November 19, 2024 Highway Investigation Report HIR-24-08

Box Truck Centerline Crossover Collision with Bus

Louisville, New York
January 28, 2023

Abstract: On Saturday, January 28, 2023, about 6:00 a.m., a 2013 Chevrolet Express bus was traveling west on New York State Route 37 (SR-37) in Louisville, New York. The bus, operated by LBFNY, was transporting 14 workers to a solar farm construction site. At the same time, a 2021 Freightliner box truck, operated by Aero Global Logistics (AGL), was traveling east on SR-37. SR-37 is a two-lane highway with a 55-mph speed limit. As the vehicles approached each other, the truck crossed over the highway centerline and collided with the driver's side of the bus nearly head-on. Six bus occupants died, eight sustained serious or minor injuries, and one was uninjured. The truck driver was seriously injured. This report addresses safety issues including lack of seat belt use by the bus occupants, inadequate safety practices of AGL for managing fatigue and crash risk, and deficient motor carrier oversight by the Federal Motor Carrier Safety Administration (FMCSA). The NTSB issues new recommendations to the FMCSA, the state of Montana, the American Trucking Associations, the National Private Truck Council, the Amalgamated Transit Union, the International Brotherhood of Teamsters, the Owner-Operator Independent Drivers Association, the Transport Workers Union of America, the American Association of Motor Vehicle Administrators, LBFNY, and AGL. The NTSB also reiterates and/or classifies previously issued recommendations to the FMCSA, the National Highway Traffic Safety Administration, and the state of New York.

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Acronyms and Abbreviations

AAMVA	American Association of Motor Vehicle Administrators
ACM	airbag control module
AGL	Aero Global Logistics
ANPRM	advance notice of proposed rulemaking
BASIC	Behavior Analysis and Safety Improvement Category
CDL	commercial driver's license
CFR	*Code of Federal Regulations*
CMV	commercial motor vehicle
CR	compliance review
DMS	driver monitoring system
ECM	electronic control module
FMCSA	Federal Motor Carrier Safety Administration
FMCSR	Federal Motor Carrier Safety Regulations
FMP	fatigue management program
FMVSS	Federal Motor Vehicle Safety Standard
HOS	hours of service
LDP	lane departure prevention
MCMIS	Motor Carrier Management Information System
NAFMP	North American Fatigue Management Program
NHTSA	National Highway Traffic Safety Administration

NPRM	notice of proposed rulemaking
NSTSCE	National Surface Transportation Safety Center for Excellence
NTSB	National Transportation Safety Board
NYDOT	New York Department of Transportation
NYSP	New York State Police
SFD	safety fitness determination
SLCOES	St. Lawrence County Emergency Services
SLCSO	St. Lawrence County Sheriff's Office
SMS	Safety Measurement System
SR-37	New York State Route 37
USDOT	US Department of Transportation

Executive Summary

What Happened

On Saturday, January 28, 2023, about 6:00 a.m., a bus was traveling west on New York State Route 37 (SR-37) at a speed of 53–54 mph in Louisville, New York. The bus was operated by LBFNY and transporting 14 workers to a solar farm construction site. At the same time, a box truck, operated by Aero Global Logistics (AGL), was traveling east on SR-37 about 59 mph. SR-37 is a two-lane roadway with one lane in each direction and a posted speed limit of 55 mph. The roadway was wet and there was light snow in the area.

As the two vehicles approached each other, the truck crossed over the highway centerline and collided with the driver's side of the bus. As a result, six bus passengers died in the crash, two were seriously injured, five had minor injuries, and one was uninjured. The bus driver sustained minor injuries, and the truck driver was seriously injured.

What We Found

We found that although the bus driver did not meet qualifications for operating a commercial motor vehicle in the United States, and therefore should not have been operating the bus, based on the circumstances of the crash, there was no action he could have taken to avoid it. Although the passengers seated on the right side of the bus were outside of the impact and intrusion zone, many of them were thrown out of their seats during the collision sequence and sustained injuries due to the lack of accessible seat belts and insufficient safety oversight by LBFNY. LBNFY's lack of seat belt use and accessibility policies and pretrip safety briefings hindered the safety of the bus occupants.

We found that the truck driver was likely fatigued at the time of the crash due to a combination of insufficient sleep and circadian disruption associated with his shift-work schedule. There was no evidence that AGL, the motor carrier overseeing trucking operations, educated its drivers and employees about the risks of fatigue. AGL possibly could have prevented the crash if it had had a structured fatigue management program in place. Further, the truck was not equipped with a driver monitoring system and AGL did not have policies or procedures for using these systems, which prevented AGL from monitoring driver performance, providing coaching on safe driving behaviors, and improving safety at the company. The truck also was not equipped with active lane departure prevention technology, which could have intervened and prevented or mitigated the crash when the truck driver began to cross the centerline.

We found that the Federal Motor Carrier Safety Administration (FMCSA) failed to consider AGL's commonalities (shared president, safety manager, and several drivers and vehicles) with a previous motor carrier that had a poor safety record, which resulted in an inaccurate assessment of AGL's safety controls, such as the policies and procedures it used to ensure compliance with FMCSA regulations. More stringent performance requirements for new entrant motor carriers would ensure that carriers such as AGL cannot graduate from the FMCSA's New Entrant Safety Assurance Program if their on-road performance data show a pattern of unsafe operation. Moreover, we found that the FMCSA was aware of numerous safety deficiencies in AGL's operations for several years, but the agency's interventions and oversight did not prevent AGL from continuing to operate unsafely. The overall safety posture of motor carriers would be better represented, and the safety of our roadways would be improved, if Safety Measurement System on-road performance data were included in the FMCSA's determination of a motor carrier's safety rating.

We also found that when states lack administrative safeguards, such as reviewing a company's status in the FMCSA's database, to identify motor carriers that are subject to out-of-service orders, these carriers may exploit those states' lack of safeguards to continue operating throughout the country in an unsafe manner. Finally, we found that enforcement limitations on en-route bus inspections contributed to the lack of interventions that enabled LBFNY to continue its unsafe operations in violation of a federal out-of-service order for over 7 months.

We determined that the probable cause of the Louisville, New York, crash was the truck driver's fatigue due to insufficient sleep and circadian disruption, which lowered his level of alertness to the driving task and resulted in the truck crossing the centerline of the roadway into the opposing lane of travel and colliding with the oncoming bus.

Contributing to the crash were the failure of the truck motor carrier, AGL, to effectively manage driver fatigue and monitor unsafe driving, and the failure of the bus motor carrier, LBFNY, to operate in compliance with Federal Motor Carrier Safety Regulations and a federal out-of-service order. Also contributing was the FMCSA's ineffective oversight of AGL during the New Entrant Safety Assurance Program and subsequent compliance reviews to ensure that the carrier had appropriate safety management controls in place to mitigate its high crash rate and driver fatigue.

Contributing to the severity of the injuries was the failure of the bus motor carrier, LBFNY, to ensure that seat belts were readily accessible and worn, which resulted in multiple bus occupants being displaced from their seats and injured during the collision sequence.

What We Recommended

As a result of this investigation, we recommended that LBFNY establish policies and procedures to ensure that the seat belts on all of its buses are regularly inspected to maintain their functionality and accessibility, and to require that all bus occupants wear seat belts on every trip and that bus drivers provide pretrip safety briefings informing all bus occupants about the benefits of wearing seat belts.

We recommended that AGL develop and implement a fatigue management program based on the North American Fatigue Management Program as well as install driver monitoring system technologies across its entire fleet of trucks and incorporate policies and procedures to enhance driver safety, training, and coaching. We recommended that the American Trucking Associations and National Private Truck Council inform their members about this crash and urge them to develop fatigue management programs based on the North American Fatigue Management Program. We also recommended that the Amalgamated Transit Union, International Brotherhood of Teamsters, Owner-Operator Independent Drivers Association, and Transport Workers Union of America inform their members about the crash and urge them to familiarize themselves with this program to learn about fatigue, its causes, and its countermeasures. Further, we reiterated a recommendation to the state of New York to enact legislation that provides for primary enforcement of a mandatory seat belt use law for all vehicle seating positions equipped with a passenger restraint, and we reiterated a recommendation to the National Highway Traffic Safety Administration to require all newly manufactured commercial motor vehicles with gross vehicle weight ratings above 10,000 pounds to be equipped with lane departure prevention systems.

To address deficiencies in the oversight of AGL, we recommended that the FMCSA require motor carriers in the New Entrant Safety Assurance Program to submit a corrective action plan, to be reviewed and approved by the FMCSA, before being granted full operating authority if their Safety Measurement System data show a pattern of unsafe operation or a high crash-involvement rate. We reiterated a recommendation to the FMCSA to establish an additional layer of oversight for recent graduates of the new entrant program that has a lower threshold for unsafe operations. Further, we recommended that the FMCSA incorporate Safety Measurement System on-road performance data into its methodology for determining a carrier's fitness to operate, and we recommended that the FMCSA include provisions in its safety fitness determination rulemaking that prioritize passenger-carrying motor carrier safety performance and ensure increased compliance monitoring for these carriers, including more frequent compliance reviews.

Finally, because LBFNY was able to register its fleet of buses out of state in Montana despite being subject to a federal out-of-service order, we recommended

that the state of Montana implement procedures—such as requiring and reviewing US Department of Transportation numbers—to identify motor carriers that are subject to a federal out-of-service order and prevent them from registering their commercial motor vehicles in the state. We also recommended that the American Association of Motor Vehicle Administrators work with the FMCSA to develop guidelines for all state motor vehicle administrations to identify and prevent similar improper registrations in their states.

1 Factual Information

1.1 Crash Narrative

On Saturday, January 28, 2023, about 6:00 a.m. eastern standard time, a 2013 Chevrolet Express bus was traveling west on New York State Route 37 (SR-37), at a recorded speed of 53–54 mph, in Louisville, St. Lawrence County, New York.[1] The bus was operated by LBFNY, being driven by a 36-year-old driver, and transporting 14 workers to a solar farm construction site. At the same time, a 2021 Freightliner box truck, operated by Aero Global Logistics (AGL) and being driven by a 25-year-old driver, was traveling east on SR-37 at a recorded speed of 59 mph (see figure 1). SR-37 is a two-lane highway with a posted 55-mph speed limit. The roadway was wet and light snow was falling in the area.

As the two vehicles approached each other, the truck crossed over the highway centerline and collided with the driver's side of the bus nearly head-on. As a result, the bus driver sustained minor injuries, six bus passengers died in the crash, two were seriously injured, five had minor injuries, and one was uninjured. The truck driver, who was the only occupant in the truck, was seriously injured.

[1] Visit ntsb.gov to find additional information in the public docket for this National Transportation Safety Board investigation (case number HWY23FH005). Use the CAROL Query to search safety recommendations and investigations.

Figure 1. Map showing crash location on SR-37.

1.2 Scene Evidence

The area of impact was in the westbound lane of SR-37 and was identified by a series of gouge marks on the asphalt roadway. Figure 2 shows the physical evidence on the roadway and the final rest positions of the truck and bus. A continuous roadway scar and a series of scrape marks extended east from the area of impact to the final rest location of the truck (see figure 3). The scar extended to the damaged left front wheel assembly of the truck. A series of scrapes and gouge marks led from the area of impact to the final rest location of the bus. No precrash tire marks were found on the wet roadway surface from either of the involved vehicles. Figures 4 and 5 depict the truck and bus, respectively, in their final rest positions.

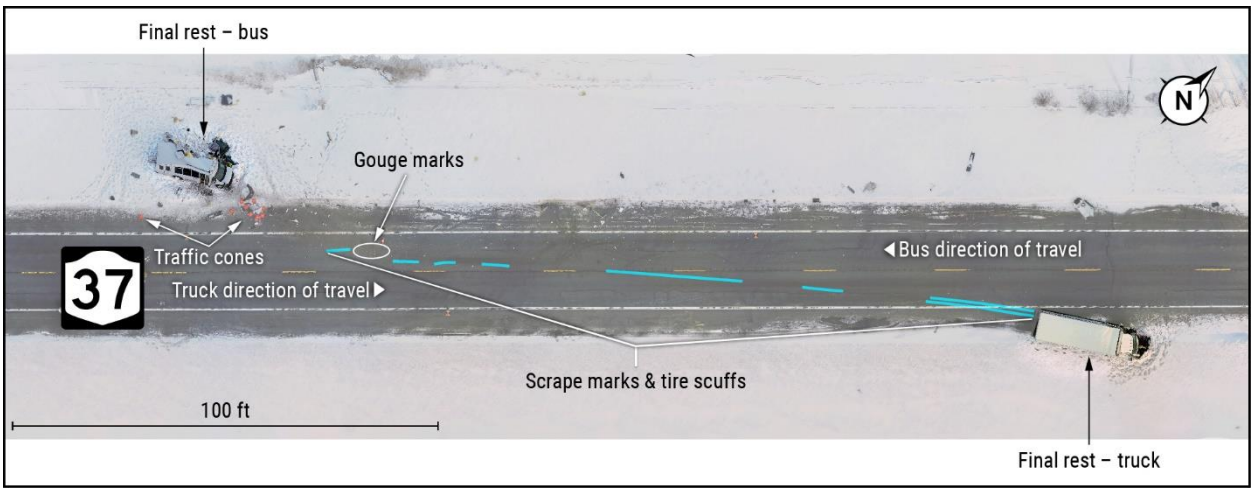

Figure 2. Scene diagram denoting gouge marks at area of impact in westbound lane of SR-37, final areas of rest of truck and bus, and locations of scrape marks and tire scuffs left by truck after impact (marked in blue).

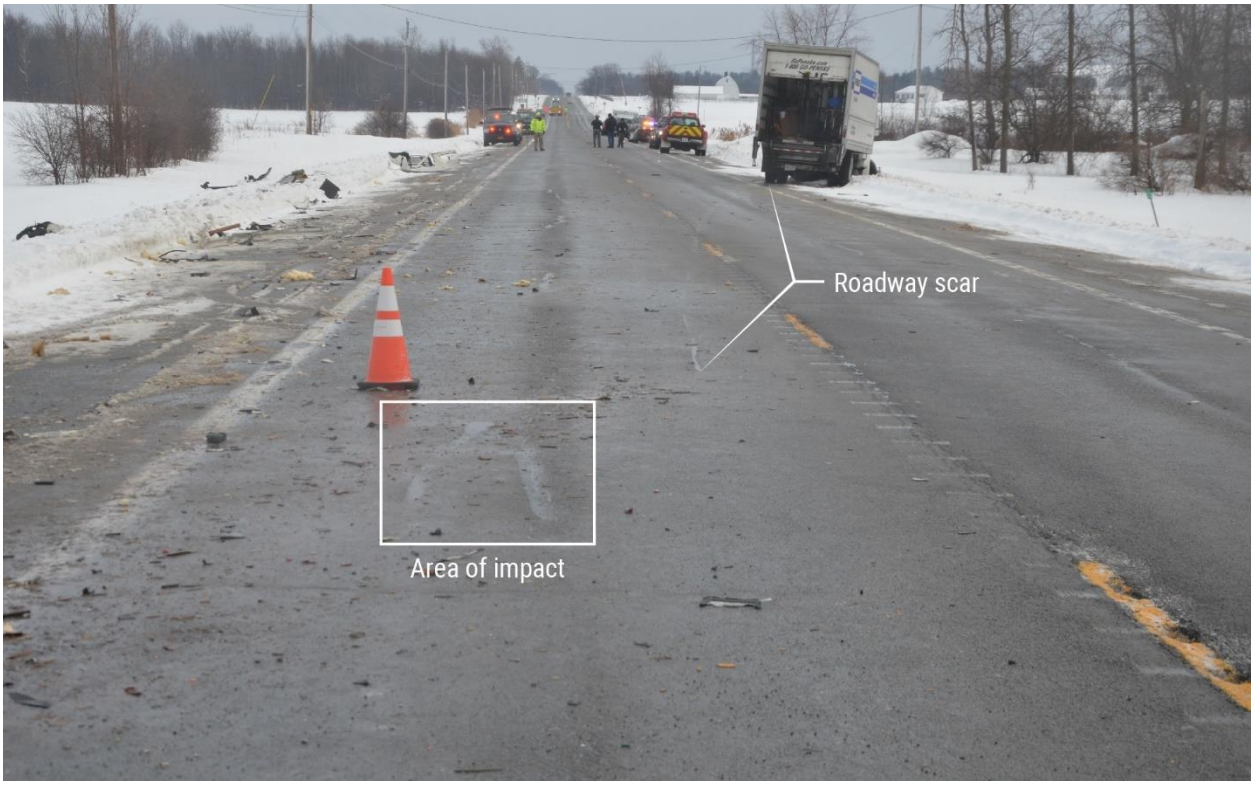

Figure 3. Eastbound SR-37 showing area of impact and roadway scar extending to truck's damaged left front wheel assembly. (Source: New York State Police; annotated by National Transportation Safety Board)

Figure 4. Truck at rest off eastbound shoulder of SR-37. (Source: New York State Police)

Figure 5. Bus at rest off westbound shoulder of SR-37, facing east. (Source: New York State Police)

1.3 Drivers' Statements

The National Transportation Safety Board (NTSB) and New York State Police (NYSP) interviewed the drivers of the involved vehicles. This section provides a summary of the drivers' recollections of events immediately preceding the crash.

1.3.1 Truck Driver's Statement

The truck driver stated that he was driving east on SR-37 when he saw a bus approaching from the opposite direction. The truck driver said that the bus's high beams were on, and he could not see anything. He stated that the bus started to travel into his lane and that he tried to veer to the right but did not have enough time. The truck driver further stated that he applied the truck's brakes when the bus hit him. After impact, the driver said that the truck moved off to the right. He reported that it was not snowing at the time of the crash but that the roadway was wet. He further added that it was still dark when the crash occurred, but he could still see the lane line markings. After the truck came to a stop, he remembered another car stopping and calling 911. Shortly thereafter, firefighters showed up. He was removed from the truck by emergency personnel, placed onto a gurney, and transported to the hospital.

1.3.2 Bus Driver's Statement

The bus driver stated that he was driving west on SR-37 to go to a work site. He reported that it was snowing lightly but that he could see the lines on the roadway. As he drove, he leaned forward in his seat to concentrate on the roadway and estimated his speed to be between 45 and 50 mph. He stated that, after passing County Road 14, he observed a truck with its headlights on traveling east toward the bus and in his lane of travel. He said that he attempted to steer right to avoid a collision but was struck by the truck on the driver's side of the bus. He did not recall the motion of the bus after the crash but remembered that it came to a stop on the north shoulder facing east, the opposite direction that the bus had been traveling. The first thing he did after the bus came to a stop was to attempt to remove his seat belt and then check on the passengers in the bus. He reported having difficulty removing his seat belt and believed he was the last person to exit the bus.

1.4 Injuries and Occupant Restraints

Table 1 depicts the injury levels for occupants in the truck and bus.

Table 1. Injury levels for truck driver, bus driver, and bus passengers.

Injury Severity[a]	Fatal	Serious	Minor	None	Total
Truck driver	0	1	0	0	1
Bus driver	0	0	1	0	1
Bus passengers	6	2	5	1	14
Total	6	3	6	1	16

[a] Although 49 *Code of Federal Regulations* Part 830 pertains only to the reporting of aircraft accidents and incidents to the NTSB, section 830.2 defines fatal injury as any injury that results in death within 30 days of the accident, and serious injury as any injury that: (1) requires hospitalization for more than 48 hours, commencing within 7 days from the date of injury; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages or nerve, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.

1.4.1 Truck

The truck cab was equipped with lap/shoulder belts in the driver and right passenger seat positions.[2] An examination of the seat belt components for the truck driver's seating position revealed evidence of occupant loading on the belt's latch plate and webbing.[3] The truck driver was seriously injured in the crash and sustained fractures to his left hip, left leg, and right hand, in addition to facial lacerations.

1.4.2 Bus

The bus was manufactured and initially used as a school bus. In October 2021, the bus was retired from the New York State school bus system and sold to a bus broker. The broker sold the bus to a private company, LBFNY, in November 2021.[4] When LBFNY purchased the bus, the driver's seat position was equipped with an adjustable high-back bucket seat, an integral headrest, and a lap/shoulder belt assembly. Behind the driver's seat, in the passenger compartment, were five rows of 29.5-inch-high bench seats on the left side of the bus and three rows on the right side. Shortly after purchasing the bus, LBFNY mechanics made modifications, including the removal of the installed wheelchair lift system, which made the

[2] The truck was not equipped—nor was it required to be equipped—with an airbag.

[3] Occupant loading marks on seat belts are often consistent with seat belts being worn. For further discussion, see section 2.2.2 of this report.

[4] LBFNY is the registered name of the company. It derives from Lake Breeze Farm New York, a former business operation of LBFNY's owner.

wheelchair lift door inoperable.[5] In place of the wheelchair lift, LBFNY installed two rows of seats without seat belts and with lower seatbacks (24 inches instead of 29.5 inches). The seat frames were bolted to a piece of angle iron that was welded to the sidewall and across the wheelchair lift door.

During a January 2023 postcrash vehicle inspection, the New York Department of Transportation (NYDOT) determined that the rows of seats that were added did not conform to the requirements of Federal Motor Vehicle Safety Standard (FMVSS) 207, "Seating Systems," constituting an out-of-service violation.[6] Although the rows did not meet seat system installation standards, both sets of seats remained firmly attached to the floor and sidewall during the crash sequence.

An examination of the seat belt components for the bus driver's seating position revealed visible evidence of occupant loading including minor scuffing found on the belt webbing. The bus was equipped with a supplemental airbag restraint system installed in the steering wheel, which deployed during the collision sequence. Data retrieved from the airbag control module (ACM) showed that the driver's seat belt switch status was "buckled." The bus driver sustained minor injuries in the crash consisting of a left wrist sprain and a ligament injury to his cervical spine.

The bus was equipped with three lap belts in all bus passenger seat rows except for the two rows added by the LBFNY mechanics at the right rear of the bus, which did not have any lap belts. Examination of the seat belts found that most of the belts were pushed between the seat pans and the seatbacks, limiting their accessibility to bus passengers. Only one lap belt—located in the aisle seat of row 1 behind the driver (seat 1B)—showed evidence of usage. Emergency personnel extricated the occupant of this seat, who was unconscious, by removing the entangled seat and cutting the lap belt.

Figure 6 shows the bus configuration and the seating location, age, and classification of injury for each bus occupant. All bus occupants were male.

[5] The NTSB was not able to determine the exact date of the seat modification for the bus because LBFNY did not keep vehicle maintenance records.

[6] See FMVSS 207 and 49 *Code of Federal Regulations* 393.93 for additional details on seating system design standards and regulations.

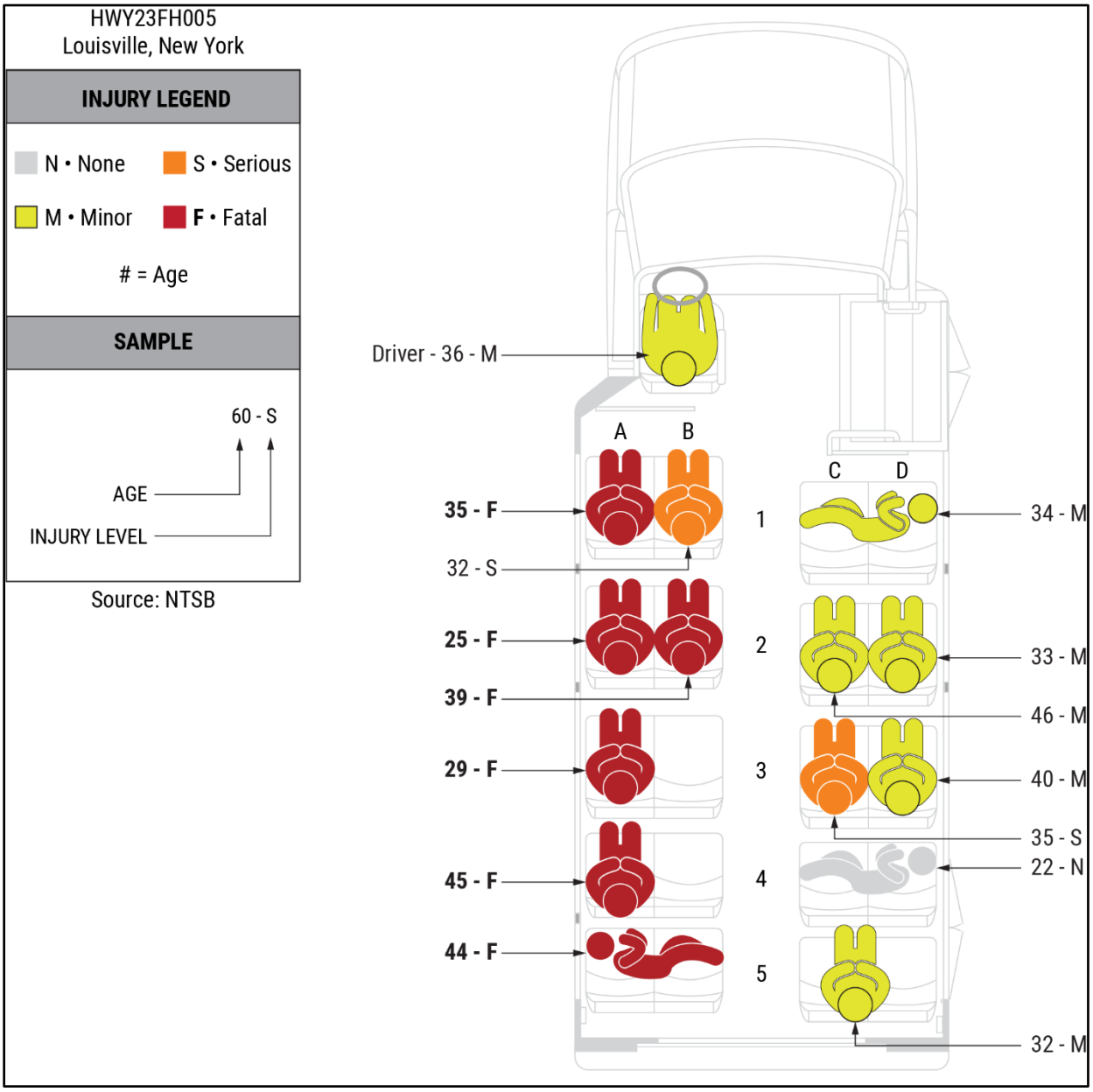

Figure 6. Seating locations and injury severity sustained by bus occupants.

The St. Lawrence County Medical Coroner's Office performed a postmortem external examination on the fatally injured bus occupants. Additionally, official medical records were obtained for most of the bus occupants treated at hospitals. Appendix C summarizes the injury descriptions for the bus occupants as well as their ejection or emergency egress status. This information is based upon interviews, patient care reports, and medical records.

1.4.3 New York State Seat Belt Laws and Company Policies

New York is a "primary enforcement" state, meaning that a police officer on law enforcement patrol can stop a motor vehicle if a vehicle occupant is observed not wearing a seat belt without needing to observe a moving traffic violation such as speeding, an unsafe lane change, or a stop sign violation. In the front seat, the driver and each passenger must wear a seat belt, one person per belt. In a passenger car, all occupants in all seats (front and rear) must be restrained by either a seat belt or a child restraint system.[7] In 2024, New York adopted legislation requiring seat belt use for passengers on charter buses.[8]

Motor carriers may develop policies and procedures for seat belt usage as part of their safety management controls. Based on the NTSB's review of LBFNY, it did not have a seat belt use policy, had no requirement for drivers to conduct pretrip safety briefings to inform passengers (employees) to wear their seat belts, and did not take any steps to ensure that seat belts were readily accessible to occupants before vehicle usage.

1.5 Emergency Response

The St. Lawrence County Sheriff's Office (SLCSO) dispatchers were notified of the crash through the 911 system at 6:02:20 a.m. by an Apple iPhone automated crash notification.[9] A second call was initiated by an iPhone at 6:03:06 a.m. with the following recorded message: "The owner of this iPhone was in a severe car crash and is not responding to their phone. Their emergency location is latitude 44.9015 and longitude -75.0629 with an estimated search radius of 5 meters. This message will repeat in 5 seconds." During this recorded message, the sound of occupants moaning in the background could be heard.[10]

[7] For more information, see Consolidated Laws of New York, Chapter 71 Vehicle & Traffic, Title 7 Rules of the Road, Article 33 Miscellaneous Rules.

[8] For more information, see New York Assembly Bill 8557.

[9] The Apple iPhone 14 and 15, in addition to Apple Watch Series 8 and Ultra, have a feature called "Crash Detection" that includes the following capabilities: a gyroscope and accelerometer that can sense the forces of a severe crash, a barometer that can detect pressure changes when airbags deploy, a GPS speed sensor that can show rapid deceleration, and a microphone that can recognize the sounds of a typical car crash. The phone feeds these inputs into a crash detection algorithm that is based on real-world crash data and will call 911 if it detects a crash. The NTSB determined that the dispatch notification was provided by a bus passenger's phone about 1 minute before the first 911 call, and that the location data (reported in latitude and longitude) accurately reported the exact location of the bus's area of rest.

[10] The bus occupant who owned the iPhone that initiated the 911 call was not identified.

At 6:03:29 a.m., a 911 caller (a former volunteer firefighter) reported a "head-on crash with bus and pick-up truck with one male patient ejected and barely breathing." Other 911 calls followed. Law enforcement, fire department, and ambulance resources were dispatched about 6:04 a.m. Based upon the seriousness of the initial 911 calls, the lead SLCSO dispatcher initiated a mass casualty incident response activating all eight county fire and rescue agencies. The director of the St. Lawrence County Emergency Services (SLCOES) team was also notified at this time. In total, 17 local and state service agencies responded to the crash scene, including the director of SLCOES.[11]

Many of the first responders were dispatched from the town of Massena, New York, located about 7 miles from the crash scene. The chief of the Louisville Volunteer Fire Department was the first to arrive on scene at 6:19 a.m., 15 minutes after being dispatched. At 6:23 a.m., NYSP units and numerous emergency ambulance services arrived on scene. A triage area was set up initially, but due to the cold and snowy weather, the injured persons were quickly moved and evaluated inside of the on-scene ambulances. Three ambulances transported two bus occupants and the truck driver to hospitals in Massena and Potsdam, New York. Six bus occupants with minor injuries were evaluated medically and transported in two ambulances back to the motel where they were residing. Firefighters extricated the left aisle seat occupant in the front row of the bus (seat 1B), who was entrapped in the postcrash wreckage, and transported him to the hospital at 6:40 a.m. This was the last ambulance to depart the scene for the hospital.

1.6 Vehicle Factors

1.6.1 Truck

1.6.1.1 General

The truck was a box truck that was manufactured in two stages. The first stage consisted of a 2021 Freightliner M2 106 two-axle conventional chassis. The second stage included a 26-foot-long Morgan box. At the time of the crash, the box was loaded with five steel distribution carts containing cargo, oil, and other automobile

[11] Responding agencies included the NYSP, Louisville Volunteer Fire Department, Massena Rescue, Massena Volunteer Fire Department, Waddington Rescue, Waddington Volunteer Fire Department, Madrid Rescue, Madrid Volunteer Fire Department, St. Lawrence County Sheriff's Office, Norfolk Volunteer Fire Department, Norfolk Rescue, Canton Rescue, Ogdensburg Rescue, SLCOES, Seaway Valley Rescue, Potsdam Rescue, and St. Lawrence County Coroner's Office.

parts. The total weight of the load being transported was about 1,135 pounds. The total weight of the truck, including cargo, was about 19,427 pounds.[12]

1.6.1.2 Damage

The truck sustained significant contact damage to its front and left side (see figure 7). During the collision sequence, the cab was displaced counterclockwise, resulting in forward intrusion into the occupant compartment. The driver's seat was displaced forward underneath the steering wheel, which was deformed during the collision sequence. The front left wheel and its accompanying suspension and steering components were displaced toward the rear of the vehicle. Fragments of plywood from the interior subflooring of the bus were located on the truck's left front wheel rim, entrapped within the crushed portion of the rim. The driver-side door and A-pillar were partially sheared from the cabin structure and displaced rearward.[13] The fiberglass hood, grille, and both headlight assemblies were torn from the front of the truck.

The front left of the Morgan box sustained contact damage from the bus and from the rear of the truck's cab. The front left vertical pillar was severed, and a portion of the outer siding on the left side of the truck separated from the vehicle.

[12] The gross vehicle weight rating of the truck was 26,000 pounds, which is the maximum allowable weight for a fully loaded vehicle. *Gross vehicle weight rating* is the total maximum weight that a vehicle is designed to carry when loaded, including the weight of the vehicle itself plus fuel, passengers, and cargo.

[13] Pillars are labeled alphabetically from front to back. The A-pillar refers to the roof support structure on both sides of the windshield. The B-pillar refers to the structural support column behind the driver- and passenger-side doors.

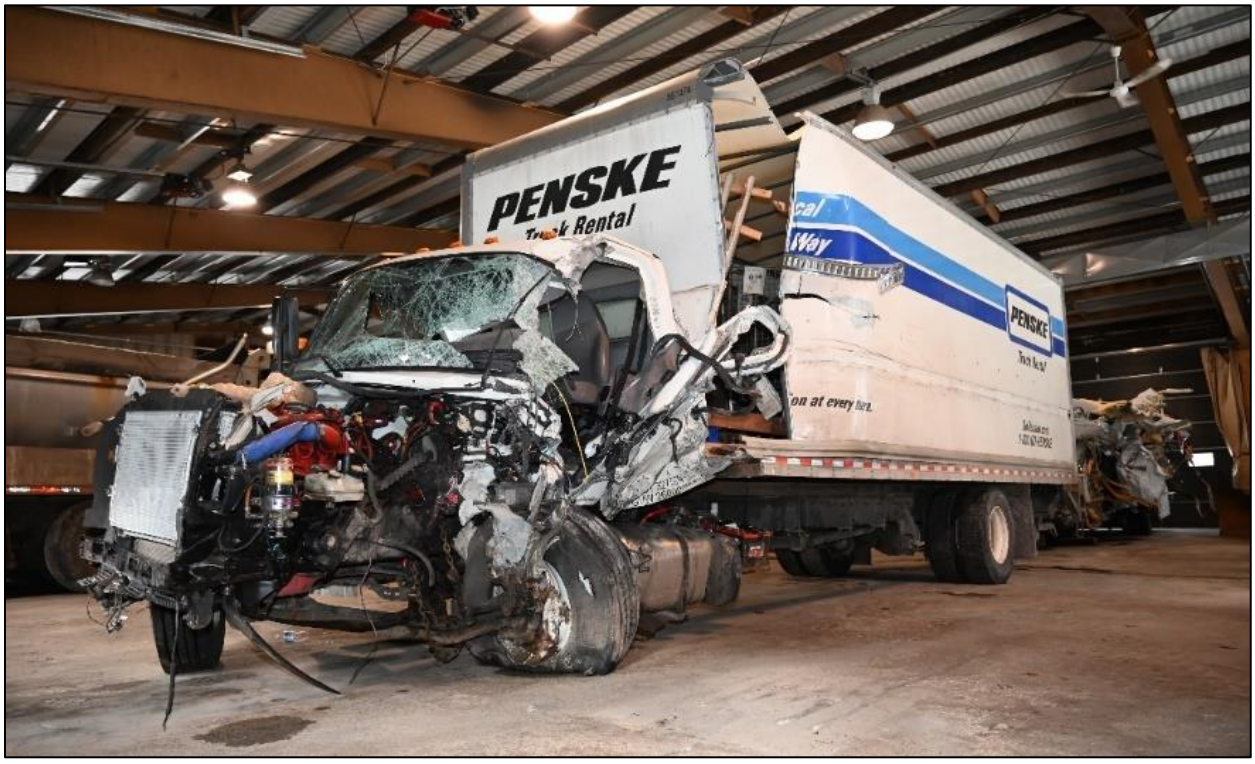

Figure 7. Damage to front and left side of truck cab and box.

1.6.1.3 Mechanical Systems

The NTSB and NYSP examined the truck's major mechanical systems, including the driver controls, steering components, suspension, tires and wheels, brakes, electrical system, and lighting. The comprehensive mechanical examination did not reveal any pre-existing mechanical defects that would have contributed to the crash.

An examination of the steering gearbox showed that it sustained an impact during the collision sequence significant enough to cause marks on the gearbox's internal components. The damage indicated that there was slight right steering input at impact.

The fuse boxes, located on the left side of the engine compartment, were also damaged during the collision sequence. As a result, the truck sustained a power loss at impact. This was further supported by the frozen instrument cluster observed inside the cab of the truck: several analog gauges on the instrument cluster were frozen in place due to the power loss. The speedometer gauge was frozen at 59 mph and the RPM gauge was frozen at 1,600 RPMs. Due to the compromised electrical system, the lighting system on the truck could not be powered on to check the performance of individual lights. The NTSB reviewed surveillance video recovered by the NYSP from a home security camera located near the crash site. The video showed the truck traveling east on SR-37 before the crash, and the lights on the truck were

observed to be illuminated and operating properly. The video did not show the crash.

1.6.1.4 Inspection, Maintenance, and Safety Recalls

Maintenance records for the truck were obtained from the motor carrier, AGL. The truck and the other vehicles in AGL's fleet were leased from Penske. AGL required that its fleet receive regularly scheduled preventative maintenance, which was performed by Penske and documented in the maintenance records that the NTSB reviewed.[14] In addition to routine maintenance, the Federal Motor Carrier Safety Regulations (FMCSR) require that commercial motor vehicles (CMV) be inspected at least every 12 months.[15] The latest federal annual inspection of AGL's fleet of vehicles, which included the crash-involved truck, was conducted on October 24, 2022, about 3 months before the crash, at a certified state of Massachusetts inspection facility. The truck passed this inspection. On the day of the crash, the truck driver's regularly assigned truck needed maintenance. He was assigned a replacement truck of comparable size and configuration to drive for the day. A review of records showed that the replacement truck had recently received preventative maintenance and had no mechanical issues. During the postcrash interview with the truck driver, he reported no mechanical or handling issues with the assigned truck.

A search of the safety recall database maintained by the National Highway Traffic Safety Administration (NHTSA) and the manufacturer's warranty claim records found no open recalls or current warranty claims for the truck.[16]

1.6.1.5 Event Data Recording

The truck was powered by a Cummins Inc. engine, which was equipped with a Continental Automotive electronic control module (ECM) capable of recording vehicle diagnostic information, diagnostic trouble codes, sudden deceleration events, and other digital data. Due to the collision-related damage and power loss that the truck sustained, it was not possible to conduct an in-cab download of the ECM. The ECM was removed from the truck and downloaded at a Cummins facility

[14] For more information on Penske's truck leasing and maintenance program, see Penske Truck Leasing - Full Service Truck Leasing.

[15] See 49 *Code of Federal Regulations* 396.17(c).

[16] A *safety recall* is an action taken by a manufacturer or government agency due to an immediate safety hazard affecting the involved vehicle. A recall is initiated when a motor vehicle or item of motor vehicle equipment does not comply with an FMVSS, or when there is a safety-related defect with the vehicle or equipment.

located in Columbus, Indiana. The ECM was installed into a sensor simulator device that mimicked the configuration of the truck's components and sensors.

During the download of the ECM, several diagnostic trouble codes were recorded and provided a snapshot of the conditions and operating parameters of the truck. A report of the fault codes indicated that the truck was traveling 59 mph when the fault codes were triggered, which was consistent with the speed displayed on the frozen speedometer when the truck experienced the collision-related power loss.

1.6.1.6 Collision Mitigation Technologies

The truck was equipped with a WABCO OnGuard Gen 2 collision warning, adaptive cruise control, and collision mitigation system.[17] This system provides driver assistance for prevention of potential rear-end collisions between vehicles that are traveling in the same direction and in the same travel lane; it is not designed to mitigate head-on collisions involving vehicles traveling in opposite directions and in different lanes, such the one that occurred in this crash. It is designed to monitor a vehicle's speed and the distance between the vehicle and a vehicle or stationary object in front of it. The system will warn the driver and slow the vehicle to prevent or mitigate a collision. The system's forward-looking radar unit was found in the collision debris and was later forwarded to the manufacturer for downloading. Although data were recovered from the radar unit, none were related to the crash.

The truck was not equipped with Freightliner's lane departure technologies that were available from Daimler (using the "Build Your Own" option).[18] Active lane departure prevention (LDP) systems can provide a combination of audio, visual, and haptic (touch-based) warnings, in addition to steering and/or braking intervention. The system intervention helps maintain a vehicle's position in a lane and can help prevent crossover into adjacent lanes.

1.6.2 Bus

1.6.2.1 General

The bus was manufactured in two stages. The first stage consisted of a rear-wheel-drive 2013 Chevrolet Express 4500 cutaway chassis. The second stage consisted of a Micro Bird school bus body. The bus had seating capacity for the driver

[17] For more information, see the WABCO OnGuard Collision Mitigation System website.

[18] For more information, see M2 106 Plus | Freightliner Trucks.

and 20 bus passengers. The total weight of the bus chassis and body was about 9,600 pounds.[19]

1.6.2.2 Damage

The bus sustained significant contact damage to its entire left side (see figure 8). The bus's front grille, left headlight, trim, and turn signal covering all separated from the vehicle. The leading edge of the hood was dented rearward in two distinct locations. The windshield was cracked and significantly damaged on the left side. Both left-side mirrors separated from the vehicle. The left fender was dented inward. The front left wheel assembly separated from the vehicle and the rear left tires were flat. The outer siding of the driver-side door peeled away from the vehicle, exposing the door mechanisms and interior siding.

[19] The gross vehicle weight rating of the bus was 14,200 pounds.

Figure 8. Damage to front and left side of bus (top) and example of undamaged bus for comparison (bottom).

The upper-front portion of the bus body sustained contact damage on the left side, which compromised several vertical pillars and horizontal rails. On the right side

of the upper-front portion of the bus, the NTSB observed crash-induced damage in the form of tearing. The left side of the bus sustained contact damage that compromised the waist rail, seat rail, window rail, and other horizontal rails. All left-side vertical pillars behind the B-pillar of the bus were significantly damaged during the collision. The compromised pillars resulted in a large opening on the left side of the bus.

1.6.2.3 Mechanical Systems

The NTSB and NYSP inspected the bus's major mechanical systems, including the driver controls, steering components, suspension, tires and wheels, brakes, electrical system, and lighting. The comprehensive mechanical examination did not reveal any pre-existing mechanical defects that would have contributed to the crash.[20]

The NTSB reviewed surveillance video of the bus departing a motel on the morning of the crash. The video, recorded 11 minutes before the crash, showed the bus with fully functional taillights, rear marker lights, reverse lights, and two distinct headlight beams. To determine whether the bus was operating with high- or low-beam headlights at the time of the crash, the NTSB examined the condition of the headlights. The left headlight was damaged during the collision sequence and was not recovered. The NTSB removed the right headlight from the vehicle for radiography imaging, which showed that the upper filament (low beam) had slight deformation consistent with the low-beam filament being illuminated at the time of the crash. The high-beam filament had no observable deformation, which was consistent with the high-beam filament not being illuminated at the time of the crash.

1.6.2.4 Inspection, Maintenance, and Safety Recalls

The NTSB interviewed the owner of LBFNY and requested the maintenance records, maintenance receipts, and a copy of the federal annual inspection for the crash-involved bus. The owner failed to produce any of these records because the company did not maintain any vehicle records.

According to the NHTSA safety issues and recalls database, a recall associated with the make and model of the crash-involved bus was issued on April 6, 2023, 68 days after the crash. The recall was related to the risk of excessive heat and potential fire associated with moisture and contamination of electrical wiring in the bus. This recall and the associated safety risk were unrelated to the circumstances of this crash.

[20] Detailed information regarding the mechanical inspection of the truck and bus can be found in the Vehicle Factors Group Chair report in the public docket for this NTSB investigation (case number HWY23FH005).

1.6.2.5 Event Data Recording

The bus was equipped with a steering wheel-mounted airbag and its sensing diagnostic module, also called an ACM. The ACM recorded electronic collision data as well as diagnostic system status information leading up to the airbag event trigger.

The ACM recorded an airbag deployment event related to the crash. Five data points over a duration of about 2.5 seconds asynchronously captured precrash information, cumulative lateral and longitudinal change of velocity, and system status information at the time of collision. The ACM also recorded the accelerator pedal position percentage, vehicle speed, engine speed, percent throttle, and brake switch circuit status every half-second.

The ACM recorded that the bus was traveling about 53–54 mph and that no brakes were applied during the 2.5 seconds leading up to the event trigger. At 0.5 seconds before the crash, recorded data showed that the accelerator pedal was no longer applied. Table 2 shows a snapshot of the most pertinent data recorded by the ACM.

Table 2. Precrash data from the bus's ACM.

Parameter	-2.5 sec	-2.0 sec	-1.5 sec	-1.0 sec	-0.5 sec
Accelerator pedal position (percent)	29	30	31	27	0
Vehicle speed (mph)	54	53	53	53	53
Engine speed (RPM)	1,728	1,728	1,728	1,728	1,664
Percent throttle	40	40	41	41	29
Brake switch circuit status	OFF	OFF	OFF	OFF	OFF

The maximum cumulative longitudinal change in velocity recorded by the ACM was about -26.02 mph, which occurred about 220 milliseconds after the event trigger. The negative velocity change indicated that the bus experienced a deceleration during the collision sequence.

1.6.2.6 Collision Mitigation Technologies

The bus was not equipped with collision mitigation or avoidance technologies when LBFNY purchased it from a bus broker. These technologies were not required to be installed at the time of manufacture, although some manufacturers were beginning to provide them as optional equipment.

1.7 Driver Factors

1.7.1 Truck Driver

1.7.1.1 Licensing and Experience

The 25-year-old truck driver held a noncommercial (Class D) New York driver's license.[21] He was first issued an unrestricted driver's license in January 2019. His license at the time of the crash was issued in May 2021 and had an expiration date of June 2029. The truck driver's license history did not include any convictions, suspensions, withdrawals, restrictions, or crashes. He held a US Department of Transportation (USDOT) medical certificate, which was valid from May 2022 until May 2024.

The truck driver completed truck driving school in 2018. His application to AGL indicated that he worked for Battery Delivery Corp. from October 2018 until December 2022. He left his former job to move to Utica, New York. He applied to AGL on January 6, 2023, and was hired on January 9, less than 3 weeks before the crash on January 28. He passed a pre-employment alcohol test on January 10 and a pre-employment drug test on January 12.[22] After joining AGL, he received training on his route and deliveries. The driver said that he did not receive any further training because he had experience driving box trucks. The manager of the Foxborough, Massachusetts, AGL terminal, where the truck driver was based, confirmed that the driver did not receive training beyond familiarization with the fixed route for which he would be responsible. The truck driver's assigned daily route consisted of nine stops that encompassed an approximate 363-mile travel distance within the state of New York.

Trip sheets obtained from AGL showed that, between January 10 and 13, 2023, the truck driver was accompanied by a driver trainer for four daily trips along the driver's fixed route. According to the driver trainer, he drove the route on

[21] A Class D license is a standard, noncommercial driver's license that authorizes a driver to operate passenger vehicles and light trucks with a gross vehicle weight rating of up to 26,000 pounds. The truck driver was not required to hold a commercial driver's license because the truck was within this weight limit. For more information, see New York Driver License Class Descriptions.

[22] USDOT drug testing regulations under 49 *Code of Federal Regulations* Part 382, "Controlled Substances and Alcohol Use and Testing," apply to drivers operating a vehicle that requires a commercial driver's license. The truck driver was operating a truck that did not require a commercial driver's license, but AGL required its drivers to take separate alcohol and drug tests as part of its pre-employment process.

January 10, 2023, and the truck driver drove the route the other 3 days.[23] According to the driver trainer, he completed the truck driver's evaluation road test on January 13, 2023, and turned in the paperwork on January 16, 2023. The evaluation stated that the truck driver "demonstrated an experienced level of vehicle operations."

1.7.1.2 Work Schedule, Cell Phone Information, and Sleep Opportunity

The truck driver stated that he worked Tuesday to Saturday and was assigned a set route delivering auto parts to the same dealerships each day. AGL used paper trip sheets to document drivers' hours of service (HOS) as well as a phone application to timestamp their deliveries. AGL provided records showing that the truck driver generally worked for AGL from about 1:00 a.m. until 11:30 a.m. on each of his workdays.

The NYSP obtained two cell phones from the truck driver, a personal phone and a work phone. The NYSP performed a data download from both phones and provided a copy of the data to the NTSB. The data were examined to identify indications of usage during the 72 hours before the crash.

During the NTSB's interview with the truck driver, he stated that when operating the truck, he concentrated on driving and did not engage in any other activities, such as talking on his phone or listening to music. He also stated that his work phone stayed with the truck and was used primarily to log in and out of work, as well as to record deliveries. Figure 9 shows the truck driver's active personal phone use, including calls and texts, use of applications, and internet browsing activities on the days before the crash. It does not include passive data transfers such as automatic updates.

[23] Trip records showed that the driver trainer operated his regular route after training the crash-involved driver and exceeded federal hours-of-service regulations in doing so; however, the driver trainer denied that this occurred.

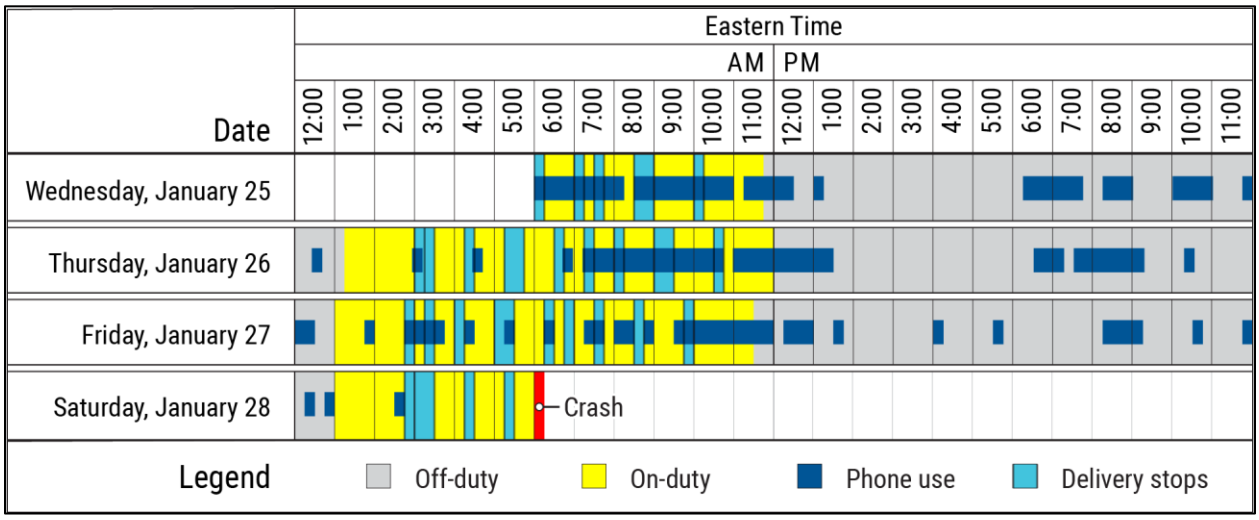

Figure 9. Graphical representation of truck driver's personal cell phone use and on-duty times during the 72 hours before the crash. Phone use is based on records and forensic data downloaded from the truck driver's cell phone and is shown as a contiguous block if the time between outgoing texts or phone calls was less than 15 minutes.[24]

The truck driver lived with his wife and young child. During his interview with the NTSB, the details he provided about his sleep and shift-work schedules indicated that he had about 5 to 6 hours of uninterrupted sleep each day. The driver generally worked from about 1:00 a.m. until 11:30 a.m. 5 days per week. After work each day, he would commute about 14 minutes to his home. After he reached home, usually between 11:40 a.m. and noon, he would eat and then go to bed around 12:30 p.m. He described his sleep quality as good. He would usually wake between 5:00 and 6:00 p.m. to eat a light dinner and reported that he would then go back to sleep until it was time to return to work.

A review of cell phone records showed that on the evenings leading up to the crash, he engaged in cell phone use and did not receive uninterrupted sleep after dinner (see figure 9). Further, on the day before the crash, cell phone records showed use during his afternoon sleep opportunity. The driver typically left for work around 12:40 a.m. His phone records indicated that he sometimes used his phone during his on-duty time but was not using it at the time of the crash.

1.7.1.3 Health

According to the truck driver, he did not have any pre-existing medical conditions and did not have a primary care physician. He did not take any

[24] For additional information about the NTSB's Vehicle Recorder Division examination of the truck driver's cell phones, see the *Personal Electronic Data Specialist Report* in the public docket for this investigation (case number HWY23FH005).

prescription medication, although he stated that he took Tylenol around 6:00 p.m. on the day before the crash. The NTSB obtained a copy of his completed USDOT medical examination form from the clinic where the exam was performed. The form indicated that his hearing and vision met regulatory standards. The truck driver indicated that he did not have any medical issues, and none were found by the medical examiner.

1.7.1.4 Toxicology Results

The NYSP performed a toxicological test of the truck driver's blood and found it to be negative for alcohol and drugs of abuse.[25]

1.7.2 Bus Driver

1.7.2.1 Licensing and Experience

Because he was engaged in a passenger-carrying operation, the 36-year-old bus driver was required to have a commercial driver's license (CDL). He did not have a valid CDL authorizing him to drive buses in the United States.[26] He also did not have a required USDOT medical certificate. The driver possessed a Venezuelan driver's license with an issue date of November 2021 and an expiration date of May 2023, and an international driver's license, which stated: "This complementary non-government identification card is a translation of a domestic driver's license" and "This non-government ID card should only be used accompanied by [a] domestic driver license." The international driver's license permitted the driver to operate a passenger car, under certain circumstances, in the United States, but did not permit the operation of a CMV. During an interview with the bus driver, he noted that he was trained to drive buses in Venezuela and drove buses there for 17 to 18 years. He joined LBFNY in June 2022 and started driving for the company that same month. Based upon an interview with LBFNY's owner, the company did not have a process for confirming driver credentials or a formal training program for drivers.

[25] The NYSP tested the blood sample for ethanol, amphetamines, benzodiazepines, buprenorphine, cannabinoids, carisoprodol, cocaine, methadone, fentanyl, opioids, methamphetamines, oxycodone, phencyclidines, tramadol, and zolpidem.

[26] Drivers are required to have a CDL to drive a combination vehicle with a gross combined weight rating of 26,001 pounds or more, a single vehicle with a gross vehicle weight rating of 26,001 pounds or more, and/or a single vehicle or combination vehicle designed to transport 16 or more passengers or placarded hazardous materials. For more information, see 49 *Code of Federal Regulations* 383.3 and 49 *Code of Federal Regulations* 383.5.

1.7.2.2 Work Schedule and Cell Phone Information

The bus driver was assigned to an LBFNY work crew to work on a solar farm construction site. He and the crew would work 6 to 7 days a week depending on weather conditions. He averaged about 45–47 hours of work per week and was paid on a weekly basis. The bus driver described his work routine as consistent from day to day. He would wake about 5:00 a.m., turn the bus on to warm it up, prepare for the day, then go back to the bus around 5:40 a.m. to wait for passengers. He would depart the motel around 5:50 a.m. and arrive at the work site around 6:50 a.m. He would usually have a lunch break between noon and 1:00 p.m. His day at the work site would usually end around 4:30 or 5:00 p.m. At the end of each day, the bus driver would drive everyone back to the motel.

The bus driver did not work on Thursdays, including the Thursday before the crash. He reported that on Friday, the night before the crash, he arrived back at the motel about 5:40 p.m. and went to bed around 8:30 p.m. On Saturday, the day of the crash, he woke up about 5:00 a.m. and began his normal routine.

According to the bus driver, he never used his phone when driving. A review of records of the bus driver's phone service provider showed no calls or texts at the time of the crash. Figure 10 provides an illustration of the bus driver's phone use.

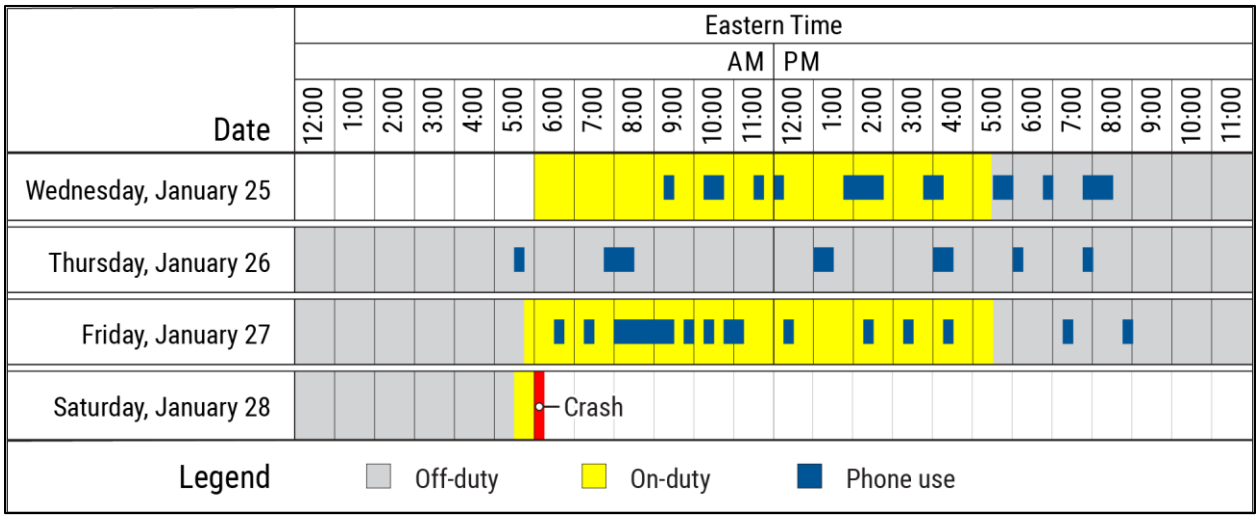

Figure 10. Graphical representation of the bus driver's cell phone use and on-duty times during the 72 hours before the crash. Phone use is based on the bus driver's cell phone records and is shown as a contiguous block if the time between outgoing texts or phone calls was less than 15 minutes.

The bus driver stated that he was usually in bed by 9:00 p.m. He also stated that he woke at 5:00 a.m. each workday. His statements were consistent with his phone usage. In the days leading up to the crash, his phone use ended by 9:00 p.m.

every night and did not begin until after 5:00 a.m. Based on the available evidence, the bus driver had 8 or more hours of sleep opportunity on each of the 4 nights before the crash.

1.7.2.3 Health

The bus driver stated that he did not have any pre-existing health conditions and did not take any prescription or over-the-counter medications. He went to the emergency room the day after the crash complaining of arm and neck pain. He was discharged from the emergency room with a left wrist splint. Medical records from this visit indicated that he was an "otherwise healthy male" who did not have pertinent past medical history or any previous surgeries.

1.7.2.4 Toxicology Results

LBFNY was required to conduct postcrash drug and alcohol testing of the bus driver but had no drug testing program in place and did not complete this regulatory requirement.[27] The NYSP interviewed the bus driver on scene about 3.5 hours after the crash. According to the bus driver, he consumed wine on special occasions but did not drink alcohol the night before the crash. He also stated that he had used edible cannabis and vape pens in the past but had not done so recently. The bus driver reported that he did not take any prescription or over-the-counter medications. During interactions with the bus driver at the crash site, the NYSP did not observe any objective signs of impairment and therefore did not require the driver to submit to toxicology testing.

1.8 Motor Carrier Operations and Regulatory Oversight

Motor carriers are responsible for ensuring their drivers' safety and compliance with the FMCSRs, which are defined and enforced by the FMCSA in accordance with 49 *Code of Federal Regulations* (*CFR*) Part 390. Section 1.8.1 of this report discusses AGL's operations and regulatory oversight, including a discussion of its involvement in the FMCSA's New Entrant Safety Assurance Program (section 1.8.1.10) and Compliance, Safety, Accountability program (section 1.8.1.11). Section 1.8.2 discusses LBFNY's operations and regulatory oversight.

[27] For more information about postaccident testing requirements, see 49 *Code of Federal Regulations* 382.303.

1.8.1 Aero Global Logistics Truck Operations

1.8.1.1 Overview

AGL was the motor carrier responsible for operating the crash-involved truck. The company's principal place of business was Winchester, Virginia, and it operated a fleet of 28 truck-tractors, 64 semitrailers, and 58 box trucks.[28] The carrier employed 69 CDL drivers and 60 non-CDL drivers. The AGL box trucks were all leased from Penske. The company's business model involved delivery of original equipment manufacturer automobile parts to unattended automobile dealerships at night.[29] The carrier also conducted line-haul operations transporting parts from automobile manufacturer distribution centers to AGL warehouses. AGL owned two distribution warehouses in Winchester, Virginia, and a third terminal in Foxborough, Massachusetts. The truck driver was assigned to the Foxborough terminal.

During an interview with the NTSB, AGL's vice president of operations stated that the company originated from a previous company called Chopper DDS, Inc., and that the president of Chopper started AGL after Chopper declared bankruptcy in October 2013. AGL began operations after the company bid on the routes that had been discarded by Chopper.

1.8.1.2 Driver Hiring

AGL hired and recruited drivers based on word of mouth, local newspaper advertisements, social media, and postings on the company website. AGL human resources personnel performed initial interviews with prospective drivers and used a third-party vendor to perform background checks, drug testing, motor vehicle record checks, medical qualification evaluations, and other driver qualification requirements.[30] AGL's minimum qualifications for drivers were: at least 23 years old, 1 year of commercial driving experience for box truck driver positions, and a violation-free motor vehicle record. AGL had a 90-day probationary period for new drivers, and the crash-involved truck driver was still within that period. AGL's driver handbook stated that any driver involved in a preventable accident during their first 90 days of employment would be terminated. Drivers were paid on a per diem basis, which equated to a set salary for designated routes. Overtime was calculated manually when a driver exceeded normal work hours for unexpected delays, such as a mechanical issue, weather, or terminal freight delay.

[28] All AGL box trucks were long-term leases. The trucks had gross vehicle weight ratings of less than 26,000 pounds, and assigned drivers were not required to have CDLs to operate them.

[29] AGL services about 500 dealerships in the mid-Atlantic region.

[30] For more information, see 49 *CFR* Part 391.

AGL officials provided a driver qualification file for the truck driver containing documents required by federal regulations; however, the driver did not sign the forms acknowledging that all information was true and complete as required by federal regulations for applications for CMV driver employment.[31]

1.8.1.3 Driver Training

AGL had a 64-page safety training manual that was last updated in 2014. The truck driver did not receive a copy of the manual, and there was no record of him being trained on its contents. The manual included a safety mission statement, drug and alcohol policy, safety rules, equipment inspection requirements, safe operations guidance, seat belt usage policy, cell phone policy, and office safety guidelines. The manual did not include a policy for managing driver fatigue. The carrier also conducted quarterly safety meetings; however, because the truck driver had worked for the company for less than a month, he did not attend any safety meetings before the crash.

1.8.1.4 Hours-of-Service Monitoring

The truck driver operated within the short-haul HOS exemption and maintained his HOS using paper trip sheets. Both the trip sheets and AGL's smart phone application, which timestamped the driver's deliveries, were used to record the driver's HOS. Under 49 *CFR* Part 395, the short-haul exemption states that a driver is exempt from the requirements of 49 *CFR* 395.8 and 49 *CFR* 395.11 if operating within a 150-air-mile radius of the normal work reporting location and not exceeding a maximum duty period of 14 hours.[32]

During the investigation, the NTSB received information from an AGL employee that the company was circumventing HOS regulations by concealing the fact that it was allowing drivers to run extra routes in excess of the maximum permissible HOS. The NTSB investigated these claims and, with the assistance of the Federal Motor Carrier Safety Administration (FMCSA), uncovered evidence that some drivers were exceeding the HOS requirements. The NTSB also found evidence that

[31] See 49 *CFR* 391.21(b).

[32] Title 49 *CFR* 395.8 requires drivers operating a CMV to record their duty status using an electronic logging device, with some exceptions. Title 49 *CFR* 395.11 requires motor carriers to retain supporting documents (such as bills of lading, payroll records, and dispatch and trip records) for a period of 6 months. Under the short-haul provision, drivers do not need to use an electronic logging device and motor carriers do not need to retain supporting documents; however, drivers must still record their HOS.

the crash-involved truck driver's trainer exceeded the permissible HOS on multiple occasions.[33]

1.8.1.5 Drug and Alcohol Testing Program

AGL had a random drug and alcohol testing program that met or exceeded federal requirements.[34] The carrier had instituted a non-USDOT pre-employment drug testing program as a condition of employment for drivers who operated trucks for which a CDL was not required. All drivers, both CDL and non-CDL, were required to acknowledge the AGL drug policy when hired.

1.8.1.6 Cell Phone Policy

AGL's company cell phone policy from its 2014 safety manual stated that:

> All employees must adhere to all federal, state or local rules and regulations regarding the use of cell phones while driving. Accordingly, employees must not use cell phones if law, regulation, or other ordinance prohibits such conduct. Employees should not use hand-held cell phones for business or personal purposes while driving. Should an employee need to make a business call while driving, he/she should locate a lawfully designated area to park and make the call or use a hands-free device such as a speaker phone or earpiece.[35]

AGL's cell phone policy did not provide information about federal or state cell phone laws and did not clearly explain expectations for using hands-free devices or for parking a vehicle when completing personal calls.

1.8.1.7 Fatigue Management

At the time of the crash, AGL did not have a policy related to driver fatigue. After the crash, AGL developed a one-page "fatigue policy" that included 12 items that a driver should consider regarding the effects of fatigue, illness, medication, equipment safety, and distractions (see appendix D). The policy was presented as a checklist of items to consider but did not provide drivers with procedures, guidelines, or resources to manage fatigue.

[33] The FMCSA forwarded this information to the USDOT Office of Inspector General for enforcement follow-up as needed.

[34] See *49 CFR* 382.305.

[35] The NTSB found a Bluetooth right earphone on the floorboard of the truck's cab during the postcrash inspection.

1.8.1.8 Driver Monitoring Systems

When the crash occurred, AGL had recently acquired driver monitoring system (DMS) technology manufactured by Samsara, but it was not installed in the crash-involved truck.[36] According to AGL's vice president, at the time of the crash, AGL had only installed a Samsara DMS in "a couple" of trucks to test the performance of the systems. No policies and procedures for how to use the DMS to coach drivers and improve safety at the company were in place.

The Samsara DMS includes inward- and outward-facing cameras that can capture risky driving behaviors. These risky behaviors include speeding, following distance, near collision, crash, harsh acceleration, harsh turn, harsh braking, no seat belt, mobile phone usage, drowsy and inattentive driving, lane departure, red light violations, failing to yield, and other moving traffic violations. If a driver engages in risky driving behaviors, the monitoring system can send an immediate warning to the driver and an alert message to the carrier's safety department via text or e-mail.

1.8.1.9 AGL Crash History

Table 3 summarizes AGL's crash history at the time of the crash.

Table 3. AGL crash history from 2020 to January 2023.

Year	Fatal Crashes	Injury Crashes	Towaway Crashes	Total Crashes
2020	0	1	6	7
2021	0	4	5	9
2022	0	2	4	6
2023	1	0	0	1
Total	1	7	15	23

1.8.1.10 FMCSA New Entrant Safety Assurance Program

Overview. In 2003, the FMCSA instituted the New Entrant Safety Assurance Program.[37] A motor carrier can obtain a USDOT number and begin interstate operations as a new entrant after completing registration forms on the FMCSA website.[38] After the new entrant satisfies a set of basic pre-operational requirements, it is subject to an 18-month safety monitoring period. During this period, the carrier's

[36] For more information on Samsara Fleet Dash Cams, see Samsara – Dash Cams.

[37] See 67 *Federal Register* (*FR*) 31983, May 13, 2002, as amended at 73 *FR* 76490, December 16, 2008, FMCSA: New Entrant Safety Assurance Program.

[38] See FMCSA: Getting Started with Registration.

roadside inspections are monitored, and it undergoes a safety audit to assess whether it is meeting regulatory requirements in the areas of driver qualification, driver duty status, vehicle maintenance, accident registry, and controlled substances and alcohol testing.

The safety audit results in either a "pass" or "fail" determination. If the carrier passes the audit, it continues to be monitored for the remainder of the 18-month period, and if the carrier remains compliant, it is granted full operating authority. If the carrier fails the audit, it is given 60 days to provide a corrective action plan identifying how it will remedy its safety practices. According to FMCSA regulations, a motor carrier will fail a new entrant safety assurance audit if it lacks safety management controls.[39] These controls are interpreted through six factor areas—General, Driver, Operations, Maintenance, Hazardous Materials, and Accidents—and a carrier must fail in three or more of the areas to receive an overall "fail" rating. A carrier should also fail a new entrant safety assurance audit if it is not compliant with one or more of the 16 regulations set forth in 49 *CFR* 385.321.[40] If a motor carrier does not fail in three more of the categories or fail to comply with any of these regulations during the safety audit, the carrier is considered to have passed the audit and would remain on track to complete the new entrant program after 18 months, regardless of the severity of any other issues that the FMCSA may have identified.

During the 18-month safety monitoring period, the carrier may also be subject to an expedited action in response to issues identified during roadside inspections or by other means. Examples of issues that may lead to expedited actions include using a driver who does not have a valid CDL, using a driver who tests positive for controlled substances or alcohol, operating with a driver or vehicle out-of-service rate of 50% or greater, or operating a CMV without proper insurance.[41] Expedited actions may result in an expedited safety audit or a compliance review (CR) or require a written response from the carrier.[42]

AGL New Entrant Program History. AGL became a new entrant on October 21, 2013. Seven months later, on May 20, 2014, AGL underwent a new

[39] Safety management controls are the systems, policies, programs, practices, and procedures used by a motor carrier to ensure compliance with applicable FMCSRs to reduce the risk of highway crashes, injuries, and fatalities.

[40] For additional information and the list of these regulations, see What would cause a motor carrier to fail a new entrant safety audit?

[41] For a comprehensive list of issues that can lead to an expedited action, refer to 49 *CFR* 385.308. A high crash rate is not included in the list of issues that can lead to expedited FMCSA action.

[42] *Safety audit* and *compliance review* are defined in 49 *CFR* 385.3. The purpose of a safety audit is to "provide educational and technical assistance" and to "gather critical safety data needed to make an assessment of the carrier's safety performance…" The purpose of a compliance review is to "determine whether a motor carrier meets the safety fitness standard" in 49 *CFR* Part 385.

entrant safety audit. At the time of the safety audit, AGL employed 60 CDL drivers and owned 59 truck-tractors and 65 semitrailers. The carrier received a passing score from the FMCSA even though it failed in one of the six factors evaluated, "Accidents."[43] (As noted above, a carrier must fail three of the six factors to fail the safety audit.) AGL had six recordable crashes and a crash rate of 2.53 crashes per million miles traveled, which exceeded the allowable crash rate of 1.5 crashes per million miles traveled for motor carriers operating in a non-urban environment. Additionally, roadside enforcement data for the initial 7 months of operation showed evidence that the carrier had a record of violations pertaining to compliance with HOS regulations (see appendix E). AGL exited the new entrant program and was granted full authority to operate on April 22, 2015, even though it was in an alert status for the FMCSA's Crash Indicator and Unsafe Driving Behavior Analysis and Safety Improvement Categories (BASIC; see tables 4 and 5), meaning that its crash-involvement rate remained high and roadside enforcement data showed repeated violations related to unsafe driving.

The NTSB's review of the safety audit revealed that it contained limited information and did not include any supplemental information about the carrier and its history. During a safety audit, a certified FMCSA investigator is expected to interview the carrier owner or safety manager, asking specific questions concerning the scope of its operation and origin of the company. The investigator should make notes, record atypical findings, and use the FMCSA's new applicant screening tool to identify whether the carrier is a potential "reincarnation" of a previous carrier.[44] According to 49 *CFR* 386.73(c), the FMCSA may issue an out-of-service order to prohibit a motor carrier from conducting operations upon determination that the motor carrier reincarnated from an affiliated carrier in an attempt to disguise its compliance history or avoid penalties.

The documentation of the safety audit did not mention that AGL was essentially a continuation and reorganization of a carrier that had previously operated under the name Chopper DDS Inc. In addition to the interview with the NTSB in which AGL's senior management stated that Chopper declared bankruptcy and the president of Chopper started AGL as a new company, a review of the FMCSA's Motor Carrier Management Information System (MCMIS) database identified other

[43] (a) The "Accidents" factor of a safety audit is scored based upon the number of crashes per million miles traveled. Motor carriers are defined as urban or non-urban to account for the higher crash rate expected for carriers operating in urban environments. Urban carriers operate within a 100-air-mile radius. A carrier will receive a failing score if the crash rate exceeds 1.5 for a non-urban carrier or 1.7 for an urban carrier. (b) AGL passed its safety audit and therefore was not required to submit a corrective action plan.

[44] For more information, see FMCSA Field Operations Training Manual section 1.1.7.1, "Discovering a Suspected Reincarnated or Affiliated Motor Carrier."

commonalities between Chopper and AGL, including two leadership personnel (AGL's chief executive officer and safety manager), thirteen drivers, and two vehicles.[45] The audit documentation included a question about whether AGL had an affiliation with any former FMCSA-regulated carriers; the response provided was "No." The FMCSA's MCMIS showed that Chopper had a history of unsafe driving and a high crash-involvement rate when it declared bankruptcy and went out of business. The FMCSA did not identify AGL as a reincarnated or affiliated carrier at any time during or after the safety audit.

1.8.1.11 Compliance, Safety, Accountability Program

Overview. In 2010, the FMCSA introduced the Compliance, Safety, Accountability program with the goal of improving large truck and bus safety and ultimately reducing CMV-related crashes, fatalities, and injuries. The program used an enforcement-and-compliance model designed to allow the FMCSA and state authorities to contact a larger number of carriers earlier in their operations to address safety problems before crashes occur. Along with the Compliance, Safety, Accountability program, the FMCSA also instituted an operational model called the Safety Measurement System (SMS). The SMS is designed to help the FMCSA identify high-risk carriers and drivers before they are involved in a crash. The SMS uses motor carrier data from roadside inspections, state-reported crashes, and the federal motor carrier census to quantify performance in the BASICs described in table 4.

[45] The MCMIS is a database of census and safety performance information for FMCSA-regulated entities. The MCMIS includes a catalog of motor carrier data that is openly shared with the public as well as a reporting feature that can provide customized census, crash, inspection, and company safety profile information.

Table 4. FMCSA BASICs.

BASIC	Definition	FMCSR	Example Violations
Unsafe Driving	Operation of CMVs in a dangerous or careless manner	49 *CFR* Parts 392, 397	Speeding, reckless driving, improper lane change, inattention
HOS Compliance	Operation of CMVs by drivers who are ill, fatigued, or noncompliant with HOS regulations; includes violations pertaining to records of duty status as they relate to HOS requirements and management of CMV driver fatigue	49 *CFR* Parts 392, 395	Operating a CMV while ill or fatigued
Driver Fitness	Operation of CMVs by drivers who are unfit due to lack of training, experience, or medical qualifications	49 *CFR* Parts 383, 391	Failure to have valid and appropriate CDL or being medically unqualified to operate a CMV
Controlled Substances/ Alcohol	Operation of CMVs by drivers who are impaired due to alcohol, illegal drugs, and misuse of prescription or over-the-counter medications	49 *CFR* Parts 382, 392	Use or possession of controlled substances/alcohol
Vehicle Maintenance	Failure to properly maintain a CMV or properly prevent shifting loads	49 *CFR* Parts 392, 393, 396	Brakes, lights, and other mechanical defects; failure to make required repairs; or improper load securement
Hazardous Materials Compliance	Unsafe handling of hazardous materials on a CMV	49 *CFR* Part 397; hazardous materials regulations	Release of hazardous materials from package; no shipping papers or no placards/markings when required
Crash Indicator	Histories or patterns of high crash involvement, including frequency and severity; based on state-reported crashes	Not applicable	Not applicable

A motor carrier's measurement for each BASIC depends on how many adverse safety events it experiences, the severity of violations or crashes, and when the adverse events occurred (more recent events are weighted more heavily). After a measurement is determined, the carrier is placed in a peer group with other carriers that have had similar numbers of inspections. The carriers are then ranked and prioritized for interventions.[46] The FMCSA has established threshold levels that require agency action (see table 5). The Unsafe Driving, HOS Compliance, and

[46] An *intervention* is an action, such as a warning letter or an investigation, that may be taken when a motor carrier's safety performance indicates a potential safety risk. According to the FMCSA, "the interventions process evaluates why safety problems occur, recommends remedies, encourages corrective action, and when necessary, assesses penalties for carriers that fail to comply." For more information, see CSA - Intervene.

Crash Indicator BASICs are set at lower thresholds because these factors have been found to be most closely correlated with future crash risk. When a carrier exceeds a threshold for one of the BASICs, a warning symbol is displayed alongside the BASIC, indicating that the carrier is in an "alert" status and has potential safety deficiencies.

Table 5. BASIC thresholds.

BASIC	Passenger Carriers (%)	Hazardous Materials Carriers (%)	All Other Motor Carriers (%)[a]
• Unsafe Driving • HOS Compliance • Crash Indicator	50	60	65
• Driver Fitness • Controlled Substances/Alcohol • Vehicle Maintenance	65	75	80
• Hazardous Materials Compliance	80	80	80

Source: FMCSA Compliance Manual, dated December 1, 2019

On a monthly basis, the SMS calculates BASIC percentiles based on carriers' on-road performance data (from roadside inspections, reported crashes, and census information, as discussed in section 1.8.1.11). The FMCSA then uses the data to prioritize interventions and schedule CRs for those carriers posing the highest risk.[47] The four categories that the FMCSA uses to assess risk are High-Risk, Moderate-Risk, Risk, and Warning Letter. Table 6 describes the criteria that the FMCSA uses for risk-based prioritization. A carrier is categorized as high-risk if it has two or more BASIC scores above the 90th percentile (in other words, scores that are at or above 90% of the scores for similar carriers) for 2 consecutive months.

[47] There are two categories of CRs, "focused" and "comprehensive." A focused CR is used when two or fewer BASICs have exceeded their thresholds. A focused CR normally does not result in a safety rating and is usually classified as "non-rated" when completed. A comprehensive CR is used when three or more BASICs have exceeded their thresholds. A comprehensive CR may also be used if the carrier has been involved in a crash or a complaint has been made. A comprehensive CR addresses all aspects of the carrier's operation and normally results in a safety rating.

Table 6. FMCSA risk-based prioritization categories.

Category	SMS BASIC Performance
High-Risk	Two (2) or more of the following BASICs at or above the 90th percentile for (2) consecutive months (1 month for passenger carriers): Unsafe Driving, Crash Indicator, HOS Compliance, Vehicle Maintenance.
Moderate-Risk	Two (2) or more of the following BASICs at or above intervention threshold: Unsafe Driving, Crash Indicator, HOS Compliance, Vehicle Maintenance.
Risk	One (1) or more BASICs at or above intervention threshold or with unresolved Acute or Critical Violation(s).
Warning Letter	One (1) or more BASICs at or above threshold.

Source: FMCSA Compliance Manual, dated December 1, 2019

AGL Compliance, Safety, Accountability Program History. According to the MCMIS, AGL had a high crash-involvement rate exceeding the FMCSA's allowable threshold of 1.5 crashes per million miles traveled in a non-urban environment and was noncompliant with motor carrier regulations for a significant portion of the time between the date that the FMCSA granted it operating authority and the date of the crash. Figure 11 shows the BASICs for which AGL was in an alert status as well as the total durations of each alert. Appendix E provides a full history of AGL's BASIC scores exceeding thresholds during the months before and after the new entrant safety audit and CRs.[48]

[48] For more information, see AGL's company safety profile in the FMCSA's MCMIS in the public docket for this investigation (case number HWY23FH005).

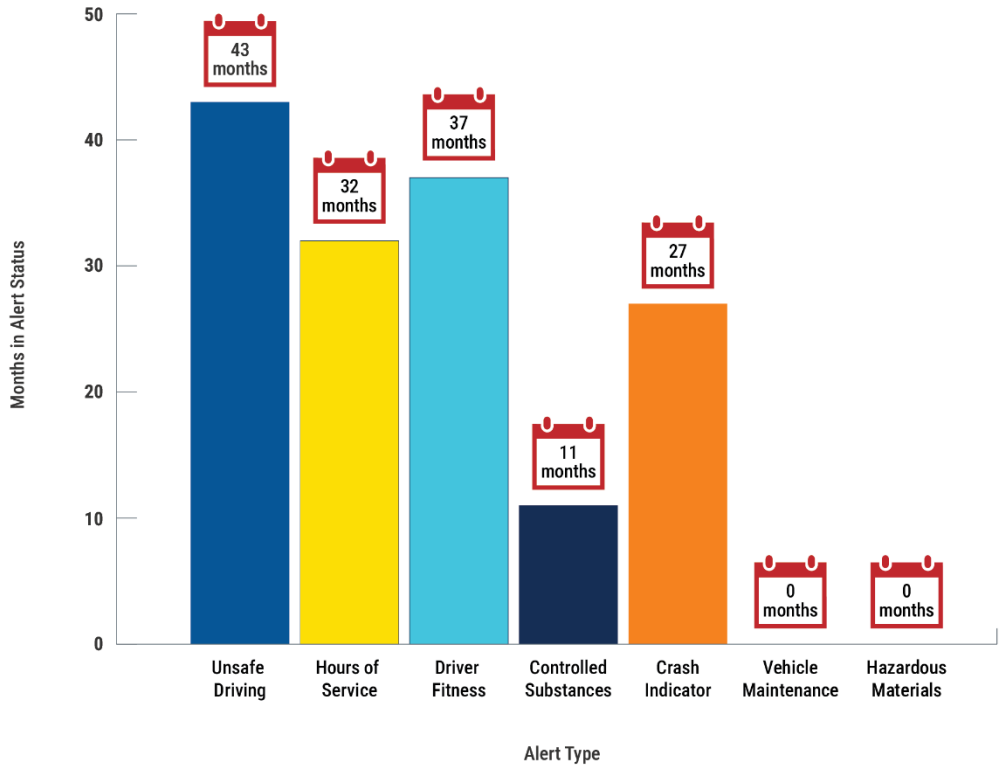

Figure 11. AGL's total durations in alert status for each BASIC, from beginning of operations (2013) until crash (2023).

Before the Louisville crash, AGL underwent three CRs, two because the carrier was identified as Moderate-Risk and the third because of a written complaint that was sent to the FMCSA National Complaint Database.[49] Table 7 provides a summary of FMCSA regulatory oversight of and interventions in AGL operations before the

[49] AGL had four BASICs in alert status at the time of the first CR and three BASICs in alert status at the time of the second CR. The complaint that led to the third CR alleged that AGL used an unqualified driver who was involved in a USDOT recordable crash. According to the CR, the complaint was "unsubstantiated." For additional information see NCCDB | National Consumer Complaint Database.

crash.[50] None of the CRs resulted in AGL having to take corrective action to continue operations. The FMCSA initiated a postcrash CR but did not complete it due to a USDOT Office of Inspector General investigation. The NTSB was informed in December 2023 that the Office of Inspector General investigation had been closed.[51] According to the MCMIS, as of November 12, 2024, AGL is an active motor carrier.

Table 7. Summary of FMCSA interventions in AGL operations.

Date	Intervention	Violations	Final Rating
05/21/2014	New Entrant Safety Audit	Failed in "Accidents" rating area with a high crash rate of 2.53.	Pass
02/04/2020	Compliance Review – Carrier identified as a Moderate-Risk carrier. 4 BASICs were in an alert status: • Unsafe Driving • HOS Compliance • Driver Fitness • Controlled Substance	10 violations identified: 1. 49 *CFR* 382.2.15 – Using a driver known to have tested positive for controlled substance. 2. 49 *CFR* 391.23(a) – Failing to investigate driver's background. 3. 49 *CFR* 391.23(c) – Failing to investigate driver's background within 30 days of employment. 4. 49 *CFR* 391.23(e)(1) – Failing to investigate the driver's alcohol and controlled substances history for the previous 3 years. 5. 49 *CFR* 391.51(a) – Failing to maintain driver qualification on each driver employed. 6. 49 *CFR* 391.51(b)(3) – Failing to maintain road test certificate and driver's qualification file or copy of license or certificate. 7. 49 *CFR* 391.51(b)(5) – Failing to maintain a note related to the annual review of the driver's driving record. 8. 49 *CFR* 391.51(b)(6) – Failing to maintain a list of certificates relating to violations of motor carrier vehicle laws and ordinances.	Satisfactory

[50] The FMCSA currently employs a three-tiered rating system during CRs: Satisfactory, Conditional, and Unsatisfactory. A Satisfactory rating is based on the degree of compliance with the safety fitness standard for motor carriers. To meet the safety fitness standard, a motor carrier must demonstrate that it has adequate safety management controls in place to reduce risk associated with (a) commercial driver's license standard violations (49 *CFR* Part 383); (b) inadequate levels of financial responsibility (49 *CFR* Part 387); (c) use of unqualified drivers (49 *CFR* Part 391); (d) improper use and driving of motor vehicles (49 *CFR* Part 392); (e) unsafe vehicles operating on highways (49 *CFR* Part 393); (f) failure to maintain accident registers and copies of accident reports (49 *CFR* Part 390); (g) use of fatigued drivers (49 *CFR* Part 395); (h) inadequate inspection, repair, and maintenance of vehicles (49 *CFR* Part 396); (i) driving and parking rule violations associated with the transportation of hazardous materials (49 *CFR* Part 397); (j) violation of hazardous materials regulations (49 *CFR* Part 171); and (k) motor vehicle accidents and hazardous materials incidents.

[51] Office of Inspector General enforcement action is taken under Title 5 and can include a prison sentence and/or fines. FMCSA enforcement action is taken under Title 49 and typically can include civil penalties and out-of-service orders.

Date	Intervention	Violations	Final Rating
		9. 49 *CFR* 395.3(a)(3)(ii) – Driving more than eight hours past the end of the driver's last off duty or sleeper berth period. 10. 49 *CFR* 395.8(f) – Failing to require a driver to prepare a record of duty status in the form and manner prescribed.	
04/21/2021	Compliance Review – Carrier identified as a Moderate-Risk carrier. 3 BASICs were in an alert status: • Unsafe Driving • HOS Compliance • Crash Indicator	2 violations identified: 1. 49 *CFR* 392.2 – Operating a commercial motor vehicle not in accordance with the laws, ordinances, and regulations of the jurisdiction in which it is being operated (Unsafe Driving). 2. 49 *CFR* 395.8(a)(1)(i) – Carrier failed to install and/or require a driver to record the driver's record of duty status using an ELD.	Unrated Review[a]
06/27/2022	Compliance Review – Complaint received. 2 BASICs were in an alert status: • Unsafe Driving • Driver Fitness	2 violations identified: 1. 49 *CFR* 392.2 – Operating a commercial motor vehicle not in accordance with the laws, ordinances, and regulations of the jurisdiction in which it is being operated (Unsafe Driving). 2. 49 *CFR* 395.8(a)(1) – Failing to require a driver to prepare a record of duty status using the appropriate method.	Satisfactory
02/05/2023	Crash	The FMCSA initiated a postcrash CR but did not complete it due to the USDOT Office of Inspector General investigation.	N/A

[a] An FMCSA review may be unrated for several reasons. The primary one is that, if it is conducting a focused CR (as opposed to a comprehensive CR), this is a limited investigation that only includes parts of the FMCSRs instead of their entirety. For additional detail, see 49 *CFR* Part 385, Appendix B.

1.8.2 LBFNY Bus Operations

1.8.2.1 Overview

LBFNY, the company responsible for overseeing the bus driver's operation of the crash-involved bus, had its principal place of business in Weedsport, New York. The company registered and entered the New Entrant Safety Assurance Program in December 2021. LBFNY's operating status was updated to "Revoked" in April 2022 because it had not undergone a new entrant safety audit. On April 26, 2022, the FMCSA issued a federal out-of-service order for "No Show/Refusal" because LBFNY did not respond to the FMCSA's correspondence and thus refused to undergo the audit.[52] At the time of the crash, the company's operating status was classified as "Inactive."

[52] When an out-of-service order is issued to a motor carrier, the carrier is no longer permitted to operate.

LBFNY's business model was to bid on solar panel job sites in New York, Maine, Connecticut, Rhode Island, and Pennsylvania. The company would solicit work through word of mouth and its website. Once a job was accepted, LBFNY would send a work crew to the job location and workers would install solar panels until the project was completed. Each solar panel installation project usually lasted about 30 days. At the time of the crash, LBFNY had about 100 employees. LBFNY owned 15 buses and one 15-passenger van and employed 15 drivers. LBFNY typically had a crew of 15–20 people per job site.

1.8.2.2 Driver Hiring and Training

The minimum driver qualifications as described by the company's owner included a positive referral by a family member or current worker and possession of a valid driver's license.[53] The company, however, did not perform a motor vehicle record check on any of its drivers. LBFNY also did not have a formal training program. According to the owner, new drivers were road-tested in one of the company's buses and were provided an oral safety briefing that included the following safety message: "Do not speed, obey all traffic laws, be very careful, no drinking and driving, and do not allow anyone to drink on the bus." The owner said that LBFNY had a company safety manual that outlined company safety practices; however, a copy of the manual was not provided to the NTSB when requested.

1.8.2.3 Safety Management Controls

The NTSB requested driver qualification files, drug testing records, HOS records, and vehicle maintenance records for the crash-involved bus. LBFNY did not provide the NTSB with any of the requested records. Additionally, the company did not provide the NTSB with a USDOT medical certificate or a CDL for the bus driver. The owner stated that the bus driver had not received any USDOT-required drug testing that would have included pre-employment, random, or postcrash tests.

1.8.2.4 Hours of Service Monitoring

The NTSB's investigation did not find evidence that LBFNY maintained any timesheets, logbooks, or electronic logging device records for assigned drivers. The NTSB used the company's payroll records and information from the interview with the

[53] See 49 *CFR* 391.11 and 391.15 for information regarding the requirements for commercial driver qualification.

bus driver to determine his HOS. The payroll records showed that the bus driver's on-duty time was within the number of hours permitted by federal HOS regulations.[54]

1.8.2.5 Federal Oversight

Before the crash, the FMCSA had not visited or inspected LBFNY operations. LBFNY should have been subject to a new entrant safety audit, but as previously discussed, it ignored the FMCSA's correspondence and refused to participate. The FMCSA completed a postcrash CR on LBFNY and identified 16 violations related to the lack of pre- and postcrash drug and alcohol testing, the use of a driver without a current CDL or medical certificate, the failure to perform and document required inspections, and the lack of other required registration and record-keeping practices (see table 8).

[54] The bus driver's on-duty time included both his driving time and his solar panel installation work time.

Table 8. Summary of LBFNY's postcrash violations.

Violation	Description
49 *CFR* 382.115(a)	Failing to implement an alcohol and/or controlled substances testing program on the date the employer begins commercial motor vehicle operations. (Acute)[a]
49 *CFR* 383.37(a)	Allowing, requiring, permitting, or authorizing a driver to operate a CMV during any period in which the driver does not have a current CDL or does not have a CDL with the proper class or endorsements. An employer may not use a driver to operate a CMV who violates any restriction on the driver's CDL. (Acute)
49 *CFR* 391.45(a)	Using a driver not medically examined and certified. (Critical)
49 *CFR* 395.8(a)(1)	Failing to require a driver to prepare a record of duty status using the appropriate method. (Critical)
49 *CFR* 396.17(a)	Using a CMV not periodically inspected. (Critical)
49 *CFR* 382.303(a)	Failing to conduct postaccident alcohol testing on driver following a recordable crash.
49 *CFR* 382.303(b)	Failing to conduct postaccident testing on driver for controlled substances.
49 *CFR* 382.701(b)(1)	Failing to conduct an annual query.
49 *CFR* 382.701(a)	Failing to conduct a pre-employment query.
49 *CFR* 382.711(b)	Failing to register in the Clearinghouse.
49 *CFR* 385.331	Operating after an Order to Revoke "New Entrant" Registration and Cease All Interstate Transportation was issued (New Entrant).
49 *CFR* 390.21(b)(2)	Failing to mark a CMV with the USDOT identification number.
49 *CFR* 396.3(a)	Failing to systematically inspect, repair, and maintain, or cause to be systematically inspected, repaired, and maintained, all motor vehicles and intermodal equipment subject to your control.
49 *CFR* 396.3(a)(2)	Failing to inspect pushout windows, emergency doors, and emergency marking lights in buses at least every 90 days.
49 *CFR* 396.3(b)	Failing to keep minimum records of inspection and vehicle maintenance.
49 *CFR* 396.3(b)(2)	Failing to have a means of indicating the nature and due date of the various inspection and maintenance operations to be performed.

[a] 49 *CFR* 385(b) defines Acute regulations as occurring when "noncompliance is so severe as to require immediate corrective actions by a motor carrier regardless of the overall safety posture of the motor carrier." 49 *CFR* 385(c) defines Critical regulations as occurring when "noncompliance relates to…breakdowns in a carrier's management controls." The items in the table not labeled as Acute or Critical did not meet these thresholds but were still identified as violations.

The FMCSA considered whether the violations discovered during the postcrash CR rose to the level of constituting an imminent hazard.[55] Ultimately, on February 15, 2023, the agency decided not to issue an imminent hazard order to LBNFY and chose instead to address LBFNY's regulatory violations using other enforcement tools.

As a result of the FMCSA's postcrash CR, LBFNY received an Unsatisfactory safety rating. The company was also penalized with a fine of $32,330. LBFNY completed and submitted a corrective action plan to the FMCSA that included the required safety improvements that had been missing. LBFNY also paid the fine. The FMCSA accepted the corrective action plan, and LBFNY was upgraded from an Unsatisfactory rating to a Conditional rating on April 24, 2023. LBFNY was placed back into the 18-month New Entrant Safety Assurance Program on May 1, 2023, and completed the program on November 3, 2024. According to the MCMIS, as of November 12, 2024, LBFNY is an active motor carrier.

1.8.2.6 Bus Registration

The crash-involved bus and the entire fleet of LBFNY vehicles were registered in Montana, which the LBFNY owner stated was for tax purposes.[56] The Montana registration for the crash-involved bus became effective on June 14, 2022, and expired June 14, 2023. The owner confirmed that the company did not have any brick-and-mortar buildings, offices, or fleet operations in Montana and used a third-party service to become a limited liability corporation in Montana. The owner also reported using a mail forwarding service to receive company mail and correspondence from a Montana post office box address. The Montana vehicle registration form requires the registrant to complete information on ownership, vehicle, lien, and odometer readings, but does not request information about the commercial use of the vehicle or its USDOT number. At the time of registration, the

[55] An *imminent hazard* refers to any condition of a vehicle, intermodal equipment, employee, or CMV operations that substantially increase the likelihood of serious injury or death if not discontinued immediately. For more information, see 49 *CFR* 386.72.

[56] LBFNY's bus fleet was originally registered in November 2021 in New York. On January 12, 2022, NYDOT conducted a roadside inspection of one of the carrier's buses, which resulted in violations. Because the carrier failed to take corrective action on those violations, NYDOT assessed the carrier a civil penalty of $10,000 and suspended the fleet's New York state registration. On April 7, 2022, LBFNY paid its fines and NYDOT lifted the carrier's registration suspensions. On April 13, 2022, LBFNY became a limited liability corporation in Montana. When LBFNY initially registered its fleet in New York, the New York Department of Motor Vehicles registration process required a USDOT number; however, when it registered its fleet in Montana, the Montana Vehicle Services Bureau vehicle application did not require a USDOT number, which would not have been available because LBFNY had an FMCSA operating status of "Inactive" when it registered its fleet in Montana.

Montana Vehicle Services Bureau did not confirm whether LBFNY was authorized to operate or check to ensure that it was not subject to an out-of-service order.

After registering the LBFNY fleet in Montana, the company continued operations in New York and other states despite being subject to the previously mentioned federal out-of-service order. Because the FMCSA considered LBFNY to be out of service, there was no record of any federal or local enforcement contacts or oversight of LBFNY from April 2022 until the date of the crash.

1.9 Highway Factors

1.9.1 General Information

SR-37 was a two-lane road with one lane in each direction. The posted speed limit was 55 mph. Each of the asphalt-paved travel lanes, eastbound and westbound, measured 12 feet wide. Paved shoulders were adjacent to each of the travel lanes and were approximately 8 feet wide. A 4-inch-wide dashed yellow line separated the eastbound lane from the westbound lane, and 6-inch-wide solid white lines separated the travel lanes from the paved shoulders.[57] A 7-inch-wide centerline rumble strip existed along SR-37. Figure 12 illustrates a typical section of SR-37. The horizontal alignment in the vicinity of the crash was on a straight tangent. The vertical alignment consisted of a 0.72% upgrade (positive) slope for motorists traveling in the westbound direction.

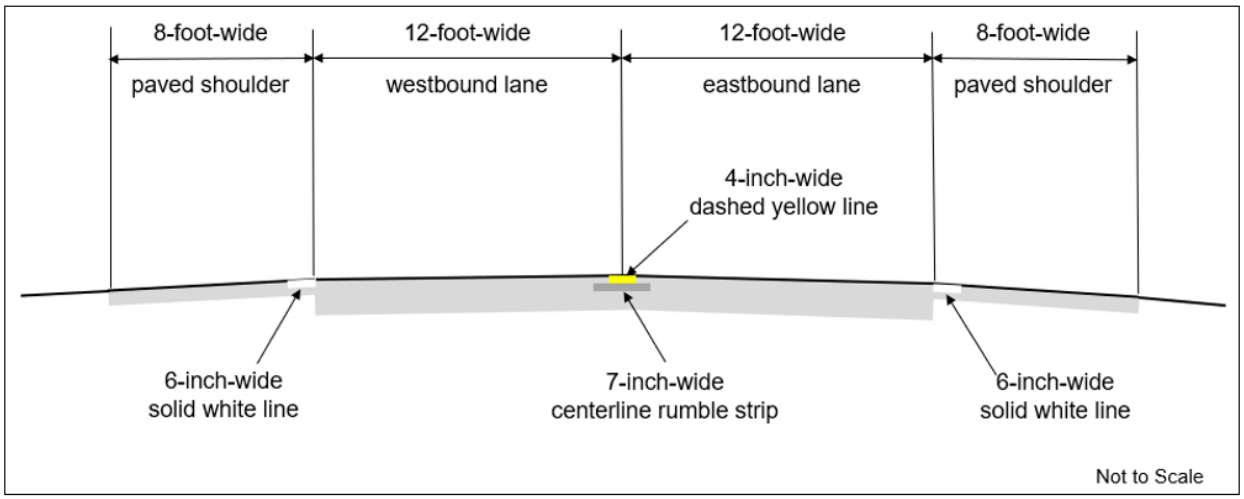

Figure 12. Typical cross-section profile for SR-37.

[57] All of the highway markings were retroreflective.

The Town of Louisville had a subcontract with NYDOT to maintain SR-37. The highway was snowplowed between 5:30 p.m. and 8:00 p.m. on January 27, the day before the crash, in the vicinity of the crash location. In addition, the highway was treated with deicing salt. Both crash-involved drivers reported that they could easily see the lane markings before the crash occurred.

1.9.2 Crash History and Traffic Volume

Table 9 summarizes crashes on SR-37 within a 1-mile radius of the crash location during the 5 years before the crash. No fatal crashes were reported during this period and most of the crashes involved a vehicle striking an animal.

Table 9. Five-year history of crashes on SR-37 within 1 mile of the crash location.

Year	Collision with animal	Collision with fixed object	Collision with motor vehicle	Collision with snow embankment	Overturned
2022	6	0	0	1	0
2021	2	1	1	0	0
2020	3	1	0	0	0
2019	1	1	0	0	0
2018	2	0	0	0	1
Total	14	3	1	1	1

Source: NYDOT

In 2022, the average daily traffic volume on SR-37 was 2,969 vehicles. The percentage of trucks (single-unit and trailer) in the traffic mix was 13.4%.

1.9.3 Centerline Rumble Strips

Centerline rumble strips spaced about 24 inches apart were positioned on SR-37 in the vicinity of the crash location. Figure 13 illustrates the centerline rumble strips, which were 7 inches wide by 12 inches long with a depth of one-half inch.[58]

[58] Centerline rumble strips have been shown to be an effective countermeasure to reduce head-on collisions and opposite-direction sideswipes (often referred to as crossover or cross-centerline crashes). Centerline rumble strips are primarily used to warn drivers whose vehicles are crossing centerlines of two-lane, two-way roads. NYDOT refers to centerline rumble strips as "milled in auditory roadway delineators."

Figure 13. East-looking view of SR-37 centerline rumble strips.

1.10 Weather and Illumination

On the day of the crash, the weather observed at Massena International Airport, 9 miles east of the crash location, at 6:00 a.m. indicated a temperature of 32°Fahrenheit with light snow, wind from 210˚ at 13 knots, and visibility of 2 statute miles, with scattered clouds. In the hour before the crash, the snowfall accumulation was between 0.00 and 0.02 inches.

According to the Earth System Research Laboratory/Global Monitoring Division of the National Oceanic and Atmospheric Administration, sunrise in the immediate area of the crash location occurred at 7:24 a.m. The crash occurred during darkness, about 6:00 a.m.

2 Analysis

2.1 Introduction

On January 28, 2023, about 6:00 a.m., a box truck traveling east on SR-37, near Louisville, New York, crossed the roadway centerline and collided with a bus traveling west. As a result of the crash, six bus passengers died, two were seriously injured, five had minor injuries, and one was uninjured. The bus driver sustained minor injuries, and the truck driver was seriously injured.

This analysis first examines factors that can be excluded as causal or contributory to the crash. Next, the analysis discusses the following safety issue areas:

- Lack of seat belt use by the bus occupants (section 2.2).
- Inadequate safety practices of the truck motor carrier (AGL) for managing fatigue and crash risk (section 2.3).
- Deficient oversight of motor carrier operations by the FMCSA (section 2.4).

Based on a comprehensive review of the circumstances that led to the Louisville crash, the NTSB determined that the following factors did not contribute to the cause of the crash:

- *Vehicle mechanical condition:* The NTSB found no evidence of mechanical problems with the truck or the bus that would have contributed to the crash.
- *Highway condition:* An examination of the highway environment revealed no safety deficiencies that contributed to the crash. Although light snow was falling in the area, the roadway had been plowed and deicing salt had been applied. All roadway markings denoting the centerline and shoulder edge lines were visible. Additionally, SR-37 was augmented with centerline rumble strips to alert drivers if their vehicles began to cross into the opposing lane of travel.
- *Familiarity with vehicles and roadway:* Both drivers were familiar with the operating and handling behavior of their vehicles and with the SR-37 operating environment.
- *Cell phone use:* According to records obtained from cell phone providers for both drivers and analysis of data extracted from the truck driver's phone, neither driver was on a phone call or texting at the time of the crash.
- *Use of alcohol or other drugs:* Postcrash toxicology test results revealed no evidence that the truck driver had used alcohol or other tested-for drugs

before the crash. Although a toxicology sample was not collected from the bus driver after the crash, the NYSP reported that the bus driver did not exhibit any objective signs of impairment by alcohol or other drugs.

- *Medical conditions*: Neither the truck driver nor the bus driver reported or were found to have had any significant medical conditions at the time of the crash.
- *Bus driver fatigue:* Based on available evidence, the bus driver had a regular work schedule and had more than 8 hours of sleep opportunity on the nights preceding the crash.

Therefore, the NTSB concludes that none of the following were factors in the crash: (1) mechanical condition of either vehicle; (2) highway condition; (3) familiarity with their vehicles or the roadway by either driver; (4) cell phone use, use of alcohol or other drugs, or medical conditions of either driver; or (5) bus driver fatigue.

Almost immediately after the crash, SLCSO dispatchers were notified of the crash through the 911 system via an Apple iPhone 14 automated crash notification. About a minute later, a former volunteer firefighter who witnessed the crash called 911. He reported a "head-on crash with bus and pick-up truck with one male patient ejected and barely breathing." Other 911 calls followed. Based upon these initial 911 calls, the lead SLCSO dispatcher initiated a mass casualty incident response, activating all eight county fire and rescue agencies. The multiagency response consisted of 17 local and state service agencies.

The chief of the Louisville Volunteer Fire Department was first to arrive on scene, 15 minutes after being dispatched. A few minutes later, NYSP units and numerous emergency ambulance services arrived on scene. Many of the first responders were dispatched from the town of Massena, New York, located about 7 miles from the crash scene. One injured bus passenger who was entrapped in the postcrash wreckage was extricated by firefighters and transported to the hospital. Other surviving bus passengers were evaluated medically and transported to the hospital or their residences. At 6:40 p.m., about 20 minutes after the first emergency responder had arrived on scene, all injured persons had been evaluated and those requiring additional medical care had departed in ambulances for the hospital. The NTSB concludes that the emergency response efforts were timely and adequate.

2.2 Crash Discussion

2.2.1 Crash Summary

The bus driver did not have a CDL, which is required to operate a vehicle designed to transport more than 16 passengers. The truck driver also did not have a

CDL but was not required to have one because the gross vehicle weight rating of the truck was less than 26,001 pounds.

The area of impact was located about 3 feet into the westbound lane and was identified by a series of gouges and scratches on the asphalt roadway surface. As illustrated in figure 3, the physical evidence showed a roadway scar extending from the area of impact in the westbound lane of SR-37 to the truck's final rest position off the eastbound shoulder. This roadway evidence indicated that the crash occurred when the eastbound truck crossed into the westbound lane and struck the bus nearly head-on. Information discovered during the vehicle mechanical inspections revealed that the truck was traveling about 59 mph at impact and the bus was traveling between 53 and 54 mph.[59] No witness information or precrash tire marks were available to identify where the truck first crossed into the westbound lane. Therefore, the NTSB could not determine the effectiveness of the centerline rumble strips in alerting the truck driver that he was impeding into the opposing lane of travel.

Based upon the contact damage to the front and left side of the truck, as well as the damage to the entire left side of the bus, the NTSB was able to approximate that the vehicles were narrowly offset from one another, with the truck's left-side cab initially striking the front left side of the bus at impact (see figure 14). The bus driver stated that he steered to the right to try to avoid the crash. However, the truck's position across the highway centerline and in the bus's lane of travel, as well as the speeds at which both vehicles were approaching each other, left the bus driver with limited time to avoid the collision. The NTSB concludes that although the bus driver did not meet qualifications for operating a CMV in the United States, and therefore should not have been operating the bus, based on the circumstances of the crash, there was no action he could have taken to avoid it.

[59] The truck's speed was determined based upon ECM fault codes and the speedometer gauge being frozen at 59 mph. The bus's speed of 53–54 mph was determined based upon data retrieved from the ACM.

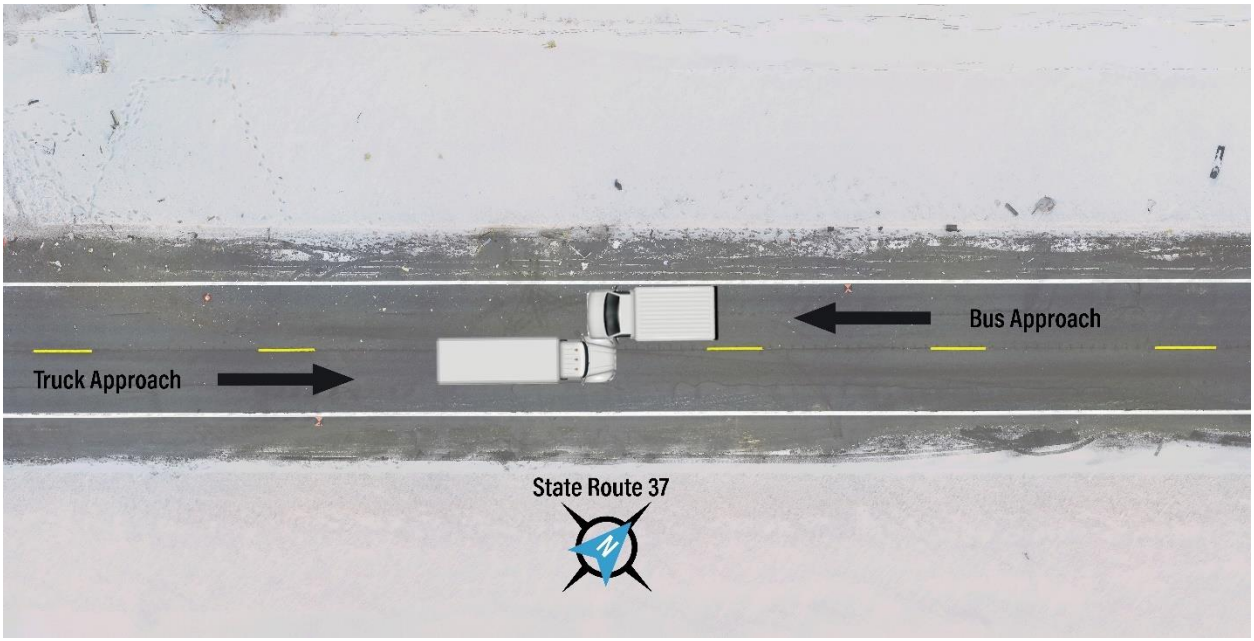

Figure 14. Diagram depicting approximate directions of truck and bus at area of impact (not to scale).

Evidence from the truck's steering gearbox components indicated that the truck driver made a slight right steering input when the two vehicles collided. Scene evidence indicated that the truck exited the area of impact and continued in an easterly direction, eventually coming to rest facing east, against the banked snow, off the south shoulder of the roadway, with a portion of the rear of the vehicle still within the paved portion of the south shoulder. The bus rotated about 160° counterclockwise as it exited the area of impact and continued in a westerly direction before coming to final rest off the north shoulder of the roadway, facing in an easterly direction.

2.2.2 Severity of Injuries

The truck driver's lap/shoulder seat belt showed evidence of loading on the belt's latch plate and webbing, indicating that the truck driver was wearing his seat belt at the time of the crash. The significant intrusion into the truck driver's seating compartment resulted in serious injuries, primarily to his limbs. According to data from the bus's ACM, the bus driver's lap/shoulder seat belt was fastened when the crash occurred. The bus driver sustained minor injuries. Multiple bus occupants were displaced from their seats and injured during the collision sequence. Behind the driver's seating position were five rows of bench seats on both the left and right sides of the bus. The last two rows of seats on the right side were installed by LBFNY mechanics after the bus was purchased in November 2021. These two rows of seats were installed in an area that was previously left open for wheelchair lift door

operation and were added for additional seating capacity to transport workers. All original seat rows were equipped with three lap belts each; the two seat rows added by the LBFNY mechanics at the rear right of the bus had no lap belts. Postcrash examination of the seat belts and interviews with bus occupants determined that only one bus passenger was wearing a seat belt at the time of the crash. The NTSB's examination of the bus occupant seating positions found that most of the lap belts were suspended behind the seats and not readily accessible.

During the collision sequence, the bus passenger seating compartment was compromised. Behind the driver-side door, starting rearward of the B-pillar, the integrity of the compartment was lost as the truck intruded into the left side of the bus, which resulted in a 5-foot-high by 7-foot-long opening in the bus sidewall. Due to the intrusion of the truck directly into the bus occupant seating area, six passengers seated on the left side of the bus were fatally injured. Although three of these fatally injured bus passengers were ejected during the collision sequence, the fatal injuries likely resulted from the loss of survival space rather than the subsequent ejections.

Six of the seven passengers seated on the right side of the bus were also injured, although less severely (one was not injured). Because of the inaccessibility and nonuse of the lap belts in the first three rows, as well as the absence of seat belts in the two rear rows, many of the passengers seated on the right side of the bus were thrown from their seats during the collision sequence. For example, the bus passenger in row 1 (seat C/D) was lying across the row and was thrown to the bus floor and into the privacy panel at the loading door and suffered a concussion. A passenger seated in row 3 (seat D) was thrown out of his seat and ended up in the center aisle. He sustained injuries to his forehead and chin and complained of neck pain. A passenger in row 4 (seat C/D) was lying across row 4, and at impact he was thrown under the seat in front of him and momentarily blacked out, though he did not report any injuries. The passenger seated in row 5 (seat C) sustained two large lacerations to the lower right side of his face and multiple bumps and bruises to his ribs, shoulders, and legs. The facial lacerations occurred most likely due to his being thrown forward over the seat back and leftward into the intruding roof and sidewall. The one bus passenger who was wearing a seat belt, and who was seated on the left side of the bus, likely would have sustained more serious injuries if he had not been belted.

The NTSB concludes that although the passengers on the right side of the bus were outside of the impact and intrusion zone, many of them were thrown out of their seats during the collision sequence and sustained injuries because the bus's seat belts were inaccessible and not used. Therefore, the NTSB recommends that LBFNY establish procedures to ensure that the seat belts on all of its buses are regularly inspected to maintain their functionality and accessibility.

In addition to not providing accessible seat belts, LBFNY did not have a seat belt use and accessibility policy, nor did it have requirements for its drivers to conduct pretrip safety briefings. The NTSB has previously issued safety recommendations to the FMCSA asking the agency to require passenger-carrying motor carriers to provide pretrip safety briefings as a way to increase seat belt use on buses.[60] The FMCSA failed to implement these recommendations, but it has developed free and ready-to-use pretrip safety briefing tools in multiple languages and in both video and audio formats. Seat belt use policies and pretrip safety briefings are an integral part of a motor carrier's approach to occupant safety. During pretrip safety briefings, carriers can inform bus occupants about the presence of restraint systems and the importance of their proper use. The NTSB concludes that LBFNY's lack of seat belt use and accessibility policies and pretrip safety briefings hindered the safety of the bus occupants. Therefore, the NTSB recommends that LBFNY establish policies to require that all bus occupants wear seat belts on every trip and that bus drivers provide pretrip safety briefings informing all bus occupants about the benefits of wearing seat belts.

State laws that require seat belt use along with primary enforcement increase seat belt use (Chen 2015; Douma and Tilahum 2012). As a result of its investigation of a truck-tractor collision with a medium-size bus equipped with seat belts in Davis, Oklahoma, the NTSB issued Safety Recommendation H-15-42 (NTSB 2015). This recommendation calls upon the 50 states, the District of Columbia, and the Commonwealth of Puerto Rico to take the following action:

> Enact legislation that provides for primary enforcement of a mandatory seat belt use law for all vehicle seating positions equipped with a passenger restraint.

In 2021, the NTSB classified Safety Recommendation H-15-42 Open—Acceptable Response for New York because the state upgraded its seat belt laws in 2020 to require seat belt use by all vehicle occupants, regardless of seating position, and to allow for primary enforcement.[61] However, at that time, the NTSB was unable to verify whether the provisions of the upgraded seat belt law extended to all vehicles equipped with a passenger restraint system, including buses. In 2023, the NTSB

[60] The NTSB issued its first recommendation pertaining to mandatory pretrip safety briefings in 1999 (H-99-8), which was superseded by Safety Recommendation H-15-14. Due to the FMCSA's decision not to implement the recommended action, the NTSB classified this recommendation Closed—Unacceptable Action. The FMCSA informed the NTSB that it encourages motor carriers to voluntarily provide pretrip safety briefings but would not mandate that they provide them.

[61] For additional information about this law's provisions, see New York State Senate Chapter 71 Vehicle & Traffic, Title 7 Rules of the Road, Article 33 Miscellaneous Rules, Section 1229-C: Operation of vehicles with safety seats and safety belts.

reiterated Safety Recommendation H-15-42 to the District of Columbia and to 38 states with open classification, including New York.[62]

The state of California provides an example of successful completion of this recommendation. In 2017 California adopted legislation—Senate Bill No. 20—that provides for primary enforcement of a requirement that bus drivers and passengers use seat belts in buses that are equipped with them.[63] California also includes a requirement to inform vehicle passengers about the state's seat belt use law and a requirement for charter motor carriers to provide pretrip safety briefings when operating a bus carrying at least 39 passengers.

In October 2024, New York adopted legislation to require charter bus passengers to wear available seat belts.[64] The law defines a charter bus as "a bus manufactured or assembled on or after November 28, 2016, transporting passengers for compensation in a chartered party." Although the law is an improvement to New York state seat belt laws, it is limited to charter buses and therefore would not be applicable to the bus involved in the Louisville, New York, crash. Bus passengers on the crash-involved bus or similar buses would not be required by state law to wear the available seat belts. The NTSB strongly believes that all vehicle occupants, including all bus passengers, should be properly belted when the vehicle is equipped with restraint systems. State primary enforcement of mandatory seat belt use laws can be the basis for a company's seat belt usage policies; when laws addressing all occupants are not in place, often only the driver is restrained. Considering the benefits that seat belt use could have had for the bus occupants in the Louisville, New York, crash, and the fact that primary enforcement seat belt use laws increase seat belt usage, the NTSB reiterates Safety Recommendation H-15-42 to the state of New York.

[62] Safety Recommendation H-15-42 was reiterated in the NTSB's investigation of a multivehicle collision involving a milk tank combination vehicle and a stopped traffic queue in Phoenix, Arizona (HWY21MH008) to Alabama, Arizona, Arkansas, Colorado, Connecticut, Florida, Georgia, Hawaii, Idaho, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, West Virginia, and Wyoming, and to the District of Columbia.

[63] Senate Bill No. 20 Chapter 593 is an act that amended sections 12810.2 and 34505.8 and added sections 27318 and 27319 to the California Vehicle Code.

[64] New York State Senate Bill 2023-S9361.

2.3 Safety Practices for Managing Fatigue and Crash Risk

2.3.1 Truck Driver Fatigue Assessment

In his interview with the NTSB, the truck driver stated that he generally worked from about 1:00 a.m. until 11:30 a.m. 5 days per week. He indicated that after work, he would drive home, eat, and then go to bed around 12:30 p.m. He reported that he would usually wake up between 5:00 and 6:00 p.m. to eat a light meal, then would try to get back to sleep until it was time to go to work. The truck driver said he would generally leave for work around 12:40 a.m.

The NTSB determined that based on the truck driver's documented schedule, his postcrash statements, and his cell phone records, he had 5 hours or less of uninterrupted sleep opportunity each day on the 3 days before the crash. Sleep opportunity is not identical to sleep; it simply indicates the windows of time when the truck driver could have slept based on the absence of evidence that he was performing other activities (such as using his phone). For example, on the day before the crash, the truck driver's sleep opportunity was disrupted by phone usage. He had slightly more than 2 hours of sleep opportunity between 1:45 p.m. and 4:00 p.m., followed by phone use. He then had slightly more than 1 hour of sleep opportunity before additional phone use, followed by 2.5 hours of sleep opportunity before more phone use.

According to a joint consensus statement of the American Academy of Sleep Medicine and the Sleep Research Society, sleeping less than 7 hours per day on a regular basis is associated with adverse health outcomes and performance issues, including impaired driving, increased errors, and greater risk of crashes (Watson and others 2015). Additionally, the fragmented nature of his sleep opportunity, especially the day before the crash, suggests that the truck driver's sleep quality was likely poor. Research has shown that in otherwise healthy adults, short-term sleep fragmentation may result in cognitive and performance deficits (Medic and others 2017).

Research has also shown that performing shift work, in this case driving between midnight and 7:00 a.m., is associated with an increase in fatigue-related crashes (Lee and others 2016; Bharadwaj and others 2021; Stutts and others 2003; Åkerstedt and Wright 2009).[65] Individuals engaged in shift work experience more sleepiness and disturbed sleep than daytime workers because their sleep time is out of synchronization with the body's circadian rhythms (Rosa and Colligan 1997; Kryger and others 2005; Drake and others 2004; Wickwire and others 2017). The body's physiological processes, such as hormone secretion, body temperature

[65] *Shift work* denotes a work schedule occurring outside of traditional daytime hours, such as an evening, rotating, or on-call shift.

regulation, and metabolism, are all regulated by the circadian rhythms. When the body is exposed to irregular work hours, it can struggle to adjust and maintain a healthy balance. Environmental and societal synchronizers (such as sunlight and family activities, respectively) can further exacerbate difficulties shift workers face in sleeping during the day (Shen and others 2006).

Sleep loss accumulates over successive days, increasing the tendency to feel fatigued or sleepy. Chronic sleep restrictions have been found to result in increased attentional lapses (Van Dongen and others 2003; Belenky and others 2003). Further, increases in attentional lapses were observed for those whose sleep was restricted to less than 7 hours per day over a span of 1 week. In addition to the truck driver's restricted sleep, this crash occurred at a circadian low point when hormone secretions and low body temperature may increase feelings of fatigue. Disruption of circadian rhythms has been found to contribute to decreased alertness, increased reaction time, and reduced vigilance during nighttime driving. Therefore, the NTSB concludes that the truck driver's centerline crossover and incursion into the bus's travel lane was likely due to fatigue caused by limited and fragmented sleep as well as circadian disruption associated with his shift-work schedule. The following sections will discuss countermeasures to reduce the effects of fatigue.

2.3.2 Fatigue Management Programs

The truck driver started working for AGL less than 3 weeks before the crash; however, he did not receive any initial training or safety briefings other than familiarization with his assigned route of travel. At the time of the crash, AGL did not have a policy that addressed driver fatigue. Although AGL presented the NTSB with a one-page "fatigue policy" that was adopted after the crash, the policy consisted only of a checklist of items to consider and did not provide drivers with procedures, guidelines, or resources to manage fatigue.

Shift work is an essential part of commercial trucking; however, drivers and employers must be aware of its risks and manage fatigue to prevent hazardous driving and crashes. To keep fatigued drivers off the road, a motor carrier must provide appropriate guidance and exercise a reasonable level of safety oversight. An FMCSA *Large Truck Crash Causation Study* showed that 13% of CMV drivers who were involved in crashes were considered to have been fatigued at the time of the crash (FMCSA 2007). For more than 15 years, the NTSB has advocated for and promoted fatigue management programs (FMP) and their use by motor carriers to reduce fatigue-related crashes (NTSB 2008, 2010, 2012a, 2012b, 2023, and 2024). An FMP offered through an employer uses a collection of policies, procedures, and information to address and reduce fatigue and its risks in the workplace.

The North American Fatigue Management Program (NAFMP) was developed by US and Canadian regulators, carriers, and researchers, and is hosted and promoted by the Commercial Vehicle Safety Alliance.[66] It is a free, interactive, web-based educational and training program designed to help commercial truck and bus companies increase awareness amongst drivers, safety managers, shippers/receivers, and family members of factors contributing to fatigue and its effects on performance. The NAFMP incorporates scientific research and industry best practices that companies can use to develop comprehensive FMPs that consider factors like circadian rhythms, sleep disorders, scheduling practices, company policies and procedures, and various other factors influencing driver alertness. A 2009 study examining the impact of implementing an FMP for commercial drivers in the US and Canada showed comprehensive improvements (Smiley and others 2009). Following the FMP intervention, drivers obtained longer and higher quality sleep, reductions in self-reported fatigue, and reductions in critical events (nod-offs or close calls). Drivers treated for obstructive sleep apnea showed improvement on the psychomotor vigilance task. One motor carrier participating in the study reported that its crash rates declined and its drivers were absent less frequently.

An FMP would have given AGL the tools to provide appropriate oversight of its drivers; educate drivers, suppliers, and family members about the critical need to obtain adequate rest during off-duty hours; and develop schedules that reduce the risk of fatigue. In the Louisville case, an FMP may have made the driver more aware of the importance of obtaining uninterrupted sleep to reduce the effects of fatigue. By not having an FMP and not incorporating considerations for fatigue into its policies, AGL failed to mitigate the risk of fatigue for its drivers.

The NTSB concludes that if AGL had had a structured FMP in place before the Louisville crash, it could have educated its drivers and other employees about the risks of fatigue and possibly prevented the crash. Therefore, the NTSB recommends that AGL develop and implement an FMP based on the NAFMP to educate its drivers and other employees about fatigue, its causes, and its countermeasures.

More than 800,000 motor carriers are registered with the FMCSA, and about 9 million CMV drivers operate on our roadways (FMCSA 2023a). These operators would benefit from the lessons that the NAFMP provides. The American Trucking Associations and the National Private Truck Council are trade associations that have the capability of reaching a broad spectrum of motor carriers, drivers, and others associated with the trucking industry. Therefore, the NTSB recommends that the American Trucking Associations and the National Private Truck Council inform their members about the Louisville, New York, crash and urge them to develop FMPs

[66] See North American Fatigue Management Program (nafmp.org).

based on the NAFMP to educate drivers and other employees about fatigue, its causes, and its countermeasures.

Further, preeminent union and trade associations representing transit operators and employees offer additional opportunities to raise awareness about fatigue management and safety. The NTSB recommends that the Amalgamated Transit Union, the International Brotherhood of Teamsters, the Owner-Operator Independent Drivers Association, and the Transport Workers Union of America inform their members about the Louisville, New York, crash and urge them to familiarize themselves with the NAFMP to learn about fatigue, its causes, and its countermeasures.

2.3.3 In-Vehicle Technologies to Help Prevent Fatigue-Related Crashes

An important component of any motor carrier FMP is the inclusion of in-vehicle technologies as an added layer of protection in preventing fatigue-related crashes. DMSs, for example, can provide immediate feedback to fatigued drivers on unsafe driving behaviors and enable motor carriers to better monitor driver performance and provide coaching on safe driving. Additionally, advanced driver assistance technologies such as LDP systems have been shown to be effective in preventing deviation from the intended lane of travel. These technologies are discussed in the following sections.

2.3.3.1 Driver Monitoring Systems

A DMS can inform drivers and motor carriers of unsafe driving behaviors such as a fatigued driver's inability to stay in their lane of travel. The technology incorporates in-vehicle recording capabilities that can continuously measure and record the driver's performance. The two primary types of DMS are driver performance (behavior) monitoring systems and driver state monitoring systems. Driver performance monitoring systems evaluate a driver's behavior through embedded vehicle sensors registering steering wheel input, lane-keeping/drift, acceleration/deceleration, vehicle speed, turn radius, and traffic signal response time. Driver state monitoring systems usually rely on in-vehicle sensors, such as cameras, to monitor a driver's face, eyes, or head for signs of impairment (such as glance behavior, blink behavior, head/body position, pupil dilation, emotions, secondary task engagement, heart rate, or breathing).

A DMS can continuously record driver behavior and/or "flag" safety-related events and risky driving behaviors. These behaviors may include violating speed limits, excessive speeding and lateral acceleration on curves, unplanned lane departures, frequent hard braking, close following distances, failure to yield at

intersections, and other factors. In addition to the advantages that DMSs can provide in detecting unusual driving behaviors associated with fatigue and other impairments, many DMSs also detect unfastened seat belts and cell phone usage. Flagging safety-related events allows drivers and safety managers to later review the data to pinpoint what happened and prevent a similar event from taking place in the future. Video-based DMSs also allow safety managers to review the video of the event together with the drivers. Further, DMSs can feed into performance management software, enabling motor carriers to track a driver's performance over time to identify risky drivers who may require coaching or removal.

Research evaluating the safety benefits of a video-based DMS found that the combination of a DMS with driver feedback and coaching resulted in a 52.2% reduction in safety-related events per 10,000 miles. Further, the most severe safety-related events were reduced by up to 59.1% (Hickman and Hanowski 2010). Other research modeled the potential safety benefits of video-based DMS on all CMVs in the US (Soccolich and others 2014). The research found that a video-based DMS paired with driver coaching had the potential to prevent an average of 727 fatal truck and bus crashes (20.5% of the total fatal crashes) and save 801 lives (20.0% of the total fatalities), reduce an estimated 25,000 truck and bus injury crashes (35.2% of the total injury crashes), and eliminate approximately 39,000 injuries (35.5% of the total injuries) each year.

At the time of the crash, AGL had recently acquired and had just started to install DMSs on its trucks with inward- and outward-facing cameras that can capture multiple risky driving behaviors, including drowsy and inattentive driving. Upon detection of risky behaviors, the DMS could send an immediate warning to the driver and an alert message to the carrier's safety department via text or e-mail. A DMS was not installed on the crash-involved truck. The NTSB concludes that although AGL had recently acquired DMSs to be installed on some of its trucks, it did not have policies or procedures for how to use these systems and did not have a DMS installed on the crash-involved truck. The lack of DMS installation kept the truck driver from receiving unsafe driving warnings and prevented AGL from monitoring driver performance, providing coaching on safe driving behaviors, and improving safety at the company.

Based upon its crash history and roadside data, which showed a pattern of unsafe driving, AGL must take additional action to prevent future crashes. Resources for developing an effective DMS, such as the National Surface Transportation Safety Center for Excellence's guidance to motor carriers, may be useful to AGL in achieving this goal (NSTSCE 2015). Therefore, the NTSB recommends that AGL install DMS technologies across its entire fleet of trucks and incorporate policies and procedures for proactively using these technologies to enhance safe driving behaviors and driver training and coaching.

2.3.3.2 Lane Departure Prevention Systems

The truck was not equipped with any in-vehicle (or advanced driving assist) technologies that could have actively prevented the fatigued truck driver's lane departure. Lane departure warning systems provide audio, visual, and/or haptic warnings but do not provide any actual steering or braking intervention to mitigate a collision. Active LDP systems, also referred to as active lane keep assist systems, provide these warnings and can also steer or brake a vehicle to help maintain its position in a lane and prevent crossover into adjacent lanes. Some systems can provide emergency braking to bring a vehicle to a complete stop, which can potentially prevent or lessen the severity of a collision. The foundation of an active LDP system is the camera, which is designed to recognize the painted lane markings. Faded lane markings, poor lighting conditions, glare, fog, and obstacles can affect the system's reliability, because if the camera cannot consistently detect the lane markings, it might be unable to predict when a lane departure is imminent. In the Louisville crash, even though there was light snow falling in the area, the roadway had been recently plowed and all roadway markings denoting the centerline and shoulder edge lines were visible.

Estimates of the potential number of crashes that could be prevented by LDP systems vary widely (from as low as 5,000 to as high as 483,000 per year), but as the systems' effectiveness improves and they become more widely adopted, the potential for preventing crashes increases (Penmetsa and others 2019). Other research has found that LDP systems may prevent 13–53% of large-truck road departures, sideswipes, and head-on crashes (Camden and others 2017). The ranges of effectiveness can be attributed, at least in part, to differences in system capabilities over time.

The NTSB has previously issued recommendations to require newly manufactured CMVs with gross vehicle weight ratings above 10,000 pounds to be equipped with LDP systems. Following our investigation of a 2019 medium-size bus rollover crash in Bryce Canyon City, Utah, the NTSB issued Safety Recommendation H-21-1 (NTSB 2021). This recommendation calls upon NHTSA to:

> Require all newly manufactured commercial motor vehicles with gross vehicle weight ratings above 10,000 pounds to be equipped with lane departure prevention systems.

In 2021, NHTSA responded to this recommendation by indicating that it was conducting research to evaluate how drivers perform using heavy-vehicle LDP systems and planned to publish the results of the study once the research was completed. In early 2022, Safety Recommendation H-21-1 was classified Open—Acceptable Response. Safety Recommendation H-21-1 was reiterated later in 2022

following our investigation of a 2020 collision between a truck and school bus in Decatur, Tennessee (NTSB 2022).

In evaluating the circumstances of the Louisville crash, it is likely that had an LDP system been installed on the truck, it would have detected the lane markings on the road's surface, warned the driver of the movement from the lane, and then, if he did not respond, actively intervened to maintain lane positioning. Therefore, the NTSB concludes that had the truck been equipped with an active LDP system or similar technology, it could have alerted the driver to the lane departure and subsequently intervened and prevented or mitigated the crash. Because the Louisville crash provides another example of a crash in which LDP could have prevented the collision or reduced the severity of the injuries, the NTSB reiterates Safety Recommendation H-21-1 to NHTSA.

2.4 Federal Oversight of Motor Carrier Operations

2.4.1 Aero Global Logistics Truck Operations

2.4.1.1 Overview

At the time of the crash, AGL had a high crash-involvement rate according to the FMCSA's allowable threshold of 1.5 crashes per million miles traveled and displayed a pattern of unsafe driving and noncompliance with the FMCSRs, as reflected in its roadside inspection data (see appendix E).[67] This section of the report examines different time periods of AGL's operation during which the FMCSA had the opportunity to detect the carrier's unsafe actions and take appropriate enforcement action. Section 2.4.1.2 examines AGL's safety record after it entered the motor carrier industry and assesses the ability of the FMCSA New Entrant Safety Assurance Program to provide effective oversight. Section 2.4.1.3 reviews the CR process that the FMCSA used to monitor AGL's roadside performance, the effectiveness of these interventions, and the importance of the FMCSA's ongoing rulemaking efforts to revamp the agency's safety fitness determination (SFD) process.

2.4.1.2 New Entrant Safety Assurance Program

Consolidation of Records. AGL entered the FMCSA New Entrant Safety Assurance Program in October 2013. As part of the program, AGL was subject to an 18-month safety monitoring period during which the FMCSA tracked the carrier's roadside inspection data. The FMCSA conducted the new entrant program safety

[67] In the 2 years before the crash, AGL had multiple BASICs above the FMCSA's intervention threshold, with Unsafe Driving (24 months in an alert status) and Crash Indicator (15 months in an alert status) being the most prevalent categories needing safety improvement.

audit on May 20, 2014, to evaluate whether AGL was meeting its regulatory requirements (driver qualification, driver duty status, vehicle maintenance, accident registry, and controlled substances). At the time of the audit, AGL employed 60 CDL drivers and owned 59 truck-tractors and 65 semitrailers. This is unusual for new entrants, which are generally much smaller operations (FMCSA 2023b). The safety audit, however, did not document the that the size and scope of the operation were unusual, and more importantly did not document the origin of the company. The audit documentation included a question about whether AGL had an affiliation with any former FMCSA-regulated carriers; the response provided was "No." In general, the documentation did not indicate anything atypical for AGL.

In our investigation, the NTSB discovered that AGL was a direct continuation of a company that was previously operating under the name of Chopper DDS Inc. In October 2013, Chopper declared bankruptcy and its president started AGL as a new company. The NTSB's review of available data identified several commonalities between AGL and Chopper, including the president, safety manager, thirteen drivers, and two vehicles. The FMCSA uses the term "reincarnated carrier" or "affiliated carrier" to refer to carriers with common ownership, management, control, or familial relationship.[68] Federal regulation prohibits two or more carriers from using any of these commonalities "to avoid compliance, or mask or otherwise conceal non-compliance, or a history of non-compliance, with statutory or regulatory requirements…" The FMCSA considers several factors in determining whether a carrier is a reincarnated carrier.[69] Upon making a determination, the FMCSA can issue an out-of-service order notice to prohibit a carrier from operating, or it can issue an order to consolidate the records that it maintains for the carrier and any affiliated carriers. The FMCSA did not identify AGL as a reincarnated or affiliated carrier during the safety audit or any of the CRs.

AGL's history as Chopper was critical information and should have been uncovered by the FMCSA during the new entrant program. Had the FMCSA documented the affiliation of the two carriers using the records consolidation procedures in 49 *CFR* 386.73, the agency could have incorporated Chopper's safety history into AGL's carrier profile to continue its safety oversight of AGL and monitor AGL's strict adherence to the FMCSRs.[70] When Chopper declared bankruptcy, it was in an alert status for the Unsafe Driving and Crash Indicator BASICs. Even though AGL was a continuation of Chopper, Chopper's negative Unsafe Driving and Crash Indicator BASIC scores did not extend to the new company, and AGL began operations with a clean driving and crash record. Further, the Unsafe Driving and

[68] For more information, see 49 *CFR* Part 385, Subpart L.

[69] For more information, see 49 *CFR* 386.73(c) and (d).

[70] Out-of-service and record consolidation proceedings for reincarnated carriers are defined in 49 *CFR* 386.73.

Crash Indicator BASICs have been found by the FMCSA to be most closely correlated with future crash risk.[71] The NTSB concludes that the FMCSA failed to consider AGL's commonalities (shared president, safety manager, and several drivers and vehicles) with a previous motor carrier that had a poor safety record, which resulted in an inaccurate assessment of AGL's safety controls, such as the policies and procedures it used to ensure compliance with FMCSA regulations.

High Crash-Involvement Rate. Another deficiency in the FMCSA's oversight of AGL during the new entrant safety audit was AGL's failure in the Accidents rating factor. During the first 7 months of operation, AGL had six recordable crashes and a crash rate of 2.53 crashes per million miles traveled, which exceeded the allowable crash rate of 1.5 crashes per million miles traveled for motor carriers operating in a non-urban environment. Additionally, roadside enforcement data for AGL's initial 7 months of operation showed evidence that the carrier also failed to comply with HOS regulations. Despite these safety deficiencies, AGL received a passing score on the safety audit because it failed one of the six factors evaluated, "Accidents," and would have needed to fail three or more factors to fail the audit.

After the new entrant safety audit, AGL remained under the oversight of the FMCSA's 18-month new entrant safety monitoring period. During this period (October 2013–May 2014), roadside inspection data showed that AGL was in an alert status for the Unsafe Driving and Crash Indicator BASICs. At the completion of the 18-month monitoring period, AGL exited the new entrant program and was able to maintain full operating authority without restriction or conditions for operation, despite being in alert status for these two critical BASICs.

The NTSB is concerned that AGL was allowed to graduate from the new entrant monitoring program even though it had a high crash-involvement rate and its roadside inspection data reflected a pattern of unsafe driving and noncompliance with HOS regulations. The NTSB believes that AGL's relative on-road performance as measured during roadside inspections and crash involvement should have prompted the FMCSA to conduct additional oversight of AGL, and we are concerned that other new entrant motor carriers will receive similar limited scrutiny, even if indicators show that their operations present a high crash risk. Considering the strong relationship between unsafe driving and involvement in a past crash, and future crash involvement, we are also concerned that AGL was allowed to graduate from the new entrant program without needing to show evidence of improved on-road performance or to submit a plan for how it was addressing deficiencies found during roadside inspections. Therefore, the NTSB concludes that more stringent safety performance requirements for new entrant motor carriers would ensure that motor

[71] See The Carrier Safety Measurement System (CSMS) Effectiveness Test by Behavior Analysis and Safety Improvement Categories (BASICs) (bts.gov).

carriers such as AGL cannot graduate from the New Entrant Safety Assurance Program if their on-road performance data show a pattern of unsafe operation or a high crash-involvement rate.

The FMCSA typically uses motor carriers' SMS on-road performance data to determine if an intervention is necessary. Violation and crash rates substantially above the norm for similar carriers often indicate weak or problematic safety management controls. Based on AGL's on-road performance during the new entrant monitoring period, it should have been clear that the carrier lacked adequate safety management controls to reduce the risk of crashes, injuries, and fatalities. At a minimum, new entrant motor carriers that have a high crash-involvement rate or show a pattern of violations related to unsafe operation should be required to submit a corrective action plan as a condition for continued operations. Therefore, the NTSB recommends that the FMCSA require new entrant motor carriers to submit a corrective action plan, to be reviewed and approved by the FMCSA, before they are granted full operating authority if their SMS on-road performance data show a pattern of unsafe operation or a high crash-involvement rate.

The NTSB has long recommended that the FMCSA implement additional safeguards to ensure that truck and bus companies entering the motor carrier industry are safe before beginning operation. In 2003, following our investigation of a three-fatality crash involving a truck-tractor–semitrailer collision with a bus in Loraine, Texas, we called for improved oversight of new entrant motor carriers (NTSB 2003). We recommended, in Safety Recommendation H-03-2, that the FMCSA take the following action:

> Require all new motor carriers seeking operating authority to demonstrate their safety fitness prior to obtaining new entrant operating authority by, at a minimum: (1) passing an examination demonstrating their knowledge of the Federal Motor Carrier Safety Regulations; (2) submitting a comprehensive plan documenting that the motor carrier has management systems in place to ensure compliance with the Federal Motor Carrier Safety Regulations; and (3) passing a Federal Motor Carrier Safety Administration safety audit, including vehicle inspections.

Safety Recommendation H-03-2 was reiterated three times following other crash investigations where we found significant deficiencies in the oversight of new entrant motor carriers (NTSB 2012b, 2014, and 2017a). Although the FMCSA had taken some steps to improve and enhance the New Entrant Safety Assurance Program, in June 2019, the NTSB classified Safety Recommendation H-03-2 Closed—Unacceptable Action because the FMCSA decided not to require carriers to submit a

safety plan or pass an FMCSR knowledge test during the new entrant program, and its other steps had not been sufficient to repair the ineffective program.[72]

In 2020, following our investigation of a multi-fatality motorcycle and truck crash in Randolph, New Hampshire, the NTSB again identified significant deficiencies with the New Entrant Safety Assurance Program (NTSB 2020). In our investigation, we recommended, in Safety Recommendation H-20-34, that the FMCSA take the following action:

> Establish an additional layer of oversight of recent graduates of your new entrant safety assurance program that has a lower tolerance for unsafe operations.

In August 2021, Safety Recommendation H-20-34 was classified Open—Acceptable Response because the FMCSA responded that it would evaluate its dynamic risk management tools to better identify and monitor moderate-risk carriers, including graduates of the new entrant program. However, because the Louisville, New York, crash represents another example of the deficiencies in the FMCSA's oversight of new entrant motor carriers as a recurring safety issue for over two decades, the NTSB reiterates Safety Recommendation H-20-34 to the FMCSA and classifies the recommendation Open—Unacceptable Response.

2.4.1.3 FMCSA Compliance Review Process and Safety Fitness Determination

Because of the large number of carriers in the motor carrier industry and the FMCSA's limited resources, new carriers do not typically receive a CR during the new entrant program. Instead, carriers are supposed to be monitored, and under certain conditions, a new entrant may be subject to an expedited action including a CR.

Without a robust, safety-focused foundation on which to build, carriers often have difficulty meeting their compliance obligations, which is often reflected in poor on-road performance and an increase in crashes. Even though AGL submitted to the new entrant program nearly 10 years before the crash, many of the safety deficiencies identified in the safety audit and during the new entrant monitoring period were never corrected and continued to affect the carrier for years leading up to the crash (see appendix E).

After completing the New Entrant Safety Assurance Program, AGL was subject to three CRs. For two of the CRs, the FMCSA intervened because AGL's SMS on-road performance data indicated safety deficiencies in multiple BASICs and AGL was classified as a Moderate-Risk carrier. The FMCSA conducted the third CR because of

[72] For the full correspondence history between the NTSB and the FMCSA on this recommendation, see Safety Recommendation H-03-2.

a written complaint that was sent to the FMCSA National Complaint Database alleging that AGL was using an unqualified driver. A review of the results of the CRs showed the disconnect between AGL's poor on-road performance and the FMCSA's intervention, which resulted in a Satisfactory fitness determination. Below is a summary of FMCSA interventions in response to AGL's poor roadside performance.

- *February 4, 2020; CR*: SMS data showed noncompliance with the FMCSRs related to the Unsafe Driving, HOS Compliance, Driver Fitness, and Controlled Substances BASICs. The FMCSA prioritized AGL for intervention because it was classified as a Moderate-Risk carrier. The FMCSA cited AGL with nine violations; however, none of the violations were considered critical or acute. AGL received a Satisfactory safety rating and no enforcement action or conditions were established for continued operations.
- *April 21, 2021; CR*: SMS data showed noncompliance with the FMCSRs related to the Unsafe Driving, HOS Compliance, and Crash Indicator BASICs. The FMCSA prioritized AGL for intervention because it was classified as a Moderate-Risk carrier and had not corrected many of the safety deficiencies noted in the CR that had been conducted 14 months earlier. The FMCSA completed a focused CR primarily examining the BASICs that were in alert status. The FMCSA identified two violations related to Unsafe Driving and the carrier's failure to require a driver to record HOS using an electronic logging device. Because the CR was a limited, focused review of the carrier's operation, the inspection was unrated and no enforcement action or conditions were established for continued operations.
- *June 27, 2022; CR*: SMS data showed a continued pattern of noncompliance with the FMCSRs related to the Unsafe Driving and HOS Compliance BASICs. The FMCSA initiated the investigation because a written complaint was sent to the FMCSA National Complaint Database alleging that AGL was using an unqualified driver. This CR was a comprehensive review, and two violations were identified related to unsafe driving and failing to require a driver to prepare a record-of-duty status. According to the CR, the complaint was unsubstantiated and resulted in a Satisfactory rating for the carrier.

When a motor carrier is selected for CR, it is because that carrier has already demonstrated a need for additional scrutiny through its poor on-road performance data. AGL was prioritized for intervention three times during the 3 years leading up to the crash because it lacked adequate safety controls, had a high crash-involvement rate, and showed a pattern of violations related to unsafe driving. Unfortunately, the FMCSA's interventions were ineffective in remediating either AGL's noncompliance

with regulations or its high crash-involvement rate. The NTSB concludes that the FMCSA was aware of numerous safety deficiencies in AGL's operations for several years, but the agency's interventions and oversight did not prevent the carrier from continuing to operate unsafely.

The FMCSA bases its current CR rating process on a comprehensive investigation and records review conducted by a certified investigator. The CR rating process does not incorporate the SMS on-road performance data used by the agency to prioritize interventions. For more than 15 years, as part of the FMCSA's Compliance, Safety, Accountability program, the agency has promised a complete revamp of the CR process with a plan to include SMS on-road performance data in its methodology for determining a carrier's fitness to operate. In 2012, following the NTSB's investigation of a 15-fatality motorcoach crash in New York City, New York, we recommended, in Safety Recommendation H-12-17, that the FMCSA take the following action (NTSB 2012a):

> Include safety measurement system rating scores in the methodology used to determine a carrier's fitness to operate in the safety fitness rating rulemaking for the new Compliance, Safety, Accountability initiative.

The NTSB reiterated this recommendation to the FMCSA a total of three times (NTSB 2016, 2017b, and 2018). In March 2020, Safety Recommendation H-12-17 was classified Open—Unacceptable Response due to the FMCSA's continuing lack of progress.

In January 2016, the FMCSA published a notice of proposed rulemaking (NPRM) titled "Carrier Fitness Determination." In the NPRM, the FMCSA noted that it was considering replacing the three-tier rating system of "Satisfactory-Conditional-Unsatisfactory" with a single determination of "Fit" or "Unfit."[73] An Unfit rating would require the carrier to improve its performance or cease operations. As part of the proposed revisions to the SFD rating structure, safety ratings would no longer stem solely from the FMCSA's comprehensive, on-site CR interventions. Instead, the FMCSA intended to tie a carrier's SFD to on-road safety performance data that it gathers from its state agency partners, which would then be converted into BASIC measurements using the SMS methodology. In 2017, the FMCSA withdrew the NPRM to await the results of an independent review of the SMS being conducted by the National Academy of Sciences, which was completed later in 2017.[74]

[73] Carrier Safety Fitness Determination. NPRM; request for comments. 81 *Federal Register* 3562 (January 21, 2016).

[74] See Improving Motor Carrier Safety Measurement | The National Academies Press.

In 2023, the FMCSA published an advanced notice of proposed rulemaking (ANPRM) titled "Safety Fitness Determinations."[75] The ANPRM was a follow-up to the 2016 NPRM and requested comments on the need for rulemaking to revise the regulations prescribing the SFD process. The ANPRM also sought input regarding new methodologies that would help determine whether a motor carrier is fit to operate CMVs in interstate commerce. The NTSB responded to this ANPRM with an in-depth discussion of our lengthy CMV crash investigation history and safety recommendations related to SFD.[76] As part of our response, we expressed our support for making SMS on-road performance data an integral part of the SFD.

The Louisville crash, with its tragic loss of life, underscores the urgency for the FMCSA to move forward more expeditiously to provide timely public safety ratings (using SMS on-road performance data) and to more quickly remove unsafe motor carriers and their drivers from the nation's highways. The NTSB concludes that the overall safety posture of motor carriers would be better represented, and the safety of our roadways would be improved, if SMS on-road performance data were included in the FMCSA's determination of a motor carrier's safety rating.

Because of the FMCSA's lack of progress in its previous rulemaking effort to revamp the agency's fitness determination process, the NTSB classifies Safety Recommendation H-12-17 to the FMCSA Closed—Unacceptable Action/Superseded. The NTSB recommends that the FMCSA incorporate SMS on-road performance data into its methodology for determining a motor carrier's fitness to operate.

2.4.2 LBFNY Bus Operations

2.4.2.1 Overview

The bus was owned and operated by LBFNY. The company used buses to transport its workers to job sites to install solar panels. Our investigation identified significant issues regarding LBFNY's operations and lack of safety management controls (section 2.4.2.2), its ability to register its fleet of buses out of state (section 2.4.2.3), and the insufficient attention it paid to the safe transportation of the bus occupants (section 2.4.2.4).

[75] Safety Fitness Determinations. ANPRM; request for comments. 88 *Federal Register* 59489 (August 29, 2023).

[76] See Comment from National Transportation Safety Board in response to FMCSA Safety Fitness Determinations ANPRM (October 20, 2023).

2.4.2.2 Safety Management Controls

LBFNY obtained a USDOT number and was automatically entered into the New Entrant Safety Assurance Program in December 2021. The company's operating status was changed to "revoked" in April 2022 when LBFNY refused to participate in a new entrant safety audit, and consequently the FMCSA issued LBFNY a federal out-of-service order for "No Show/Refusal." At the time of the crash, LBFNY's operating status was classified as "Inactive." In reviewing the company's safety management controls, the NTSB found that LBFNY was in significant noncompliance with the FMCSRs and did not possess any driver qualification, drug testing, HOS, or vehicle maintenance records. Additionally, the company did not have a formal driver training program and could not produce records related to the crash-involved driver, who did not have a CDL and therefore was not properly licensed at the time of the crash. Before the crash, the FMCSA had not visited or inspected LBFNY operations.[77] After the crash, the FMCSA performed a CR and identified 16 violations. LBFNY received an Unsatisfactory safety rating and was penalized with a fine of $32,330. We are concerned that LBFNY was able to continue operations for more than 7 months (June 2022–January 2023) with an "Inactive" status and without detection or appropriate intervention by regulatory authorities, and that it ultimately received a safety rating that enabled it to resume legal operations. This issue is discussed in the following sections of this report.

2.4.2.3 Bus Out-of-State Registration

In June 2022, LBFNY incorporated in Montana. The owner then registered LBFNY's entire fleet of vehicles, including the crash-involved bus, at the Montana Vehicle Services Bureau. At this time, the FMCSA's public Safety and Fitness Electronic Records System database indicated that LBFNY was under a federal out-of-service order, but the Montana Vehicle Services Bureau did not check the database and issued license plates to LBFNY.[78] The Montana vehicle registration form asks for basic ownership, vehicle, lien, and odometer information. By comparison, the New York vehicle registration form is significantly more robust, including these fields but also asking about whether the vehicle is to be used for commercial purposes, its seating capacity, its seat belt availability, and whether the vehicle has been altered. The New York registration form informs the registrant of its responsibilities if operating a bus or passenger-carrying vehicle, such as complying with New York

[77] The MCMIS assists the FMCSA in identifying motor carriers that violate out-of-service orders. Such violations are typically noted during a roadside inspection, crash, or targeted enforcement effort by state police or the FMCSA. A carrier caught violating an out-of-service order would be flagged for an immediate CR and enforcement action. Passenger-carrying operations typically do not receive roadside inspections, as discussed in section 2.4.2.4.

[78] The FMCSA's Safety and Fitness Electronic Records (SAFER) System is publicly available online and provides motor carrier safety data including USDOT status and out-of-service date.

state bus requirements.[79] Further, it asks for the type of non-personal vehicle use, additional insurance information, and a USDOT operation number. Because Montana's form did not include these fields, the Montana Vehicle Services Bureau had no capability to ensure that LBFNY was registered and was operating with appropriate authority and without an out-of-service order.

The NTSB concludes that when states do not have administrative safeguards in place, such as reviewing a company's status in the FMCSA's database, to identify motor carriers that are subject to out-of-service orders and prevent them from registering their vehicles, as was the case with Montana, these carriers may exploit those states' lack of safeguards to continue to operate throughout the country in an unsafe manner. Therefore, the NTSB recommends that the state of Montana implement procedures—such as requiring and reviewing USDOT numbers as part of the registration process—to identify motor carriers that are subject to a federal out-of-service order and prevent them from registering their CMVs in the state.

The American Association of Motor Vehicle Administrators (AAMVA) is a nonprofit organization that develops model programs in motor vehicle administration for law enforcement and highway safety. Founded in 1933, AAMVA represents the state, provincial, and territorial officials in the United States and Canada who administer and enforce motor vehicle laws. AAMVA's programs encourage uniformity and reciprocity among the states and provinces. AAMVA provides a variety of technology services including system applications, network services, software products, and standards that enable members to securely share driver, vehicle, and identity verification data. AAMVA, working with the FMCSA, can review current CMV registration protocols and develop procedures for state motor vehicle administrations to detect improper registration of CMVs that are subject to a federal out-of-service order. Therefore, the NTSB recommends that AAMVA, in cooperation with the FMCSA, develop guidelines—such as requiring and reviewing USDOT numbers as part of the registration process—for state motor vehicle administrations to identify motor carriers that are subject to a federal out-of-service order and prevent them from registering their CMVs in the state. The NTSB also recommends that the FMCSA support AAMVA in developing guidelines—such as requiring and reviewing USDOT numbers as part of the registration process—for state motor vehicle administrations to identify motor carriers that are subject to a federal out-of-service order and prevent them from registering their CMVs in the state.

[79] For more information, see New York State Senate Article 19-A, "Special Requirements for Bus Drivers."

2.4.2.4 Limitations on Inspections of Passenger-Carrying Motor Carriers

After registering its fleet of vehicles in Montana, LBFNY was able to continue operations for over 7 months while in violation of a federal out-of-service order and without detection by law enforcement.[80] Roadside inspections are an important tool for the FMCSA to identify out-of-service carriers and issue immediate CRs and enforcement actions for those carriers. However, with the rare exception of a few locations (New York City; Washington, DC; and a few destination locations such as Yellowstone National Park), passenger-carrying vehicles (buses, motorcoaches, and limousines) are not required (or authorized) to stop at CMV inspection locations where they might be subject to a roadside inspection. Additionally, the USDOT is only authorized to issue funds to states through motor carrier assistance programs when the inspection of vehicles transporting passengers is conducted at a bus station, terminal, border crossing, maintenance facility, destination, or other location where a motor carrier may make a planned stop.[81] The reason for these limitations on the enforcement policy is that it is often a safety hazard and a significant inconvenience for bus passengers to disembark on the side of a road, without adequate protection from traffic hazards, in order for law enforcement to conduct a roadside inspection.

Because of these enforcement limitations, it is difficult for the FMCSA or law enforcement officers to detect unsafe passenger-carrying motor carrier operations. The NTSB concludes that because of a lack of intervention associated with enforcement limitations on en-route bus inspections, LBFNY was able to operate its fleet of buses in violation of a federal out-of-service order, as well as with an improperly licensed driver and no safety management controls in place to protect bus occupants, for over 7 months.

As discussed in section 2.4.1.3, the FMCSA published an ANPRM titled "Safety Fitness Determinations" in 2017. In the ANPRM, as part of the FMCSA's efforts to revamp the SFD process, the agency requested feedback from stakeholders on whether motor carriers that transport passengers should be subject to higher standards than other motor carriers in terms of SFD rating methodology. The NTSB responded to the ANPRM by emphasizing that because passenger-carrying motor carriers have distinctly different business models than freight carriers, and because of the number of people onboard, the risk is amplified and there is a higher potential for injury and loss of life. Additionally, we advised the FMCSA that because of the lack of regular roadside inspections of passenger-carrying motor carriers, there should be a requirement for more frequent CRs and ideally higher standards for compliance. We

[80] The NTSB found no record of any enforcement contacts with LBFNY from June 2022 until the date of the crash in January 2023.

[81] See *49 United States Code* 31102(c)(2)(W).

believe this still holds true. Therefore, the NTSB recommends that the FMCSA include provisions in its SFD rulemaking that prioritize passenger-carrying motor carrier safety performance and ensure increased compliance monitoring and other interventions for these carriers, including more frequent CRs.

3 Conclusions

3.1 Findings

1. None of the following were factors in the crash: (1) mechanical condition of either vehicle; (2) highway condition; (3) familiarity with their vehicles or the roadway by either driver; (4) cell phone use, use of alcohol or other drugs, or medical conditions of either driver; or (5) bus driver fatigue.

2. The emergency response efforts were timely and adequate.

3. Although the bus driver did not meet qualifications for operating a commercial motor vehicle in the United States, and therefore should not have been operating the bus, based on the circumstances of the crash, there was no action he could have taken to avoid it.

4. Although the passengers on the right side of the bus were outside of the impact and intrusion zone, many of them were thrown out of their seats during the collision sequence and sustained injuries because the bus's seat belts were inaccessible and not used.

5. LBFNY's lack of seat belt use and accessibility policies and pretrip safety briefings hindered the safety of the bus occupants.

6. The truck driver's centerline crossover and incursion into the bus's travel lane was likely due to fatigue caused by limited and fragmented sleep as well as circadian disruption associated with his shift-work schedule.

7. If Aero Global Logistics had had a structured fatigue management program in place before the Louisville crash, it could have educated its drivers and other employees about the risks of fatigue and possibly prevented the crash.

8. Although Aero Global Logistics (AGL) had recently acquired driver monitoring systems (DMS) to be installed on some of its trucks, it did not have policies or procedures for how to use these systems and did not have a DMS installed on the crash-involved truck. The lack of DMS installation kept the truck driver from receiving unsafe driving warnings and prevented AGL from monitoring driver performance, providing coaching on safe driving behaviors, and improving safety at the company.

9. Had the truck been equipped with an active lane departure prevention system or similar technology, it could have alerted the driver to the lane departure and subsequently intervened and prevented or mitigated the crash.

10. The Federal Motor Carrier Safety Administration (FMCSA) failed to consider Aero Global Logistics' (AGL) commonalities (shared president, safety manager, and several drivers and vehicles) with a previous motor carrier that had a poor safety record, which resulted in an inaccurate assessment of AGL's safety controls, such as the policies and procedures it used to ensure compliance with FMCSA regulations.

11. More stringent safety performance requirements for new entrant motor carriers would ensure that motor carriers such as Aero Global Logistics cannot graduate from the New Entrant Safety Assurance Program if their on-road performance data show a pattern of unsafe operation or a high crash-involvement rate.

12. The Federal Motor Carrier Safety Administration was aware of numerous safety deficiencies in Aero Global Logistics' operations for several years, but the agency's interventions and oversight did not prevent the carrier from continuing to operate unsafely.

13. The overall safety posture of motor carriers would be better represented, and the safety of our roadways would be improved, if Safety Measurement System on-road performance data were included in the Federal Motor Carrier Safety Administration's determination of a motor carrier's safety rating.

14. When states do not have administrative safeguards in place, such as reviewing a company's status in the Federal Motor Carrier Safety Administration's database, to identify motor carriers that are subject to out-of-service orders and prevent them from registering their vehicles, as was the case with Montana, these carriers may exploit those states' lack of safeguards to continue to operate throughout the country in an unsafe manner.

15. Because of a lack of intervention associated with enforcement limitations on en-route bus inspections, LBFNY was able to operate its fleet of buses in violation of a federal out-of-service order, as well as with an improperly licensed driver and no safety management controls in place to protect bus occupants, for over 7 months.

3.2 Probable Cause

The National Transportation Safety Board determines that the probable cause of the Louisville, New York, crash was the truck driver's fatigue due to insufficient sleep and circadian disruption, which lowered his level of alertness to the driving task and resulted in the truck crossing the centerline of the roadway into the opposing lane of travel and colliding with the oncoming bus.

Contributing to the crash were the failure of the truck motor carrier, Aero Global Logistics (AGL), to effectively manage driver fatigue and monitor unsafe driving, and the failure of the bus motor carrier, LBFNY, to operate in compliance with Federal Motor Carrier Safety Regulations and a federal out-of-service order. Also contributing was the Federal Motor Carrier Safety Administration's ineffective oversight of AGL during the New Entrant Safety Assurance Program and subsequent compliance reviews to ensure that the carrier had appropriate safety management controls in place to mitigate its high crash rate and driver fatigue.

Contributing to the severity of the injuries was the failure of the bus motor carrier, LBFNY, to ensure that seat belts were readily accessible and worn, which resulted in multiple bus occupants being displaced from their seats and injured during the collision sequence.

4 Recommendations

4.1 New Recommendations

As a result of this investigation, the National Transportation Safety Board makes the following new safety recommendations.

To the Federal Motor Carrier Safety Administration:

Require new entrant motor carriers to submit a corrective action plan, to be reviewed and approved by the Federal Motor Carrier Safety Administration, before they are granted full operating authority if their Safety Measurement System on-road performance data show a pattern of unsafe operation or a high crash-involvement rate. (H-24-25)

Incorporate Safety Measurement System on-road performance data into your methodology for determining a motor carrier's fitness to operate. (H-24-26)

Support the American Association of Motor Vehicle Administrators in developing guidelines—such as requiring and reviewing US Department of Transportation numbers as part of the registration process—for state motor vehicle administrations to identify motor carriers that are subject to a federal out-of-service order and prevent them from registering their commercial motor vehicles in the state. (H-24-27)

Include provisions in your safety fitness determination rulemaking that prioritize passenger-carrying motor carrier safety performance and ensure increased compliance monitoring and other interventions for these carriers, including more frequent compliance reviews. (H-24-28)

To the State of Montana:

Implement procedures—such as requiring and reviewing US Department of Transportation numbers as part of the registration process—to identify motor carriers that are subject to a federal out-of-service order and prevent them from registering their commercial motor vehicles in the state. (H-24-29)

To the American Trucking Associations and the National Private Truck Council:

Inform your members about the Louisville, New York, crash and urge them to develop fatigue management programs based on the North American Fatigue Management Program to educate drivers and other employees about fatigue, its causes, and its countermeasures. (H-24-30)

To the Amalgamated Transit Union, the International Brotherhood of Teamsters, the Owner-Operator Independent Drivers Association, and the Transport Workers Union of America:

Inform your members about the Louisville, New York, crash and urge them to familiarize themselves with the North American Fatigue Management Program to learn about fatigue, its causes, and its countermeasures. (H-24-31)

To the American Association of Motor Vehicle Administrators:

In cooperation with the Federal Motor Carrier Safety Administration, develop guidelines—such as requiring and reviewing US Department of Transportation numbers as part of the registration process—for state motor vehicle administrations to identify motor carriers that are subject to a federal out-of-service order and prevent them from registering their commercial motor vehicles in the state. (H-24-32)

To LBFNY:

Establish procedures to ensure that the seat belts on all of your buses are regularly inspected to maintain their functionality and accessibility. (H-24-33)

Establish policies to require that all bus occupants wear seat belts on every trip and that bus drivers provide pretrip safety briefings informing all bus occupants about the benefits of wearing seat belts. (H-24-34)

To Aero Global Logistics:

Develop and implement a fatigue management program based on the North American Fatigue Management Program to educate your drivers and other employees about fatigue, its causes, and its countermeasures. (H-24-35)

Install driver monitoring system technologies across your entire fleet of trucks and incorporate policies and procedures for proactively using these technologies to enhance safe driving behaviors and driver training and coaching. (H-24-36)

4.2 Previously Issued Recommendations Reiterated in This Report

As a result of its investigation, the National Transportation Safety Board reiterates the following safety recommendations.

To the National Highway Traffic Safety Administration:

Require all newly manufactured commercial motor vehicles with gross vehicle weight ratings above 10,000 pounds to be equipped with lane departure prevention systems. (H-21-1)

Safety Recommendation H-21-1 is reiterated in section 2.3.3.2 of this report.

To the State of New York:

Enact legislation that provides for primary enforcement of a mandatory seat belt use law for all vehicle seating positions equipped with a passenger restraint. (H-15-42)

Safety Recommendation H-15-42 is reiterated in section 2.2.2 of this report.

4.3 Previously Issued Recommendations Reiterated and Classified in This Report

As a result of its investigation, the National Transportation Safety Board reiterates and classifies the following safety recommendation.

To the Federal Motor Carrier Safety Administration:

Establish an additional layer of oversight of recent graduates of your new entrant safety assurance program that has a lower tolerance for unsafe operations. (H-20-34)

Safety Recommendation H-20-34 is reiterated and classified Open—Unacceptable Response in section 2.4.1.2 of this report.

4.4 Previously Issued Recommendations Classified in this Report

As a result of its investigation, the National Transportation Safety Board classifies the following safety recommendation:

To the Federal Motor Carrier Safety Administration:

Include safety measurement scores in the methodology used to determine a carrier's fitness to operate in the safety fitness rating rulemaking for the new Compliance, Safety, Accountability initiative. (H-12-17)

Safety Recommendation H-12-17 is classified Closed—Unacceptable Action/Superseded in section 2.4.1.3 of this report.

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

JENNIFER HOMENDY
Chair

MICHAEL GRAHAM
Member

THOMAS CHAPMAN
Member

ALVIN BROWN
Member

J. TODD INMAN
Member

Report Date: November 19, 2024

Appendixes

Appendix A: Investigation

The National Transportation Safety Board was notified of this crash on January 28, 2023, and an investigative team was dispatched to the scene. Groups were established to investigate human performance, highway, vehicle, motor carrier, and survival factors. The on-scene investigative staff was supported by staff from the Office of Aviation Safety (meteorology support) and the Office of Research and Engineering.

Parties to the investigation were the Federal Motor Carrier Safety Administration, New York State Police, and New York State Department of Transportation – Motor Carrier Compliance Bureau.

Appendix B: Consolidated Recommendation Information

Title 49 *United States Code* 1117(b) requires the following information on the recommendations in this report.

For each recommendation—

(1) a brief summary of the Board's collection and analysis of the specific accident investigation information most relevant to the recommendation;

(2) a description of the Board's use of external information, including studies, reports, and experts, other than the findings of a specific accident investigation, if any were used to inform or support the recommendation, including a brief summary of the specific safety benefits and other effects identified by each study, report, or expert; and

(3) a brief summary of any examples of actions taken by regulated entities before the publication of the safety recommendation, to the extent such actions are known to the Board, that were consistent with the recommendation.

To the Federal Motor Carrier Safety Administration:

H-24-25

Require new entrant motor carriers to submit a corrective action plan, to be reviewed and approved by the Federal Motor Carrier Safety Administration, before they are granted full operating authority if their Safety Measurement System on-road performance data show a pattern of unsafe operation or a high crash-involvement rate.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.4.1.2, New Entrant Safety Assurance Program. Information supporting (b)(1) and (b)(2) can be found on pages 58–60; (b)(3) is not applicable.

H-24-26

Incorporate Safety Measurement System on-road performance data into your methodology for determining a motor carrier's fitness to operate.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.4.1.3, FMCSA Compliance Review Process and Safety Fitness Determination. Information supporting (b)(1) and (b)(2) can be found on pages 62–65; (b)(3) is not applicable.

H-24-27

Support the American Association of Motor Vehicle Administrators in developing guidelines—such as requiring and reviewing US Department of Transportation numbers as part of the registration process—for state motor vehicle administrations to identify motor carriers that are subject to a federal out-of-service order and prevent them from registering their commercial motor vehicles in the state.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.4.2.3, Bus Out-of-State Registration. Information supporting (b)(1) and (b)(2) can be found on pages 66–67; (b)(3) is not applicable.

H-24-28

Include provisions in your safety fitness determination rulemaking that prioritize passenger-carrying motor carrier safety performance and ensure increased compliance monitoring and other interventions for these carriers, including more frequent compliance reviews.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.4.2.4, Limitations on Inspections of Passenger-Carrying Motor Carriers. Information supporting (b)(1) and (b)(2) can be found on pages 68-69; (b)(3) is not applicable.

To the State of Montana:

H-24-29

Implement procedures—such as requiring and reviewing US Department of Transportation numbers as part of the registration process—to identify motor carriers that are subject to a federal out-of-service order and prevent them from registering their commercial motor vehicles in the state.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.4.2.3, Bus Out-of-State Registration. Information supporting (b)(1) and (b)(2) can be found on pages 66–67; (b)(3) is not applicable.

To the American Trucking Associations and National Private Truck Council:

H-24-30

Inform your members about the Louisville, New York, crash and urge them to develop fatigue management programs based on the North American Fatigue Management Program to educate drivers and other employees about fatigue, its causes, and its countermeasures.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.3.2, Fatigue Management Programs. Information supporting (b)(1) and (b)(2) can be found on pages 53–55; (b)(3) is not applicable.

To the Amalgamated Transit Union, the International Brotherhood of Teamsters, the Owner-Operator Independent Drivers Association, and the Transport Workers Union of America:

H-24-31

Inform your members about the Louisville, New York, crash and urge them to familiarize themselves with the North American Fatigue Management Program to learn about fatigue, its causes, and its countermeasures.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.3.2, Fatigue Management Programs. Information supporting (b)(1) and (b)(2) can be found on pages 53–55; (b)(3) is not applicable.

To the American Association of Motor Vehicle Administrators:

H-24-32

In cooperation with the Federal Motor Carrier Safety Administration, develop guidelines—such as requiring and reviewing US Department of Transportation numbers as part of the registration process—for state motor vehicle administrations to identify motor carriers that are subject to a federal out-of-service order and prevent them from registering their commercial motor vehicles in the state.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.4.2.3, Bus Out-of-State Registration. Information supporting (b)(1) and (b)(2) can be found on pages 66–67; (b)(3) is not applicable.

To LBFNY:

H-24-33

Establish procedures to ensure that the seat belts on all of your buses are regularly inspected to maintain their functionality and accessibility.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.2.2, Severity of Injuries. Information supporting (b)(1) and (b)(2) can be found on pages 48–49; (b)(3) is not applicable.

H-24-34

Establish policies to require that all bus occupants wear seat belts on every trip and that bus drivers provide pretrip safety briefings informing all bus occupants about the benefits of wearing seat belts.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.2.2, Severity of Injuries. Information supporting (b)(1) and (b)(2) can be found on pages 48–50; (b)(3) is not applicable.

To Aero Global Logistics:

H-24-35

Develop and implement a fatigue management program based on the North American Fatigue Management Program to educate your drivers and other employees about fatigue, its causes, and its countermeasures.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.3.2, Fatigue Management Programs. Information supporting (b)(1) and (b)(2) can be found on pages 53–55; (b)(3) is not applicable.

H-24-36

Install driver monitoring system technologies across your entire fleet of trucks and incorporate policies and procedures for proactively using these technologies to enhance safe driving behaviors and driver training and coaching.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.3.3.1, Driver Monitoring Systems. Information supporting (b)(1) and (b)(2) can be found on pages 55–56; (b)(3) is not applicable.

Appendix C: Injury Descriptions and Information for Bus Occupants

Seating Position	Injury Description	Occupant Information
Row 1, Seat A	Fatal injuries. Left leg injuries including fractures to left femur, tibia, and fibula. Lacerations to left arm and forearm.	Ejected. Found lying facing upward and pinned under bus's driver-side windowsill.
Row 1, Seat B	Serious injuries. Unconscious with trauma to left side of head.	Emergency personnel extricated him by removing entangled seat and cutting lap belt.
Row 1, Seat C/D	Minor injuries. Concussion with temporary loss of consciousness. Complaint of pain to head, neck, and shoulder area.	Lying down across seats prior to crash. Thrown to the bus floor and into privacy panel at the loading door.
Row 2, Seat A	Fatal injuries. Cervical fracture, skull fracture, facial fractures, left clavicle fracture, and fracture to left tibia and fibula.	Ejected. Found on ground near the driver-side B-pillar.
Row 2, Seat B	Fatal injuries. Left frontal skull fracture and left scalp laceration.	Entrapped between the seat back and seat pan.
Row 2, Seat C	Minor injuries. Multiple small glass cuts and complaint of pain to chest and upper back.	Self-extricated from bus. Visited hospital 3 days after crash for follow-up exam.
Row 2, Seat D	Minor injuries. Small cut to right hand and abrasion to forehead on right side.	Self-extricated from bus. Visited hospital 3 days after crash for follow-up exam.
Row 3, Seat A	Fatal injuries. Skull and facial fractures.	Entrapped between seatbacks.
Row 3, Seat C	Serious injuries. Mid-fibula fracture to left leg and swollen left cheek.	Evaluated in an ambulance at crash scene but did not go to hospital until next day.
Row 3, Seat D	Minor injuries. Cut to forehead and chin. Complaint of pain to neck.	Self-extricated from bus. Visited hospital 3 days after crash for follow-up exam.
Row 4, Seat A	Fatal injuries. Cervical fractures, multiple mandible fractures, left cheek fracture, left scapula fracture, and multiple rib fractures.	Entrapped between seatbacks.
Row 4, Seat C/D	No injuries claimed.	Lying down across seats prior to crash. Thrown to floor and reported briefly "blacking out." Refused medical treatment.
Row 5, Seat A/B	Fatal injuries. Craniofacial fracture, skull fracture, jaw fractures, and brain lacerations.	Ejected from bus. Found about 8 feet west of rear of bus.
Row 5, Seat C	Minor injuries. Two lacerations with stitches to lower right cheek. Bruises to ribs, shoulders, and legs.	Transported to hospital where he was treated and released.

Appendix D: Aero Global Logistics Fatigue Policy

AERO GLOBAL LOGISTICS

Fatigue Policy

As an employee, it is important to prioritize safety by asking yourself if you are doing everything you can to ensure your own safety and the safety of other drivers on the road, including considering factors such as fatigue, illness, medication, equipment safety, and being aware of and avoiding distractions. This mindset of safety and accountability can be achieved by being proactive in identifying and addressing potential hazards and reporting any concerns or issues to your employer. Please consider the following every time before you start a trip:

- Am I fatigued? Have I taken a break or slept enough in the past 24 hours
- Am I sick, requiring medication?
- Will this medication affect my driving?
- Is the equipment safe to operate?
- Do I know when to say no? -refuse to run a route due to equipment issues or me not feeling up to it physically.
- Are there any distractions in the vehicle that could take my attention away from driving? ● Have I been properly trained on the vehicle and equipment I am operating? ● Are the weather and road conditions safe for driving?
- Do I know how to handle and react to emergency situations?
- Have I reviewed and familiarized myself with the route I am taking?
- Have I checked for proper registration and inspection of the vehicle?
- Have I done a proper pre and post trip inspection?
- Am I properly licensed and insured to operate the vehicle?
- What actions can you take today to be more safe?

Driver Signature _____

Print Name_____ Date _____

Appendix E: Aero Global Logistics (AGL) Behavior Analysis and Safety Improvement Categories (BASIC) in Alert Status

Date	BASIC In Alert Status	Comment
Jun. 2013	Unsafe Driving, Crash Indicator	Chopper operations.
Jul. 2013	Unsafe Driving, Crash Indicator	Chopper operations.
Aug. 2013	Unsafe Driving, Crash Indicator	Chopper operations.
Sep. 2013	Unsafe Driving, Crash Indicator	Chopper operations.
Oct. 2013	No "alerts." Insufficient # of roadside inspections for new entrant AGL.	Chopper declares bankruptcy and AGL begins operations. Enters new entrant program.
Nov. 2013	No "alerts." Insufficient # of roadside inspections for new entrant AGL.	AGL new entrant monitoring period.
Dec. 2013	HOS [Hours of Service] Compliance	AGL new entrant monitoring period.
Jan. 2014	HOS Compliance	AGL new entrant monitoring period.
Feb. 2014	HOS Compliance	AGL new entrant monitoring period.
Mar. 2014	HOS Compliance	AGL new entrant monitoring period.
Apr. 2014	Crash Indicator	AGL new entrant monitoring period.
May 2014	Crash Indicator	AGL passed new entrant safety audit. Failed “Accidents” factor due to high crash rate.
Jun. 2014	Crash Indicator	AGL new entrant monitoring period.
Jul. 2014	Crash Indicator	AGL new entrant monitoring period.
Aug. 2014	Crash Indicator	AGL new entrant monitoring period.
Sep. 2014	Unsafe Driving, Crash Indicator	AGL new entrant monitoring period.
Oct. 2014	Unsafe Driving, Crash Indicator	AGL new entrant monitoring period.
Nov. 2014	Unsafe Driving, Crash Indicator	AGL new entrant monitoring period.
Dec. 2014	Unsafe Driving, Crash Indicator	AGL new entrant monitoring period.
Jan. 2015	Unsafe Driving, Crash Indicator	AGL new entrant monitoring period.
Feb. 2015	Crash Indicator	AGL new entrant monitoring period.
Mar. 2015	Crash Indicator	AGL new entrant monitoring period.
Apr. 2015	Crash Indicator	AGL exits new entrant monitoring program and receives full operating authority.
May 2015	Crash Indicator	1 BASIC above intervention threshold (alert)
Jun. 2015	Crash Indicator	1 BASIC above intervention threshold (alert)
Jul. 2015	Crash Indicator	1 BASIC above intervention threshold (alert)
Aug. 2015	Crash Indicator	1 BASIC above intervention threshold (alert)
Sep. 2015	Unsafe Driving, Crash Indicator	2 BASICs above intervention threshold (alert)
Oct. 2015	Unsafe Driving, Crash Indicator	2 BASICs above intervention threshold (alert)
Nov. 2015	Unsafe Driving, Crash Indicator	2 BASICs above intervention threshold (alert)

Date	BASIC In Alert Status	Comment
Dec. 2015	Unsafe Driving, Crash Indicator	2 BASICs above intervention threshold (alert)
Jan. 2016	Unsafe Driving, Crash Indicator	2 BASICs above intervention threshold (alert)
Feb. 2016	Crash Indicator	1 BASIC above intervention threshold (alert)
Mar. 2016	Crash Indicator	1 BASIC above intervention threshold (alert)
Apr. 2016	Crash Indicator	1 BASIC above intervention threshold (alert)
May 2016	Crash Indicator	1 BASIC above intervention threshold (alert)
Jun. 2016	Unsafe Driving, Crash Indicator	2 BASICs above intervention threshold (alert)
Jul. 2016	Unsafe Driving, Crash Indicator	2 BASICs above intervention threshold (alert)
Aug. 2016	Unsafe Driving, Crash Indicator	2 BASICs above intervention threshold (alert)
Sep. 2016	Unsafe Driving, Crash Indicator	2 BASICs above intervention threshold (alert)
Oct. 2016	Unsafe Driving, Crash Indicator	2 BASICs above intervention threshold (alert)
Nov. 2016	Crash Indicator	1 BASIC above intervention threshold (alert)
Dec. 2016	Crash Indicator	1 BASIC above intervention threshold (alert)
Jan. 2016		No BASICs were above intervention threshold
Feb. 2016		No BASICs were above intervention threshold
Mar. 2016		No BASICs were above intervention threshold
Apr. 2016		No BASICs were above intervention threshold
May 2016		No BASICs were above intervention threshold
Jun. 2016		No BASICs were above intervention threshold
Jul. 2016		No BASICs were above intervention threshold
Aug. 2016		No BASICs were above intervention threshold
Sep. 2016		No BASICs were above intervention threshold
Oct. 2016		No BASICs were above intervention threshold
Nov. 2016		No BASICs were above intervention threshold
Dec. 2016	Unsafe Driving	1 BASIC above intervention threshold (alert)
Jan. 2017	Driver Fitness	1 BASIC above intervention threshold (alert)
Feb.2017	Driver Fitness	1 BASIC above intervention threshold (alert)
Mar. 2017		No BASICs were above intervention threshold
Apr. 2017		No BASICs were above intervention threshold
May 2017		No BASICs were above intervention threshold
Jun. 2017		No BASICs were above intervention threshold

Date	BASIC In Alert Status	Comment
Jul. 2017		No BASICs were above intervention threshold
Aug. 2017		No BASICs were above intervention threshold
Sep. 2017		No BASICs were above intervention threshold
Oct. 2017		No BASICs were above intervention threshold
Nov. 2017		No BASICs were above intervention threshold
Dec. 2017	Crash Indicator	1 BASIC above intervention threshold (alert)
Jan. 2018	Crash Indicator	1 BASIC above intervention threshold (alert)
Feb. 2018	Crash Indicator	1 BASIC above intervention threshold (alert)
Mar. 2018	Crash Indicator	1 BASIC above intervention threshold (alert)
Apr. 2018	Crash Indicator	1 BASIC above intervention threshold (alert)
May 2018	Crash Indicator	1 BASIC above intervention threshold (alert)
Jun. 2018	Crash Indicator	1 BASIC above intervention threshold (alert)
Jul. 2018	Crash Indicator	1 BASIC above intervention threshold (alert)
Aug. 2018	Crash Indicator	1 BASIC above intervention threshold (alert)
Sep. 2018	Crash Indicator	1 BASIC above intervention threshold (alert)
Oct. 2018		No BASICs were above intervention threshold
Nov. 2018	Crash Indicator	1 BASIC above intervention threshold (alert)
Dec. 2018	Crash Indicator	1 BASIC above intervention threshold (alert)
Jan. 2019	Crash Indicator	1 BASIC above intervention threshold (alert)
Feb. 2019	Crash Indicator	1 BASIC above intervention threshold (alert)
Mar. 2019	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)
Apr. 2019	HOS Compliance, Driver Fitness, Crash Indicator	3 BASICs above intervention threshold (alert)
May 2019	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)
Jun. 2019	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)
Jul. 2019	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)
Aug. 2019	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)
Sep. 2019	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)

Date	BASIC In Alert Status	Comment
Oct. 2019	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)
Nov. 2019	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)
Dec. 2019	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)
Jan. 2020	Unsafe Driving, HOS Compliance, Driver Fitness	3 BASICs above intervention threshold (alert)
Feb. 2020	Unsafe Driving, HOS Compliance, Driver Fitness, Controlled Substances	Compliance Review – Satisfactory Rating 4 BASICs above intervention threshold (alert)
Mar. 2020	Unsafe Driving, HOS Compliance, Driver Fitness, Controlled Substances	4 BASICs above intervention threshold (alert)
Apr. 2020	Unsafe Driving, HOS Compliance, Controlled Substances	3 BASICs above intervention threshold (alert)
May 2020	Unsafe Driving, HOS Compliance, Controlled Substances	3 BASICs above intervention threshold (alert)
Jun. 2020	Unsafe Driving, HOS Compliance, Driver Fitness, Controlled Substances	4 BASICs above intervention threshold (alert)
Jul. 2020	Unsafe Driving, HOS Compliance, Driver Fitness, Controlled Substances	4 BASICs above intervention threshold (alert)
Aug. 2020	Unsafe Driving, HOS Compliance, Driver Fitness, Controlled Substances	4 BASICs above intervention threshold (alert)
Sep. 2020	Unsafe Driving, Driver Fitness, Controlled Substances	3 BASICs above intervention threshold (alert)
Oct. 2020	Unsafe Driving, Driver Fitness, Controlled Substances	3 BASICs above intervention threshold (alert)
Nov. 2020	Unsafe Driving, HOS Compliance, Driver Fitness, Controlled Substances	4 BASICs above intervention threshold (alert)
Dec. 2020	Unsafe Driving, HOS Compliance, Driver Fitness, Controlled Substances	4 BASICs above intervention threshold (alert)
Jan. 2021	Unsafe Driving, HOS Compliance, Driver Fitness, Controlled Substances, Crash Indicator	5 BASICs above intervention threshold (alert)
Feb. 2021	Unsafe Driving, Driver Fitness, Crash Indicator	3 BASICs above intervention threshold (alert)
Mar. 2021	Unsafe Driving, Driver Fitness, Crash Indicator	3 BASICs above intervention threshold (alert)
Apr. 2021	Unsafe Driving, HOS Compliance, Crash Indicator	3 BASICs above intervention threshold (alert)
May 2021	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)

Date	BASIC In Alert Status	Comment
Jun. 2021	Unsafe Driving, HOS Compliance, Crash Indicator	Compliance Review – Satisfactory Rating 3 BASICs above intervention threshold (alert)
Jul. 2021	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)
Aug. 2021	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)
Sep. 2021	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)
Oct. 2021	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)
Nov. 2021	Unsafe Driving, HOS Compliance, Driver Fitness, Crash Indicator	4 BASICs above intervention threshold (alert)
Dec. 2021	Unsafe Driving, Driver Fitness, Crash Indicator	3 BASICs above intervention threshold (alert)
Jan. 2022	Unsafe Driving, Driver Fitness, Crash Indicator	3 BASICs above intervention threshold (alert)
Feb. 2022	Unsafe Driving, Driver Fitness, Crash Indicator	3 BASICs above intervention threshold (alert)
Mar. 2022	Unsafe Driving, Driver Fitness, Crash Indicator	3 BASICs above intervention threshold (alert)
Apr. 2022	Unsafe Driving, Driver Fitness	2 BASICs above intervention threshold (alert)
May 2022	Unsafe Driving, Driver Fitness	2 BASICs above intervention threshold (alert)
Jun. 2022	Unsafe Driving, Driver Fitness	2 BASICs above intervention threshold (alert)
Jul. 2022	Unsafe Driving, Driver Fitness	2 BASICs above intervention threshold (alert)
Aug. 2022	Unsafe Driving, HOS Compliance, Driver Fitness	3 BASICs above intervention threshold (alert)
Sep. 2022	Unsafe Driving, Driver Fitness	2 BASICs above intervention threshold (alert)
Oct. 2022	Unsafe Driving	1 BASIC above intervention threshold (alert)
Nov. 2022	Unsafe Driving	1 BASIC above intervention threshold (alert)
Dec. 2022	Unsafe Driving	1 BASIC above intervention threshold (alert) Crash occurs on January 28, 2023

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