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Multivehicle collision and post-crash fire on Interstate 70

Emergency Responder Safety Institute

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In 1967, the U.S. Congress consolidated all transportation agencies into a new U.S. Department of Transportation (USDOT) and established the National Transportation Safety Board (NTSB) as an independent agency within the USDOT. Congress defined the NTSB mission is to investigate accidents and events to determine the probable cause, examine safety issues, and develop recommendations to prevent similar accidents and events in the future (NTSB, 2024).

The decision to engage NTSB investigators begins generally in the aftermath of an event. Following notification, a preliminary review is conducted by the NTSB accident and modal leadership. The NTSB is not a criminal investigation agency. When criminal activity is suspected, other appropriate agencies handle the potential criminal components under a separate investigation. The duration between the start of an investigation and the determination and reporting of probable cause depends on the investigation's complexity and the agency's workload. Generally, the HTSB aims to conclude an investigation within 12 to 24 months, although various factors can significantly influence this timeline.

There are an estimate 6 million motor vehicle crashes on the U.S. Interstate highway system annually. Because of this, the NTSB is selective in choosing which event is worthy of a formal investigation. The NTSB weighs contributing factors before launching an investigation including the extent of damage, proper notification to the NTSB, are there safety recommendations to be proposed following a preliminary review, and might there be operational procedures that need addressing to enhance safety.

Event:

In November 2023, a secondary multivehicle collision and post-crash fire incident occurred on Interstate 70 near Etna, Ohio. A westbound Freightliner combination vehicle in the right lane moving at highway speed (72 mph) approached a developing traffic queue due to an

earlier minor crash further ahead. The driver failed to reduce speed and crashed into traffic queue. The vehicles in the traffic queue were traveling at a crawling speed between 3 and 15 mph. The resulting chain-reaction collision and post-crash fire involved five vehicles, including two passenger vehicles, a motorcoach, and a second combination vehicle. As a result of the crash, six occupants were fatally injured, four sustained serious injuries, and 37 suffered minor injuries. Fifteen occupants were unharmed.

The crash sequence of was initiated when the approaching combination vehicle struck the rear of a Nissan sedan also traveling west in the right lane, occupied by a driver and two passengers. The Nissan vehicle was traveling as a companion vehicle with a Van Hool motorcoach bus immediately in ahead. There was no evidence of tire friction marks in advance of the point of initial contact. There was extensive evidence of pavement scrapes and gouges at the point of impact and beyond. The combination vehicle forced the Nissan into the rear of a motorcoach, which also was traveling west in the right lane. The combination vehicle overtook the Nissan and impacted the motorcoach. The motor coach bus was occupied by the driver and 55 passengers, including 52 students and 3 faculty members, who were being transported on a school trip. The motorcoach was then pushed into a Toyota Highlander which rotated clockwise while moving forward and struck the left side of a Volvo combination vehicle also traveling west in the right lane before coming to rest in the left westbound lane. The Toyota and the Volvo were occupied only by the driver. The final resting position of the Freightliner was 274 feet west of the place of original impact. The front of the Freightliner vehicle remained in contact with, and partially intruded into, the rear of the motorcoach. Moments after impact between the Freightliner and the Nissan and before the vehicles came to rest, a fire erupted completely engulfing the Nissan and Freightliner. The fire continued to spread involving the motorcoach.



(Conn, 2023)

As a result of the crash, the three occupants of the Nissan and three motorcoach passengers were fatally injured. The driver and two passengers of the motorcoach, as well as the driver of the Toyota, were seriously injured. Thirty-six motorcoach passengers and the Freightliner truck driver sustained minor injuries. Fourteen motorcoach passengers and the Volvo driver were uninjured.

Traffic incident management on day of crash:

The initial crash occurred at 07:51 EST in the left lane of westbound I-70, resulting in a blockage of that lane for approximately 23 minutes. Emergency responders did not notify the Ohio Department of Transportation (ODOT) about the initial crash, as they assessed the remaining lanes to be operational and saw no need to escalate the notification to ODOT. The secondary crash occurred at 08:55 and led to a closure lasting over 14 hours. Approximately 1 hour after the secondary crash, ODOT was notified and requested to provide traffic incident management (TIM) assistance, including implementing a full detour using parallel state routes.

Manual on Uniform Traffic Control Devices:

The Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) offers guidance for managing traffic in traffic incident management areas. According to the MUTCD, a traffic incident is defined as an "emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic." These incidents are categorized into three types—minor, intermediate, and major—based on the expected duration of the incident and travel lane closures (FHWA, 2023).

Minor incidents generally involve disabled vehicles and minor crashes that lead to lane closures lasting less than 30 minutes. It is expected that traffic control for these minor incidents will be managed by the first responders on the scene, such as law enforcement or

fire/rescue teams. In the events related to this report, the initial incident resulted in a lane closure of approximately 23 minutes, classifying it as a minor incident. The expectation was that traffic incident management would be handled by the emergency response team, which in this case was law enforcement. The NTSB found that during this initial 23-minute period, the emergency response team did not monitor the developing traffic queue upstream of the initial incident. Intermediate incidents impact travel lanes for 30 minutes to 2 hours and typically require traffic control at the crash site, as well as the diversion of traffic to alternate routes to alleviate congestion and prevent secondary crashes. Major incidents are expected to last more than 2 hours and often involve fatal crashes or multiple vehicles, such as the secondary crash in this case (NTSB, 2025).

The general guidance found in the MUTCD suggests responders arriving at a traffic incident should estimate its magnitude, its expected duration, and the expected developing traffic queue length, then establish advanced warning temporary controls based on these estimates. This can be a challenging size-up component for many response personnel who lack experience or training in this process. In addition to noting responders should pay attention to upstream traffic queues, the MUTCD also offers guidance that upstream advanced warning devices to alert approaching traffic should be "available so that can be readily deployed for all major traffic incidents" (FHWA, 2023). Readers are encouraged to visit [Respondersafety.com](https://www.respondersafety.com) to view the Advanced Warning Learning Module.

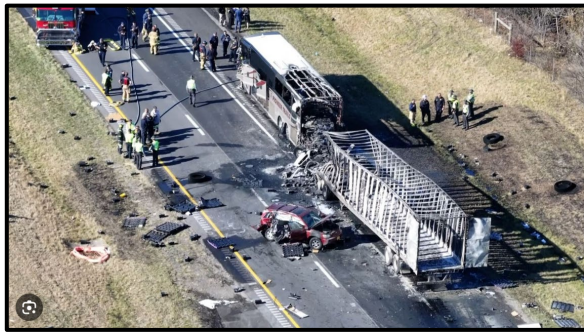
Regarding the coordination and communications with other highway agencies, the FHWA provides a TIM handbook which notes that "effective communication among responder agencies is essential, even minor incidents" (FHWA, 2010, p.77). However, a conflict exists within the MUTCD stating that when events are deemed as probable major incidents that could generate prolonged lane or road closures, notification of all affected agencies should be initiated as part of the initial incident action plan. The most effective tool for notification is the emergency communications center.

Digital alerting:

In vehicle digital alerting is an electronic notification sent directly to a driver approaching an emergency incident. The system broadcast life-saving digital alerts that protect all roadway users and is effective at reducing secondary crashes. These notifications inform drivers that there is a nearby or upcoming roadway hazard and they need to slow down and move over –

essentially be prepared and not surprised (Piehowski, 2024).

Based on the findings from the Ohio incident, digital alerting might have led to a different outcome. ODOT offers real-time alerts to drivers about sudden slowdowns, congestion, and travel delays through their traveler information system. Although the slowdown from the initial crash triggered ODOT's system to detect an incident that met the criteria for public notification, no alert was sent out. It was later discovered that a technical issue had prevented the notification from being dispatched. ODOT informed the NTSB that this issue has since been resolved (NTSB, 2025).



(Orsagos & Seewer, 2023)

NTSB findings and report recommendations:

The NTSB concluded that factors such as weather, visibility, the mechanical condition of the vehicles, truck driver licensing, experience, familiarity with the vehicle and route, health, alcohol or other drug use, truck driver fatigue, and roadway design did not contribute to this incident. The NTSB also determined that the emergency response was timely and adequate. Evidence shows that certain vehicles were able to see the developing queue and responded by slowing down to a safe speed before reaching the end of the queue. In fact, a van positioned between the Nissan and the approaching Freightliner combination truck noticed the truck approaching at what appeared to be a high speed. Video evidence shows the van moved out of the right lane to avoid the collision approximately 7-9 seconds before the initial impact. Because the truck driver did not slow his vehicle upon approach to the traffic queue, he struck the last two vehicles in the queue at full highway speed. The slow speed of the traffic queue (3-15 mph) compared to that of the Freightliner combination vehicle (about 72 mph) resulted in a considerable speed differential in the collision (NTSB, 2025). The NTSB did find that the truck driver was inattentive to the forward roadway, as evidenced by the lack of braking or evasive maneuver before impact.

Although the investigation was inconclusive, the truck driver's cell phone records reported a high rate of data transfer suggesting that the phone could have been in use and was a distracting factor near the time of the crash (NTSB, 2025, p.56).

The crash in Etna, OH, was a secondary crash, meaning it was indirectly caused by an earlier primary crash. The prevalence of secondary crashes is not well-documented, primarily due to variations in state crash datasets, highlighting the need for further research. A recent FHWA report noted that in 2017, a new data element and attribute for secondary crashes was added to the Model Uniform Crash Criteria. However, as of 2023, only 18 states had integrated this attribute into their crash report forms (NTSB, 2025, p.48).

Clearing an incident as quickly and safely as possible is a critical means of preventing secondary crashes because it reduces the development of traffic queues in response to the initial incident. However, the formation and extent of a traffic queue depends not only on clearance from the travel lane but also on roadway capacity and traffic volumes. Even quick cleared minor incidents can result in extensive traffic queues. One must also remember a disabled or crashed vehicle need not be in the traveled lane to induce a queuing of traffic. Vehicles on shoulders and near the edge of a travel lane can influence traffic flow and cause queuing. Once a queue forms, informing upstream drivers of the slowdown and reducing upstream travel speed the risk and probability of a secondary growth exponentially requiring quick action by emergency responders to communicate and deploy advanced warning systems.

The NTSB has concluded that catastrophic crashes can result when traffic queues form after minor roadway incidents, and the current MUTCD guidance for minor roadway incidents may create conditions that enable potentially dangerous queues to form. Given the most recent version of the MUTCD was issued in 2023, it may be many more years before an update is published incorporating these new findings. The NTSB suggests a public notice to transportation departments across the U.S. be issued by the FHWA that states:

- Traffic incident classifications (as minor, intermediate, or major) should consider not only the duration of lane closure but also factors such as location of vehicles when moved off the roadway, number of lanes available, queue development, and lanes affected; and
- Communications between responding and transportation agencies are critical for all traffic incidents in which a queue has formed or is likely to form.

Additional NTSB recommendations include:

- Ensuring that all traffic incident classifications (minor, intermediate, and major) are defined using a consistent standard, such as the incident's overall effect on the flow of traffic;
- Emphasizing the importance of communications between responding and transportation agencies for all incidents in which a traffic queue has formed or is likely to form; and
- Ensuring that traffic queues are monitored and procedures established throughout the TIM to notify road users of the queue (NTSB, 2025, p. 50-51).

The Emergency Responder Safety Institute recommends individuals who operate on roadways complete roadway incident safety training and obtain the Federal Highway Administration's Traffic Incident Management certificate available at [Respondersafety.com](https://respondersafety.com) along with the following specific learning modules:

- Fire Department-based vehicles for traffic control.
- Innovative temporary traffic control devices & methods.
- Recommended practices for TIM SOPs.
- Safety & service patrols: An underutilized partner.
- Setting up a traffic incident management unit.
- Traffic incident management: Model practices & procedures.

ERSI call to action:

Leadership within the Emergency Responder Safety Institute serve on the National Committee for Uniform Traffic Control Devices (NCUTCD), specifically on Task Group 8 – Chapter 6O, which focuses on controlling traffic through traffic incident management areas.

The NCUTCD's purpose is to assist in developing standards, guides, and warrants for traffic control devices and practices to regulate, warn, and guide traffic on streets and highways. The NCUTCD makes recommendations to the FHWA and other relevant agencies regarding proposed revisions and interpretations of the MUTCD (NCUTCD, n.d.). The ERSI Committee members will contribute to the discussions to address the NTSB recommendations resulting from this tragic event.

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The Emergency Responder Safety Institute is a Committee of the Cumberland Valley Volunteer Firefighter's Association and is committed to protecting emergency responders on the highway. Visit www.respondersafety.com.