

INTERSTATE COMMERCE COMMISSION  
WASHINGTON

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REPORT OF THE DIRECTOR  
BUREAU OF SAFETY

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ACCIDENT ON THE  
READING RAILROAD

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CLEMENT, PA.

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JANUARY 30, 1936

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INVESTIGATION NO. 2038

SUMMARY

Railroad: Reading  
Date: January 30, 1936.  
Location: Clement, Pa.  
Kind of accident: Derailment  
Train involved: Passenger  
Train number: 14  
Engine number: C10  
Consist: 6 cars  
Speed: Unknown; probably much in excess  
of maximum authorized at point  
of accident.  
Track: 8° curve; slightly descending grade.  
Weather: Light snow.  
Time: 11:48 p.m.  
Casualties: 3 killed and 30 injured.  
Cause: Excessive speed on sharp curve.

April 3, 1936.

To the Commission:

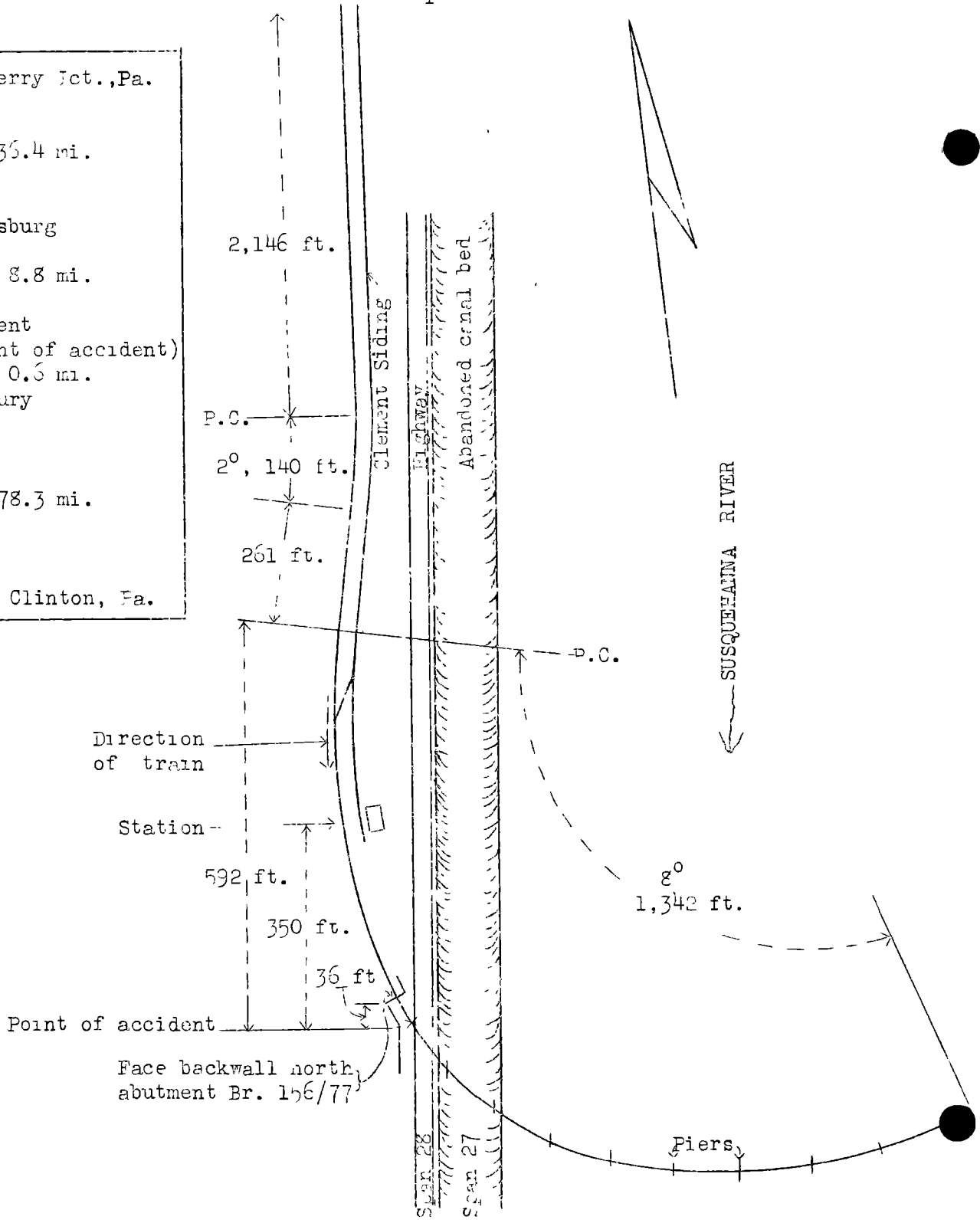
On January 30, 1936, there was a derailment of a passenger train on the Reading Railroad at Clement, near Sunbury, Pa., which resulted in the death of 1 passenger and 2 employees, and the injury of 26 passengers, 2 mail clerks and 2 employees. The investigation of this accident was made in conjunction with a representative of the Public Service Commission of Pennsylvania.

#### Location and method of operation

This accident occurred on the main line of the Shamokin Division, which extends between Port Clinton and Newberry Junction, Pa., a distance of 124.1 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 the northern end of Bridge 156/77, known as the Susquehanna River bridge, at a point 350 feet south of the station at Clement. Approaching this point from the north, the track is tangent for a distance of 2,146 feet, followed by a 2° curve to the right 140 feet in length, tangent track for a distance of 261 feet, and then an 8° curve to the left 1,542 feet in length, the point of accident being on this latter curve about 592 feet from its northern end. The grade is undulating, being 0.2 percent ascending for south-bound trains for a distance of approximately 900 feet to a point 36 feet from the point of accident, where it then changes to 0.2 percent descending.

Approaching the point of accident from the north, the track is laid on a fill along the side of a hill. Below the track, and in the order named, are Pennsylvania State Highway No. 11, an abandoned canal bed, and the Susquehanna River, all of these running parallel with the tracks on the left or east side. At a point 314 feet beyond the station near the middle of the 8° curve, is the beginning of Bridge 156/77, which spans the highway, the canal bed, and the river. This bridge consists of 28 through plate girder spans with open floor, supported by 27 concrete piers, together with the end abutments; the spans are numbered, from south to north, 1 to 28 inclusive, and the piers from 1 to 27. The bridge is 2,629 feet in length, two-thirds of the spans being on tangent track while the remaining spans at the northern or receiving end are on the 8° curve, resulting in the two northerly spans over the highway and canal bed being on rather a short skew. This combination of skew and curve causes the girders to be offset at the piers, the

• Newberry Jct., Pa.
35.4 mi.
• Lewisburg
8.8 mi.
• Clement
*(Point of accident)
0.6 mi.
• Sunbury
78.3 mi.
• Port Clinton, Pa.



Inv. No. 2038  
 Reading Railroad  
 Clement, Pa.  
 Jan. 30, 1936

offset of the girders at pier 27 being 1 foot 9 inches. The highway passes under span 28, the distance from the top of the rail to the surface of the highway being 19 feet. Span 27 bridges the canal bed, and span 26 is over the bank of the river. The distance from the top of the rail to the canal bed is  $28\frac{1}{2}$  feet and from the top of the rail to the river bank about 25 feet. The railroad crosses the highway at an angle of about  $45^{\circ}$  and the point of accident was on the span over the highway at a point approximately 36 feet from the face of the back wall abutment of the bridge.

The track is laid with 130-pound rails, 39 feet in length, laid new in June, 1950, with treated ties spaced 22 inches apart, double-spiked and tieplated; rail anchors are used and the track is ballasted with ashes to a depth of 12 inches. The track on the bridge is laid with treated oak ties, with 6 by 8-inch treated oak guard rails on the outside, laid new in 1933, and with 100-pound steel guard rails on the inside, laid on tieplates with two spikes to the plate. The track is well maintained. The super-elevation of the outside rail on the curve is  $4\frac{1}{2}$  inches; the maximum speed limit for passenger trains on this division is 60 miles per hour, and on the curve involved all trains are restricted to 25 miles per hour.

A light snow was falling but visibility was good at the time of the accident, which occurred about 11:48 p.m.

#### Description

Train No. 14, a southbound passenger train, consisted of 1 combination mail and baggage car, 1 coach, 1 combination coach and smoking car, 1 express car and 2 refrigerator cars, hauled by engine 610, of the double-cab type, and was in charge of Conductor Jetter and Engineman Ramp. All of the cars were of all-steel construction with the exception of the two rear cars, which had steel underframes. This train departed from Lewisburg, 8.6 miles from Clement, at 11:36 p.m., according to the train sheet, 14 minutes late, lost about 1 minute en route, and on entering the bridge just beyond the station at Clement was derailed while traveling at an undetermined high rate of speed.

The entire train was derailed to the right or outside of the curve. The frame and running gear of the engine turned over to the right and stopped with the front end on pier 26, about 160 feet beyond the break in a rail which was the first indication of derailment, the boiler and cab being thrown 110 feet beyond and stopping on the river bank near pier 25, and the tender cistern stopping in the canal bed 25 feet to the right of

the track. Spans 28 and 27 collapsed and the west girders of both spans were knocked out of position on the piers, span 28 forming a ramp to the right down which the cars traveled to the highway and canal bed. The first car stopped on the bank of the canal, leaning at an angle of 45° to the right, with its head end 360 feet from the point of derailment and 160 feet from the center line of the track, with the next three cars in an irregular line, upright on the canal bed and highway, at distances from the track varying from 35 to 80 feet; the two rear cars were lying on their right sides partially on top of the west girder of the north span. The employees killed were the engineman and fireman, and those injured were the baggage-man and flagman.

#### Summary of evidence

Conductor Jetter stated that his train was 10 minutes late in leaving Newberry Junction, their initial terminal, due to a defective cylinder cock; he talked with Engineman Ramp about 5 minutes concerning the defect and the engineman appeared to be in good physical condition. The air brakes were properly tested on the train, which consisted of five cars on leaving that point, and they were tested again at Williamsport, where the mail and baggage car was picked up, and functioned properly at the five stops made en route. There was a further delay of about 6 minutes in loading mail at Lewisburg, but the train seemed to be operated as usual and he noticed no unusual swaying of the cars. Conductor Jetter said he was in the third car in the train and was occupied with his collections, and while he was unable to say whether or not an air-brake application had been made on approaching the Susquehanna River bridge, he did not think that the train entered the curve, or the bridge, at a speed greater than 25 or 30 miles per hour, this being followed by a feeling of leaving the rails and lunging forward, and then by the dropping of the front end of the car. Conductor Jetter said that he had worked with Engineman Ramp for some time and considered him to be a safe and reliable engineman.

Baggageman Wetherill stated that he was sitting in the smoking compartment of the third car; the train was making good time and he did not notice anything unusual until it lurched and the car left the rails. He did not feel an application of the air brakes or a reduction in speed and the train was traveling very fast at that time, and he also stated that he did not hear the whistle sounded after leaving Lewisburg. Baggageman Wetherill felt that there must have been something wrong with the engineman, as he was a good engineman and had always checked his train properly on rounding this curve.

Flagman Hill noticed nothing unusual in the operation of the train, thought the speed was about the same as usual, and did not notice any reduction in speed approaching the curve; he did not consider the speed unsafe, saying that he was looking out of the window watching automobiles on the highway which were making about the same speed as that of the train, and he did not think that the automobiles were traveling very fast. He further stated, however, that the normal speed approaching Clement is about 50 miles per hour, and while it was the usual practice of the engineman to apply the brakes in advance of the curve, yet on this particular trip he did not recall that the speed had been reduced by a brake application.

Mail Clerk Edminston, who was in the first car in the train, stated that after leaving Lewisburg he was working on the mail; the train seemed to ride smoothly, none of the mail being thrown around, and he said he felt a light application of the brakes followed by a slightly heavier application, which appeared to be the regular service application, a short time prior to the accident, and he felt nothing unusual on rounding the curve until the car in which he was riding became derailed. He was unable to say whether the application of the brakes which he felt was made at the usual location.

Cut Watchman Schindel, who patrolled the track through the north end of a cut known as Blue Hill, about  $2\frac{1}{2}$  miles north of Clement, stated that he saw Train No. 14 approaching for about 3 miles and that the headlight was burning brightly. The train was traveling at its usual speed, although he was unable to estimate the rate of speed, and as the train approached he gave a clear signal and the engineman answered with two short blasts on the whistle. He saw nothing irregular as the train passed and watched it until it was out of sight, about  $\frac{1}{2}$  mile distant, but he did not hear the engineman answer the watchman's signal in the following section.

Cut Watchman Rearick, who patrolled the south end of Blue Hill cut, about  $1\frac{1}{2}$  miles north of Clement, stated that he waited about 12 minutes at the north end of his section for Train No. 14. As the train approached he gave the engineman a proceed signal but the latter did not answer, and he then signaled him a second time, but the engineman again failed to answer. The watchman stated that he was standing at his customary place on the east side of the track, where he had a good view of both sides of the engine as it came around the curve. The engineman had never before failed to answer his signal and after the train passed him he walked back to the watch box to report the fact that his signal had not been answered, but found that the telephone was not working.

The engineman and conductor of Train No. 12, which passed Clement, southbound, at 5:07 p.m. on the day of the accident, stated that they noticed no unusual condition in the track as their train rounded the curve on the bridge at a speed of 20 or 25 miles per hour. Extra 1751, northbound, passed over the bridge at 6:34 p.m., and the conductor and engineman of this train also stated they observed nothing wrong with the track or bridge at that time.

Section Foreman Raup, in charge of the section on which this accident occurred, stated that on his arrival at the scene he found a broken rail which in his opinion was broken by the weight of the train when it became derailed; the fracture was a clean break and revealed no defects. Examination of the track from this broken rail northward to the station revealed no marks of any kind on the track and there was no indication of spikes having been pulled or of any movement of the tieplates. From his observation of the location of the damaged equipment and the distance it traveled, it was his opinion that the accident was caused by excessive speed, the section foreman estimating it to have been about 60 miles per hour. The track had been last checked for gauge and superelevation during the fall of 1935; the last repairs were made on January 4, 1936, when bolts were tightened on the bridge, and he had last inspected the track personally on January 15, at which time there was only slight wear on the head of the rail.

Track Walker Etzweiler, who daily walks over this section, and return, said he went over it about noontime on the day of the accident and found nothing wrong.

Supervisor of Track Morrison stated that the track rode smoothly when he last went over it on a snow flanger on January 26. It was his opinion that the broken rail was a result of the accident, the fracture being due to a heavy weight on the leaving end with the support having been taken away as the result of the accident. He found no evidence of dragging equipment, nor did he find any wheel marks on the head of the rail.

Division Engineer Schafer stated that in his examination of the track he did not find any marks to indicate that the equipment had been derailed north of the broken rail. There were no apparent flaws in the broken ends of the rail, and the receiving end of the south portion showed that it had been hammered as though it had been struck by the wheels.

Engineer of Bridges Baker made his last inspection of the bridge on October 9, 1935, and found the steel work in first-class condition, while the bridge was last inspected on January 10,



1933, by Assistant Foreman Carpenter Kunkle, at which time no exceptions were noted. Engineer of Bridges Baker stated that a bridge of this character can not be designed to take care of a lateral blow caused by such a derailment, being designed to carry a vertical load. He did not think it possible that the accident could have been caused by the failure of the bridge, and it seemed to him that a speed of 25 miles per hour would not have caused the destruction that resulted from this accident. It was his belief that the engine probably struck the first girder about 15 or 20 feet from its end and folded the top flange downward, and in so doing pulled the north portion of the girder into an inclined position, and that the resistance of the girder guided the engine in a longitudinal direction in about the line where it was found.

Engine Inspector Glass inspected engine 610 and made a few minor repairs before its departure from Newberry Junction on the day of the accident; he stated that the engine was in good condition. Engine House Foreman Madenfort also inspected the engine and said it was in a safe operating condition. He also stated that Engineman Ramp did not complain about his health except for an asthmatic condition. Road Foreman of Engines Reeder stated that he rode engine 610 several days prior to the accident, at which time the riding qualities of the engine were good. He had found that Engineman Ramp always observed speed restrictions and, as far as he knew, Engineman Ramp was in good physical condition.

Master Mechanic Spangler stated that he inspected the engine after the accident and found nothing that could have contributed to its occurrence. The automatic brake valve was in emergency position, throttle closed and latched, and the reverse lever in full forward position, although badly bent. After a very thorough and detailed examination he was of the opinion that the derailment was not due to any defect in the equipment, but rather that the damage was a result of the accident.

Yardmaster Henry, Yardmaster's Clerk Temple and Acting Night Engine House Foreman Wentz stated that they talked with Engineman Ramp prior to his leaving Newberry Junction on the night of the accident, but noticed nothing unusual, and the engineman appeared to be in a cheerful frame of mind.

Inspection of the track and bridge by the Commission's inspectors showed that the first indications of derailment were marks on the north end of the west girder of the north span of the bridge, practically opposite a broken rail located about 36 feet south of the north abutment. Examination of the damaged engine showed a deep indentation on the right front corner of the

firebox, as well as marks on the right side of it, which indicated that the engine apparently had struck the girder in question with the engine in an overturning position and then had ridden against the flange at the top of the girder to a point where it struck the north end of the west girder on span 27. This girder, being offset 1 foot 9 inches on account of the curve and skew, apparently tore the hole in the firebox at the right front end, also breaking the mud ring. Observation of the condition and the position of the west girders on the two north spans of the bridge, and their fastenings, showed they also had received severe side thrusts which caused the girders to be crowded outward, and the bolts holding the plates were sheared off and bent outward. A careful inspection of the engine and its parts disclosed no defects other than those that resulted from the derailment. The engine truck and driving wheels showed no excessive wear or marks, and the flanges were not defective. The breaks in the truck frames, pedestal braces, etc., were clean and indicated they were the result and not the cause of the accident. Careful inspection also was made of the cars, but nothing was observed that would have caused the derailment. Inspection of the track for a distance of 1 mile north of the point of accident showed no evidence of dragging equipment and the track was in good condition.

An analysis was made of the broken rail, and a joint report furnished by representatives of the Carnegie Steel Company and Engineer of Tests Young of the Reading Company stated that the results of the analysis showed that the rail was in accordance with the specification requirements and that there were no defects, the fracture being entirely a shock fracture. It also was stated by Mr. Young that the rail showed a mark on top of the head at the edge of the fracture where the flange of a wheel struck it after the rail had been broken, this mark being somewhat covered by a battered end, due to some object striking the rail after the wheel flange passed over it.

#### Discussion

The evidence indicates that the train entered the 8° curve at a rate of speed so high that as the engine was passing the first span of the bridge the side of the firebox contacted the west girder, making heavy indentations in both the firebox and the girder and causing the front of the engine to careen to the left, and then the right front corner of the firebox evidently came in contact with the north end of the second girder at the offset, tearing a hole in the firebox, wrecking span 27 and pushing the south end of girder 28 outward so that it dropped down upon the highway. The position of the wrecked equipment and the destruction of the two north spans of the bridge, the distance

the boiler of the engine traveled from the indicated point where it came in contact with the girders, the distance of this boiler from the chassis of the engine, the manner in which the engine frame, tender and car equipment were broken and scattered in the vicinity, and the absence of any wheel or flange marks on ties or rails up to the point where the engine came in contact with the bridge girders, and the further fact that the engine must have been in practically an overturning position to contact these girders, indicate that the train was traveling at a rate of speed greatly in excess of the maximum allowable speed of 25 miles per hour on this curve.

As both members of the engine crew were killed in the accident there is no means of knowing why the speed of the train was not properly controlled. The first cut watchman stated that he received an answer to his signal, but a very short time thereafter, the second cut watchman did not receive an answer, and the fact that the speed was not reduced to comply with the restrictions indicates that some unusual condition may have arisen in the cab of the engine. The physical records of the engineman showed that he did not enjoy the best of health, but there was nothing of an alarming character, and from the evidence it was apparent that he was in condition to perform his duties and had operated his train in the usual manner up to the time of the accident.

#### Conclusion

This accident was caused by excessive speed on a sharp curve.

Respectfully submitted,

W. J. PATTERSON,

Director.