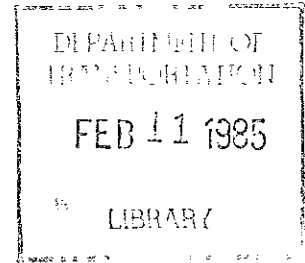


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Railroad accident investigation reports

REPORT NO. 79-7
LOUISVILLE AND NASHVILLE RAILROAD
ST. JOSEPH, TENNESSEE
JULY 6, 1978



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

RAILROAD ACCIDENT INVESTIGATION

ACCIDENT REPORT NO. 79-7

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ST. JOSEPH, TENNESSEE

JULY 6, 1978

FEDERAL RAILROAD ADMINISTRATION

OFFICE OF SAFETY

WASHINGTON, D. C. 20590

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Synopsis

On July 6, 1978, at approximately 9:15 a.m., a head end collision occurred between two Louisville and Nashville freight trains 1.3 miles south of St. Joseph, Tennessee. The weather was clear.

Casualties

The head brakeman of the southbound train died en route to the hospital as a result of internal injuries sustained in the collision. The engineer of that same train suffered cuts, abrasions and contusions to the face, arms and legs as a result of his jumping from the locomotive prior to the collision.

The engineer and head brakeman of the northbound train sustained cuts, abrasions and contusions to their upper torsos and legs as a result of being thrown around in the cab as their locomotive unit overturned.

Cause

The collision was caused by the failure of the crew members of the southbound train to operate that train in accordance with train order instructions.

Location and Method of Operation

The accident occurred on that part of the Louisville and Nashville Railroad extending from Columbia, Tennessee to Sheffield, Alabama, a distance of 83.9 miles. This is a single track line over which trains are operated by timetable and train orders.

The collision occurred on the main track, 1.3 miles south of St. Joseph, Tennessee.

From the north on the main track there is a tangent of 965 feet, a four degree curve to the left 23 feet to the point of collision and 727 feet southward, and a tangent 854 feet in length.

The grade for southward trains in the accident area is 1.13% ascending.

Sight Distance

The range of vision is restricted in the accident area by dense undergrowth and a tree line which extends to a height of 30 feet on the east. Sight distance for train crews operating in both timetable directions is further limited by two 4° curves to the north and to the south of the point of collision.

Authorized Speed

The maximum authorized speed for freight trains in the accident area is 25 miles per hour.

Applicable Rules

Engine Whistle Signal

14 Sound Indication

(n) - - o Approaching meeting or waiting points....

- S-89(a) At meeting or waiting points, trains must stop clear of the switch to be used by an opposing train to enter the siding, unless the train to enter the siding is clear of the main track and switch is properly set.
- S-90 The engineer of each train must sound signal, Rule 14(n), two miles before reaching a meeting or waiting point or a point where their train is restricted.
-
- On trains having radio communication, conductor and engineer must communicate with each other by radio and have a thorough understanding two miles before reaching point their train is restricted.
- 106 Both the conductor and the engineer are responsible for the safety of the train and the observance of the rules and, under conditions not provided for by the rules, must take every precaution for protection, but this does not relieve other employees of their responsibility under the rules.
- 106(a)
- When the conductor or engineer fails to take action to stop the train, and an emergency requires, other crew members must take immediate action to stop the train.
- 212 Conductors, enginemen and trainmen must read train orders and clearance Form A and when practicable check with each other and have a definite understanding of their requirements. As far as practicable, conductors and engineers must satisfy themselves that train orders are understood by other crew members.
-
- 221(h) On trains equipped with radio, conductor and engineer, after receiving train orders, must promptly communicate with each other as to requirements of such orders.

Forms of Train Orders (S-A) Fixing Meeting Points for Opposing Trains

. . . .

Trains receiving these orders will run with respect to each other to the designated points and there meet in the manner prescribed by the rules. When directing superior trains to take siding for inferior trains, the instructions must be given specifically for each meeting point in each order. (L&N Rules of The Operating Department)

Circumstances Involved in the Accident

Extra 4137 North

Extra 4137 North originated at Florence, Alabama, on the day of the accident, and departed that location at 7:55 a.m. Train crew members are responsible for air brake tests at this point and they did not perform the required air brake tests and inspection of the train brakes prior to departure. This northbound freight train consisted of five GP-38-2 diesel-electric locomotive units, operating in multiple control, and a caboose. The locomotive units are of the low profile hood design with the control compartments at the front end. All locomotive units were equipped with 26L air brake equipment.

The engineer was operating the controls of the lead locomotive unit from his normal position on the right side of the control compartment. The head brakeman was occupying the seat on the left side of the control compartment of the lead unit. The conductor and the flagman were in the caboose.

Extra CN 4011 South

Extra CN 4011 South departed the Kayne Avenue Yard, Nashville, Tennessee, at 1:25 a.m. on the day of the accident as Second No. 399. Car department employees performed the required air brake test prior to departure. The train brakes functioned properly when used en route. This second class southbound freight train consisted of five diesel-electric locomotive units (EMD-GP-40, GE-U23-B, EMD-GP-35, GE-U23-B and EMD-SW-1500), operating in multiple control, 60 loaded coal cars and a caboose. The locomotive units are of the low profile hood design with the control compartment at the front end. All the units were equipped with 26L air brake equipment.

Kayne Avenue Yard is located within the limits of the Nashville Terminal, and train movements within this territory are controlled by automatic block signals, except at interlocking points. At Vine Hill, 3.5 miles south of Kayne Avenue, a continuous train order office is maintained. All Birmingham Division trains must receive a Clearance Form A at this point. Extra CN 4011 South received the necessary clearance form and four train orders and moved southward to the interlocking station at Brentwood, Tennessee, where it was held for an opposing movement. After departing Brentwood, operations were normal between that point and Columbia, Tennessee, 34.5 miles to the south. At the Columbia Wye, all trains, except originating and terminating trains, are required to secure a Clearance Form A and leave a register card. Extra CN 4011 South passed the delivery point and obtained the clearance form and 11 Form 19 Train Orders. Order No. 415, dated July 6, 1978, addressed to C&E Second 399 and Engine CN 4011, read as follows:

"Engine CN 4011 is withdrawn as Second 399 at Mt. Pleasant and run Extra 4011 Mt. Pleasant to Florence and meet Extra 4137 North at Lorretto."

This particular order bore the dispatcher's initials, was made complete at 5:25 a.m. and was signed by the operator. The other 10 orders were track related which required train speed reductions at various locations between Columbia, Tennessee and Florence, Alabama. On this division, southbound trains are superior to northbound trains of the same class. Therefore, Second 399 would proceed from Columbia to Mt. Pleasant on the schedule of No. 399 and then as Extra CN 4011 South from Mt. Pleasant to Florence, Alabama. Being the train in the superior direction, Extra CN 4011 South should have proceeded on the main track to the south switch of the siding at Lorretto, stopped to clear and arranged to meet Extra 4137 North at that point. The crew members of the southbound train proceeded to operate the train south beyond Lorretto, occupying the main track without authority.

Included in the track related orders received by Extra CN 4011 South at Columbia, was Order No. 554. This order stated "See safe before passing over broken rail A 284.4 on east rail." At mile A 284.4, Extra CN 4011 South stopped and both the engineer and the head brakeman descended from the locomotive. They found four inches of the head of the east rail broken out and laying on the track structure. After placing the pieces back in the rail, they notified the conductor by

radio that track conditions were safe for the train to pass this location. The flagman notified the engineer, by radio, when the caboose had gone by the defective rail. The location of the defective rail is 1.4 miles south of the meeting point at Lorretto and at this point, the crew had not yet realized that Extra CN 4011 South was occupying the main track without authority.

Approaching the point of accident, the engineer was operating the controls of the lead locomotive from his normal position. The head brakeman was occupying the seat on the left side of the control compartment of the lead unit. The conductor and the flagman were in the caboose.

The Accident

Extra 4137 North

Extra 4137 North was in the four degree right curve moving at approximately 10 to 15 miles per hour when the engineer observed the headlight of Extra CN 4011 South approaching at a distance of 250 feet. The throttle, according to the engineer, was either in "Idle" or run "One" position. He immediately closed the throttle and moved the automatic brake valve to the "Emergency" position. Both the engineer and the head brakeman got down on the floor and braced their feet against the front wall of the control compartment prior to the collision. The engineer stated that his train was moving at not over one or two miles per hour when it was struck by the southbound train.

Extra CN 4011 South

Extra CN 4011 South was on the ascending grade and the engineer had just released the automatic brake valve and applied power. The speedometer was not working and the engineer estimated that his train was moving at approximately 15 miles per hour. As he looked forward, he observed the approaching northbound train at a distance of 200-250 feet. He stood up and shouted a warning to the head brakeman to jump. The engineer then started to jump from the right side cab window. He hesitated for a second, and before jumping he reached back and moved the automatic brake valve to the emergency position. After jumping and hitting the ground, he ran to an adjacent field to escape being trapped beneath the derauling equipment. After the collision, the engineer

observed the engineer and the head brakeman of the northbound train crawl from the wreckage. He did not see his head brakeman and returned to the lead locomotive, No. CN 4011, to find the brakeman in a standing position, trapped in the debris. With the assistance of the front end crew of Extra 4137 North, the trapped brakeman was in the process of being freed when a fuel tank in the second locomotive unit, LN 2803, ruptured and ignited. Despite the fire, the injured brakeman was moved to a safe location.

Damages

Extra 4137 North

Extra 4137 North was shoved southward approximately 75 feet by the force of the impact. In the collision, LN 4137 overrode the platform and control compartment of CN 4011, the southbound lead locomotive unit, and overturned to the west of the track structure. The front truck of LN 4137 stopped on the track against the front pilot plate of CN 4011. The rear trucks remained with the frame and superstructure. LN 4137 was equipped with Type "F" tight lock couplers, and coupler alignment control. The remaining four units of the locomotive consist, though substantially damaged, did not derail. There were no damages to the caboose of this train.

Extra CN 4011 South

The lead locomotive unit, CN 4011, stopped upright on the track structure with the rear trucks on the rail. In the collision, the lead unit of the northbound train overrode the front end tearing the control compartment away and leaving it in a ditch to the west of the main track. All controls were damaged to the extent that no determination could be made as to their position immediately prior to the collision. The second unit of the locomotive consist, LN 2803, overrode the rear platform and superstructure, stripping the unit to the frame. The engine, compressor, alternator and auxiliary generator were torn from the bed plate and were found with the alternator on the left side walkway with the accessory end of the engine on the ground to the east of the locomotive frame. This unit was equipped with Type "F" couplers and coupler alignment control.

The second unit, LN 2803, turned over to the east of the track structure at an angle of 110°, with the fuel tank ruptured. In the ensuing fire, the unit was destroyed. The front trucks of this locomotive unit were found on the top rear portion of the frame of CN 4011. This unit was equipped with Type F couplers and coupler alignment control.

The third unit, LN 1116, had the rear, or south, trucks derailed. The unit remained in line with the track structure, and the north, or front, trucks did not derail. There was a 15-foot separation between this unit and the frame of CN 4011. This unit was equipped with Type "E" couplers and alignment control. There was considerable fire damage to this unit.

The fourth unit, LN 2704, had the rear, or north, trucks derailed. The front trucks did not derail. No separation occurred between the third and the fourth locomotive units. This unit was equipped with Type "E" couplers and alignment control. The unit was substantially damaged in the collision.

The fifth unit, LN 5022, turned over to the west of the track structure at an angle of 95°. The front, or south, trucks remained on the track structure and separations occurred at each end of this unit. This unit was equipped with Type "E" couplers and did not have alignment control.

The first, second and third head cars derailed and stopped in various positions to the track structure. These three cars were substantially damaged.

The carrier estimate of damages was reported as follows:

Locomotives	\$1,683,000.00
Cars	5,800.00
Track	<u>5,500.00</u>
Total	\$1,694,300.00

Train Crews and Hours of Service

At the time of the accident, the crew members of Extra CN 4011 South had been on duty eight hours and 45 minutes after having been off duty in excess of 10 hours. Crew members of Extra 4137 North had been on duty two hours and 15 minutes after having been off duty in excess of 10 hours.

Findings

1. Both train crews had in their possession 10 Form 19 train orders notifying them of track conditions which required their trains to either reduce speed to 10 mph or to stop and inspect the track before proceeding. These orders had been in effect for periods of time ranging from one day to over five months.

2. Maximum authorized speed for trains in this area is 25 mph due to track conditions. Train orders, applicable to both trains, reveal that within a distance of 12.4 miles, there were six separate locations where a 10 mph speed restriction was imposed.

3. As Extra 4137 North approached the accident point, it was being operated in accordance with applicable rules and regulations of the carrier. The FRA has taken appropriate action concerning the lack of an appropriate inspection and air brake test prior to departure from Florence, Alabama.

4. Neither the conductor, the engineer, nor the brakeman of Extra CN 4011 South demonstrated that they were familiar with the content of the train order which restricted the movement of their train past the meeting point. After the train had passed the meeting point, occupying the main track without authority, no member of the train crew took responsible action to prevent the accident.

5. This collision was caused by the failure of the crew members of the southbound train to operate that train in accordance with train order instructions.

Dated at Washington, D. C., this
1st Day of October 1979
By the Federal Railroad Administration

J. W. Walsh
Chairman
Railroad Safety Board