

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT NO. 3537

CHICAGO, BURLINGTON & QUINCY
RAILROAD COMPANY
AND
CHICAGO, ROCK ISLAND AND PACIFIC
RAILROAD COMPANY

IN RE ACCIDENT
AT FAIRFIELD, IOWA, ON
OCTOBER 5, 1953

SUMMARY

Date: October 5, 1953

Railroads: Chicago, Burlington & Quincy : Chicago, Rock Island and Pacific

Location: Fairfield, Iowa

Kind of accident: Side collision

Trains involved: Freight : Passenger

Train numbers: Extra 5631 East : 3

Engine numbers: 5631 and 5601 : Diesel-electric units 647 and 634B

Consists: 41 cars, 2 cabooses : 10 cars

Estimated speeds: 20 m. p. h. : 20 m. p. h.

Operation: Interlocking

Tracks: Double, tangent, practically level : Single; tangent; 0.46 percent descending grade westward

Weather: Clear

Time: 6:20 p. m.

Casualties: 5 injured

Cause: Failure to operate Chicago, Rock Island and Pacific train in accordance with signal indications

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3537

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

CHICAGO, BURLINGTON & QUINCY RAILROAD COMPANY
AND
CHICAGO, ROCK ISLAND AND PACIFIC RAILROAD COMPANY

November 23, 1953

Accident at Fairfield, Iowa, on October 5, 1953, caused by
failure to operate the Chicago, Rock Island and Pacific
train in accordance with signal indications.

REPORT OF THE COMMISSION¹

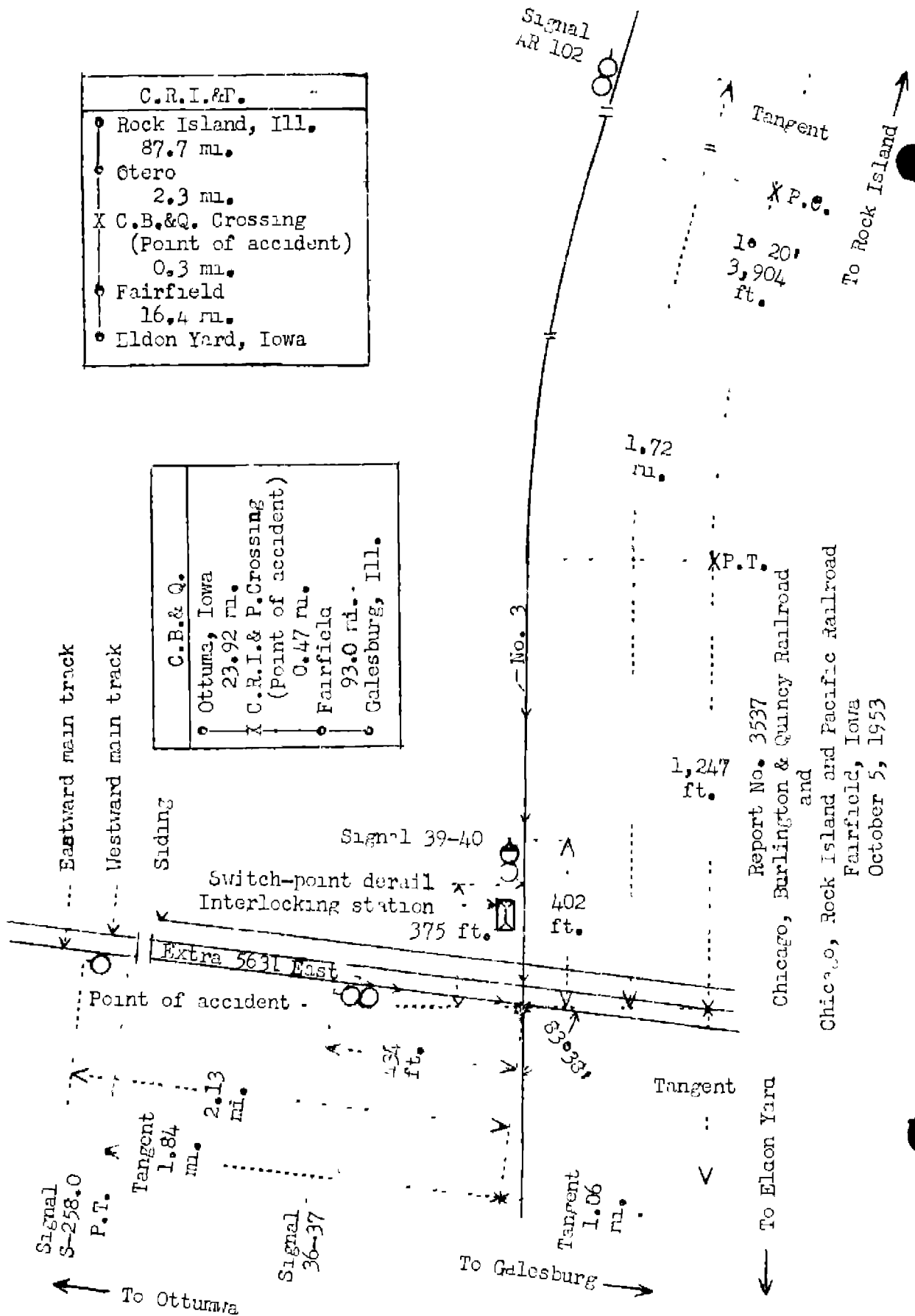
CLARKE, Commissioner:

On October 5, 1953, there was a side collision between a freight train on the Chicago, Burlington & Quincy Railroad and a passenger train on the Chicago, Rock Island and Pacific Railroad at Fairfield, Iowa, which resulted in the injury of three passengers and two train-service employees. This accident was investigated in conjunction with a representative of the Iowa State Commerce Commission.

¹ Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Clarke for consideration and disposition.

C.R.I.&P.	
•	Rock Island, Ill.
	87.7 mi.
•	Otero
	2.3 mi.
X	C.B.&Q. Crossing
	(Point of accident)
	0.3 mi.
•	Fairfield
	16.4 mi.
•	Eldon Yard, Iowa

C.B.&Q.	
•	Ottumwa, Iowa
	23.92 mi.
X	C.R.I. & P. Crossing
	(Point of accident)
	0.47 mi.
•	Fairfield
	93.0 mi.
•	Galesburg, Ill.



Location of Accident and Method of Operation

This accident occurred at the intersection of the Chicago, Burlington & Quincy Railroad, hereinafter referred to as the C.B. & Q., and the Chicago, Rock Island and Pacific Railroad, hereinafter referred to as the C.R.I. & P., at Fairfield, Iowa. The crossing is located on that part of the Ottumwa and Creston Divisions of the C.B. & Q. extending between Ottumwa, Iowa, and Galesburg, Ill., 117.39 miles, and on that part of the Rock Island Division of the C.R.I. & P. extending between Rock Island, Ill., and Eldon Yard, Iowa, 106.7 miles. The crossing is 23.92 miles east of Ottumwa and 0.47 miles west of the C.B. & Q. station at Fairfield, and 90 miles west of Rock Island and 1,466 feet east of the C.R.I. & P. station at Fairfield. In the vicinity of the crossing the C.B. & Q. extends east and west and the C.R.I. & P. extends north and south. Timetable directions on both lines are east and west, and these directions are used in this report. The lines intersect at an angle of $83^{\circ}38'$. An interlocking station is located in the northwest angle of the intersection. In the vicinity of the point of accident the C.B. & Q. is a double-track line, over which trains are operated by signal indications. The main tracks from north to south are designated as westward main track and eastward main track. A siding which extends over the crossing parallels the westward main track on the north in the immediate vicinity of the point of accident. From the west the main tracks are tangent throughout a distance of 1.64 miles to the crossing and 1.06 miles eastward. The grade for east-bound trains on the eastward main track varies between 0.68 percent and 0.077 percent ascending throughout a considerable distance immediately west of the crossing. At the crossing the grade is practically level. In the vicinity of the point of accident the C.R.I. & P. is a single-track line, over which trains are operated by signal indications. From the east there are, in succession, a tangent over 2 miles in length, a $1^{\circ}20'$ curve to the left 3,004 feet, and a tangent 1,247 feet to the point of accident and a considerable distance westward. Throughout a distance of 1.72 miles immediately east of the point of accident the grade for west-bound trains varies between 0.52 percent descending and 0.53 percent ascending. At the point of accident the grade is 0.46 percent descending.

Movements over the crossing are governed by interlocking signals. Automatic signal S-258.0 and semi-automatic signal 36-37, governing east-bound movements on the C.B. & Q. eastward main track, are located, respectively, 2.13 miles and 434 feet west of the crossing. Signal S-258.0 is of the searchlight type and displays three aspects. Signal 36-37 is of the two-unit

searchlight type and displays four aspects. Both signals are continuously lighted. Automatic signal AR 102 and semi-automatic signal 39-40, governing west-bound movements on the C.R.I. & P., are located, respectively, 1.72 miles and 402 feet east of the crossing. Signal AR 102 is of the two-unit searchlight type and displays three aspects. Signal 39-40 is of the two-unit color-light type and displays four aspects. These signals are continuously lighted. The aspects applicable to this investigation and the corresponding indications and names are as follows:

<u>Signal</u>	<u>Aspect</u>	<u>Indication</u>	<u>Name</u>
S-258.0	Yellow	Approach next signal prepared to stop.	APPROACH
36-37	Green-over-red	Proceed.	CLEAR
AR 102	Yellow-over-red	Proceed, immediately reducing to 30 MPH, or slower if necessary, prepared to stop before leading wheels pass the next signal.	APPROACH
39-40	Red-over-red	Stop.	STOP

The circuits and the mechanical locking are so arranged that, when the route is lined for a C.B. & Q. train to move over the crossing, signal AR 102 indicates Approach and signal 39-40 indicates Stop. Indicators are provided in the interlocking station to indicate when an east-bound C.B. & Q. train enters the approach circuit at a point 3.82 miles west of the crossing and when a west-bound C.R.I. & P. train enters the approach circuit at a point 2.75 miles east of the crossing. A switch-point derail is located on the C.R.I. & P. track 375 feet east of the center-line of the C.B. & Q. eastward main track.

Operating rules of the C.R.I. & P. read in part as follows:

34. Calling of Signals.--All members of engine and train crews must, when practicable, communicate to each other by its name the indication of each signal affecting the movement of their train or engine.

* * *

111. * * *

When * * * passing over railroad crossings * * * and other places where safety requires, conductors and brakemen must, when practicable, station themselves where they can observe and transmit signals and assist in stopping train, if necessary.

* * *

327. Where Stop Must Be Made.--A train or engine must stop before the leading wheels pass a Stop * * * indication, * * *

Rules and instructions governing employes in the operation of train air brakes and air signal read in part as follows:

43. Emergency Stops--In an emergency, where life or property is in danger, move the brake valve quickly to emergency position and leave it there until the train stops. * * *

The maximum authorized speeds for the trains involved in this accident were 50 miles per hour for the C.B.& Q. train and 79 miles per hour for the C.R.I. & P. train, restricted at the crossing to 20 miles per hour and 45 miles per hour, respectively.

Description of Accident

Extra 5631 East, an east-bound C.B. & Q. freight train, consisted of steam locomotives 5631 and 5601, 41 cars, and 2 cabooses. This train departed from Ottumwa, 23.92 miles west of the point of accident and the last open office, at 5:50 p. m., passed signal S-258.0, which indicated Approach, passed signal 36-37, which indicated Proceed, and while it was moving over the crossing at an estimated speed of 20 miles per hour the twentieth car was struck by C.R.I. & P. No. 3.

No. 3, a west-bound first-class C.R.I. & P. passenger train, consisted of Diesel-electric units 647 and 634B, coupled in multiple-unit control, one baggage car, one baggage-mail car, one dormitory car, two coaches, one cafe-lounge car, one dining car, one lounge car, and two sleeping cars, in the order named. The first three cars were of conventional all-steel construction, and the other cars were of lightweight steel construction. The locomotive units and all cars of the

train were equipped with tightlock couplers. This train passed the west siding-switch at Otero, 1.65 miles east of the point of accident, about 6:18 p. m., 6 minutes late, passed signal AR 102, which indicated Approach, and passed signal 39-40, which indicated Stop. The locomotive, the first three cars, and the front truck of the fourth car were derailed at the derail east of the crossing. The derailed equipment continued in line with the track, and while moving at a speed of about 20 miles per hour it struck the twentieth car of Extra 5631 East.

The nineteenth to the twenty-seventh cars, inclusive, of Extra 5631 East were derailed. The nineteenth car stopped upright and in a diagonal position across the eastward main track, with the front end about 345 feet east of the crossing. The other derailed cars stopped in various positions on or near the eastward main track, with the rear derailed car off its trucks on the crossing. The derailed equipment obstructed the westward main track. The nineteenth, twenty-sixth, and twenty-seventh cars were somewhat damaged, and the other derailed cars of this train were badly damaged.

A separation occurred between the Diesel-electric units of No. 3. The first Diesel-electric unit stopped upright and in a diagonal position, with the front end on the C.B. & Q. westward main track and at a point about 92 feet east of the crossing, and the rear end of the unit on the siding and about 30 feet east of the center-line of the C.R.I. & P. track at the crossing. The front truck of this unit was displaced and stopped adjacent to the south rail of the C.B. & Q. eastward main track and approximately 165 feet east of the crossing. The second Diesel-electric unit and the derailed cars of this train stopped in line with the track. The first Diesel-electric unit was considerably damaged, the second Diesel-electric unit was somewhat damaged, and the first three cars were slightly damaged.

The engineer and the fireman of No. 3 were injured.

The weather was clear and it was dark at the time of the accident, which occurred about 6 20 p. m.

The locomotive units and all cars of the train of No. 3 were provided with equipment for electro-pneumatic operation of the brakes. The brake equipment of Diesel-electric unit 647 was of the 24-RL type with DSE 24-H automatic brake valve and S-40-D type independent brake valve. The regulatory devices were adjusted to maintain main reservoir pressure of 140

pounds and brake-pipe pressure of 110 pounds. A spring-loaded shifter lever is provided on the automatic brake valve to change the functioning of the valve, as desired, between conventional automatic operation and electro-pneumatic operation. This shifter lever can be moved from one position to the other only when the handle of the brake valve is in automatic running position or in electro-pneumatic release position. An emergency application of the brakes may be obtained at any time by the movement of the brake valve handle to the extreme right on its quadrant. Automatic sanding of the rails during an emergency application of the brakes is provided. This unit is equipped with a safety-control feature actuated by a foot-pedal. An emergency valve connected to the brake pipe is located adjacent to the fireman's seat in the control compartment. The unit is equipped with an oscillating red headlight, the controls of which are so arranged that it will be displayed and the conventional headlight will be extinguished by an emergency application of the brakes.

Discussion

Approximately 7 to 9 minutes before the accident occurred the operator lined the route of the interlocking for the movement of Extra 5631 East over the crossing at Fairfield. This train was moving over the crossing at a speed of about 20 miles per hour when the twentieth car was struck by No. 3. When the operator first observed No. 3 approaching, the locomotive was about 150 feet east of the derail. The oscillating red headlight of the locomotive was lighted and this indicated that the brakes were applied in emergency. The operator left the interlocking station before the collision occurred.

As No. 3 was approaching the point where the accident occurred the speed was about 70 miles per hour, as indicated by the speed indicator of the locomotive. The headlight was lighted brightly and the oscillating white headlight was lighted. The brakes of this train had been tested in conventional automatic service and in electro-pneumatic operation and had functioned properly in each, and also when used en route. The shifter lever of the automatic brake valve was in position for electro-pneumatic operation of the brakes. The engineer and the fireman were maintaining a lookout ahead from the control compartment at the front of the locomotive. The conductor and the brakeman were in the vestibule at the front end of the fourth car and the flagman was in the vestibule at the front end of the rear car. Signal AR 102 indicated Approach, and the indication was called by the enginemen. The engineer said that he made a brake application when his locomotive was

about 1,300 feet east of the signal, and that this application was not released. The speed of the train was reduced to about 60 miles per hour, and he then became concerned because the rate of deceleration did not seem normal. He then made a full application of the brakes and observed that the gauge indicated about 60 pounds brake-cylinder pressure. He said that there was no appreciable reduction in speed and soon afterward there was a run-in of slack, which apparently resulted from an undesired release of the brakes. Simultaneously the fireman called the Stop indication of Signal 39-40. The engineer said that he immediately warned the fireman and then moved the brake valve to emergency position, released the foot-pedal of the safety-control feature, and applied the independent brake. He estimated that the speed was reduced to about 20 miles per hour by the derailment of the locomotive immediately before the collision occurred. The fireman said that he opened the emergency valve at approximately the same time that the engineer moved the brake valve to emergency position. He thought the exhaust from the brake pipe was less than normal. He said that the emergency application was not effective in reducing the speed of the train. He alighted from the locomotive in the vicinity of the derail. The conductor and the brakeman said that the speed of the train was reduced in the vicinity of signal AR 102 by a brake application and later the brakes were released. The brakeman said that as the train was moving on the curve east of the crossing he looked forward from the vestibule on the south side of the car and observed that the white headlight of the locomotive was lighted and also that signal 39-40 indicated Stop. He called the indication to the conductor. A few seconds later the brakes were applied in emergency. The conductor and the brakeman said that because there was no conductor's valve in the front vestibule of the fourth car they were unable to take immediate action to stop the train. The flagman said that the brakes were applied in emergency while he was inspecting the train from the vestibule at the front end of the rear car. He immediately turned on the oscillating signal light at the rear of the train and threw off a lighted fusee. After the collision occurred he proceeded eastward to provide rear-end protection; he did not observe whether the brakes of the rear car were applied.

Examination of the first Diesel-electric unit after the accident disclosed that the automatic brake valve was in lap position, the independent brake valve in release position, the throttle in idle position, the shifter lever in position for automatic operation of the brakes, and the emergency valve adjacent to the fireman's seat was in closed position. The angle cock at the rear of the unit was open. The jumper connection was missing from the receptacle of the electrical

conduit at the rear of the unit. The angle cocks were open and all electrical connections were in place on the second Diesel-electric unit and the derailed cars. The brakes of these units of the train were found applied when inspected by a member of the mechanical force of the carrier about 4 hours 45 minutes after the accident occurred. There were no slid-flat spots on the wheels of the Diesel-electric units or the derailed cars. The brakes of the second Diesel-electric unit and the derailed cars functioned properly when tested before removal from the scene of the accident. The cars which were not derailed in the accident had been dispatched westward prior to the time the inspection and tests were made.

The air-brake controlling apparatus of Diesel-electric unit 647 was tested at Silvis, Ill., shops after the accident. Broken air-brake pipes were plugged, the reservoir and brake system were charged from an outside source, and the electrical brake control circuits were energized. The brakes functioned as intended in all tests of the brake valve in both automatic and electro-pneumatic operation. The emergency valve and the safety-control feature functioned properly when tested, and no defective condition was found in any of the controlling apparatus. The air hose at the rear of the first Diesel-electric unit and at both ends of the second Diesel-electric unit were removed and examined. No defective condition of the hose was found.

The brakes of this train had functioned properly in electro-pneumatic operation and had been used to control the speed of the train between Rock Island and Otero. In the vicinity of signal AR 102 east of the crossing at Fairfield a brake application reduced the speed of the train from about 70 miles per hour to about 55 miles per hour. According to the statement of the engineer, an undesired release of the brakes then occurred. An emergency application of the brakes became effective when the train was closely approaching signal 39-40, and the speed was reduced to about 20 miles per hour at the point of collision.

The rules of the C.R.I. & P. require that when a train passes a signal which indicates Approach the speed of the train must be reduced immediately to not exceeding 30 miles per hour and must be so controlled that the train can be stopped short of the next signal. The locomotive of this train was equipped

with a dual-purpose brake valve for automatic or electro-pneumatic operation of the brakes with provision for immediate emergency application available at all times. Apparently, after it was found that the speed of the train was not being properly controlled with the brakes in electro-pneumatic operation further action was not taken in time to stop the train short of signal 39-40.

Cause

This accident was caused by failure to operate the C.R.I. & P. train in accordance with signal indications.

Dated at Washington, D. C., this twenty-third day of November, 1953.

By the Commission, Commissioner Clarke.

(SEAL)

GEORGE W. LAIRD,
Secretary.