INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE LONG ISLAND RAILROAD AT CALVERTON, N. Y., ON AUGUST 13, 1926.

September 25, 1926.

To the Commission.

On August 13, 1926, there was a derailment of a passenger train on the Long Island Railroad at Calverton, N. Y., resulting in the death of 5 passengers and 2 employees, and the injury of 21 passengers and 7 employees. This accident was investigated in conjunction with a representative of the Public Service Commission of New York.

Location and method of operation

This accident occurred on that part of the main line extending between Hicksville and Greenport, N. Y., a distance of 69.5 miles, in the vicinity of the point of accident this is a single-track line over which trains are operated by time-table, train orders, and a manual block-signal system. The accident occurred at a point about 1,500 feet west of the station at Calverton, at the west switch of the south siding, which leads off the main track through a No. 9 turnout to the south. The siding is approximately 1,275 feet in length and parallels the main track, the switch is a facing-point switch for eastbound trains. The high type switch stand is located on the engineman's side of an eastbound engine, when the switch is lined for the main track a disk target, green with a white circular border, is displayed, and when lined for the siding a red indication is displayed. Approaching the point of accident from the west the track is tangent for more than 1 mile, while the grade is 0.3 per cent ascending for eastbound trains. The main track in the vicinity of the switch is laid with 100-pound rails, 39 feet in length, with about 20 ties to the rail-length, single-spiked, tie-plated, and ballasted with a mixture of sand, cinders and gravel to a depth of 18 inches, anti-rail creepers are also used. The track is well maintained. The south siding is laid with 80-pound rails, 33 feet in length.

The weather was clear and it was daylight at the time of the accident, which occurred at about 6.05 p. m.

Description

Eastbound passenger train No 212 consisted of one parlor car, one combination baggage and chair car, and four coaches, in the order named, all of steel construction, hauled by engines 214 and 2, and was in charge of Conductor Neaves and Enginemen Squires and Jackson, respectively. This train left Manorville, 4 miles west of Calverton, at 5.59 p. m., 16 minutes late, and on reaching the west switch of the south siding at Calverton was derailed while traveling at a speed estimated to have been between 40 and 55 miles an hour.

Both engines and the first car were derailed and overturned, while the next three cars and the forward truck of the following car were derailed; the head end of the lead engine was 355 feet east of the switch. The employees killed were the engineman and fireman of the lead engine.

Summary of evidence

The switch stand at which this accident occurred has been in service for approximately 40 years. It consists of a vertical shaft set in a frame, with the targets and switch lamp attached to the top of the shaft, the bottom of the shaft is bent to form a crank, which extends downward through the eye hole of the connecting rod, this rod is held in place by a washer and nut, while there is also a hole drilled horizontally through the threaded portion of the crank, near the bottom, to accomodate a cotter pin, intended to keep the nut and washer from working off, thereby preventing the connecting rod from dropping off the crank shaft and permitting the switch points to move entirely independent of the switch targets and lamp.

Engineman Jackson, of the second engine, stated that the speed of his train was about 50 miles an hour when approaching the switch. The first intimation he had of anything wrong was on seeing engine 214, the lead engine, apparently rise and then he was thrown out of the cab of his engine, he thought both engines started to follow the turnout. Fireman Fitzgerald was working on the fire and was unaware of anything wrong prior to the accident. Conductor Neaves was riding on the forward platform of the third car in the train at the time of the accident, while Collector Leutner was riding on the fourth car and Trainman Benson on the rear car, the first knowledge they had of anything wrong was when the air brakes applied in emergency, at which time they estimated the speed to have been between 40 and 50

miles an hour. Shortly after the accident an examination of the switch and its appurtenances by members of the crew disclosed that the switch lever was locked for a main track movement and the target displaying the proper clear indication, the nut and washer had worked off the end of the crank shaft, however, and were laying on the ground directly under the connecting rod, which had thus been allowed to drop off the end of the crank and in turn had entirely released the switch points, which were found to be partly open. No cotter pin, or nail in lieu thereof, was found in the vicinity of the nut and washer, while the cotter-pin hole at the end of the crank shaft was clogged, indicating that there had been no cotter pin in it for some time.

Section Foreman Dinizo stated that the nut had been placed on the crank shaft about one year previously, and that he had last examined the switch on August 10, three days prior to the accident. At that time the eye hole of the connecting rod was above the threaded portion of the crank shaft while the nut was screwed up the maximum distance. He said he placed a wrench on the nut but did not move it at all as the nut was tight, and there was also a wire nail in the cotter-pin hole, bent so that it could not work out. Later he said he was not sure about having tried the nut with a wrench on August 10. Section Foreman Dinizo further stated that he had gauged the track in the vicinity of the switch about six weeks previously and it was then in good condition. He had also been over this portion of the track on several occasions since that time. Section Foreman Dinizo knew of no instances of switches having been tampered with on his section and said that he could not account for the nail, nut and washer becoming disengaged.

Supervisor Steers stated that he arrived at the scene of the accident at about 10.45 p. m., and his examination of the switch disclosed it to be in the condition described by members of the crew. He said that he last inspected the switch about three weeks previously, at which time he only glanced at it and saw that it was in proper position. The threads on the crank shaft looked bright all the way down and in his opinion the nut had been removed from the shaft, and did not work off gradually, although he said he had never received any report of switches having been tampered with in this vicinity. His instructions are to use nails in cotter-pin holes to prevent nuts from working off, in the event cotter-pins are not available, nails are not as secure as cotter pins, however, and are not used as a general practice.

Assistant Freight Trainmaster Castline arrived at the scene of the accident about 4g hours after its occurrence and examination of the switch disclosed it to be in the condition described by members of the crew. The following morning he unscrewed the temporary nut from the end of the shaft of the switch stand, using a wrench. The cotter pin hole was clogged with grease. In his opinion the defective condition of the switch was probably the cause of the accident.

Before the Commission's inspectors examined the switch on the day following the accident, the connecting rod had been replaced on the shaft and a temporary nut applied. This nut was removed with a wrench in the presence of an official of the railroad, disclosing that the cotter-pin hole in the crank shaft was clogged with a gummy mixture of old dirt and grease. Considerable pressure was required in order to dislodge the obstruction, which came out of the cotter-pin hole in a solid formation the shape of the hole and about 1/3 inch long. With the nut removed from the crank shaft the connecting rod, unsupported, remained in position, held by tension. At the moment that the connecting rod dropped off the crank shaft, with the switch in the closed position, the switch point opened from the stock rail a distance of 1 inch. The threads on the crank shaft were bright a distance of 1 inch from the end of the shaft, where the temporary nut had been screwed on, while the 1 inch of threads above the nut were filled with a gummy mixture of old dirt and grease.

A careful examination of the original nut and washer disclosed that they were covered with a gummy deposit of old grease and dirt, there being several inches of this substance on the flat sides of the hexagonal nut that the nut appeared to be circular in shape, this formation apparently requiring considerable time to accumulate. There was not the slightest evidence of a wrench having been applied to the nut, and a standard track wrench could not have been used on it without having removed the deposit from the sides of the nut. It also appeared that there was not the slightest mark on the head of the nut to indicate that it had rested on a cotter-pin or nail, while the lower half of the threads of the nut contained a deposit of grease and dirt, increasing in density toward the outside edge of the nut, the last three threads being half full of the deposit. The original nut was then screwed on the shaft by hand, which process scoured the threads clean, although Section Foreman Denize had previously stated that he had tightened the nut with a wrench some time prior to the accident and that it could not be turned by hand. At the time of this test the nut

turned freely on the lower threads of the crank shaft and was loose on the upper threads, which had not been disturbed by forcing on the temporary nut. The condition of the threads inside the original nut, when first examined, indicated that the nut had not been fully screwed on the crank shaft for a considerable time prior to the accident, and this indication was given further weight when the process of screwing the nut on the shaft had the effect of scouring the deposit from the threads.

A careful inspection of the engines and cars after the accident failed to disclose any condition which would have caused or contributed to the accident.

The last train to use the switch prior to the accident was westbound freight train extra 140, which train performed switching at Calverton about 8 hours before the accident occurred, after which the west switch of the south siding was closed, four eastbound and five westbound trains then passed over the switch on the main line before the accident occurred, the last eastbound train, extra 145, passing at 2.18 p. m., and the last westbound train, No. 211, at 3.52 p. m.

Conclusions

This accident was caused by the defective condition of the west switch of the south siding at Calverton, for which Section Foreman Dinizo is primarily responsible.

It appeared that there had been no cotter pin, or nail in the hole through the end of the crank shaft for the purpose of preventing the nut from working off, and the great weight of evidence indicates that this is what happened, the nut fitting rather loosely and gradually working off as a result of the pounding effect of the connecting rod eye against the upper surface of the nut, due to vibration from passing trains coupled with the tendency of the nut to work off when the switch was operated, there being more or less downward pressure on the nut at all times. After the nut had worked off the bottom of the crank shaft, there was nothing to prevent the connecting rod from dropping off, thus leaving the switch points free to move at will.

As previously stated, this was a very old switch stand, and observations indicated that there were several similar stands in use on the main line of this railroad.

In some cases nails were in use instead of cotter pins, while in several instances there was no nut at all, the connecting rod being held in place only by a washer supported

by a cotter pin, on one such stand the ends of the cotter pin had not been spread and there was nothing to prevent it from working out or from being pushed out easily by hand. The existence of such conditions indicates laxness in the maintenance of switches as well as in the supervision and inspection of the same. Track Supervisor Steers said new nails were often used in place of cotter pins, and there is no particular reason why he should not have known of the other conditions which were observed by the Commission's inspectors. Immediate steps should be taken to correct this situation.

Section Foreman Dinizo entered the service of this railroad as a section laborer on August 1, 1913, was promoted to section leading laborer on March 16, 1924, and made section foreman January 1, 1924, he can not read or write, nor does he understand English to any extent. Consequently, he was examined with difficulty, and even though he was re-examined through an interpreter his statements could not be accepted with any degree of certainty because of his apparent lack of understanding of the questions asked.

None of the employees involved had been on duty in violation of any of the provisions of the hours of service laws.

Respectfully submitted,

W. P. Borland,

Director.