from which live steam was escaping under pressure, the chair car was headed northwest across the main track, leaning at an angle of about 30°, the next two cars remained on the roadbed of the spur track and in line therewith, in an upright position, while the last car stopped on the spur track with its rear end just north of the switch. The passengers killed were riding in the coach, the employees killed were the engineman and fireman.

Summary of evidence

The first mark of derailment appeared on the head of a rivet at the east switch point, $27\frac{1}{2}$ inches from the point of switch, and apparently was made by the flange or flanges of wheels riding between the switch point and the east rail of the spur track. On the west side of the track there was a mark on the outside of the head of the west switch point, 20 feet 9 inches from the point of switch, apparently caused by wheels or tires rubbing against the rail as the engine or cars were pulled over to the east. Flange marks appeared on the base of the outside of one east rail of the main track, 17 feet 9 inches from the point of switch, while on the outside of the base of the west rail of the spur track, flange marks appeared at a point 24 feet 4 inches from the point of switch. The switch points apparently had been struck a heavy blow, as about $1\frac{1}{4}$ inches of the tip of the west switch point had been broken away, and there was a pronounced abrasion on the tip of the east switch point. There were indications that the engine split the switch, derailed, and continued on the ties a short distance beyond the frog, followed by the tender and baggage car, while the rest of the train followed the spur track. On account of the damaged condition of the track, with ties having been removed and replaced, it was impossible to ascertain the exact spot where the engine left the ties.

Conductor McCaughan stated that he was riding in the rear compartment of the third car approaching Henryetta and estimated the speed of the train to have been about 55 or 60 miles per hour, this latter figure being the maximum permissible speed for passenger trains. The first he knew of anything wrong was when the accident occurred, without any application of the brakes having been made, and the car immediately became filled with steam. He climbed out of a window and summoned assistance from a nearby telephone, and then went to the switch in an endeavor to find out what caused the accident, the switch was unlocked, the switch lock was missing, the level was raised and moved around about 2 inches from the notch where it should have been, and the switch points were open about 1 inch, but he did not notice whether the switch lamp was burning, as it was daylight. The switch target was turned at an angle, although it displayed almost a full red indication, he was of the opinion however, that at the time his train approached, the switch was not open far enough for the target to give warning of impending danger to the engineman, and that it became opened, to the extent afterwards found to exist, as a result of the accident.

Flagman Andre was riding on the rear end of the last car at the time of the accident, immediately after the train came to a stop he looked at the switch and its appurtenances and found them to be practically in the condition described by Conductor McCaughran. Flagman Andre then went back to flag and on his way back he inspected the track, but found no indication of dragging equipment. Train Porter Stoner was riding in the rear or third compartment of the coach approaching Henryetta and on hearing a crossing signal sounded, he started toward the front end of this car in order to open the trap door. On starting through the front compartment he felt a jolt and at the same time the air brakes applied in emergency. Train Porter Stoner was of the opinion that no fatalities would have occurred in the coach had it not been for the escaping steam.

Assistant Superintendent Hutchison and Division Engineer Busch arrived at the scene of the accident about $2\frac{1}{4}$ hours after its occurrence. The switch and its appurtenances were found to be practically in the condition as previously described, and no indication was found of dragging equipment. Both switch points had small pieces snapped out of them, about $1\frac{1}{2}$ inches long and from $\frac{1}{2}$ to $\frac{3}{4}$ inch deep, where they had been struck. The switch lamp was not burning, later in the day Division Engineer Busch tried to light it, but found that the wick had been burned down completely and he assumed that the lamp probably was tampered with at the time the switch was partly opened. Assistant Superintendent Hutchison stated that during the late afternoon of the day of the accident several boys came in from the north and one of them was carrying a switch lock by the end of a chain, this boy said that he had found the lock, in the weeds, about 50 or 60 feet from the main track and on the west side thereof, at a point about 725 feet north of the switch. The lock was closed and there was no evidence of its having been hammered open, no attempt was made to open it at this time by means of a switch key and it was turned over to the special agents. Assistant Superintendent Hutchison went with this boy to the exact spot where the lock was said to have been found, apparently the lock had been laid down or tossed from a point only a few feet distant, as no mark was found on the ground indicating that the lock had been thrown from a point as far away as the main track. Owing to the manner in which the equipment came to rest, Division Engineer Busch thought that the engine, tender and baggage car followed the main track, while

the remainder of the train followed the spur track. He did not think that it would have been possible for traffic to have jarred the switch lever out of its notch even if the lock had not been in its proper place, as the jaws of the notch were square and in good condition and the lever fitted tightly therein. In his opinion the switch lock was unlocked by some unknown party or parties, and the switch opened only to the extent that it would have been impossible to detect it until too late to avert the accident.

Section Foreman King stated that he inspected the switch between 4 and 5 p.m., August 16. At that time he examined the switch points to see that they fitted tightly, and also gave a jerk on the chain of the lock, but nothing wrong was noticed, in making this inspection he did not open the switch. Section Laborer Smith inspected the switch about 1.30 p.m., August 17, while filling switch levers with oil, he was positive that the lock was in the hasp and properly locked at that time.

The switch was last used about 2.30 p.m., August 16, by the Henryetta mine switcher, in order to place one car on the spur track. At that time the switch was closed by Brakeman Adams, who was positive that he locked the switch and jerked on the chain to make certain that the switch was properly secured, Conductor Kleiser was standing beside the brakeman and saw him lock it. Brakeman Adams said that he experienced difficulty in unlocking the lock with his switch key, but that he did not try to open the lock without using his key, only testing it by jerking on the chain after closing the switch. Testimony was also given to the effect that while no trouble with unlocked main-line switches had been experienced previously in this vicinity, yet such was not the case with yard-track switches, some of which had been found cocked or partly open. This condition was attributed to mischievousness on the part of boys in the neighborhood and yard-track switches subsequently were equipped with hooks, instructions also were in effect to keep the locks wired to the stands, so that they would not be laid on a tie and then forgotten. The section foreman did not remember whether the wire was in place when he inspected the switch on August 16 but one of his laborers said the lock was wired to the switch lever. Statements of various other witnesses developed nothing additional of importance.

Northbound freight train extra 4164 and southbound passenger train No. 117 passed over this switch on the main track about 6 and 5½ hours, respectively, prior to the occurrence of the accident.

During the investigation the lock that was found was tested with different switch keys of members of the crew of the Henryetta mine switcher, when tried with the key of Conductor Kleiser, which was old and worn, it would not open. The conductor said that this lock apparently was the lock that had been on the switch, as it was the only lock that his key would never unlock. The key of Brakeman Tucker would open the lock, but would not make a full revolution, with the key of Brakeman Adams, difficulty was experienced in opening the lock. Section Foreman King also tried his key in the lock and opened it, but it appeared as though there was something wrong with the inside of the lock, although subsequent internal inspection failed to disclose anything wrong. Section Foreman King also stated that there was a mark on the lock, apparently made recently, indicating that the lock had been struck, right at the point where it would be hit in order to force it open. Several tests were made by Section Foreman King, jerking on the chain of the switch lock with the lock fastened to a railing, and also to a switchstand, and the lock was pulled open each time, in this connection, he said that he gave the chain a similar jerk when he inspected the switch on August 18, but that the lock did not open at that time.

Cross levels and gauge taken for a considerable distance south of the switch showed the track to be in good condition, while careful inspection of engine 1058, including flanges of the engine-truck wheels, tender-truck wheels, driving-wheel tires, lateral, driving-brake foundation gear, engine truck center casting and cradle, etc., failed to disclose anything that would have caused or contributed to the accident.

Tests of the switch and its appurtenances disclosed that when the switch lever was released suddenly, the east switch point would spring open about 2 inches and the west switch point remained open about 2½ inches. With the switch in this condition a test was made to determine how far the switch target could be seen from the engineman's side of the cab of a northbound engine. It could not be definitely determined that the switch was not properly lined until a point approximately 495 feet south of the switch was reached, while the position of the switch points could not be determined until a point 231 feet south of the switch was reached.

Conclusions

This accident was caused by a cocked or partly-opened switch, apparently due to malicious tampering.

No defective condition was found about the track or equipment which would have caused the accident, while the switch was last used about 3.30 p.m., August 16, Section Foreman King inspected the switch between 4 and 5 p.m., August 16, while Section Laborer Smith inspected it about 1.30 p.m., August 17, nothing wrong being noticed at the time of either of these inspections. Since these inspections, several train movements had been made over the switch in each direction, the last of these being northbound freight train extra 4164, which passed this point about six hours before the accident occurred, and southbound passenger train No 117, which passed about one-half hour after extra 4164. After the accident, however, the switch was found to be cocked or partly opened, and it appeared that the lock might have been forced open, tests disclosing that this could be done by giving quick hard jerks on the chain. It also appeared that when the switch lever was taken from its socket the points would spring open just enough to cause the switch target to turn only part way around, with the result that proper warning of danger would not be given to the engineer of an approaching northbound train. The circumstances point quite clearly to a case of malicious tampering, particularly in view of the fact that after the accident a lock was found in the weeds on the west side of the main track, at a considerable distance north of the switch, which seemed to have been the one that had been on the switch, at the time of this investigation, however, it had not been determined when or by whom the tampering was done.

The Commission's inspectors were informed by an official of the railroad that within the next year, that part of the Creek Subdivision extending between Bryant, 5.9 miles south of Henryetta, and Sapulpa, 50.5 miles north of Bryant, over which the greater part of traffic on this subdivision is handled, will be equipped with an automatic block-signal system.

All of 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. F. BORLAND,
Director.