INTERSTATE COMMERCE COMMISSION

REPORT OF THE CHIEF OF THE BUREAU OF SAFETY COVERING INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE CENTRAL RAILROAD OF NEW JERSEY AT ELIZABETHPORT, N J, ON MARCH 3, 1920

APRIL 8, 1920

To the Commission

On March 3, 1920, there was a side collision between two passenger trains on the Central Railroad of New Jersey at Elizabethport, N J, which resulted in the death of 3 employees on duty and 1 employee off duty, and injury to 2 employees on duty, 4 employees off duty, and 11 passengers The investigation of this accident was held jointly with the Board of Public Utility Commissioners of New Jersey, and as a result of this investigation I respectfully submit the following report

The accident occurred at a point where the main line of the central division intersects the Newark and Elizabeth branch of that division The main line in this vicinity consists of four tracks, while the branch is a single-track line Trains are operated by time-table, train orders, and an automatic block-signal system, and the intersection is protected by semiautomatic signals of a mechanical interlocking plant controlled from RU tower

The automatic signals are of the two-position, lower-quadrant, electropneumatic type, normally displaying proceed indications The stop arms are red and have pointed ends, while the caution arms are yellow and have fishtail ends The night indications are red, yellow, and green for stop, caution, and proceed, respectively The semiautomatic signals are of the two-position, lower-quadrant, electropneumatic type, normally displaying stop indications The arms have square ends and are painted red, the night indications are red and green lights These signals are controlled in the usual manner by means of track circuits, levers, selectors, and circuit controllers, and approach and route locking are provided All of the apparatus is maintained in good condition

Trains of both the main line and the branch line are designated in the time-table as eastbound and westbound, and while the main line actually runs approximately east and west at Elizabethport, the

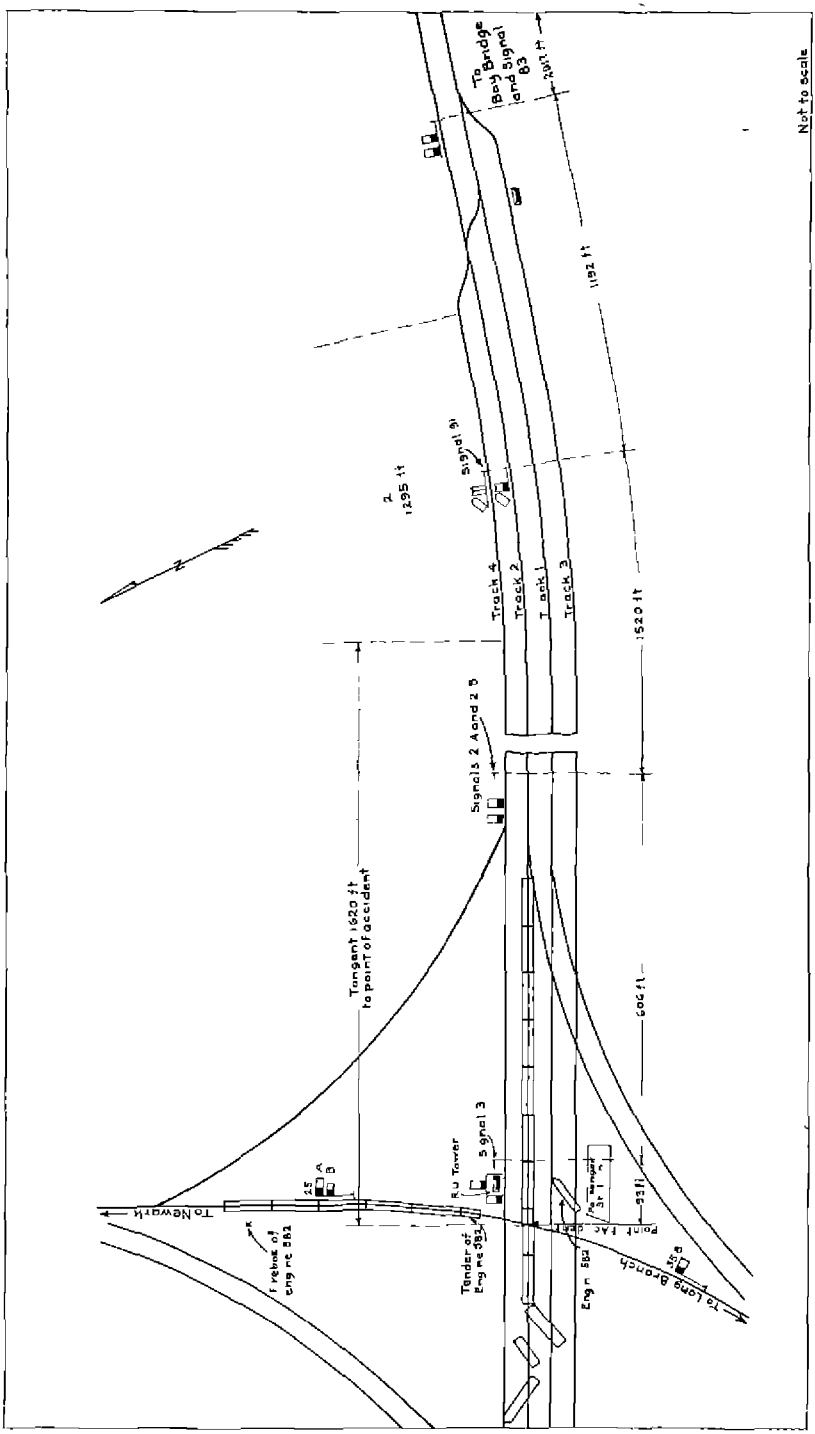

Diagram showing relative location of tracks and signals involved in accident

branch runs approximately north and south, and eastbound trains on the branch approach the station running in a southerly direction The Elizabethport passenger station is located at the intersection south of the main line and east of the branch line The accompanying diagram shows the relative location of the tracks and signals involved in this accident

The tracks of the main line are numbered from north to south as follows 4, 2, 1, and 3, track 2 being the only one concerned in this report Beginning at Newark Bay Bridge, located 5,428 feet east of the point of accident, and proceeding westward, the track is straight for 2,513 feet, followed by a 2-degree curve to the right 1,295 feet in length and then a tangent which extends 1,620 feet to the point of accident and a considerable distance west thereof Automatic signal

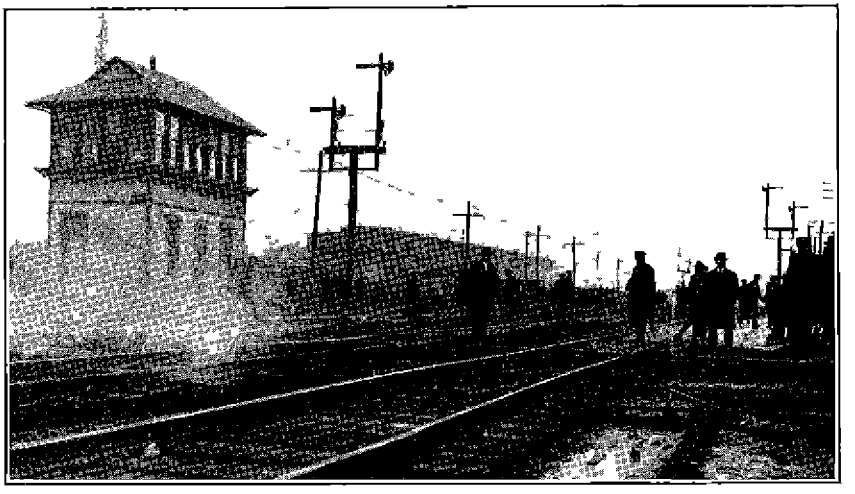

FIG 1—Crossing on which accident occurred RU tower, and semiautomatic signals 3 and 5

91, governing westbound trains on track 2, is mounted on signal bridge 9/22, located 2,219 feet east of the point of accident, and this signal may be seen from the western end of Newark Bay Bridge, a distance of 3,209 feet, this signal provides a distant indication for signals 2–A and 3 Semiautomatic signals 2–A and 2–B are located 699 feet east of the point of accident, these are route signals, the top arm, 2–A, governing main-line movements, and the bottom arm, 2–B, governing diverging movements to the Perth Amboy branch Semiautomatic signal 3, also governing westbound trains on track 2, is located at RU tower, 93 feet east of the point of accident, and may be seen from signal bridge 9/22, a distance of 2,126 feet Illustration No 1 shows RU tower and semiautomatic signals 3 and 5, while in the extreme background, on the left of the main tracks, are route signals 2–A and 2–B

The track of the Newark and Elizabeth branch is straight for a short distance each side of the intersection and eastbound train movements over the intersection are protected by semiautomatic signals 4–A and 5–B, while westbound movements over the intersection are governed by signals 35–B and 25–B

Passenger train No 449, running on the Newark and Elizabeth branch, was in charge of Conductor Davidson and Engineman Hahn, and consisted of engine 582, 1 combination car, and 4 coaches, all of wooden construction The time-table direction of this train is eastbound from Newark to Elizabethport, then westbound to its destination, at Dunnellen, N J This train left Newark, N J, at 5 16 p m, 4 minutes late, and arrived at Elizabethport at 5 37 p m, 4 minutes late Approaching RU tower clear indications were received at signals 4–A and 5–B and the train passed over the crossing and was brought to a stop at the passenger station After receiving and discharging passengers, which consumed about 3 minutes, the train was moved backward under clear signal indications, it being the purpose to back far enough to clear signal 4–B, at which point it was to be diverged to the main line and run westward to Dunnellen At 5 40 p m, while this back-up movement was being made, and while the engine was crossing track 2 of the main line, the engine was struck by train No 123

Westbound passenger train No 123, running on track 2 of the main line, was in charge of Conductor Conley and Engineman Sell, and consisted of engine 162, 1 combination car of all-steel construction, 8 coaches of all-steel construction, and 1 club car of wooden construction This train left Jersey City, N J, at 5 23 p m, 1 minute late Approaching Elizabethport a caution indication was received at automatic signal 91, semiautomatic route signal 2–A was clear, while a stop indication was displayed by semiautomatic signal 3 The caution and stop indications of signals 91 and 3 were disregarded

The impact of the collision resulted in the overturning of engine 582, of train No 499, the engine coming to rest, nearly reversed, across tracks 1 and 3 The boiler of this engine exploded, tearing the crown, stay, and flue sheets loose, and carrying the fire box, which was of the Wootten type, approximately 400 feet north of the point of collision Illustration No 2 shows the condition of this engine after it had been removed from the track, illustration No 3 shows the fire box With the exception of broken windows, no damage was sustained by the cars in this train Engine 162, of train No 123, came to rest across track 4, about 150 feet west of the crossing, in a badly damaged condition, as shown in illustration No 4 The first car of train No 123 was derailed to the left, obstructing tracks 1 and 3, while the other cars remained on the rails The employees

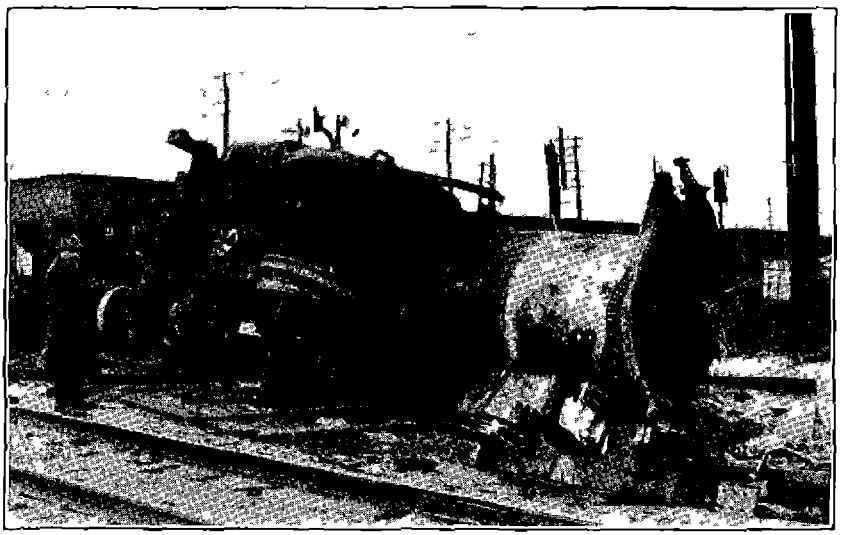

FIG. 2—Engine 582, after having been removed from the track

killed were the engineman and fireman of train No 449, the engineman of train No 123, and a transfer man who was off duty

Conductor Davidson, of train No 449, stated that his train arrived at Elizabethport at 5 29 p m After the station work had been completed, the train started to back over the crossing, signals 35-B and 25-B governing this movement being in the clear position He stated that he was on the rear platform of the rear car, saw train No

FIG 3—Fire box of engine 582

123 approaching from the east on the main line, saw that signal 2-A, the route signal, had been cleared permitting train No 123 to continue on the main line to signal 3, but he did not notice the indications of either signals 91 or 3 Conductor Davidson further stated that when he last saw train No 123 prior to the collision the engine was working steam and he estimated its speed at 50 miles an hour, while he estimated the speed of his own train at about 10 miles an hour

Flagman Manning, of train No 449, who was riding between the fourth and fifth cars of his train, stated that the signals which authorized his train to back over the crossing were displaying the proper indications for the back-up movement He noticed signal 3

FIG 4.—Engine 162 being removed from scene of accident

displaying a stop indication, he also saw the route signal farther east, which was set for a main-line movement He said that as train No 123 approached the crossing the engine was working steam and continued to work steam up to the time of the collision Flagman Manning further stated that he saw the engineman of train No 123 in the cab leaning slightly forward with his hands in front of him and he believed the engineman was unconscious before the accident occurred He estimated the speed of train No 123 at the time of the collision at 40 miles an hour

Brakeman Briskey, of train No 449, who was riding on the rear platform of the first car, stated that after completing the station work at Elizabethport, the proper signals were displayed to permit his train to back over the crossing He saw train No 123 as it came

around the curve east of the crossing and was able to see it until it reached a point near route signals 2–A and 2–B He could see the engineman, but could not tell whether he was standing or sitting He thought that train No 123 was traveling at a speed of about 40 or 50 miles an hour

Assistant Passenger Trainmaster Herman stated that he boarded the engine of train No 123 at Jersey City At 5 35 p m it entered the east end of Newark Bay bridge, which is 7,345 feet in length, and he stated that 3 minutes and 30 seconds were consumed in crossing the bridge, the engineman having reduced the speed over a portion of the bridge to about 15 miles an hour in conformity with a bulletin slow order which had been issued on account of ice conditions When about three-fourths the way across the bridge the engineman began increasing the speed, which was about 20 or 25 miles an hour when passing off the bridge The trainmaster stated that he did not notice the position of signal 91 as the train approached it or the position of route signal 2–A At about the time the train passed the latter signal he noticed that train No 449 was backing over the crossing and that signal 3 was in the stop position He stated that Engineman Sell was working steam at the time and he called a warning to him but the accident occurred an instant later with no brake application having been made and with the engine still working steam, the speed at the time was about 35 miles an hour He stated that the accident occurred at 5 40 p m, or very shortly thereafter Trainmaster Herman further stated that he had had no conversation whatever with Engineman Sell on this trip and was not in a position where he could see the engineman, being on the left side of the engineman's cab, which on this type of engine is over the center of the boiler

Fireman Swaitz, of train No 123, stated that he talked with Engineman Sell before leaving Jersey City, and the engineman seemed to be in perfectly normal condition He stated that the train left Jersey City at 5 22 p m, at which time the air brakes were apparently operating properly On approaching Newark Bay Bridge, the engineman shut off steam and by an application of the air brakes reduced the speed to about 15 miles an hour After crossing the bridge he saw the engineman stand up and open the throttle, the speed of the train being increased He did not notice the engineman's movements after that, and as he was busy with other duties he did not notice the position of any of the signals between the bridge and the point of accident He stated further that the engine was working steam when the accident occurred, at which time the speed was about 35 or 40 miles an hour

Baggagemaster Kenney, of train No 123, stated that the speed was properly controlled while passing over Newark Bay Bridge When

the train was approaching Elizabethport he looked out and on seeing train No 449 backing over the crossing he pulled the air whistle signal cord twice and then started toward the emergency valve for the purpose of stopping the train, but was unable to reach it before the collision occurred He estimated that the speed at this time was about 45 miles an hour

Conductor Conley, of train No 123, stated that before leaving Jersey City he compared watches with Engineman Sell and noticed nothing unusual in the engineman's manner or condition A terminal test of the air brakes was made and they were apparently working properly After leaving Jersey City he noticed that the engineman slowed down at West Eighth Street, á station about 3 miles east of Elizabethport, and that when crossing Newark Bay Bridge the engineman reduced the speed from about 40 miles an hour to about 15 miles an hour He said that there is a permanent slow order of 30 miles an hour over the bridge, and on the day of the accident a special bulletin was in effect limiting the speed to 15 miles an hour He stated that he did not notice the position of any of the signals approaching Elizabethport He was positive that no application of the air brakes was made and he had no intimation of the impending accident prior to its occurrence, at which time he was at the rear end of the seventh car in his train

Flagman Ryder, of train No 123, stated that he saw the brakes inspected at Jersey City and noticed that they were apparently operating properly when the train slowed down at West Eighth Street and at Newark Bay Bridge Approaching Elizabethport he was busy assisting the conductor in collecting tickets and did not notice the position of any of the signals He estimated the speed at 40 or 50 miles an hour

Brakeman Applegate, of train No 123, stated that he was acting as flagman at the time of the collision while the flagman assisted the conductor in collecting tickets He estimated the speed of his train as it approached Elizabethport to have been at least 45 miles an hour He had noticed the train slow down at different times on the trip and that the air brakes were apparently operating properly He did not notice the position of signal 91, route signal 2–A or signal 3, either before or after the collision He said that no application of the air brakes was made prior to the collision

Fireman Pheasant, of train No 291, was about 1,100 feet east of signal 91, and he stated that when train No 123 passed him he saw the engineman standing in the cab, his left hand being on the throttle while his right hand was resting on the window sill Fireman Pheasant stated that he waved his hand to Engineman Sell and that the engineman returned the salute by raising his right hand

Brakeman Gundrum was standing at a switch about 200 feet east of signal 91 when train No 123 passed him He saw Engineman Sell sitting in the cab with his right arm on the window sill and noticed that he was looking ahead He estimated that train No 123 was traveling at a speed of about 45 miles an hour

Erecting Shop Foreman Walters stated that at the time train No 123 approached the crossing he was walking toward RU tower and was about 70 feet east of the tower when the train passed him He said that the engine was working steam and the engineman had his right arm on the arm rest and was leaning out of the cab window looking ahead through the wind shield on the side of the cab, his head was erect, his eyes were open, and there was nothing whatever in his position to indicate that he was otherwise than wide-awake and attending to his duties Foreman Walters stated that he noticed no application of the brakes prior to the collision

Station Master Dowdell, on duty at Elizabethport, stated that when train No 449 started backing away from the station he looked at signal 3 to see if any train was coming from the east on track 2 and he observed that the signal was in the stop position He also noticed that the signal was in the stop position after the accident occurred

Engineman Wodey, who not on duty, stated that at the time of the collision he was standing near the east end of the passenger station and when he saw train No 123 approaching he observed that signal 91 was in the caution position At about the time the train passed signal 91 he saw route signal 2–A change to the clear position while signal 3 was in the stop position It appeared to him that the engineman of train No 123 shut off steam when the train reached a point about opposite the point where he was standing, or about 50 feet from the crossing, he thought that the speed at the time of the accident was about 35 or 40 miles an hour

Towerman Spewack, on duty at RU tower, stated that the signals to permit train No 449 to back over the crossing were in the clear position when that train started to back up, while signal 3 was in the stop position He also said that just before train No 123 reached the route signal he cleared that signal with the intention of permitting the train to proceed on the main line to signal 3, and this was in accordance with the customary practice He thought train No 449 would clear the crossing before train No 123 reached it, he could then clear signal 3 and permit train No 123 to proceed without stopping The engine of train No 123 was working steam when the collision occurred

Signal Maintainer O'Kane stated that he was in RU tower when train No 123 approached and that he could see the line-up of the signals He said that signal 91 was in the caution position, and when

the train was about 100 feet from the route signal the towerman cleared it to permit the train to come as far as signal 3, which was in the stop position He stated that he was unable to see Engineman Sell as train No 123 neared the tower, he estimated the speed at the time of the collision at 35 or 40 miles an hour

The collision resulted in certain wires and cables being cut and pipe lines being torn loose, rendering the interlocking plant about 50 per cent inoperative At the time of the inspection, on the day following the accident, the signals were found to be working properly and there was no evidence of any changes or adjustments having been made, with the exception that the control wire for signal 3 had been disconnected, this being necessary on account of testing the circuits during the course of repairs The statements of the various witnesses clearly show that when train No 123 approached Elizabethport, semiautomatic signal 3 was properly displaying a stop indication and that automatic signal 91 was displaying a caution indication, while the route signal was set for the main line, and there is no doubt but that the signals were operating as intended

This accident was caused by the failure of Engineman Sell, of train No 123, to observe and obey signal indications

During the investigation of this accident, theories were advanced that Engineman Sell must have been dead, asleep, or otherwise incapacitated The evidence brought out by the investigation established the fact that he was in apparently normal physical condition before starting out on this trip from Jersey City, also that he operated his train properly until within a short distance of the point of accident and within two or three minutes of the time the accident occurred He reduced the speed of his train once within the limits of Jersey City and again on the Newark Bay Bridge, as required by a slow order, as his train approached the western end of the bridge, he was seen by the fireman to stand up and open the throttle, the train increasing speed from that point and continuing without further reduction of speed until the accident occurred A number of railroad employees saw the engineman in the cab within a period of time measured by seconds prior to the accident, to one of them he waved his hand in salutation at a point about 3,500 feet from the place where the accident occurred, and another who was passed by this train less than 100 feet from the point of accident said there was nothing in the appearance or position of the engineman at that time which would indicate that he was not in proper physical condition and attending to his duties

According to evidence brought out by this investigation, it is the practice for enginemen, when a caution signal indication is received approaching Elizabethport, to shut off steam immediately and to approach signals 2-A and 2-B and signal 3 prepared to stop In this

case signal 91 was in the caution position, and Engineman Sell passed it without shutting off steam or reducing speed, signal 2–A was cleared a short distance ahead of his train, and this authorized him to proceed as far as signal 3 for the purpose of permitting his train to keep moving if possible and proceed as soon as the crossing was cleared and the proceed indication of signal 3 could be displayed Signal 3 was in the stop position, and train No 449, which was on the crossing, was in clear view Notwithstanding these conditions and the warnings which the assistant train master gave from the left side of the cab, Engineman Sell was apparently unaware of the impending danger, as he took no action to reduce speed or stop his train It is thought, therefore that shortly before the accident occurred Engineman Sell must have suffered some lapse of his faculties, but the nature of this lapse can not be determined, and any attempted explanation can amount to nothing more than mere conjecture

Engineman Sell entered the service of the Central Railroad Co of New Jersey as fireman in February, 1907 and was promoted to engineman in March, 1914 His record was good

On the day of the accident the crew of train No 123 had been on duty from about 4 50 a m to 5 40 p m, 12 hours and 50 minutes Between 7 42 a m and 5 22 p m, however, they were required to perform no service with the exception of the time required to put train No 104 away at Jersey City and the preparatory time for the departure of train No 123 from that point at 5 22 p m Prior to going on duty at 4 50 a m they had been off duty about 9 hours The crew of train No 449 had been on duty about 11 hours and 50 minutes prior to which they had been off duty about 9 hours

The main line of the Central Railroad of New Jersey at this point is a busy four-track railroad upon which a large volume of traffic is carried, including a considerable number of suburban trains operated at short intervals during the early morning and late afternoon hours It is the regular practice for trains stopping at Elizabethport en route from Newark to points west of Elizabethport on the main line to cross the main line for the purpose of reaching Elizabethport station and then to back over the main line again in order to reach the Y connection The regular practice was followed in this case, the accident occurring when the reverse movement was being made The necessity for these daily movements in both directions across the main line could be eliminated by the construction of a passenger landing adjacent to the Y tracks leading from the Newark branch to the main line on the north side of the main line, together with a passageway either overhead or underground connecting this landing with the station, and the safety of operation at this point would thereby be materially increased

Respectfully submitted

W P Borland,
Chief, Bureau of Safety