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Railroad accident investigation reports

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REPORT NO. 79-5
BURLINGTON NORTHERN, INCORPORATED
CHICAGO, ROCK ISLAND AND PACIFIC RAILROAD
FORT MADISON, IOWA
JUNE 24, 1978



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION
Office of Safety

RAILROAD ACCIDENT INVESTIGATION

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OFFICE OF SAFETY

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Synopsis

On June 24, 1978, at 4:10 p.m., a head-end collision involving a Chicago, Rock Island and Pacific freight train and a Burlington Northern switcher locomotive occurred within yard limits at Fort Madison, Iowa. Weather conditions at the time of the accident were clear and calm.

Cause

The accident was caused by failure of the front end crew of the Chicago, Rock Island and Pacific train to operate that train in accordance with the carrier's instructions and operating rules.

Casualties

A switchman of the yard assignment crew was fatally injured in the collision. The engineer of the Chicago, Rock Island and Pacific train was treated and released from a local hospital for minor head injuries sustained in the accident.

Location and Method of Operation

The accident occurred on that part of the Burlington Northern railroad extending from North Market, Missouri to Burlington, Iowa, a distance of 220.3 miles. In the accident area, the railroad is single track, over which trains operate by the authority of timetable, train orders and special instructions. There is no block signal system in use from Keokuk to Burlington, Iowa. Block signals govern movements on other portions of the railroad. The collision occurred at mile post 201.46 on the main track, 2,757 feet east of the Fort Madison, Iowa, depot.

The Chicago, Rock Island and Pacific Railroad has trackage rights over the Burlington Northern between Keokuk and Burlington, Iowa, a distance of 42.4 miles. Keokuk is 24.1 miles east of Fort Madison, Iowa and Burlington lies 18.3 miles to the west. From the east there are, in succession, a tangent 2,544 feet, a 2°55' curve to the left, 1,262 feet to the point of collision and 52 feet beyond.

Track

The grade in the accident area is .11% ascending westward.

Sight Distance

The view between opposing trains approaching the point of collision is restricted to approximately 480 feet by the 2°55' curve, vegetation and a building alongside the railroad right-of-way.

Maximum Authorized Speed

Maximum speed is moving prepared to stop within one-half the range of vision but not to exceed 20 miles per hour.

Applicable Rules

Rule 93 ...

All trains and engines, except first class trains must move within yard limits prepared to stop within one-half the range of vision but not exceeding 20 MPH, unless main track is known to be clear by block signal indication.
 ...(Burlington Northern, Inc., Special Instructions No. 7)

Circumstances Prior to the Accident

Extra CRIP 4517 West

The crew of this westbound freight train went on duty at Keokuk, Iowa at 3:00 p.m., the day of the accident. The train was already assembled and consisted of diesel-electric locomotive unit CRIP 4517, 21 cars and cabooses. After receiving the prescribed brake test, the train departed Keokuk at 3:10 p.m., with the Burlington Northern pilot engineer at the controls of the locomotive. The Chicago, Rock Island and Pacific front brakeman was seated in the front seat on the left side of the control compartment and the CRIP engineer was seated in the seat behind him. The locomotive was operated with the front or short end ahead, with the pilot engineer in his normal operating position on the right side of the locomotive. The conductor, flagman and pilot conductor were in the caboose.

This train is operated between Keokuk and Burlington, Iowa, a distance of 42.4 miles, on track designated as part of the Burlington Northern Fourth Subdivision, Hannibal Division, over which the Chicago, Rock Island and Pacific Railroad has trackage rights.

The pilot engineer stated that he had maintained proper operating speeds as prescribed by train orders, timetable or special instructions, from Keokuk to the yard limit board at mile post 196.48, near Fort Madison, Iowa. He further stated that he had either used the independent or automatic air brakes several times enroute, and took no exception to their operation. While approaching Fort Madison, the CRIP engineer questioned the Burlington Northern pilot engineer as to whether there should be a yard engine on duty. The pilot engineer replied, "I don't think so, but I'm not going to take any chances."

Once inside the yard limits at Fort Madison, the pilot engineer stated that he made a first service air brake reduction with the automatic brake valve in order to slow down for a ten mile per hour speed restriction between mile posts 201.6 to 203.0. Shortly, thereafter, the front end crew members saw the Burlington Northern yard locomotive on the main track.

Yard Locomotive BN 93

The yard crew went on duty at 9:00 a.m., June 24, 1978 at Fort Madison, Iowa, assigned to yard locomotive BN 93, an EMD SW1 diesel-electric locomotive. After receiving verbal information of trains operating through Fort Madison for the day from the dispatcher at Hannibal, Missouri, the crew performed yard and industrial switching within the Fort Madison yard limits. After completing their yard switching duties, the crew received instructions to go to the Consolidated Packaging Corporation and switch out a rejected car. The car was in the plant which is located about 2,600 feet east of the depot. The crew departed from the passing track in front of the depot and entered the main track at approximately 4:05 p.m., moving in an eastward direction. The engineer was at the controls of the locomotive on the right side of the control compartment, with the front or long hood of the locomotive ahead. The yard foreman and one switchman were riding on the platform at the front of the locomotive and the remaining switchman was in the control compartment on the left side seat. After entering the main track, the yard engine's movement was directed eastward at approximately eight to ten miles per hour. At mile post 201.6, the crew members saw the headlight of Extra CRIP 4517 West.

The Accident

Extra CRIP 4517 West

The pilot engineer stated that his train was traveling between 20-25 miles per hour when the front end crew saw the yard locomotive about 300-500 feet ahead on the main track. The pilot engineer immediately moved the automatic brake valve from first service position to emergency position. The front end crew remained in their respective seats and prepared themselves for the collision which occurred immediately thereafter.

Yard Engine BN 93

Realizing that a collision was imminent, the yard foreman, riding on the front platform, dismounted to the north side. The switchman, also riding on the platform, dismounted to the south side. The engineer stated that he stopped the locomotive and reversed the engine, but did not apply power and try to move it back because the oncoming train was too close. He left the locomotive cab and descended

to the south side. The switchman, riding in the control compartment followed the engineer out of the cab and dismounted to the north side. For reasons unknown, the switchman then attempted to crossover the main track to the south side. In the process, the head-end collision occurred and the yard locomotive BN 93 ran over his body. The impact derailed both pairs of wheels on the front truck, and propelled the yard locomotive westward 290.8 feet.

Damages

Extra CRIP 4517 West

The train stopped with the front end 290.8 feet west of the collision point with no equipment derailed. The locomotive sustained substantial damage.

Yard Locomotive BN 93

The impact propelled the locomotive westward derailing the front truck. The locomotive sustained minor damage. Total cost of equipment damages in the accident was \$27,000.

Train Crews and Hours of Service

The engineer of the yard locomotive was first employed by the Burlington Northern on April 2, 1967. His last rule examination was in March 1978. Disciplinary record is clear as to rule violations.

The Burlington Northern pilot engineer of Extra CRIP 4517 West was first employed by the carrier in 1944. He was promoted to engineer in 1962. This engineer had served as a pilot engineer for Chicago, Rock Island and Pacific trains on this division in the past, and was familiar with the territory in the accident area. Disciplinary record shows one suspension related to train operation.

All crew members of the Chicago, Rock Island and Pacific train had been on duty for one hour and ten minutes, after having completed the required off duty period.

Crew members of the yard engine BN 93 had been on duty for seven hours and ten minutes at the time of the collision, after having completed the required off duty period.

Post-Accident Examination

The CRIP 4517 is an Electro-Motive Division GP 7 road switcher type locomotive equipped with 26L air brake equipment and a two-way radio for communication with land base station and trains on the same frequency within range. An examination of the control compartment revealed that the throttle was in the idle position, reverse lever in the forward position, automatic brake valve in the emergency position, independent brake valve in the release position, and the fireman's emergency brake valve in an open position. All other controls and valves of this unit were found in the proper position for the operation of the locomotive. This locomotive was equipped with a speed recorder with no speed tape. The two-way radio was not equipped to receive BN train communications.

The BN 93 locomotive is an Electro-Motive Division SW1 switcher type equipped with 6BL air brake equipment and a two-way radio for communication with land base stations and other BN trains on the same frequency within range. An examination of the control compartment disclosed that the throttle was in idle position, reverse lever in reverse position, automatic brake valve in release position, independent brake valve in full application, and the fireman's emergency brake valve in the normal closed position. All other controls and valves of this locomotive were found in the proper position for operation.

Findings

1. At the time of the collision, BN locomotive 93 was operating in accordance with applicable operating rules.
2. It is apparent from the BN pilot engineer's statement and damages sustained, that Extra CRIP 4517 West was moving between 20-25 miles per hour when it passed the yard limit sign and collided with yard locomotive BN 93 occupying the main track.
3. The front end crew of Extra CRIP 4517 West was operating the train at a speed which allowed them insufficient braking distance to stop within one-half the range of vision.

4. Both the Chicago, Rock Island and Pacific engineer and the front brakeman failed to take action to require the pilot engineer to slow the train as the train passed the west yard limit sign, and entered into restrictive territory as required by the provisions of Rule 93.

Dated at Washington, D. C., this 24th
day of May 1979
By the Federal Railroad Administration

J. W. Walsh
Chairman
Railroad Safety Board