New York: Basic safety system absent in Metro North crash

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A key safety feature was absent from the cab of a Metro North crash that occurred last Sunday, when an inbound commuter train to New York City failed to slow for a low-speed curve and derailed, killing four.

The experienced engineer of the train, William Rockefeller, initially stated that brakes were not functioning, but has since stated that he "zoned out" while operating the train, only realizing that the train was over speed for a 30 mph curve seconds before it reached the curve. The National Safety Transportation Board (NTSB) is investigating the matter, and released a preliminary comment that the train's brakes were applied only seconds before it left the rails.

Predictably, the media and politicians quickly leaped to place blame for the incident on the engineer, even as the NTSB cautioned that a full investigation is required to determine the exact cause. Democratic New York Governor Andrew Cuomo stated he hopes the engineer "receives appropriate discipline" while Democratic Senator Chuck Schumer stated "the tracks are ok, and the brakes seem to be ok," implying the engineer is at fault.

In contrast to such simplistic explanations, NTSB reports of major railroad accidents seek to provide an explanation of the events to show how several interrelated factors converge at one moment to make such tragedies possible. Their conclusions and recommendations reflect this, pointing to multiple items that should be addressed by railroads, transit, and government agencies.

Two recurring subjects of NTSB commentary on rail safety are the scheduling and rest of crews, and the implementation of safety systems. But these subjects come up over and over again because the recommendations have never been taken up in any significant way.

As for safety systems, it is now known that a basic one was lacking in the cab of the train that derailed. The item, called an alerter, requires some element of the controls, like the throttle or brakes, to be frequently changed. If no controls are used for 25 seconds, the alerter emits a loud noise or lights; if 15 seconds pass without a response, it automatically applies the brakes.

It is a standard piece of equipment in both freight and passenger engines in North America, and was located in the engine of the Metro North train. The train was being operated in "push" mode, though, where the engine was on the rear, and the engineer controlled operations from a small cab in the front of the first passenger car. This cab lacked the alerter device.

The cab did have a simpler system, called a dead-man's pedal. The pedal must be pushed down during operation, and if pressure is released, the brakes are automatically applied after a few seconds. An alerter, by contrast, requires a more active level of engagement that more reliably ensures that an engineer is paying attention.

Aside from the alerter device, there are railroad signaling and communications systems, both new and old, that prevent trains from going dramatically over the posted speed. Metro North did not have any of them installed on the route, and like many other passenger train operators in the United States, had no upcoming plans for installation due to a lack of funding.

The newest technology, Positive Train Control (PTC), was mandated by Congress and the Federal Railroad Administration to be in place by 2015. It is designed to provide constant enforcement of speed restrictions and protection from collisions and interference with maintenance personnel. Through GPS and other electronic equipment, a train with PTC would receive continually updated information about its

authority for movement at a given speed in a given area, and equipment in the locomotive would enforce these restrictions.

Ultimately, the implementation of PTC would drastically reduce or eliminate severe accidents that have a component of human error. PTC has been on the NTSB's "most wanted list" of railroad safety improvements since 1990. The agency states that since 2004, it could have prevented and reduced the severity of over 20 accidents that took 57 lives and caused millions in damage.

Yet the mandate by Congress for implementation by 2015 is unfunded, imposing the estimated $10 billion cost of installation on freight carriers and passenger operators. Critics indicate that the significant technical complications of implementing the system are not resolved. In response to this and the cost of implementation, railroads are pushing Congress to extend the deadline to 2018.

The giant for-profit freight railroads aren't the only ones opposing implementation of the system. Commuter agencies like Chicago's Metra and MTA, the parent agency of Metro North, also are pushing for an extension because they lack the funds to implement the technology. Virtually all commuter rail agencies are struggling to fund essential maintenance of track and equipment as cities, regions, and the federal government sharply reduce spending.

PTC is a technological response to the other issue the NTSB has consistently pointed to: the operating conditions of rail employees. American railroads have undergone a massive reduction in labor in the post-war era, based on technological improvements and cost-cutting.

Freight crews have gone from five to two crew members, and in some cases, just one crew member. Operating trains for freight railroads is said to "take your life." Crews are on call 24/7, can work up to 12 hours per shift, with as little as eight hours off, away from home, before the next shift. Start times are often utterly inconsistent, and some crew members work 60 or more hours a week. As one example, a freight engineer who fell asleep before a wreck in 2004 had been on the job for 37 hours out of 55 hours prior to the accident.

Some agencies use a "split shift," where the engineer works both the morning and evening commuter rush, with a several-hour paid break in between. Metro North has used such shifts in the past, but no details have been released on whether the engineer on Sunday's train, who reported to work at 5 a.m., was on such a shift.

Most American commuter and passenger trains now only have one person in the cab of the train, responsible at every second for the safety of hundreds of passengers. The jobs are more scheduled than freight operation, but can still require extended workdays, or shifts with very early or very late operation.

Rockefeller worked an afternoon shift for two years before switching to a morning shift two weeks prior to the incident. Rockefeller's lawyer said that he felt rested before reporting to work in the early morning the day of the fatal crash, but also characterized the engineer's state before the crash as "an autopilot kind of thing."

On Wednesday, the chairman of the NTSB stated that fatigue has been "an insidious problem, particularly in the rail industry." It could be solved by careful study and likely increasing staffing to improve work schedules, but adequate funding has not been allocated to commuter rail agencies.