NEW YORK (CBSNewYork) — Five passengers were killed in the Metro-North train accident and fire this week when the electrified third rail dislodged from the tracks and entered the lead car.

As CBS2’s Tony Aiello reported, the incident has investigators looking closely at a feature unique to Metro-North among American railroads.

National Transportation Safety Board Member Robert Sumwalt on Friday said 12 pieces of the electrified third rail – each of them measuring 39 feet, penetrated the floor of the front train car in the Harlem Line accident in Valhalla Tuesday evening. The accident killed five people on the train and the driver of a sport-utility vehicle it struck.

Sumwalt said he was in the front train car on Friday. The train car sustained extensive fire damage, and there were third-rail pieces scattered throughout – some stacked up on the floor, others going up to the ceiling level, Sumwalt said.

“Unheard of, basically – but these are freak accidents,” said Robert “Buzz” Paaswell, a rail expert and distinguished professor of civil engineering at City College of New York.

Paaswell said it may be the first accident ever of its kind.

When the Harlem Line train hit Ellen Brody’s sport-utility vehicle at the Commerce Street crossing, the Mercedes was pushed into an electrified third-rail nose piece where the rail tapers off before being interrupted for a crossing.

The rail dislodged, and plowed through the bottom of the train into the passenger compartment as the train screeched to a halt.

“The momentum from the collision, and the impact with the car probably serving as the leverage, lifted the third rail up,” Paaswell said.

Metro-North uses a bottom-contact third rail. The nose piece slopes down to catch the “shoe” that touches the rail for power.

The Long Island Rail Road, by contrast, uses a top-contact third rail and the nose pieces slope up instead of down.

U.S. Sens. Charles Schumer (D-N.Y.) and Richard Blumenthal (D-Conn.) viewed the train wreckage on Friday and raised concerns.

“How is the third rail constructed? Did that cause the problem?” Schumer said. “We don’t know the answer, but that’s a question that has to be answered.”

But Paaswell said the Metro-North rail design is safer for maintenance workers and more reliable in bad weather. He said the accident needs to be put in perspective.

“If it happened four, five times over the last 10 years, which is enough to be recurring, you’d say you should take a look at it,” Paaswell said. “(But it) never happened.”

Still, Paaswell expects experts to look again at what happened, and see if an affordable fix could prevent it from happening again.

Metro-North inherited the bottom-contact third rail when it took over the New York Central Railroad. No other railroad uses the system, but it is popular in Europe.