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Railroad Accident Investigation Report

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MISSOURI PACIFIC RAILROAD COMPANY
ST. LOUIS SOUTHWESTERN RAILWAY COMPANY
GORHAM, ILLINOIS
MAY 17, 1978

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION
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WASHINGTON, D. C. 20590

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Synopsis

On May 17, 1978, at approximately 6:55 a.m., a northbound Missouri Pacific freight train struck the rear end of a standing northbound St. Louis Southwestern freight train 2.3 miles south of Gorham, Illinois. Heavy ground fog severely limited visibility in the accident area.

Casualties

The conductor on the standing St. Louis Southwestern train was killed and the flagman was seriously injured. The engineer and the brakeman on the Missouri Pacific train sustained serious injuries. In addition, two off-duty railroad employees, riding on the second Missouri Pacific locomotive unit, were injured.

Cause

The accident was caused by the failure of the engineer of the Missouri Pacific train to control train speed in accordance with signal indications and impaired visibility conditions.

Location and Method of Operation

The accident occurred on that part of the Missouri Pacific Railroad extending from Poplar Bluff, Missouri to Valley Junction, Illinois, a distance of 196.3 miles. This line is a combination of single and double track railroad over which trains operate by authority of timetable, train orders, and signal indications of a traffic control system. The collision occurred 2.3 miles south of Gorham, Illinois.

In the accident area, the grade is practically level. The track runs tangent for 20,800 feet in length to a 1° curve to the left, 555 feet to the point of collision and 810 feet beyond.

Maximum Authorized Speed

The maximum authorized speed in the accident area is 60 m.p.h. Illinois Division General Order 32, dated April 5, 1978, states that "Any train handling a covered hopper loaded or empty must not exceed 50 m.p.h."

Signals

Signals 886R and 866R, governing northbound movements on the east main track are, respectively, 10,692 feet and 560 feet south of the point of collision. The signal system is a traffic control system having DC non-coded track and line control circuits, with electric switches and three position color-light signals. The traffic control system is controlled from a control machine at Chester, Illinois. The color-light signals are continuously lighted and approach lighted with the power off. The applicable aspects, corresponding indications and names for both 886R and 866R are:

Aspect	Indication	Name
Green	Proceed	Clear
Yellow	Proceed, immediately reducing to 40 m.p.h. or slower if necessary, prepared to stop before reaching next signal	Approach
Red-over-No. plate	Stop, then proceed at low speed through the entire block	Stop and proceed

Sight Distance

The view of Signal 886R by a northbound train is unrestricted for more than 10,000 feet. The view of Signal 866R by a northbound train is also unrestricted under normal weather conditions.

Applicable Rules

Uniform Code of Operating Rules

Definition - Low Speed - A speed that will permit stopping short of train, engine, obstruction, or switch not properly lined and looking out for broken rail, but not exceeding 20 miles per hour.

Rule 101 Precautions Account Unusual Conditions. - Trains must be fully protected against any known condition, not covered by the rules, which interfere with their safe passage.

Conductors and engineers must inform themselves of conditions, and, during and after excessive rains, heavy storms, fogs, or any condition which may restrict visibility or affect condition of track, must restrict speed of their train to insure absolute safety, and, if in doubt of being able to proceed safely, train must be placed on siding until it is safe to proceed.

When storms, fogs or other conditions obsure track or signals from points where they are plainly seen under normal conditions, speed must be restricted to insure seeing and complying with indications of any and all signals, regardless of loss of time.

Special Instructions

(7) Rule 34 and 34(a) Employees located in the operating compartment of an engine must communicate to each other in an audible and clear manner the name of each signal affecting movement of their train or engine, as soon as the signal is clearly visible. It is the responsibility of the engineer to have each employee comply with these requirements, including himself.

It is the engineer's responsibility to have each employee located in the operating compartment maintain a vigilant lookout for signals and conditions along the track which affect the movement of the engine or train.

If a crew member becomes aware that the engineer has become incapacitated or should the engineer fail to operate or control the engine or train in accordance with the signal indications or other conditions requiring speed to be reduced, other members of the crew must communicate with the crew member controlling the movement at once, and if he fails to properly control the speed of the train or engine, other members of the crew must take action necessary to insure the safety of the train or engine, including operating the emergency valve.

Circumstances Prior to the Accident

Extra 9610 North

This St. Louis Southwestern Railway train is commonly known by the symbol "LACHH." The train consisted of three diesel electric units, 108 cars, and a caboose. The initial terminal for the "LACHH" is Los Angeles, California and the final terminal is Chicago, Illinois. The last 500 mile train air brake test and inspection was performed at Pine Bluff, Arkansas. The crew went on duty at Illmo, Missouri at 4:15 a.m., May 17, 1978, after having completed the required off duty period. They had been on duty 2 hours and 37 minutes at the time of the accident.

Extra 9610 North departed from Illmo, Missouri at 5:25 a.m. and proceeded to Howardton Junction. At that junction, the dispatcher lined the switch, cleared the signal, and routed the train on the east track. The train proceeded northward, and its speed was reduced while passing a signal displaying an Approach indication two miles north of Howardton Junction. The train stopped at the next signal which displayed a Stop-and-Proceed indication. This signal is located 2.6 miles south of Gorham, Illinois. Extra 9610 North then proceeded past this signal indication at a low speed until the caboose of a Missouri Pacific train was observed on the east track ahead. The train then stopped at 6:35 a.m. The fireman, who was a promoted engineer, was operating the locomotive. The engineer, the fireman and the front brakeman were in the control compartment of the lead locomotive unit. The conductor and the flagman were in the caboose.

Approximately 17 minutes after the train had stopped, the flagman heard a grating noise. He looked back from the caboose to see the lead locomotive unit of the Missouri Pacific train, Extra 2296 North, approaching from out of the fog. He observed two men, one on the walkway and one on the bottom step of the stairway of the locomotive, preparing to jump. The flagman opened the window on the left side of the caboose, where he was sitting, and jumped out. The conductor apparently remained in the caboose.

Extra 2296 North

This Missouri Pacific train is designated by the symbol "XHC," and is operated as an extra train. The train consisted of two diesel electric units, 31 cars, and a caboose. The lead locomotive unit, 2296, was operated with the cab, or short end, forward. The last 500-mile train air brake test and inspection was made at Abco, Arkansas. The crew of Extra 2296 North went on duty at Poplar Bluff, Missouri at 1:30 a.m., May 17, 1978, after having completed the required off duty period. They had been on duty for 5 hours and 22 minutes at the time of the accident. An off duty train crew was required to board the train at Poplar Bluff, Missouri, to return to their home terminal at Salem, Illinois. The off duty engineer and the fireman rode in the second locomotive unit in their normal respective seats. The off duty conductor and two brakemen rode in the caboose.

Extra 2296 North departed Poplar Bluff, Missouri at 1:45 a.m. and proceeded towards Gorham, Illinois. The train developed a leaking trainline on the 15th head car. This caused the train brakes to become applied. The train crew set the defective car out at Lozeta, Missouri, on joint tracks owned by the St. Louis Southwestern Railway. After the car had been set out, the train brakes were applied and functioned as intended. The radio was also used in the setting out of the defective car, and functioned properly. The radio was used again at the hot-box detector eight miles south of the point of collision, and again functioned normally. Except for observing a slow order of 30 m.p.h. over a bridge near Mile Post 61, the train was operated at a speed of 52 m.p.h., as indicated by the speed recorder of the second locomotive unit.

The crew stated that they had encountered heavy patches of fog in the area. As the locomotive approached the Howardton Junction, 5.7 miles south of the accident site, the engineer observed a signal indication displaying a green aspect. The train continued northward on the east track at a speed between 50 to 51 m.p.h. According to the engineer's statement, the fog became so heavy that he did not see any more road crossings until after passing them. He also did not remember seeing the intermediate signal located two miles south of the accident site. The front brakeman said that he failed to see either the signal at the Howardton Junction, or the intermediate signal. He believes that he might have dozed off.

Extra 2296 North passed Signal 886R, two miles south of the point of collision, at a speed between 50 to 52 m.p.h. and did not reduce speed. According to the post-accident investigation and tests, this signal displayed a yellow aspect indicating "Approach". The engineer and the front brakeman both saw Signal 866R displaying a red aspect and the rear of the stopped Extra 9610 North at about the same time. The engineer placed the automatic brake valve in emergency position and moved toward the fireman's side, calling to the front brakeman to jump. The front brakeman went out the fireman's side of the locomotive unit followed by the engineer and both men jumped.

The off duty engineer and fireman on the second locomotive unit were alerted when they heard the air brakes applied in emergency. They fell to the floor as the lead locomotive unit struck the caboose of the standing train. Members of the train crew in the caboose heard the air brakes go into emergency before the rear of the train came to a stop.

The Accident

Extra 9610 North

As the lead locomotive unit of Extra 2296 struck the rear end of Extra 9610, the caboose was propelled upward and crushed between the locomotive unit and the car preceding it in the train. The rear portion of the caboose overrode the locomotive unit, destroying the control compartment, and coming to rest on the engine compartment. The front portion of the caboose was propelled upward into and onto the rear end of the 108th car, a tri-level automobile carrier. The tri-level carrier was shoved forward, coming to rest on its right side parallel with and 15 feet east of the east track structure. The rest of the train was shoved forward about 100 feet by the force of the impact. Only the last six cars derailed. The conductor's body was later found in the wreckage of the locomotive unit MP 2296 and the caboose of Extra 9610 North.

Extra 2296 North

From the point of impact with the rear end caboose of Extra 9610, the lead locomotive unit moved northward 325 feet and jackknifed to the west blocking both main tracks. The second locomotive unit MP 2523 jackknifed to the east coming to rest on its right side also blocking both tracks. The first five cars behind the locomotive unit derailed and stopped at various angles to the track structure, although all cars remained upright.

Damages

Extra 9610 North

The caboose was destroyed in the accident. The preceding car, a tri-level automobile carrier, was substantially damaged. The 107th car was also substantially damaged. The preceding three cars sustained minor damages.

Extra 2296 North

The lead locomotive unit sustained substantial damages. Both the control and engine compartments were destroyed. The second locomotive unit was also damaged heavily. The first two cars behind the locomotive consist were destroyed, and the following three were damaged.

Total damage cost to cars, locomotive units, track and signals were estimated to be $168,000.

Crew of Extra 2296 North

The engineer, age 29, was first employed in June of 1973. He was promoted to an engineer in April of 1977. The engineer's last operating rule examination was in September 1975. His discipline record was clear.

The front brakeman, age 46, was first employed in 1963. His last examination on operating rules was in October 1975. His discipline record had been clear since 1967.

VIEW OF ACCIDENT SITE

Post-Accident Investigation

The controlling locomotive unit of Extra 2296 North, MP 2296, is a General Electric B23-7, road-switcher type locomotive with 26L air brake equipment. The investigation of this unit after the collision revealed that the automatic brake valve was in the emergency position, the independent brake valve was in release position, the throttle was in position No. 7, and the reverse lever was in forward position. Due to damage sustained in the accident, an air brake examination was impossible. There was a speed recorder, but it was not equipped with a tape.

The trailing locomotive unit of Extra 2296 North, MP 2523, is an Electro-Motive Division, GP 35 road-switcher type locomotive with 26L type air brake equipment. This unit was equipped with a speed recording device, including a speed recording tape, which was operative before and during the accident. The speed recorder functioned as intended and was properly calibrated.

The air brakes were tested and inspected on the remaining undamaged cars of Extra 2296 North and found to be in effective operating condition. The air brakes on the caboose were discovered to be cut out.

The signal system was undamaged in the accident, except for some poles and wires broken in the immediate area of the collision. None of the relays, relay cases, cables or signal light units were damaged. Tests were performed to determine the condition of these signal elements in the presence of an FRA Signal and Train Control Inspector. The pole line between Signal 886R and the point of collision was carefully inspected. There was no evidence to indicate that a malfunction of the signal system had occurred.

Findings

1. At the time of the accident, Extra 9610 North occupied the east main track in accordance with applicable rules and instructions of the carrier.

2. Neither the engineer of Extra 2296 North nor the front brakeman observed the indication of Signal 886R, which displayed a yellow aspect.

3. Because of excessive speed, Extra 2296 North was unable to stop short of Signal 866R and the rear end of Extra 9610 North.

4. The accident was caused by the failure of the engineer of the following train, Extra 2296 North, to control the train speed in accordance with signal indications and visibility conditions. The front brakeman also did not take action to stop the train or otherwise assist the engineer.

Dated at Washington, D. C., this 7th day of December 1979
By the Federal Railroad Administration

J. W. Walsh
Chairman
Railroad Safety Board

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