

## INTERSTATE COMMERCE COMMISSION

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REPORT OF THE CHIEF OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE NORTHERN PACIFIC RAILWAY AT PARKWATER, WASH., ON SEPTEMBER 7, 1922.

October 24, 1922.

To the Commission:

On September 7, 1922, there was a rear-end collision between a passenger train and a shop train on the Northern Pacific Railway at Parkwater, Wash., resulting in the death of 6 employees, and the injury of 4 employees. This accident was investigated in conjunction with a representative of the Labor and Industries Department of the State of Washington

This accident occurred on that part of the Second Sub-Division of the Idaho Division extending between Kootenai Yard, Ida., and Spokane, Wash., a distance of 70.5 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, and an automatic block-signal system. The accident occurred 460 feet east of the telegraph office at Parkwater, at a point 12 feet east of the switch points of the west switch of a crossover 1,280 feet in length, connecting the two main tracks, which are spaced 132 feet apart. The switches of this crossover are trailing-point switches for trains moving with the current of traffic. Approaching from the east, the track is tangent for several miles; the grade is slightly descending for more than 1 mile. The east yard-limit board is located 4,368 feet east of the point of accident. Under special instructions in the time-table, the speed of all passenger trains is restricted to 20 miles an hour between Parkwater and Spokane, a distance of 4.5 miles, all of which territory is within yard limits. The headlight of a westbound train can be seen for a distance of about 4 miles approaching Parkwater; however, as a highway parallels the track for several miles it is sometimes difficult to distinguish between the headlights of automobiles and engines, for any considerable distance. All passenger trains change engines at Yardley, at a point approximately 1 mile west of Parkwater.

The automatic block signals are of the normal-clear, three-position, upper-quadrant type, the night indications are red, yellow, and green, for stop, caution, and proceed, respectively. Westbound signal 65.9 is located 6,228 feet east of the point of accident, while 12,558 feet farther east is westbound signal 63.5, this latter signal being 1,758 feet west of Irvin, the first station east of Parkwater and 3.8

miles distant therefrom. The crossover at Parkwater is not bonded throughout, the circuits extending only to the fouling points. Both switch indicators are equipped with push buttons which operate lights to indicate the condition of the block. The indicator located at the east cross-over switch is controlled from a setting section on the westbound track about 4 miles east, or approximately 2,000 feet east of Irvin. The indicator located at the west crossover switch is controlled from signal 68.2, located on the eastbound track about 1 mile west of the crossover. The opening of either crossover switch causes signal 65.9 to indicate stop and signal 63.5 caution on the westbound track, and signal 67.4 to indicate stop and signal 68.2 caution on the eastbound track, while if a train is standing on the unopened section of the crossover with both switches closed and the main tracks clear, all of the above signals display clear indications. The weather was clear at the time of the accident, which occurred at about 7 12 p m.

#### Description.

The shop train involved conveys Northern Pacific shop employees between Spokane and the shops at Yardley and Parkwater. Yardley is 3.5 miles east of Spokane, and Parkwater is 1 mile east of Yardley. The entire movement is within yard limits, no train orders being issued to the crew of the shop train, this crew operating on information obtained from a blackboard located in the chief dispatcher's office at Spokane, and a similar board at Yardley, on which is marked the time passenger and freight trains are expected to arrive. At about 6 p m. on the day of the accident, the blackboard at Spokane indicated train No. 41 was expected to arrive at that point at 7.35 p m, and train No. 1 at 7 50 p m. The blackboard at Yardley was not examined on the trip in question. The shop train left Spokane at 6.35 p. m., on the eastbound track, with 4 coaches, all of wooden construction, hauled by switch engine 1128, headed west, and was in charge of Switch Engine Foreman Leidloff and Engineman Hodous. It arrived at the shops at Parkwater at about 6 55 p m, and after unloading employees, proceeded to the east crossover switch, the switch was opened, and the cars were then shoved westward through the switch, ahead of the engine, the switch being closed as soon as the train entered the crossover. The train moved through the crossover and out upon the westbound track, the rear end of the tender being 12 feet east of the switch points when it was struck by train No. 41 while traveling at a speed estimated to have been about 10 or 12 miles an hour.

Westbound passenger train No. 41 consisted of 2 baggage cars, 2 coaches, 1 dining car, 3 Pullman sleeping cars, and 1 observation car, in the order named, hauled by engine 2081, and was in charge of Conductor Bushnell and

Engineman Southern. The first, fourth, fifth, and last cars were of steel-underframe construction, while the rest were of all-steel construction. This train passed Velox, 6.8 miles east of Parkwater and the last open telegraph office, at 7 05 p. m., 1 hour and 25 minutes late, and collided with the shop train at Parkwater while traveling at a speed estimated to have been about 40 or 45 miles an hour.

Engine 2081 came to rest 264 feet west of the point of accident, 15 feet south of the westbound track, on its left side, headed east, in a badly damaged condition. The first car in this train came to rest on its right side, with its forward end crushed in for a distance of about 20 feet. The next three cars and the forward truck of the following car were derailed, but these cars remained upright and were not materially damaged. Engine 1128 came to rest 441 feet west of the point of accident, across the westbound track, practically demolished. The first car ahead of the engine, in the shop train, was demolished, and the second car was considerably damaged, while the other cars were only slightly damaged. The employees killed were the engineman and electrician of train No. 41, the engineman and fireman of the shop train, and two shop employees who were riding in the first car ahead of engine 1128.

#### Summary of evidence.

Before the shop train left Spokane, it was the practice for Foreman Leidloff personally to ascertain from the blackboard the time overdue trains were expected to arrive. On this occasion, however, he got off the switch engine in order to inform the yardmaster concerning important switching movements, and Engineman Hodous and Switchman Keenan went over to the dispatcher's office to look at the blackboard. It indicated that train No. 41 was expected to arrive at 7.35 p. m. and train No. 1 at 7.50 p. m., and as these employees were about to leave the office, Switchman Keenan inquired of Night Chief Dispatcher Smith whether or not this was a good figure on that train and was informed that it was. On the way back to the train, Engineman Hodous told Switchman Keenan they would not make the return trip from Parkwater ahead of train No. 41. After Foreman Leidloff and Switchman Welton boarded the shop train, Switchman Welton heard Switchman Keenan tell Foreman Leidloff the time train No. 41 was expected to arrive at Spokane. While the shop employees were getting off the train at Parkwater, Foreman Leidloff walked to the engine and compared time with Engineman Hodous, saying also that over 35 minutes was at their disposal within which to make the return trip ahead of train No. 41, and it was agreed that there was sufficient time for this movement. The train then proceeded on the eastbound track, and when opposite the west crossover switch Switchman Keenan dropped off, and walked over to that switch. On arrival at the east crossover switch, the shop

train was brought to a stop just east of the switch. Switchman Welton pushed the switch indicator button and he said the indicator went to the clear position, after which he opened the switch, gave a proceed signal, and as soon as the train entered the crossover and cleared the main track the switch was closed. Switchman Welton then caught up with the train, and boarded the engine, which was pushing the train through the crossover at a speed of 10 or 12 miles an hour. Engineman Hodous and Switchman Welton saw the headlight of an approaching train on the westbound track, and came to the conclusion it was a freight train. Shortly afterwards, Switchman Welton called Engineman Hodous' attention to slow signals being given by Switchman Keenan, who was at the west crossover to let the approaching train pass; no answer was made, and Switchman Welton then got off the engine and took up a position on the rear foot board of the tender. He then realized that the approaching train was a passenger train, at which time the shop train was fouling the westbound main track; he at once crossed over and made every effort to flag train No. 41, which was then about 300 or 400 yards away. He thought Engineman Hodous realized it was train No. 41 after it was too late to avert the accident.

Switchman Keenan did not open the west crossover switch as soon as he reached it, as he could plainly see the headlight of the train approaching on the westbound track; at this time his own train was in the vicinity of the east crossover switch, with the switch open. Being of the impression that this was train No. 41, and seeing that his own train was not stopping on the crossover, he gave them slow signals, and thought his train was going to be brought to a stop on the unbonded section of the crossover, as Engineman Hodous had informed him they would not make the return trip ahead of the superior train. The slow signals he gave were not heeded, and he then gave stop signals; when he realized the shop train was not going to stop he opened the west crossover switch, at which time his train was less than 100 feet away, in order to keep it from running through the switch. He estimated its speed at 10 or 12 miles an hour.

Foreman Leidloff said he saw Switchman Welton look at the indicator before throwing the east crossover switch, that his train then moved through the switch at a speed of 10 or 12 miles an hour, after which it slowed down so that Switchman Welton could overtake it. There were several automobile headlights on the highway parallel to the railroad tracks east of Parkwater, apparently several miles distant, and from his position near the east switch, Foreman Leidloff said he could not tell whether or not there was an engine headlight among them, but with the indicator showing a clear track and nothing in sight, he intended to operate his train out upon the main track without protection; he also said that if his train had waited on the crossover for train No. 41, it

would also have had to wait for train No 1, and would have been delayed about 1 hour in reaching Spokane. He was riding on the leading car as the train moved through the crossover and when it was about one-half or two-thirds of the way through saw Switchman Keenan giving stop signals. When his train did not stop he got down on the step and also gave his engineman stop signals, and said when he realized his train was not going to stop it was so close to the main track that by the time he could have entered the car and open an emergency valve the train would have stopped on the frog of the west switch. Foreman Leidloff further stated that he had not understood the rule which requires at least one switch of the crossover to be open while the crossover is being used, although he knew the opening of one of the switches would cause the automatic signals to display stop indications, and said he thought the crossover was bonded throughout its length, and that the signals would display stop indications if any part of the crossover were occupied. Foreman Leidloff also was under the impression that he could place full reliance on the time at which trains were expected to arrive at Spokane as shown in the dispatcher's office, and that in view of that information he was not occupying the main track on the time of train No 41.

Fireman Carlson, of train No. 41, said signals 63 5 and 65 9 were displaying clear indications when his train passed them. He was working on the deck of the engine, which was to be changed for another engine at Yardley, and did not see the shop train head out on the main track, his first knowledge of anything wrong being when the engineman placed the brake valve in the emergency position.

Members of the train crew felt a service application of the air-brakes made about half a mile east of the point of accident, however, none of them was aware of anything wrong until the brakes were applied in emergency just before the accident occurred. Supervisor of signals Cuthbertson, who was a passenger on train No. 41, said that on going back to signal 65.9 he found it displaying a stop indication, while subsequent test of the signal apparatus showed it to be in proper working order.

A test made with a shop train of three cars, handled by a switch engine, showed that 30 seconds were consumed between the time the east switch was opened and the time it was closed after the train had moved onto the crossover, while the point of collision was reached in an additional period of 1 minute and 24 seconds, or a total of 1 minute and 54 seconds between opening the switch and reaching the point of accident. All the surviving members of the shop train crew were present at this test, and they stated that the speed used was about the same as on the night of the accident.

### Conclusions

This accident was caused primarily by the shop train occupying the main track within yard limits on the time of a first class train, without authority or proper flag protection as required by the rules, for which Foreman Leidloff and Engineman Hodous are responsible. A secondary cause was the failure of the crew to keep at least one of the crossover switches open all the time the crossover was being occupied, for which Foreman Leidloff and Switchman Welton are responsible.

Operating rules 93, 510, and 510-a read in part as follows:

Rule 93. "Within yard limits the main tracks may be used, protecting against first class trains.\*\*\*"

Rule 510. "\*\*\* Trains using a crossover, must have at least one switch open while occupying any part of the crossover. The opening of any switch will set and hold signal of that block at stop until the switch is closed. The opening of any switch at either end of a double track crossover, will hold signals on both main tracks at stop \*\*\*"

Rule 510-a "Where switch indicators are used the indications displayed do not relieve enginemen and trainmen from protecting their trains as required by the rules."

Foreman Leidloff considered that the posting of the expected time of arrival of trains on the blackboard in the dispatcher's office at Spokane, coupled with a clear indication at the switch indicator, gave him a right to occupy the main track without flag protection, and he did not consider that in so doing he was using the main track on the time of a superior train.

The blackboard located at the dispatcher's office at Spokane, and at the yard office at Yardley, on which the expected arrival of trains is posted, are merely for the purpose of information and for the guidance of yardmasters, car inspectors, etc., and there is no authority for the use of such information as substitute for train orders. The rules clearly require that yard movements on the main track must be made under protection against first-class trains even within yard limits. For this laxity on the part of Foreman Leidloff and Engineman Hodous there is no excuse.

Under the rule Switchman Welton should have remained at the east crossover switch and have kept the switch open until the switch at the west end of the crossover had been

opened in order that the signals on both eastbound and westbound tracks would be held in the stop position until the movement had been completed. Had he done so train No. 41 would have received a stop indication at signal 65.9. It was also the duty of Foreman Leidloff to know that this rule was complied with. The excuse offered by both of these employees for their failure to comply with the rule, is that they did not know that the crossover was not bonded its entire length.

Examination of the signal system and indicators disclosed that they were in proper working order shortly after the accident and the evidence is that train No. 41 received clear signal indications approaching the crossover. Considering this, together with the fact that the collision occurred at approximately 7:12 p. m., that train No. 41 would ordinarily consume about 4 minutes in making the run between Irvin and the point of accident, and that the shop train would consume about 2 minutes or less in passing through the crossover, it is believed that the shop train reached the crossover at 7:09 or 7:10 p. m., that at this time train No. 41 had passed signal 63.5 and that Switchman Welton is mistaken in his belief that the switch indicator gave a clear indication when he looked at it before opening the switch, and that the switch was opened and closed and the shop train had passed on to the unbonded section of the crossover while train No. 41 was moving between signals 63.5 and 65.9, a distance of 2.3 miles, thus accounting for the proceed indications displayed by both signals.

Engineman Hodous had ample warning, which, if he had observed it, would have averted the accident. Switchman Keenan gave slow signals shortly after the train entered the crossover and his attention was called to them by Switchman Welton, who was on the engine with him, stop signals were also given by Switchman Keenan and Foreman Leidloff as the train neared the west crossover switch, and in addition this switch was held against the movement being made by the shop train, until it was apparent that its indication was going to be disregarded and the train was going to run through the switch. This failure of Engineman Hodous can not be explained. On account of the high speed at which train No. 41 was running, it is doubtful if the engineman of this train saw the warning in time materially to reduce the speed of the train.

There is some evidence in this case that the rules and conditions under which this shop train was operating were not fully understood by members of the crew in charge. It was the impression of Foreman Leidloff that the posting of the time of the expected arrival of first-class trains on the blackboards was authority for yard engines to make use of

that time without flag protection. Both he and Switchman Welton were ignorant of the fact that the greater part of this crossover was not bonded. These are conditions for which the operating officials of the Northern Pacific Railway are responsible.

The shop train involved in this accident was one which operated practically every day, and on the day of the accident it was not materially different from that of any other day. Proper vigilance on the part of supervising officers would have easily disclosed that the information posted on the blackboards at Spokane and Yardley was being improperly used to dispense with flag protection and that the switches at this crossover were not being operated in accordance with the rules. A rule which requires a switchman after he has opened a switch, to remain at it and keep it open until the forward part of the train reaches the other end of the crossover some 1,200 feet distant, and the switch opened, is not a rule which under ordinary circumstances is likely to be strictly complied with, particularly when the train is a short one, and where the observance of such a rule is such a large factor in the safety of train operation as in this instance, special attention should be given to secure obedience to it.

In movements where passenger equipment is being pushed ahead of an engine for any considerable distance, the interests of safety require that the forward platform of the leading car be equipped with an auxiliary hose and valve so that the air brakes can be operated directly by the person maintaining the lookout. If this shop train had been so equipped it is probable that Foreman Leidloff would have applied the air brakes in time to have avoided the collision.

The employees involved were experienced men, at the time of the accident the yard switching crew had been on duty about 4 hours, after having been off duty for about 15 hours.

Respectfully submitted,

W. P. Borland,

Chief, Bureau of Safety.