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Federal Railroad Administration, Office of Railroad Safety

Accident Investigation Summary Report HQ-2022-1654

Norfolk Southern Railway Company (NS) – Highway-Rail Grade Crossing Accident
Harmarville, Pennsylvania
May 26, 2022

1. EXECUTIVE SUMMARY

On May 26, 2022, at 3:45 p.m., EDT, a Norfolk Southern Railway Company (NS) freight train, Train 38GC225, crashed into a construction dump truck at a private grade crossing on the Conemaugh Subdivision in Harmarville, Allegheny County, Pennsylvania. The crash caused 2 locomotives and 17 rail cars to derail and led to the release of hazardous materials.

The accident happened at a private grade crossing marked with crossbucks, a stop sign, and a railroad warning sign. The dump truck, a Volvo A40G articulated hauler, did not stop for these signs and drove onto the tracks while Train 38GC225 was traveling at 35 mph. The impact caused the train to brake suddenly and derail.

After the crash, the lead locomotive traveled 8 feet 6 inches beyond the crossing before derailing. The two locomotives and the first rail car ended up on the south side of a bridge, with the second locomotive and the first car on their sides. Eleven rail cars fell into Guys Run creek, releasing petroleum distillates and plastic pellets. Five more rail cars on the shore of the creek also leaked petroleum distillates. The total damage was \$2,094,785, including \$1,859,299 for the equipment and \$235,486 for the track. Cleaning up the hazardous materials was estimated to cost around \$2,000,000.

Both the locomotive engineer and the conductor suffered minor injuries and were treated at Heritage Valley Hospital. The dump truck driver also suffered minor injuries.

The main cause of the accident was the dump truck driver's failure to follow the grade crossing signs.

2. ACCIDENT SEQUENCE OF EVENTS

On May 26, 2022, at approximately 3:45 p.m., EDT, an NS freight train, Train 38GC225, was involved in a highway-rail grade crossing accident in Harmarville, Allegheny County, Pennsylvania. This mixed freight train was heading east, powered by two front locomotives and two mid-train distributed power locomotives, and hauling a total of 225 cars—109 loaded and

116 empties. Among the 109 loaded cars, 81 contained hazardous materials. The train was about 13,657 feet long and had a total weight of 17,972 tons. It had departed from the NS Conway Terminal in Conway, Pennsylvania, on May 25, 2022, and was bound for Altoona, Pennsylvania.

The train's crew, consisting of a locomotive engineer and a conductor, started their shift at 8:30 a.m., EDT, on May 26 at the Conway Terminal. Both crew members had completed their required rest period before reporting for duty. The engineer was positioned at the controls on the right side of the lead locomotive, while the conductor was on the left side. The train had undergone regulatory mechanical inspections and initial air brake tests at the terminal, with no issues reported.

The accident took place on Main Track No. 1, which has a maximum authorized speed of 40 mph. This track uses Signal Indication, Automatic Cab Signals, and has a Positive Train Control (PTC) system overly in place.

As Train 38GC225 approached the grade crossing, traveling at 35 mph, it was sounding its horn as required by the federal regulations. A Volvo A40G articulated hauler, loaded with earth and stone, was heading east on Treatment Plant Road.¹ This road, running parallel to the railroad tracks, makes a 90-degree turn north to cross the tracks at a private grade crossing equipped with crossbucks, a stop sign, and a railroad warning sign. The dump truck failed to stop and turned directly into the path of Train 38GC225.

The collision occurred on the driver's side of the dump truck, near the midpoint of its trailer. The impact triggered an undesired emergency brake application on the train, and the engineer also then manually placed the train's airbrake system into emergency via the airbrake handle. The lead locomotive traveled 8 feet 6 inches beyond the crossing before derailling. The train's head-end locomotives and the first rail car came to rest on the south side of a bridge, with the lead locomotive remaining upright and the second locomotive and first car on their sides. Eleven rail cars (positions 2 through 12) fell into Guys Run creek, a tributary of the Allegheny River, while five rail cars (positions 13 through 17) remained on the shore of the creek west of the bridge.

Among the rail cars in the creek, one covered hopper leaked plastic pellets and one tank car released petroleum distillates. On the bank of the creek, three of the five tank cars also leaked petroleum distillates. Emergency services transported the engineer, the conductor, and the dump truck driver to Heritage Valley Hospital, where they were treated for minor injuries (and released the same day?).

The total damage from the accident amounted to \$2,094,785, including \$1,859,299 in equipment damage and \$235,486 to the track structure. Cleanup costs for the hazardous materials were estimated at \$2,000,000. The weather at the time of the accident was clear and sunny, with a temperature of 72°F. The accident did not involve Amtrak and did not lead to a fire, explosion, or evacuation.

¹ Treatment Plant Road is a private road that provides access from Freeport Road to the Allegheny Valley Joint Sewage Authority Treatment Plant.

3. INVESTIGATION AND ANALYSIS

After examining multiple aspects of the incident to ascertain potential contributing factors, the Federal Railroad Administration (FRA) determined that the main cause of the accident was the dump truck driver's failure to follow the grade crossing signs.

Operating Practices and Equipment

- The review of cameras from the lead locomotive showed that the crew was not using personal cell phones or other, personal electronic devices at the time of the accident. These devices were not a factor in the incident.
- The crew's certification and training records were checked, including their vision and hearing, operational rules, safety rule contacts, physical exams, and performance evaluations. All were up-to-date and there were no related findings that contributed to the accident.
- The data from the train's event recorders showed that the train was traveling 35 mph, below the authorized speed of 40 mph, and that the crew applied the emergency brakes correctly after the collision. The train's speed and braking were managed properly by the crew. The train's braking response was consistent with the expected performance.
- The crew sounded the horn for 13 seconds before the collision. While this was less than the 15 seconds required for public crossings under FRA regulations, these regulations do not require sounding the horn for private crossings nor is there a requirement in Pennsylvania law for sounding the horn at private crossings (see 49 CFR 222.25). The crew's use of the locomotive horn did not contribute to the accident.
- An analysis of the crew's work history showed no signs of excessive fatigue. Fatigue was not a factor in the accident.
- Post-accident testing was not performed because the accident did not meet FRA's criteria for conducting post-accident toxicological testing following a highway-rail grade crossing accident/incident.

Grade Crossing and Visibility

- An inspection showed that there were no obstructions affecting visibility at the crossing. Sight distance was adequate and did not contribute to the accident.

Hazardous Materials

- The train had 81 hazardous materials cars, with 8 involved in the derailment. Four of these cars leaked petroleum distillates. The hazardous materials were properly documented, and the cars performed as expected; however, the presence of hazardous materials did contribute to the severity of the accident due to the leaks.

- The damage to the tank cars was assessed, showing that they released hazardous materials due to impact-related damage. The DOT111 and DOT117 tank cars were up to FRA safety standards, but the accident damage led to a release of product.

Mechanical and Track Conditions

- Inspections confirmed that the locomotives were in good condition and functioning correctly at the time of the accident.
- The freight cars had been properly inspected and maintained before the accident. The inspection records showed no mechanical issues contributing to the derailment.
- Post-accident track inspections confirmed that the track conditions complied with FRA safety standards. The track's geometry and structure were not factors in the accident.

In summary, the accident was primarily caused by the construction vehicle entering the train's path at a private crossing. The investigation found no significant faults in the train's operation, crew performance, or track conditions that contributed to the accident. The hazardous materials released during the accident added to the severity, but the train's mechanical systems and the track structure were all in order.

4. CONCLUSION

FRA's investigation concluded that the primary cause of the accident was the dump truck entering the train's path at a private crossing. The crew of the train was not using personal electronic devices at the time, and their certifications and training were current and did not contribute to the accident. The train operated within the authorized speed limit, and the emergency braking was correctly executed following the collision. The horn was sounded for 13 seconds before the crossing. While this was less than the required time for public crossings, neither FRA nor Pennsylvania state regulations require sounding the horn for private crossings, and FRA otherwise determined that horn usage was not a contributing factor to the accident.

The investigation found no evidence of crew fatigue or mechanical issues with the train or track structure that could have played a role in the derailment. The sight distance at the crossing was adequate, with no visibility obstructions noted.

The release of hazardous materials from four tank cars contributed to the severity of the accident due to impact-related damage, although the cars complied with FRA's safety standards. The hazardous material leaks, while not a cause of the accident, exacerbated the environmental consequences.