INTERSTATE COMMERCE COMMISSION

WASHINGTON

INVESTIGATION NO. 3237

CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC RAILROAD COMPANY

REPORT IN RE ACCIDENT

AT MILWAUKEE, WIS., ON

MARCH 7, 1949

SUMMARY

Date:	March 7, 1949	
Railroad:	Chicago, Milwaukee, St. Paul and Pacific	
Location:	Milwaukee, Wis.	
Kind of accident:	Head-end collision	
Trains involved:	Passenger	: Passenger
Train numbers:	6	: 21
Engine numbers:	Diesel-electric units 17A and 17B	: 105
Consists:	12 cars	: 7 cars
Speeds:	Standing	: 20 m. p. h.
Operation:	Hand signals; automatic block-signal system	
Tracks:	Double; tangent; level	
Weather:	Clear	
Time:	1:44 p. m.	
Casualties:	46 injured	
Cause:	Failure to operate west-bound train in accordance with instructions governing movements over station tracks	

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 3237

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

CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC
RAILROAD COMPANY

April 27, 1949

Accident at Milwaukee, Wis., on March 7, 1949, caused by failure to operate the west-bound train in accordance with instructions governing movements over station tracks.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On March 7, 1949, there was a head-end collision between two passenger trains on the Chicago, Milwaukee, St. Paul and Pacific Railroad at Milwaukee, Wis., which resulted in the injury of 34 passengers, 8 dining-car employees, 3 train porters and 1 train-service employee.

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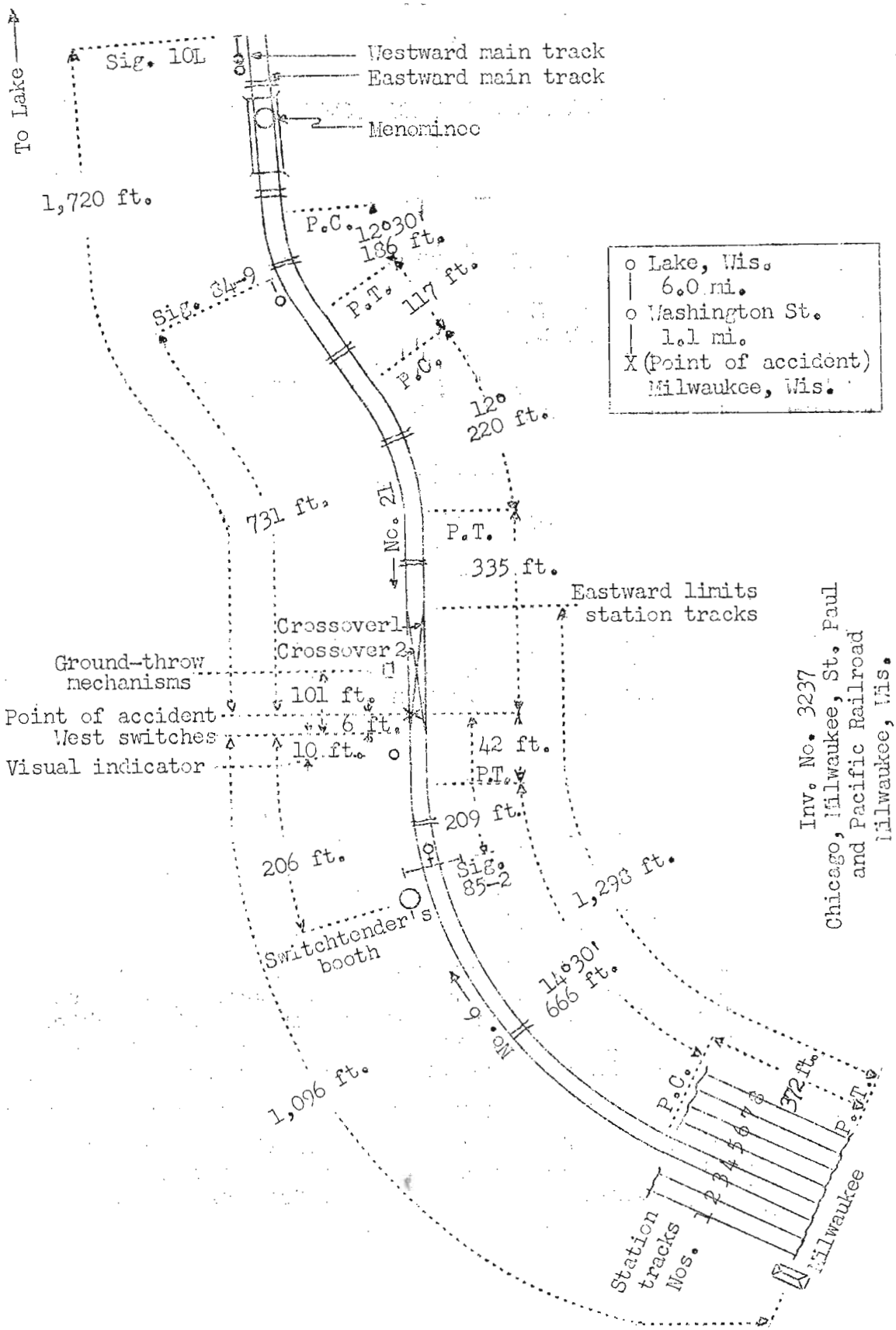
[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Inv. No. 3237
Chicago, Milwaukee, St. Paul and Pacific Railroad
Milwaukee, Wis.
March 7, 1949

Location of Accident and Method of Operation

This accident occurred on that part of the Milwaukee Terminal Division extending between Milwaukee and Lake, Wis., 7.1 miles. From the east this is a double-track line to the east limit of the station tracks at Milwaukee. The east limit is 1,298 feet east of the center-line of the station. On the double-track line, trains moving with the current of traffic are operated by signal indications. From north to south these tracks are designated as westward and eastward. At Milwaukee station there are eight station tracks designated from north to south, successively, as station tracks Nos. 1 to 8. Between points 385 feet and 1,062 feet east of the center-line of the station these tracks converge into two station tracks, which extend eastward to the east limit, where they join the main tracks. A double crossover connects the two station tracks at their east limit. The west and east switches of these crossovers are, respectively, 1,096 feet and 1,298 feet east of the center-line of the station. These crossovers are designated as crossovers 1 and 2. East-bound movements from station tracks Nos. 1, 2 and 3 to the eastward main track are made through crossover 1 and west-bound movements from the westward main track to station tracks Nos. 4, 5, 6, 7 and 8 are made through crossover 2. Two ground-throw mechanisms for operating these crossovers are located north of the station tracks and 101 feet east of the west switches of the crossovers. The station master authorizes movements in either direction on the station tracks. All switches leading to these tracks are hand-operated by a switchtender. Operation over the station tracks is by timetable special instructions, which provide that all trains entering or leaving the station tracks will proceed only on hand signals from the switchtender. The accident occurred at a point 6 feet east of the west switch of crossover 1 and 1,102 feet east of the center-line of the station. From the center-line of the station, station track No. 3 is tangent 372 feet, then there are, in succession, a 14°30' curve to the right 666 feet and a tangent 42 feet to the point of accident and 335 feet eastward. From the east there are, in succession, a 12°30' curve to the left 186 feet in length, a tangent 117 feet, a 12° curve to the right 220 feet and the tangent on which the accident occurred. From the east the grade is 1.00 percent descending 200 feet, 0.54 percent descending 500 feet and then it is level 258 feet to the point of accident.

The automatic block-signal system for west-bound movements extends to a signal bridge located 209 feet west of the point of accident. The automatic block-signal system for east-bound movements begins at the same location. Interlocking signal 10L, at Menominee drawbridge interlocking, and automatic signal 84-9 govern west-bound movements, and are located, respectively, 1,720 feet and 731 feet east of the point of accident. Interlocking signal 10L is a two-arm, color-light signal, which displays three aspects. Automatic signal 84-9 is a color-light signal, which displays two aspects. Automatic signal 85-2, governing east-bound movements, is mounted on a signal bridge located 209 feet west of the point of accident. It is a color-light signal, which displays two aspects. These signals are continuously lighted. The involved aspects and corresponding indications and names of these signals are as follows:

Signal	Aspect	Indication	Name
85-2 and 84-9	Yellow	Proceed prepared to stop at next signal. Train exceeding medium speed must at once reduce to that speed.	Approach
10L	Yellow-over-red	Proceed prepared to stop at next signal. Train exceeding medium speed must at once reduce to that speed.	Approach
85-2 and 84-9	Red over number plate	Stop, then proceed at restricted speed.	Stop and proceed

The controlling circuit of eastward signal 85-2 is so arranged that when the block of that signal is unoccupied and the switches of crossover 1 are reversed it will indicate Approach. The block of signal 85-2 extends through crossover 1 to the eastward main track and to the next eastward signal. The controlling circuit of westward signal 84-9 is so arranged that when the block of that signal is unoccupied, crossover 2 is in either the normal or the reverse position, and signal 10L indicates either Approach or Clear, signal 84-9 will indicate Approach. The block of signal 84-9 extends to eastward signal 85-2, and to signal 85-4 when the switches

of crossover 2 are reversed. Visual indicators are provided at points 206 feet and 10 feet west of the west switches of the crossovers. Each of these indicators shows track occupancy of the westward main track west of signal 84-9 when that signal is indicating Stop and proceed. When signals 10L and 84-9 display an aspect to proceed, these indicators show track occupancy of the westward main track west of signal 84-7, the approach signal to interlocking signal 10L. A telephone is provided in the switchtender's booth for receiving instructions concerning the movement of trains.

This carrier's operating rules read in part as follows:

DEFINITIONS.

Fixed Signal.--A signal of fixed location indicating a condition affecting the movement of a train or engine.

Note.--The definition of a "Fixed Signal" covers such signals as * * * block, interlocking, * * * and other means for displaying indications that govern the movement of a train or engine.

Restricted Speed.--Proceed prepared to stop short of train, obstruction, or anything that may require the speed of a train to be reduced.

Medium Speed.--A speed not exceeding thirty (30) miles per hour.

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

Timetable special instructions read in part as follows:

X-8 All trains and engines entering and leaving Union Depot, Milwaukee, will proceed only on hand signals from switchtenders at Second and Fifth Streets.

In the vicinity of the point of accident the maximum authorized speed for the trains involved is 12 miles per hour.

Description of Accident

No. 6, an east-bound first-class passenger train, consisted of Diesel-electric units 17A and 17B, coupled in multiple-unit control, one mail car, two baggage cars, five coaches, one

tap-lounge car, one dining car and two parlor cars, in the order named. All cars were of lightweight steel construction. This train departed from Milwaukee on station track No. 3 at 1:42 p. m., 17 minutes late, and stopped at signal 85-2, which indicated Stop-and-proceed. The switchtender gave a hand proceed signal, and the train proceeded eastward and stopped at a point 6 feet east of the west switch of crossover 1, where it immediately was struck by No. 21.

No. 21, a west-bound first-class passenger train, consisted of steam engine 105, one baggage car, four coaches, one dining car and one parlor car, in the order named. All cars were of lightweight steel construction. This train passed Lake at 1:35 p. m., on time, passed Washington Street, the last open office, 1.1 miles east of Milwaukee station, at 1:40 p. m., passed signal 10L, which indicated Clear, passed signal 84-9, which indicated Stop-and-proceed, and while moving at a speed of 20 miles per hour, as indicated by the tape of the speed recorder with which the engine was equipped, it collided with No. 6.

The rear truck of the first car and the front truck of the second car of No. 6 were derailed, and the front of Diesel-electric unit 17A was slightly damaged. The engine of No. 21 was slightly damaged.

The fireman of No. 6 was injured.

The weather was clear at the time of the accident, which occurred at 1:44 p. m.

Discussion

A west-bound train may not enter a station track and an east-bound train may not depart from a station track at Milwaukee except when authorized by a proceed hand signal given by the switchtender who has charge of the hand-operated station-track switches east of the station. After a train receives a hand signal to proceed, the speed is restricted to not exceeding 12 miles per hour between the station and a point 470 feet east of the east crossover switches. No. 6 is scheduled to leave Milwaukee at 1:25 p. m. and No. 21 is scheduled to arrive at Milwaukee at 1:50 p. m. In order to expedite station work at Milwaukee it is a practice to route No. 6 to station track No. 3 and No. 21 to station track No. 4. Under this procedure it is necessary for No. 6 to use crossover 1 in moving to the eastward main track, and

for No. 21 to use crossover 2 in moving to station track No. 4. Unless changed by the stationmaster, this procedure is followed daily. The operator at Menominee can cause automatic signal 84-9 to indicate Stop-and-proceed by the operation of a toggle switch located in the tower, but he does not hold a west-bound train at either signal 10L or 84-9 unless instructed to do so.

The investigation disclosed that the operator at Menominee was informed that No. 21 had passed Lake at 1:35 p. m. He immediately called the switchtender at the east end of the station tracks at Milwaukee to relay that information and, in turn, he was informed by the switchtender that No. 6 had arrived at the station at Milwaukee. The operator said the switchtender told him that No. 21 was to be routed to station track No. 4, and it was his understanding that No. 21 would enter station track No. 4 before No. 6 departed from station track No. 3. The operator at Menominee was not instructed to hold No. 21, therefore, he reversed the control lever which caused signal 84-9 to indicate Approach and signal 10L to indicate Proceed. The switchtender received no instruction concerning the movement of either train. No. 6 arrived on station track No. 3 at 1:37 p. m. After the station work was completed and a brake-test was made, this train departed eastward at 1:42 p. m., 17 minutes late. The engineer and the fireman were in the control compartment at the front of the first Diesel-electric unit. Signal 85-2 indicated Stop-and-proceed, and the train stopped, with the engine immediately west of the signal. Immediately after the train stopped, the switchtender operated the switches of crossover 1 for No. 6 to proceed to the eastward main track. He did not look at the indicator to determine whether a west-bound train was approaching. Then signal 85-2 indicated Approach and the switchtender gave a hand signal to the engineer to proceed. The train was started and had attained an estimated speed of 3 miles per hour when the enginemen observed No. 21 approaching on the westward main track. The engineer of No. 6 realized that No. 21 was moving at a speed too high to be stopped short of their train. He then closed the throttle and placed the brake valve in the emergency position.

No. 21 passed Lake at 1:35 p. m., on time. The brakes of this train had been tested and had functioned properly where used en route. When this train was approaching signal 84-7 the engineer made a service brake-pipe reduction, and the speed of the train was reduced from 40 miles per hour to 20 miles per hour. The engineer and the fireman were maintaining a lookout ahead from their respective positions

in the cab of the engine. Interlocking signal 10L indicated Clear. The engineer said that signal 84-9 indicated Approach until the engine passed it, and the fireman said that it indicated Approach until his view of the signal was obstructed by the front of the engine. The operator at Menominee, however, said that the signal indicated Approach until the engine of No. 21 was about 100 feet east of the signal, then the aspect changed to indicate Stop-and-proceed. The engineer said he saw No. 6 at a distance of about 200 feet, and about the same time he observed that the east switch of crossover 2 was not properly lined for movement of No. 21 to station track No. 4. Then he saw the switchtender giving stop signals, and he immediately placed the brake valve in emergency position. The fireman said he did not see the switchtender or the position of the crossover switch before the collision occurred. Throughout the 470 feet immediately east of the point of accident the maximum authorized speed was 12 miles per hour. However, the tape of the speed recorder with which the engine of No. 21 was equipped indicated that a speed of 20 miles per hour was maintained throughout a distance of about 4,000 feet immediately east of the point of accident, and there was no apparent reduction in speed before the collision occurred. This indicates that the brakes of No. 21 were applied at a point not more than 100 feet east of the point of collision. The view of the point of accident from the cab of a west-bound engine is restricted to 405 feet by structures north of the westward main track. The flagman, who was in the last car, said that the train moved about 50 feet from the time the brakes were applied in emergency to the time the collision occurred. The conductor estimated that the brakes were applied in emergency about 80 feet east of the point of accident. The switchtender said that No. 6 was stopped when the collision occurred. He observed that the engine of No. 21 was working steam as it approached the point where the accident occurred, and he said that he thought the brakes of No. 21 were not applied until immediately before the collision occurred. The engineer of No. 21 said that it was an unusual occurrence to be stopped by the switchtender at the east end of the station tracks, because west-bound trains usually are stopped at signal 10L while an east-bound train is proceeding through crossover 1 to the eastward main track. The fireman said that he never had been on a west-bound train which was stopped between signal 84-9 and the double crossover while an east-bound train was proceeding through crossover 1 to the eastward main track.

Cause

It is found that this accident was caused by failure to operate the west-bound train in accordance with instructions governing movements over station tracks.

Dated at Washington, D. C., this twenty-seventh day of April, 1949.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,

Secretary.