INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE LINE OF THE SOUTHERN PACIFIC COMPANY AT BAYSHORE, CALIF., ON JULY 4, 1928.

August 31, 1928.

To the Commission:

On July 4, 1928, a passenger train of the Southern Pacific Company, Pacific Lines, was derailed and then collided with freight cars which were being hauled by a switch engine in the opposite direction on an adjoining track, at Bayshore, Calif., resulting in the injury of nine passengers, two employees, two dining car waiters and one cook. This accident was investigated in conjunction with representatives of the Railroad Commission of California.

Location and method of operation

This accident occurred on the San Francisco and Watsonville Junction Subdivision of the Coast Division, extending between San Francisco and San Jose, Calif., a distance of 46.9 miles; it is a double track line over which trains are operated by time-table, train orders and an automatic block-signal system. Time-table directions are used in this report. The accident occurred on the eastbound main track within interlocking and yard limits, at a switch point derail, located 630.3 feet east of Tunnel No. 4 and 136.2 feet west of Bayshore station. Approaching the point of accident from the west the track is tangent for more than 3,500 feet, followed by a 1° curve to the left 1,595 feet in length, the switch point derail being located on this curve at a point 892.2 feet from its western end. The grade is practically level.

Tunnel No. 4 is 3,547 feet in length; eastbound automatic distant signal 44 is located 303 feet west of the western portal of the tunnel. This is a two-arm, two-position, lower-quadrant signal; the top arm, or home signal, has a square end, painted red, while the lower arm, or caution signal, is a fish-tail semaphore, painted yellow. Interlocking home signal 24 is located 413 feet east of the eastern portal of the tunnel, while the switch point derail involved is located 317.3 feet east of interlocking home signal 24. At a point 685.7 feet east of the switch point derail there is located on the eastbound main track the east

switch of a crossover; this crossover is 194.8 feet in length, extends from northwest to southeast, and connects the two main tracks. At a point 232 feet east of the east crossover switch there is a facing-point switch for eastbound trains which leads off the eastbound main track toward the southeast to what is known as lead track 51. Ground light signal 535A is located between the eastbound main track and lead track 51 at a point 234 feet east of the main line lead track switch. In the immediate vicinity of the point of accident and south of the main tracks there are numerous yard tracks of Bayshore freight yard. Bayshore station is located north of the main tracks, while Bayshore interlocking tower is located south of the main tracks and 65.7 feet east of the switch point derail involved. An approach circuit extends to a point 2,541 feet west of eastbound distant signal 44 and when an eastbound train enters upon the circuit its approach is registered on the annunciator in Bayshore interlocking tower and by the drop of a red indicator. Eastbound and westbound movements on the main track and diverging movements in and out of Bayshore yard are controlled from the interlocking plant in Bayshore tower. Approach locking is used; there is a time release mechanism which requires 2 minutes and 50 seconds to operate.

The switches and signals are so arranged that when the route has been lined for a movement from lead track 51 to the eastbound main track, thence westward against the current of traffic to the east switch of the crossover and through the crossover to the westbound main track, the switch point derail involved is locked open, a stop indication for interlocking home signal 24 is displayed, and a caution indication is displayed on eastbound automatic distant signal 44. After the route has been lined for a crossover movement from lead track 51 and is then occupied, as was the case in this instance, it cannot be changed, or the switch point derail closed, until the intended movement is completed. Eastbound automatic distant signal 44 can be seen by an engineman a distance of 1,680 feet, but it can not be seen from the fireman's side of the cab of an eastbound engine, while interlocking home signal 24 can be seen by an engineman for a distance of 1,702 feet and for a greater distance from the fireman's side of the cab.

The weather was clear at the time of the accident, which occurred at about 8.09 a. m.

Description

Eastbound passenger train No. 78 consisted of one baggage car, three coaches, one dining car, one parlor car and one coach, all of steel construction, in the order

named, hauled by engine 4355, and was in charge of Conductor Welt and Engineman Weir. This train departed from San Francisco at 8 a. m., on time, passed Potrero tower, 1.2 miles beyond, at 8.05 a. m., passed eastbound automatic distant signal 44, which it is believed was displaying a caution indication, passed interlocking home signal 24, which was displaying a stop indication, and was derailed at a point 4 miles east of Potrero tower at about 8.09 a. m. on encountering the open switch point derail while traveling at a speed estimated by members of the crew to have been between 40 and 45 miles per hour.

Engine 4355, together with its tender, was derailed to the right and came to rest on its right side at a point 520 feet east of the switch point derail and south of the main tracks; the first car in the train was derailed to the left and struck the sides of the third and fourth cars of the switching drag, which was passing in the opposite direction on the adjacent track. The second, third and fourth cars in train No. 78 were also derailed, but remained upright. All of the persons injured were riding on train No. 78.

Westbound switch engine 1159 headed east and hauling six freight cars loaded with apricots, was in charge of Engine Foreman Pennington and Engineman Hoddinott. This drag approached the main line on lead track 51, called for the crossover route, and a proceed indication was displayed on ground light signal 535A, at 8.07 a. m. Engine 1159 proceeded out upon the eastbound main track and against the current of traffic to the east switch of the crossover, thence through the crossover, but before the rear end of the drag had gotten entirely through the crossover, while traveling at a speed estimated to have been about 15 miles per hour, the third and fourth cars were struck by the first car in passenger train No. 78.

The third and fourth cars of the drag were demolished and two other freight cars were damaged.

Summary of evidence.

Engineman Weir, of train No. 78, was interrogated at the hospital the day following the accident. He said that distant signal 44 was displaying a clear indication as far as he knew and therefore he was expecting to find interlocking home signal 24 displaying a similar indication. Schedule time was being maintained and the speed of the train was about 45 miles per hour through tunnel No. 4, he did not see interlocking home signal 24 until the engine was entirely out of the tunnel, it was displaying a stop indication, he immediately applied the air brakes in emergency, and then the accident occurred. Owing to the condition of Fireman

Miller no statement was obtained from him.

Conductor Welt, of train No. 78, was riding in the third car as the train emerged from tunnel No. 4, and he said that the air brakes were applied in emergency just before that car came out of the tunnel, immediately after which the accident occurred; he estimated the speed of his train to have been between 40 and 45 miles per hour at the time the emergency air brake application was made. The air brakes had been tested, and they operated properly at the time they were applied in emergency. No unusual delays were encountered en route on this trip and schedule time was being maintained. Immediately after the accident he observed that interlocking home signal 24 was displaying a stop indication and that the switch point derail was open. He did not go back as far as distant signal 44 immediately after the accident, but later, when the cars in the rear of the train which were not derailed were moved back to San Francisco, he observed that distant signal 44 was displaying a caution indication at that time.

Engine Foreman Pennington, of switch engine 1159, stated that the switch engine was backing up hauling the drag and that he was riding on the rear foot-board of the tender on the engineman's side. While on lead track 51 the whistle was sounded on the switch engine calling for the cross-over route and the route was lined for the switch drag; a proceed indication was displayed on ground light signal 535A and Engine Foreman Pennington gave a hand proceed signal to Engineman Hoddinott, after which the drag started out upon the eastbound main track and through the crossover. On reaching a point between the eastbound and westbound main tracks, at which time the drag was moving at a speed of about 10 or 12 miles per hour, Engine Foreman Pennington saw train No. 78 approaching, noticing its headlight in the tunnel, but thought the passenger train was reducing speed. Interlocking home signal 24 was displaying a stop indication and the derail was set against the passenger train, but before the drag got entirely through the crossover, although the rear car had cleared the eastbound track, the passenger train encountered the open derail and the first car in that train was derailed to the left and struck the third and fourth cars of the drag. Engine Foreman Pennington stated that they had instructions to rush the apricots from Bayshore yard to San Francisco. Also, that while he knew train No. 78 was due at Bayshore at 8.09 a. m., and that the drag did not start to make the crossover move until about 8.07 a. m., he thought the towerman would not line the crossover route for the drag unless everything was all right. The statements of Engineman Hoddinott, Fireman Toney and Switchman Rutherford, of switch engine 1159, corresponded in substance to those of Engine Foreman Pennington. Engineman Hoddinott estimated

the speed of the drag to have been about 8 or 10 miles per hour on starting through the crossover and between about 15 and 20 miles per hour at the time of the accident. He knew that train No. 78 was about due but thought that it might be late and said when he saw the headlight of that train coming out of the tunnel he realized that the passenger train was traveling at too high a rate of speed to stop before reaching the switch point derail. Just after the engine of the passenger train emerged from the tunnel he noticed fire flying from the wheels of the engine. Engineman Hoddinott said he made every effort to get the drag out of the way, also, that it was 8.07 a. m. when the proceed indication was displayed on ground light signal 535A. Switchman Herndon was riding on the rear end of the drag and was unaware of anything wrong prior to the accident.

Towerman Perry, on duty at Bayshore tower at the time of the accident, stated that switch engine 1159 whistled for the crossover route at about 8.06 a. m., three minutes before train No. 78 was due. At 8.07 a. m. the route was lined for the drag and the switch engine and one car of the drag had moved out upon the eastbound main track from lead track 51 when the annunciator in the tower registered the approach of train No. 78, the track circuit extending for a distance of about 7,000 feet west of the tower. Towerman Perry saw train No. 78 approaching through the tunnel, when the headlight was about in the center of the tunnel; on definitely realizing that it was not going to stop before reaching interlocking home signal 24, which was displaying a stop indication, he went to the window and motioned the drag to hurry along and clear the route, having in mind to close the switch point derail, which could not be done until the crossover movement was completed, but before the route was cleared the accident occurred. Towerman Perry said he had had about 10 years' experience as towerman in Bayshore tower and that to his knowledge distant signal 44 had never displayed a false clear indication; the normal position of signals is at stop and the derail open. Distant signal 44 works in conjunction with interlocking home signal 24; in the event an approaching eastbound train has passed distant signal 44 the crossover route can not then be lined, as the interlocking machine would automatically be locked. He said that it usually takes a switch drag of five cars only about 40 seconds to move through and clear the crossover route and he thought that on this occasion there was ample time for switch engine 1159 and the short drag to negotiate the crossover route ahead of train No. 78, therefore, he lined the route for the switch drag and depended upon distant signal 44 to govern the movement of train No. 78 and was of the opinion that that train would proceed under control through the tunnel to interlocking home signal 24. Towerman Perry further stated that it was customary to permit small drags to cross over as close as two minutes on the time of scheduled trains and he thought that on

this occasion the drag would make the movement in half the time it actually consumed in making it; however, he said this was probably due to the fact that the crew of the switch drag was a Mission Bay crew and was not as familiar with the territory in the immediate vicinity as a Bayshore crew would have been. Foreman Perry also stated that had the switch drag crossed over as quickly as his experience taught him a drag of that size should have made the movement, the crossover route would have been clear in time to have lined up the route for train No. 78 without delay to that train, however, the purpose of an interlocking plant is to protect crossover movements and there is no danger provided signal indications are properly observed and obeyed. To his knowledge he had never stopped train No 78 at interlocking home signal 24 to permit a crossover movement to be made ahead of that train.

Yard Clerk W. G. Fifield, Jr., stated that he went off duty at 8 a. m., left the yard office at Bayshore yard about 8.01 a. m., walked slowly westward on the south side of the eastbound main track, accompanied by Yard Clerk Mitchell, and on reaching a point about 20 feet east of the switch leading to yard track 5 of the outbound yard, this switch being located south of the main tracks and just east of the east switch of the crossover involved, at about 8.09 a. m., he saw switch engine 1159 and two cars of the drag on the westbound main track while the two rear cars of the drag were on the eastbound main track. At this time he also saw the headlight of train No. 78 near the mouth of the tunnel and interlocking home signal 24 displaying a stop indication, shortly afterwards the accident occurred. The statements of Yard Clerk Mitchell were similar to those of Yard Clerk W. G. Fifield, Jr.

According to the evidence train No. 78 passed Potrero tower at 8.05 a. m. and was derailed at a point 4 miles east thereof at about 8.09 a. m. From these figures it appears that train No. 78 traveled this distance at an average speed of 60 miles per hour, although under timetable instructions passenger trains are limited to a speed of 45 miles per hour in this territory.

Conclusions

This accident was caused by the failure of Engineman Weir, of train No. 78, properly to observe and obey signal indications.

Engineman Weir maintained that as far as he knew eastbound automatic distant signal 44 was displaying a clear indication, therefore, he was expecting to find interlocking home signal 24 displaying a similar indication. He did not observe the stop indication displayed by interlocking home signal 24 until his engine was entirely out of tunnel No. 4, at which time he immediately applied the air

brakes in emergency; however, owing to the rate of speed at which the train was traveling it was then too late to avert the accident. The interlocking plant is so arranged that conflicting routes or signals can not be given, nor can a route or signal be taken away from a train after it has started through the interlocking plant without operating a time release. Immediately before and after the accident interlocking home signal 24 was observed to be displaying a stop indication, while eastbound automatic distant signal 44 was observed to be displaying a caution indication when the rear cars of train No. 78 were moved back to San Francisco. Subsequent tests showed that the signal apparatus functioned as intended, and there was nothing found which could have caused the display of a false clear indication. Under these conditions it is believed that eastbound distant signal 44 was displaying a caution indication and that for some reason the indication was not properly observed and obeyed by Engineman Weir.

Engineman Weir entered the service on the Tucson Division as fireman in 1891 and was transferred to the Coast Division as engineman in 1902, his record was clear. 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. P. Borland,

Director.