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Federal Railroad Administration, Office of Railroad Safety

Accident Investigation Summary Report HQ-2022-1785

Illinois Central Railroad Company (IC) – Derailment
Paulina, Louisiana
November 2, 2022

1. EXECUTIVE SUMMARY

On November 2, 2022, at around 1:35 p.m., CDT, an Illinois Central Railroad (IC) freight train derailed on the Baton Rouge Subdivision in Paulina, Louisiana. The derailment occurred at Milepost (MP) 410.1, resulting in eight of the train's hazardous material (HAZMAT) cars being derailed.

Among the derailed cars, one car (Line 67 of the train consist) was punctured and leaked approximately 19,500 gallons of Hydrochloric Acid. This spill led to an emergency response involving local and state agencies, including St. James Emergency Management, St. James Parish Sheriff's Office, Louisiana State Police, Department of Environmental Quality, and Canadian National (CN) HAZMAT Emergency Services.

The derailment caused an estimated \$247,616 in damages—\$47,616 to equipment and \$200,000 to tracks and structures. There were no injuries reported. As a precaution, a 1,000-foot evacuation zone was established, affecting 500 residents, and leading to road closures around the incident site. The area was declared safe, and restrictions were lifted after 30 hours.

The Federal Railroad Administration (FRA) identified the probable cause of the derailment as track alignment issues, specifically a track buckle, and a contributing factor as a failure to adhere to the IC's Continuous Welded Rail (CWR) plan. The release of Hydrochloric Acid further intensified the severity of the incident.

2. ACCIDENT SEQUENCE OF EVENTS

On November 2, 2022, at around 1:35 p.m., CDT, a southbound freight train, A41971-02, operated by Illinois Central Railroad (IC) derailed while traveling through Paulina, Louisiana, in St. James Parish. The train was making its way from Geismar, Louisiana, to Memphis, Tennessee. The train was configured with 2 locomotives and 87 cars, including 76 loaded with cargo and 11 empties. It was 4,596 feet long and carried a total of 10,451 tons.

At MP 410.1 on the Baton Rouge Subdivision, the train derailed eight of its cars. The train was

moving at 21 mph when it derailed. The speed limit in that area is 40 mph, but there was a temporary restriction reducing the speed to 25 mph due to a track condition. The weather at the time was clear, with a temperature of 70°F and light winds of 8 mph. The derailed cars were eight tank cars carrying hazardous materials (HAZMAT). These cars remained upright, but one of them, line 67 of the train consist, was punctured on the bottom, causing approximately 19,500 gallons of Hydrochloric Acid to spill onto the ground.

Emergency responders, including St. James Emergency Management, the St. James Parish Sheriff's Office, Louisiana State Police, the Department of Environmental Quality, and CN HAZMAT Emergency Services, quickly arrived on the scene to manage the situation.

The derailment caused significant damage, totaling an estimated \$247,616. This includes \$47,616 for damaged equipment and \$200,000 for repairs to tracks and structures.

As a result of the spill, a 1,000-foot evacuation zone was established. This required evacuating 500 residents and closing nearby roads. After 30 hours, all restrictions were lifted, and residents were allowed to return home.

3. INVESTIGATION AND ANALYSIS

The FRA investigation into the derailment found no deficiencies or irregularities in the operation of the train, signal system, or equipment. Fatigue analysis of the crew's work/rest schedules showed no excessive fatigue risks, and the crew was not under the influence of drugs or alcohol.

Track Analysis

The derailment occurred about 22 feet south of a right-hand track switch that was installed on October 4, 2022, on a flat, straight section of track. This section included a transition rail that changed from a 115-pound rail to the north to a 136-pound rail to the south.

North of the derailment point, the track was equipped with 115-pound continuous welded rail (CWR). This rail was supported by wooden ties, each measuring 8 feet 6 inches long. The rail was secured to these ties with standard spikes and double shoulder tie plates. Box anchors were used to secure the rail on every tie for about 175 feet north of the derailment point, after which box anchors were placed on every third tie.

South of the derailment point, the track featured 136-pound rail from the transition rail through the switch and beyond. This section also used wooden ties of the same size, and the rail was secured with 6-inch tie plates, lag screws, and Pandrol clips.

Before the derailment point, the track was misaligned for approximately 60 feet, becoming 8½ inches out of alignment towards the east at the point of derailment. No additional track defects or broken rails were found at or near the derailment location.

Inspection records revealed that turnouts were installed on the east rail on October 4 and October 6, 2022. During this installation, both rails were cut. However, the IC's CWR plan did not address the procedures for installing turnouts. A necessary "traditional distress" procedure to

check the rail's neutral temperature (RNT) was not performed. This procedure is crucial for preventing track buckling. Given that the track buckled when the temperature was 70°F, it is likely that the RNT was lower than this. The standard rail laying temperature for this area is 105°F.

Previous audits by FRA in 2021 identified 173 defects in IC's rail inspection reports and raised concerns about the maintenance of proper rail installation temperatures and record-keeping for RNT. In response, IC was required to enhance training and improve record-keeping. However, a follow-up audit in 2022 found additional defects, and FRA issued violations, showing that the issues from the initial audit had not been resolved.

The failure to adhere to proper rail installation procedures and maintain accurate records contributed significantly to the derailment.

A follow-up audit in June 2022 revealed 975 more defects and resulted in 93 violations. FRA found that the problems identified in the initial audit had not been addressed, and there were still issues with IC's CWR plan. As a result, FRA rejected the plan and instructed IC to make necessary corrections and resubmit it for review.

An IC track inspection of the derailment area on October 31, 2022, revealed no defects at that time.

HAZMAT

The FRA Hazardous Materials team reviewed the train's cargo and emergency response details. The train had 87 railcars, 62 of which were tank cars carrying hazardous materials. Eight of these tank cars derailed, and one of them (Line 67) released 19,500 gallons of Hydrochloric Acid when the bottom of the tank was punctured by derailment debris.

It is worth noting that Hydrochloric Acid is transported in DOT 111 specification tank cars. However, because Hydrochloric Acid is a Class 8 (corrosive material), DOT111 tank cars in this service are not scheduled for phase out.

The spilled Hydrochloric Acid could have mixed with water from a nearby swamp. According to the Emergency Response Guide, this substance reacts with water, leading to a release of toxic gas. As a result, a 1,000-foot evacuation zone was established, affecting about 500 nearby residents.

FRA found that IC followed all the rules for handling hazardous materials, including shipping documents, material descriptions, emergency response details, and train placement before the derailment. While IC was compliant with these regulations, the release of hazardous materials made the incident more serious.

4. CONCLUSION

FRA's investigation determined that although an IC track inspection of the derailment area on October 31, 2022, revealed no defects at that time, the probable cause of the derailment was due

to track alignment issues, specifically a track buckle. FRA also determined that contributing factors were failure to adhere to the IC's Continuous Welded Rail (CWR) plan and failure to adhere to proper rail installation procedures and maintain accurate records contributed significantly to the derailment. The release of Hydrochloric Acid exacerbated the severity of the incident.