

Date: May 23, 2024

To: Patrick Warren, Director, RPH

Through: Zach Zagata Branch Chief, RPH-140

From: Shane Richardson/Joey Rhine, IIC, RPH-130

Subject: **Accident Investigation Closeout Memo**
RRD23FR013
Train derailment
Norfolk Southern Railway
Elliston, Virginia
July 6, 2023

Accident Summary

On July 6, 2023, about 7:42 p.m. local time, eastbound Norfolk Southern Railway (NS) freight train 814V404, consisting of three locomotives and 105 loaded railcars, derailed 19 loaded gondolas on the New River Division at milepost (MP) 263.7 near Elliston, Virginia.¹ The train weighed 14,158 tons, was 5,562 feet long, and was traveling at 14 mph when the train received an emergency brake application. Postaccident inspections and evidence obtained indicate that the 71st railcar had a burnt off journal, causing the derailment of 19 loaded gondolas. There were no reported fatalities or injuries resulting from this derailment. NS estimated the equipment damages to be about \$159,750 and track and infrastructure damages at \$288,360. At the time of the accident, visibility conditions were clear, dark, and the temperature was 82°F with no precipitation.

Investigation

Train 814V404, with its crew, reported for duty at Bluefield, West Virginia at 10:15 a.m. local time and departed the terminal at 2:39 p.m., destined for Norfolk, Virginia. The Yellow Sulphur hot bearing detector (HBD) at MP V276.3 gave a critical alarm for a hot bearing on axle number 299 as the train passed over the detector at 5:28:22 p.m. At 5:32:37 p.m., the crew brought train 814V404 to a stop, contacted the dispatcher, and were instructed to contact the wayside detector help desk and

¹ All times in this document are local time.

inspect the train. The train's conductor, inspected the the R1 bearing on the 71st railcar (CR 507499) using a Tempilstik, which melted slightly indicating that it had overheated. The conductor further noticed some grease coming out of the inner bearing seal.² After reported their inspection findings to the dispatcher, who instructed the crew to set the railcar out at Fagg Siding, MP V268.8. The crew countered this instruction, requesting to set the railcar out at Riverside Siding at MP V259.8 due to the ascending grade into Fagg Siding. However, Riverside Siding was not the closest siding location. The crew stated that the grade to the Fagg Siding was too steep for the locomotive power of the train to ascend. At 7:10 p.m., the dispatcher instructed the crew of train 814V404 to depart on signal indication at track speed to Riverside Siding, and set the 71st railcar out. The train departed at 7:16 p.m., and at 7:44 p.m., the train experienced an emergency brake application. The lead locomotive came to a stop at MP V263.03 where the crew found 19 of the train's loaded gondola cars hauling coal derailed.

National Transportation Safety Board investigators found that the R1 bearing burned off the journal on railcar CR 507499 resulting in the derailment of train 814V404. During examination of the bearing, investigators noted that the bearing had extensive thermal damage, and that no traces of the polymer seals remained. They also identified that steel components within the bearing had evidence of melting and extensive rub damage.

The investigation into the derailment of train 814V404 further identified the following issues with crew operating performance and the NS wayside detector help desk procedures:

- The crew did not set out the railcar at the nearest location after determining they had an overheated wheel bearing, which increased the risk of the train being effected by a failed wheel bearing.
- The crew was instructed to proceed at track speed, which increased potential of catastrophic damage to the train if the overheating wheel bearing failed.
- The absence of federal or railroad requirements to restrict the speed of a train with an overheated wheel bearing, introduced the opportunity for more damage to the train.

NS Postaccident Actions

On July 7, 2023, NS issued a new operations bulletin, OB-21, to provide additional clarification and requirements for (1) when a detector defect alarm is

² Tempilstik is a trade name for temperature indicating crayons.

received, and (2) responding to hot bearing and dragging equipment detectors. Key excerpts specific to the investigation are noted below:³

- If the temperature indicator confirms an overheated condition, the Wayside Detector Help Desk must be informed and consulted for movement instructions to set the railcar(s) out at the next available location. Any authorized movement must not exceed 10 mph, and the defective railcar(s) must be re-inspected at least every 3 miles until set out.
- A visual inspection of the bearing, associated wheel, and brakes must be performed whenever responding to a defect alarm. When visual inspection of the bearing defect(s) reveals exceptions (leaking grease, visible damage, heat discoloration, missing or damaged end cap, misaligned or distorted components, etc.), the Wayside Detector Help Desk must be notified, and ATC-Mechanical Department personnel must perform a visual inspection before moving the car(s).

Conclusion

The aforementioned postaccident actions implemented by NS address the issues identified in this investigation. In addition to these measures, National Transportation Safety Board investigation RRD23MR005 (East Palestine, Ohio) is focusing on needed regulatory measures concerning wayside detectors and wheel bearing performance; therefore, no additional recommendations are warranted, and staff recommends that this investigation be closed.

I concur:


Patrick Warren
Director
Office of Railroad, Pipeline and Hazardous Materials Investigations

³ All excerpts are directly from Norfolk Southern Operations Bulletin, OB-21 dated July 7, 2023. For further context and clarification of subjects, refer to the document.

