On February 13, 2020, at 6:54 a.m. eastern standard time, CSX Transportation (CSX) freight train K42911, a high-hazard flammable key train carrying denatured ethanol, derailed in Draffin, Kentucky.¹ The derailment occurred at milepost 123.8 of the CSX Kingsport Subdivision, along a hillside adjacent to the Russell Fork River. (See figure.) The engineer and the conductor sustained minor injuries. The train consisted of 3 lead locomotives, 2 buffer cars, and 96 loaded tank cars. It was 6,045 feet long and weighed 13,172 trailing tons. The derailment involved all three locomotives, one buffer car, and four loaded tank cars. Two of the derailed tank cars were breached and released 38,400 gallons of denatured ethanol. The ethanol and diesel fuel from the locomotives ignited and caught fire, which engulfed the locomotives and the second and third tank cars.

Prior to the derailment the area received a substantial amount of rain, which led to a landslide that covered the tracks with debris. According to the train crew, the debris from the landslide was as high as the nose of the lead locomotive. The engineer stated that sight distance had been around five car lengths due to rain, fog, curves, and darkness. According to wireless uploads from the train’s energy management system (or trip optimizer), the train had been traveling at a speed between 24 and 25 mph, which was within the operational speed of the tracks.² The tracks were not equipped with positive train control, nor were they required to have the system in place.³

¹ CSX defines a *key train* as any train with 5 or more tank carloads of a poison inhalation hazard, or with 20 or more tank carloads or intermodal portable tank loads of hazardous material.

² A *trip optimizer* is an intelligent automated energy management system installed on locomotives that assists train crews to improve fuel consumption efficiency based on a train's configuration and the route traveled.

³ *Positive train control* is a system designed to prevent train-to-train collisions, enforce speed restrictions, and provide protection for roadway workers and their equipment operating under specific authorities.
The train crew escaped from the burning lead locomotive by jumping into the river, where they were rescued by emergency responders. Due to concerns that the tank car nearest to the fire that did not derail would be affected by the intensity of the heat, emergency responders initiated an evacuation of six to ten nearby homes around 7:30 a.m. There were no civilian injuries, and the evacuation order was lifted by 10:30 a.m. Postaccident equipment recovery operations were hampered by the continued slide of water and debris from the hillside.

This National Transportation Safety Board (NTSB) investigation will focus on mountain or hillside slide detection and weather alerts, and the performance of US Department of Transportation (DOT)-111A, DOT-117 and DOT-117R tank cars in this and other accidents. It will also examine the positioning or marshaling of different tank car types in train consists.\textsuperscript{4} All aspects of the Draffin, Kentucky, accident remain under investigation as the NTSB determines the probable cause, with the intent of issuing safety recommendations to prevent similar accidents. Parties to the investigation include the Federal Railroad Administration, the Pipeline and Hazardous Materials Safety Administration, CSX, the Brotherhood of Locomotive Engineers and Trainmen, the International Association of Sheet Metal, Air, Rail and Transportation Workers, and Trinity Industries.

\textsuperscript{4} Marshaling indicates the movement of cars or cuts of cars into specific locations (positions) in trains when the train is built.