

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT NO. 3747
ILLINOIS CENTRAL RAILROAD COMPANY
IN RE ACCIDENT
NEAR BELLEVILLE, ILL., ON
DECEMBER 21, 1956.

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SUMMARY

Date: December 21, 1956

Railroad: Illinois Central

Location: Belleville, Ill.

Kind of accident: Derailment

Train involved: Passenger

Train number: 15

Locomotive number: Diesel-electric units 4003 and 4004

Consist: 14 cars

Speed: Undetermined

Operation: Timetable, train orders, and automatic block-signal system

Tracks: Double; 3°30' curve; 0.43 percent descending grade southward

Weather: Foggy, misting

Time: 12:35 a. m.

Casualties: 2 killed; 46 injured

Cause: Insecure condition of track for speed at which train was operated

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3747

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS
UNDER THE ACCIDENT REPORTS ACT OF MAY 6, 1910.

ILLINOIS CENTRAL RAILROAD COMPANY

June 17, 1957

Accident near Belleville, Ill., on December 21, 1956, caused
by insecure condition of the track for the speed at
which the train was operated.

REPORT OF THE COMMISSION¹

TUGGLE, Commissioner:

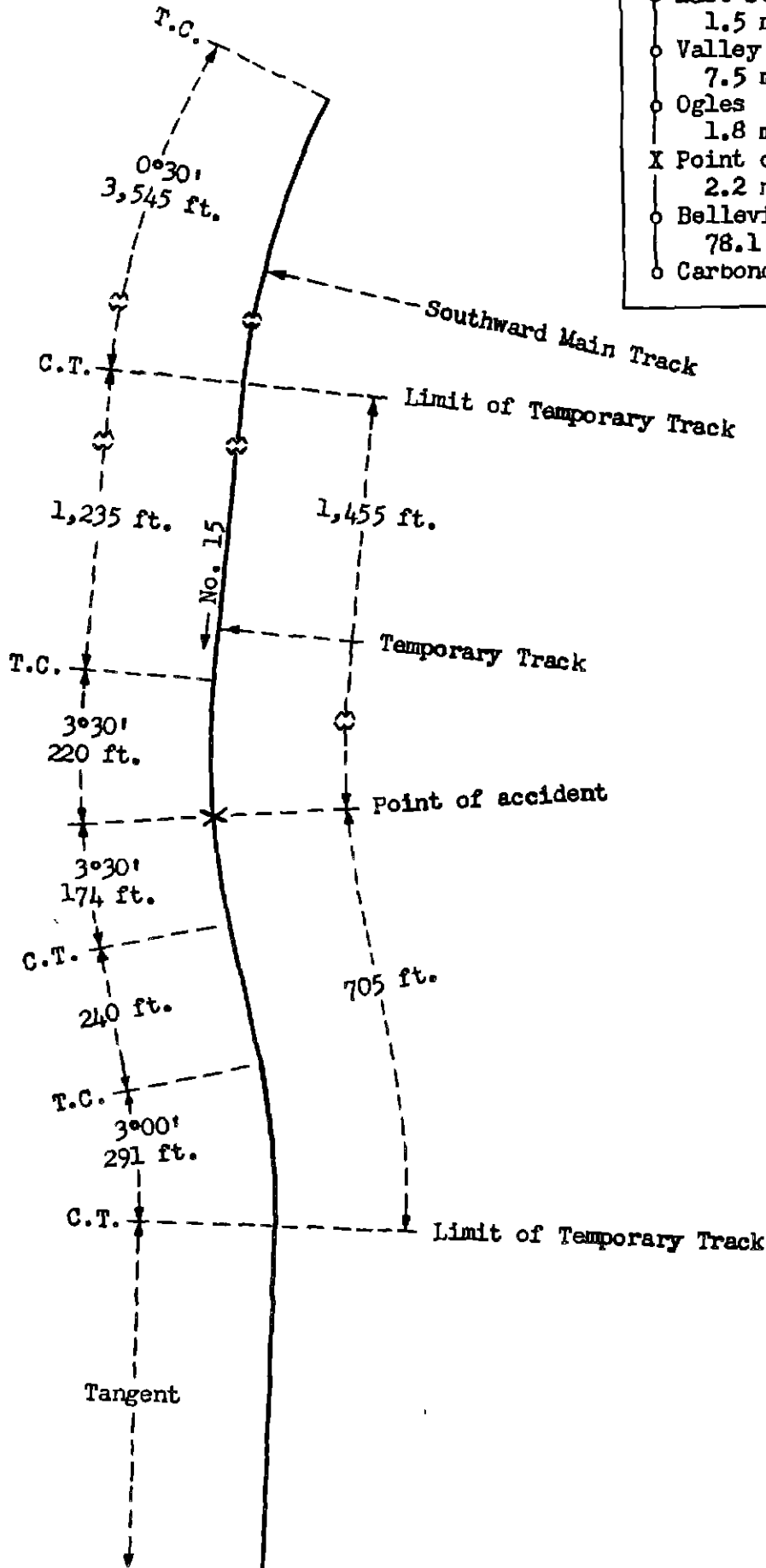
On December 21, 1956, there was a derailment of a passen-
ger train on the Illinois Central Railroad near Belleville,
Ill., which resulted in the death of 2 passengers, and the
injury of 42 passengers, 1 Pullman Company employee, 1 train
porter, and 2 train-service employees. This accident was
investigated in conjunction with a representative of the
Illinois Commerce Commission.

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Under authority of section 17 (2) of the Interstate Commerce
Act the above-entitled proceeding was referred by the Commis-
sion to Commissioner Tuggle for consideration and disposition.

To East St. Louis

To Carbondale



- o East St. Louis, Ill. 1.5 mi.
- o Valley Jct. 7.5 mi.
- o Ogles 1.8 mi.
- X Point of accident 2.2 mi.
- o Belleville 78.1 mi.
- o Carbondale, Ill.

Report No. 3747
 Illinois Central Railroad
 Belleville, Ill.
 December 21, 1956

Location of Accident and Method of Operation

This accident occurred on that part of the St. Louis Division extending between East St. Louis and Carbondale, Ill., 91.1 miles. In the vicinity of the point of accident this is a double-track line, over which trains moving with the current of traffic are operated by timetable, train orders, and an automatic block-signal system. The accident occurred on the southward main track at a point 10.8 miles south of East St. Louis and 2.2 miles north of Belleville. At this point the main tracks are approximately 1 mile apart, and the southward main track is laid on a temporary roadbed which extends between points 1,455 feet north and 705 feet south of the first marks of derailment. From the north there are, in succession, a 0°30' curve to the left 3,545 feet in length, a tangent 1,235 feet, a 3°30' curve to the left 220 feet to the first marks of derailment and 174 feet southward, a tangent 240 feet, a 3°00' curve to the right 291 feet, and a tangent over 2,000 feet in length. The grade is 0.43 percent descending southward at the point of initial derailment.

On the temporary track on which the accident occurred the track structure consists of 112-pound rail, 39 feet in length, rolled in 1943 and laid in this location in July 1956 on an average of 23 ties to the rail length. It is fully tie-plated with double-shoulder canted tie plates, single spiked, and is provided with 4-hole 24-inch joint bars. It is ballasted with chatts and rock ballast to a depth of 8 inches below the bottoms of the ties.

A reduce-speed sign is located 1 mile north of the north end of the temporary track on which the accident occurred, and a resume-speed sign is located at the south end of this track.

The maximum authorized speed for passenger trains in the vicinity of the point of accident is 60 miles per hour, but at the time of the accident it was restricted to 5 miles per hour on the temporary track on which the accident occurred.

Description of Accident

No. 15, a south-bound first-class passenger train, consisted of Diesel-electric units 4003 and 4004, coupled in multiple-unit control, one baggage-express car, one mail car, three baggage-express cars, one express car, one express refrigerator car, one box express car, one baggage-express car, one mail car, one baggage-express car, two coaches, and one sleeping car, in the order named. The seventh car was of steel underframe construction, and the other cars were of

all-steel construction. The thirteenth car was equipped with tightlock couplers. At St. Louis, Mo., 3.9 miles north of East St. Louis, the members of the crew received copies of train order No. 646 reading in part as follows:

* * *

Trains using southward main track must not exceed a speed of 5 miles per hour with engine and entire train while moving through new runaround track between Mile Post 11 and 12 south of Ogles * * *

Ogles is 9.0 miles south of East St. Louis. This train departed from St. Louis at 11:49 p. m., December 20, 32 minutes late, and passed Valley Jct., 1.5 miles south of East St. Louis, at 12:04 a. m., 33 minutes late. While it was moving on the temporary track 10.8 miles south of East St. Louis at an undetermined speed the front wheels of the front truck of the first car, the front wheels of the front truck of the second car, the front wheels of the front truck of the third car, and the sixth to the fourteenth cars, inclusive, were derailed.

Separations occurred between the fifth and sixth, sixth and seventh, tenth and eleventh, and thirteenth and fourteenth cars. The forward portion of the train stopped with the front of the locomotive approximately 1,900 feet south of the first marks of derailment. All of the derailed equipment was derailed to the west. The sixth to the tenth cars, inclusive, stopped parallel to the track. At this point the track is laid in a shallow cut, and the cars leaned against the wall of the cut at an angle of approximately 45 degrees. There were separations of about 12 feet between the fifth and sixth cars, and about 65 feet between the sixth and seventh cars. The eleventh to the fourteenth cars, inclusive, stopped on their right sides at distances of from 5 to 25 feet west of the track and approximately parallel to it. The front end of the eleventh car was 602 feet north of the rear end of the tenth car, and there was a separation of about 6 feet between the thirteenth and fourteenth cars. At the point at which the rear four cars stopped the track is laid on a fill approximately 8 feet in height. The first three cars were not damaged, and after they were rerailed they were forwarded in the train. The appurtenances below the floor level of the other derailed cars were considerably damaged, and the west sides of the cars were damaged from contact with the wall of the cut and the ground.

The conductor and the train baggageman were injured.

The weather was foggy and it was misting at the time of the accident, which occurred at 12:35 a. m.

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During the 30-day period preceding the day of the accident the average daily movement in the vicinity of the point of accident was 8.1 trains.

Discussion

As No. 15 was approaching the point where the accident occurred the enginemen were maintaining a lookout ahead from the control compartment at the front of the locomotive. The train baggageman was in the eleventh car, the train porter was in the twelfth car, the conductor was in the thirteenth car, and the flagman was in the fourteenth car. The headlight and the oscillating white light on the locomotive were lighted brightly. The brakes of the train had been tested and had functioned properly when used en route. The enginemen said that the train passed the reduce-speed sign north of the temporary track at a speed of about 35 miles per hour. The engineer said that immediately after passing this sign he made a brake application, and that when the locomotive reached a point several hundred feet north of the north end of the temporary track the speed had been reduced to 5 miles per hour. He said that he then released the brakes and placed the throttle in No. 1 position. The grade on the temporary track is slightly descending for south-bound trains, and the enginemen said that as the train moved over this track the engineer made several light brake applications so that the speed would not exceed 5 miles per hour. They said that the track appeared to be in proper alinement and cross level as they moved over it. They said that when the locomotive was in the vicinity of the south end of the temporary track the communicating signal whistle sounded once, and that after the locomotive had moved from 600 to 850 feet farther southward the brakes became applied in emergency as a result of the derailment. They said the locomotive stopped within a distance of about 70 feet after the brakes became applied. The employees in the cars of the train said that they noticed nothing unusual in the movement of the cars in which they were riding until the cars became derailed and overturned. The train baggageman said that the brakes of the car in which he was riding became applied as the car was overturning. He was unable to estimate the speed, but he said that the train was moving slowly. The other employees all said they thought the speed was approximately 5 miles per hour after the train entered the temporary track.

In connection with a highway construction project by the State of Illinois, at the time of the accident the southward main track in the vicinity of the point of accident had been temporarily relocated approximately 60 feet west of the permanent location throughout a distance of 2,160 feet. The roadbed for the temporary track was constructed by the contractor for the state. The track was constructed by the carrier and was placed in service on July 9, 1956. A speed restriction of 15 miles per hour was placed on the track. On October 15, after excavation work had been started, sheet piling was installed on the east side of the track between points approximately 1,100 feet and 1,195 feet south of the north end of the temporary track and also between points 1,430 feet and 1,500 feet south of the north end of the track. The sheet piling at the south location was 25 feet in length and was driven with the top approximately 5 feet below the level of the base of the rails. A foot or more was cut off the top of some of the piling, and the piling was not continuously interlocked. The earth east of the piling was excavated to a depth of 19 feet below the level of the top of the piling. In order to secure the top of the sheet piling, wood piling was driven on the opposite side of the track. The top of the sheet piling was then secured to the wood piling by cables. Very little rain fell until December 6. On this date there was a rainfall of about 2-1/2 inches. After this occurred the embankment cracked about 2 feet east of the ends of the ties at the location of the south sheet piling. Watchmen were then assigned to inspect the condition of the track and the embankment after the passage of each train. On December 9 the top of the sheet piling at the south location bulged out about 1-1/2 feet and one of the cables securing the top of the piling was broken. The surface of the embankment about 2 feet east of the ends of the ties settled from 2 to 3 feet. The cable was replaced, and a speed restriction of 5 miles per hour was placed on the temporary track. Additional crushed stone ballast was unloaded on the west side of the track, and on December 18 the track at the location of the south sheet piling was shifted to the west and away from the sheet piling a distance of approximately 6 feet. At this location the track remained on the top of the original grade and was approximately 20 feet west of the closest sheet piling. At the new location the track remained stable, and the watchmen were discontinued on December 19. On the morning of December 19 the section foreman found it necessary to raise the west rail of the relocated track about 3/4 inch in order to maintain the specified superelevation of 2 inches, and on the morning of December 20 it was necessary to raise the west rail 1/2 inch throughout a distance of about one rail length. The section foreman said that he did not consider this condition unusual considering the fact that the track had been shifted onto new ballast.

Examination of the track structure by officials of the carrier after the accident occurred disclosed that beginning at a point 1,255 feet south of the north end of the temporary track the track had settled and was out of cross level and had also shifted to the west. It had settled a maximum of 4 to 6 inches at a point 1,455 feet south of the north end of the track. At the latter point flange marks on the ties indicated that wheels had become derailed to the west. At a point 1,520 feet south of the north end of the track there had been a road across the track used by the contractor. At this crossing the track appeared to be in normal alinement and level. The rear end of the fourteenth car stopped immediately south of this crossing. South of the crossing the track had shifted to the west. The maximum deflection occurred at a point approximately 150 feet from the crossing. At this point the track had shifted toward the shoulder a distance of somewhat more than 2 feet and the west rail appeared to be from 8 to 10 inches low. Officials of the carrier who inspected the track before it was repaired said that at the time the track was inspected persons walking on the track had disturbed the ballast at the ends of the ties to the extent that the lateral displacement could not be measured. There were no center stakes. A second road crosses the track at a point 365 feet south of the contractor's crossing. Between this road and a point about 60 feet to the south there were no marks of derailed equipment. Beginning at the latter point marks on the ties indicated that wheels had become derailed to the west. In the vicinity of the south end of the temporary track bolts had been sheared at joint bars in the west rail, and this rail had become separated at a joint. Between the latter point and the point at which the derailed equipment in the forward portion of the train overturned, the west rail was displaced. Flange marks on the ties were continuous to the point at which the first car stopped.

At the time the temporary track was constructed it was laid in a shallow cut north of the sheet piling at the south location. South of this point it was laid on a fill. After the track was constructed the contractor did considerable excavating west of the track, and this excavating had the effect of leaving the track on an embankment at the location in which it had originally been in a cut. It was the opinion of officials of the carrier that the soil underneath the roadbed was not firm, and that after it had become saturated as a result of rains and water which had become impounded in the excavations it settled and the track shifted toward the edge of the embankment under the train. Ballast had been plowed down the side of the embankment at the time the track was shifted to the new location on December 18, and after the derailment occurred it could not be determined from the contour of the slope whether any of the material of the embankment had been displaced.

With the exception of the train baggageman, all members of the crew of No. 15 said they thought the train was moving at a speed of about 5 miles per hour when the derailment occurred, but from the position of the derailed equipment and marks on the track structure it appears that the speed was considerably higher than 5 miles per hour. Traces of paint in the mud indicated that the eleventh car slid a distance of approximately 70 feet after it overturned. There were no marks of derailment throughout a distance of approximately 60 feet south of the point at which the front end of the eleventh car stopped, and from this it appears that cars in the forward portion of the train were derailed toward the inside of the 3° curve to the right as a result of the rear cars becoming derailed. The west rail was torn out throughout a distance of approximately 340 feet behind the rear end of the tenth car, and there were marks of derailment throughout a distance of approximately 1,150 feet immediately north of the point at which the first car stopped. At low speed there should have been a noticeable difference in the handling of the train after cars became derailed, and an emergency application of the brakes should have stopped the train within a very short distance. There are four separations in the train, including a separation of 602 feet between the tenth and eleventh cars, and there should have been an emergency application of the brakes after the first separation occurred. The locomotive was equipped with a speed indicator, but the device was not equipped with a recording tape.

A south-bound freight train with 99 cars, 4,040 tons, passed the point of accident about 3 hours before the accident occurred. The employees in the caboose of this train said there was no unusual motion of the caboose as it moved over the temporary truck.

Cause

This accident was caused by insecure condition of the track for the speed at which the train was operated.

Dated at Washington, D. C., this seventeenth day of June, 1957.

By the Commission, Commissioner Tuggle.

(SEAL)

HAROLD D. McCOY,

Secretary.