INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN ACCIDENT WHICH OCCURRED ON THE NORFOLK AND WESTERN RAILWAY AT UNION, OHIO, ON APRIL 21, 1932.

June 14, 1932.

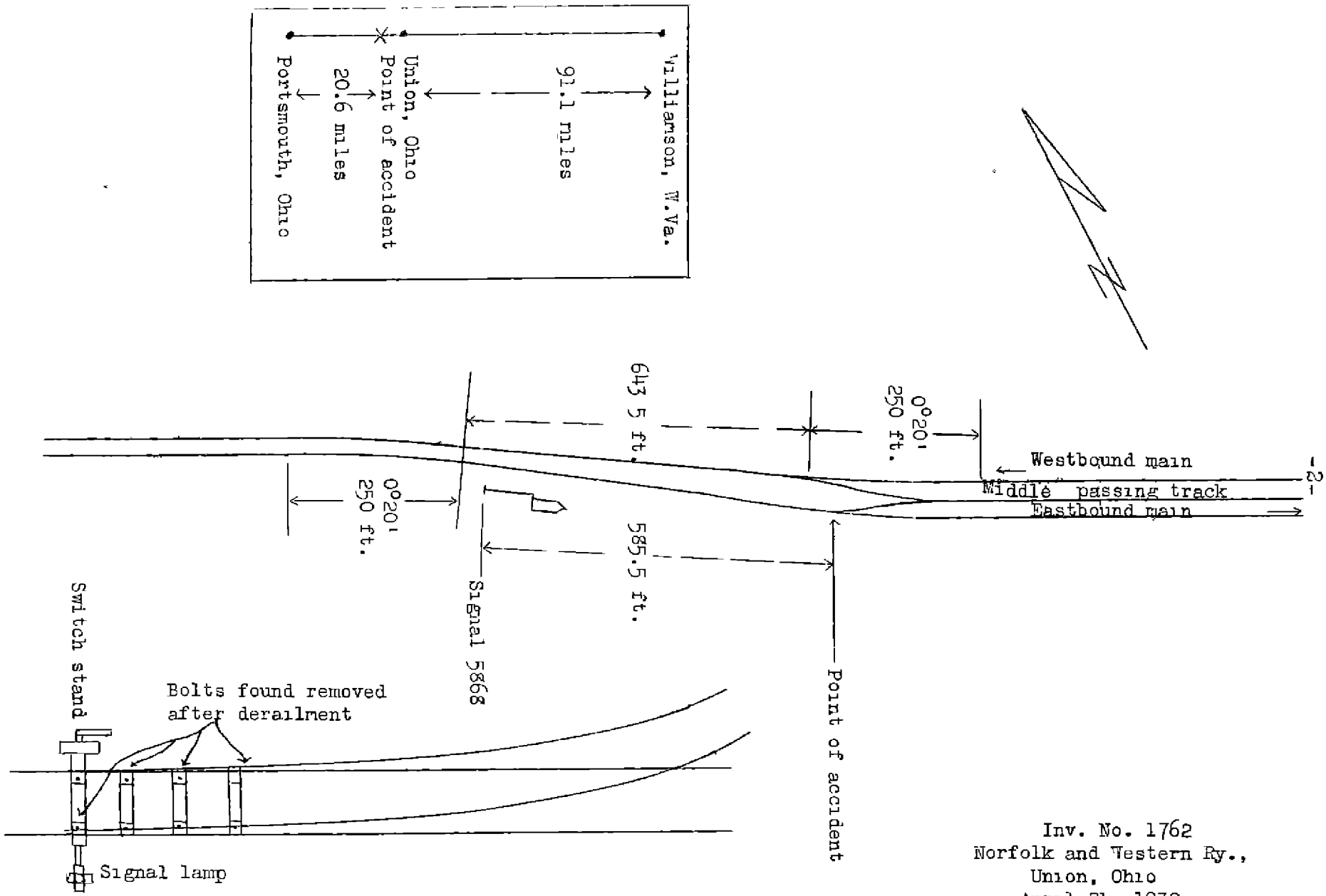
To the Commission:

On April 21, 1932, there was a derailment of a passenger train on the Norfolk and Western Railway at Union, Ohio, which resulted in the death of 2 employees, and the injury of 1 passenger, 1 express messenger and 2 mail clerks. The investigation of this accident was made in conjunction with a representative of the Ohio Commission of Public Utilities.

Location and method of operation

This accident occurred on that part of the Scioto Division which extends between Portsmouth, Ohio and Williamson, W.Va., a distance of 111.7 miles, and is a double-track line over which trains are operated by timetable, train orders, and an automatic block-signal system. The accident occurred at the west switch of the middle passing track at Union; approaching this point from the west, there is a 1° curve to the left 2,008.3 feet in length and 941.9 feet of tangent, then a 0° 30' curve to the right 250 feet in length, tangent track for a distance of 643.5 feet, and a 0° 30' curve to the left 250 feet in length, followed by tangent track for a considerable distance, the switch at which the accident occurred being located at the western end of the last-mentioned curve. The grade is level at the point of accident.

The switch involved is a facing-point switch for eastbound trains and leads off the main track through a No. 12 turnout to the left or north to the middle passing track, which is situated between the westbound and eastbound main tracks. The switch stand is of the Ramapo No. 20 type,



West switch on eastbound main track

Inv. No. 1762
Norfolk and Western Ry.,
Union, Ohio
April 21, 1932

the lever being located on the north side of the track while the stand, approximately 24 inches in height and equipped with an electric lamp, is located on the south side of the eastbound main track, normal night indications are green when the switch is closed and red when the switch is open. The last eastbound automatic signal - 5868 - is located 585.5 feet west of the switch.

The track is laid with 130-pound rails, 39 feet in length, with an average of 24 treated hardwood ties to the rail-length, single-spiked, fully tie-plated, and ballasted with slag and crushed stone to a depth of 24 inches, six rail-anchors to each rail are used. The track is well maintained.

The weather was cloudy at the time of the accident, which occurred about 1.37 a.m.

Description

Eastbound passenger train No. 4 consisted of 2 express cars, 2 mail cars, 1 combination mail and baggage car, 1 coach, and 4 Pullman sleeping cars, all of steel construction, hauled by engine 133, and was in charge of Conductor McCoy and Engineman Myers. This train departed from Portsmouth, 20.6 miles west of Union, at 1.11 a. m., six minutes late, according to the train sheet, and was derailed at the west switch of the middle passing track at Union while traveling at a speed estimated to have been between 45 and 55 miles per hour.

The engine, tender, first six cars and the leading truck of the seventh car were derailed. The engine stopped on its left side, fouling the westbound main track, at a point 497 feet east of the switch, with the tender still coupled to the engine. The first car stopped on its right side diagonally across the tracks, while the second car was on its left side against the tender. The following four derailed cars remained in upright position to the right of the eastbound track but in general line with the track. The employees killed were the engineman and fireman.

Summary of evidence

Conductor McCoy stated that he was riding in the fifth car in the train approaching Union and his first warning of danger was the sudden jerking and surging of

the train at the time of the derailment. He did not think that the engineman applied the brakes prior to the accident, and estimated the speed to have been about 50 miles per hour at the time. After summoning aid by means of a telephone in a house west of the rear of his train, he started back east, examining the track, but found no signs of anything wrong until he reached the switch; at that point he found cotter keys, nuts and bolts lying on the switch ties, while several connecting-rod bolts were lying on the ground, and he then instructed the Pullman conductor to watch the switch to prevent any one from touching anything until the officials arrived. His further inspection disclosed that the switch was locked and the lock was not damaged in any way, but Conductor McCoy was unable to say whether or not the switch lamp was burning. The last eastbound automatic signal west of the point of accident was displaying a red indication while the next signal east of the point of accident displayed a green indication, indicating that the signals were functioning properly. The engineman's watch was found to have stopped at 1.37 a.m. Conductor McCoy further stated that a running test of the air brakes was made upon departing from Portsmouth, that the train ran smoothly, and that the speed had not been reduced at any time on account of signal indications.

Head Brakeman Putzek stated that the train was traveling at a speed of 50 miles per hour when he felt the slack run out and supposed the train had parted or an air hose had burst, and he did not know that the coach in which he was riding was derailed until it came to a stop. After taking care of the passengers he went eastward to protect the front end of his train, passing the eastbound signal east of the point of accident, and he thought it displayed a green indication; he made no examination of the track. The only applications of the air brakes he noticed was the running test upon leaving Portsmouth, and the train also slowed down in the yard, and the brakes worked properly each time.

Rear Brakeman Stevens, who was riding in the rear car of the train, stated that the train was riding smoothly and traveling at a speed of 50 miles per hour or more when the accident occurred, but he thought the train had stopped due to a burst air hose. He went back to flag and observed the eastbound signal west of the point of accident displaying a stop indication.

Conductor Davis, who was deadheading on train No. 4, stated that he accompanied Conductor McCoy to a farmhouse west of the point of accident to report the accident and on their return they inspected the track to some extent; inspection of a road crossing situated about 180 feet west of the switch disclosed nothing, nor did examination of the track for about one car-length west of the switch reveal any wheel marks. The switch was found with all four tie rods disconnected on one end, and the switch point on the south side stood about 1 inch from the rail; the point on the north side fitted properly, and the lock was in place. The switch lamp was not burning. He estimated the speed of the train at the time of the accident to have been 50 or 52 miles per hour.

Four other employees who were deadheading on train No. 4, variously estimated the speed of the train at the time of the accident to have been between 45 and 55 miles per hour, and they were of the opinion that the air brakes had not been applied by the engineman prior to the occurrence of the accident.

Master Mechanic Barry arrived at the scene of the accident about 3.05 a.m., inspected the switch and found that bolts had been recently removed from the south end of No. 1 tie rod and the north end of Nos. 2, 3 and 4 tie rods. The bolts were lying between the ties, and the nuts and cotter keys were lying on top of the ties; the bolts and nuts were wet with oil. The switch was lined for the eastbound main track and the switch point on the south side was possibly about 1½ inches from the south rail. The indications were that the left or north flange of an engine-truck wheel started to follow the main line, but the wheel on the opposite side led in toward the middle passing track, and at a point about 9 feet east of the switch the marks indicated that the left wheel mounted the north rail and ran along a distance of about 24 feet to the point where it dropped off on the north side of the rail and started up the passing track. The engine and first two cars evidently followed this direction, while the remainder of the train continued on the main track until it reached the frog of the switch. He thought that the switch lamp was burning but was unable to say what indication it displayed. Master Mechanic Barry further stated that he inspected the engine and found nothing that would in any way have contributed to the cause of the derailment. This engine had received a monthly inspection on April 1, and measurements made a

day or two previous to the accident disclosed the lateral to be within the required limits. The statements of Division Car Inspector Minter, who accompanied Master Mechanic Barry to the scene of the accident, substantiated those of the master mechanic. Car Inspector Minter made an examination of the track for a distance of 400 feet west of the rear of the train but did not find any marks of derailment west of the switch or any evidence of dragging equipment. He examined the equipment closely for defects, inspecting the flanges, draw bars and running gear, but found nothing that would have contributed to the cause of the derailment.

Supervisor of Signals Burnett stated that when he arrived at the scene of the accident several hours after its occurrence the eastbound signal west of the switch was displaying a stop indication. The only repair work necessary was the replacement of new bond wires in the track that had been destroyed by the derailment, after which a thorough test of the signals was made and they functioned properly. He further stated that the south switch point appeared to be bent a little outward.

Signal Maintainer Kercher stated that on his arrival at the scene of the accident about one hour after its occurrence he observed signal 5868, located 580 feet west of the west switch, displaying a red indication. He stated that the condition in which the switch was found, with some of the bolts removed, was such that the switch lamp could not have been turned when the south switch point was moved, and therefore displayed a green indication to the engineman of train No. 4, but if the north switch point had been moved from the north rail, under normal conditions, as much as 3/16 inch it would have caused the automatic signal west of the switch to display a stop indication. On the day previous to the occurrence of the accident Signal Maintainer Kercher was working in the vicinity of the point of accident and was informed by Section Foreman Johnson that the switch had been tampered with, and upon examination he found that one bolt on the south side and several on the north side had been removed from the tie rods and then replaced in reverse position, the bolts in the heel block were loose and the nuts had been taken off and put back in the wrong way. Several hours later on the same day he inspected the switch after repairs had been made and

found all parts intact and properly secured.

Section Foreman Johnson stated that on the morning of April 30 he and his men proceeded from Portsmouth on their motor car to a point east of the point of derailment to perform some work, and great difficulty was experienced in throwing the west switch of the middle passing track. Inspection of the switch showed that several bolts had been recently removed from the switch tie-rods and replaced in reverse position. The bolt on the north end of the No. 1 switch rod had been tampered with but apparently had not been removed; the bolts on the next two switch rods had been replaced in reverse position, and the bolt on the No. 4 switch rod had been replaced in proper position. The bolt on the south end of the No. 1 switch rod had been removed and replaced. All four bolts had been removed from the angle bar at the heel of the north switch point; one was left on the ground but three had been replaced with the nuts reversed and only partly screwed back on the bolts. Section Foreman Johnson stated that he immediately replaced and tightened all the bolts, nuts and cotter keys in their proper positions, and reported it to Section Foreman Workman, who has charge of the section within which the switch is located.

Section Foreman Workman stated that he inspected the west switch of the middle passing track at 1.45 p.m. on the day prior to the occurrence of the accident, having been informed by Section Foreman Johnson that the latter had found it tampered with and had repaired it, he found the switch in proper condition, and he also said there were no low joints in the vicinity and that the track gauged properly.

Roadmaster McConnell, Assistant Superintendent of Maintenance of Way Anglin, Assistant Superintendent of Transportation McMullan, and Superintendent Peters found the switch in the condition as described by Master Mechanic Barry. Roadmaster McConnell added that the switch lamp was burning and displaying a green indication, while Assistant Superintendent Anglin, and Superintendent Peters stated that in addition to the nuts, bolts and cotter keys found lying near where they had been removed, a spike was also found lying on the tie near the south switch point; about 1 inch of this spike was covered with grease or oil, and from the indications the spike had been used for the purpose of holding the south switch point

against the main track rail, as the slot in the tie plate on the tie at that point was filled with oil, and it was evident that when the train struck the switch point it jarred the spike out of the hole. Roadmaster McConnell had inspected the switch on the previous afternoon, after receiving a report that it had been tampered with, and at the time of his inspection it was in first-class condition.

The members of the crew of eastbound extra 2075, which departed from Portsmouth at 11.30 p.m., April 20, the last train to pass over the switch involved, stated that they passed Union about 12.30 a.m.; the train rode smoothly, all signals displayed green indications, and no one was observed by them in the vicinity of the west switch of the passing track.

Roundhouse Foreman Bertram, who made an inspection of engine 133 before its departure from Portsmouth on the night of the accident, stated that it was in good condition. Car Inspectors Griffin and Cleary inspected the cars in train No. 4 and made a terminal air-brake test, and all the brakes were found to be working properly.

An examination of the track made by the Commission's inspectors for a considerable distance west of the point of accident disclosed no wheel marks on rails or ties, nor any sign or indication that any part of the train had been dragging. Inspection of the engine, tender and derailed cars at the scene of the accident about eight hours after its occurrence, and later after the damaged equipment had been taken to Portsmouth, disclosed nothing that in any way could have caused the accident.

Conclusions

This accident was caused by the defective condition of a facing-point switch, due to malicious tampering.

The switch was found with the bolt at the south end of the No. 1 switch rod, and the bolts at the north end of Nos. 2, 3, and 4 switch rods removed and lying between the ties, with the nuts and cotter keys on the ties. The manner in which the switch rods had been disconnected permitted the south switch point to be moved over against the

south rail, and a spike was found near the south switch point which appeared to have been used to hold the point against the rail. Apparently this switch had been tampered with by some one who was familiar with track work and the operation of automatic signals, and was careful not to disturb the north switch point; had that point been moved more than 3/16 inch from the stock rail it would have broken the track circuit and caused the automatic block signal, located approximately 585 feet west of the switch, to display a red or stop indication.

On the day previous to the occurrence of this accident this switch was found to have been tampered with in a similar manner by a section foreman and was immediately repaired. On the night of the accident eastbound extra 2703 passed over this switch about 12.30 a.m., which would indicate that the switch was tampered with after that time, but at the time of this investigation it had not been determined by whom the tampering was done.

All of the employees involved in this accident 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.