NATIONAL TRANSPORTATION SAFETY BOARD
OFFICE OF HIGHWAY SAFETY
WASHINGTON, D.C.

SURVIVAL FACTORS GROUP CHAIRMAN'S FACTUAL REPORT

GREENVILLE, ALABAMA – HWY21MH009

A. CRASH INFORMATION

Refer to the *Crash Information and Crash Summary Report* in the docket for this investigation.

B. SURVIVAL FACTORS GROUP

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C. DETAILS OF THE SURVIVAL FACTORS INVESTIGATION

The survival factors investigation collected evidence from the involved vehicles and occupants, as well as documented the emergency response to the crash.

1. Vehicles

There were twelve vehicles involved in the crash sequence established for the NTSB investigation. Other collisions preceded this crash sequence; the Alabama Law Enforcement Agency investigation included a different set of crash interactions and vehicles to meet their needs. Further information about the vehicles can be found in the Vehicle Group Chairman's Factual Report, located in the docket for this investigation. The vehicles were impounded and inspected at Till's Towing and Wrecker Service (Till's), 6043 Mobile Rd, Greenville, AL 36037. The vehicles were inspected from June 24 to 26, 2021.

1.1. 2020 Volvo VAH truck-tractor in combination with a 2020 Cottrell auto transporter trailer

The 2020 Volvo VAH truck-tractor had Vehicle Identification Number (VIN): 4V5RC9EH7LNXXXXXX, and the 2020 Cottrell auto transporter had VIN: 5E0AA1849LGXXXXXX.[1] The survival factors inspection was limited to the fuel tanks and driver compartment of the truck-tractor. More information about the vehicle inspection is contained in the Vehicle Group Chairman's Factual Report, available in the docket. The truck-tractor was consumed by fire, with virtually all non-metal materials burned away. The Volvo auto-transporter had dual, aluminum fuel tanks located outside the frame rails and just aft of the occupant cabin on each side. The fuel tank on the left side was missing and presumed consumed in the fire, and the right tank was present and damaged.[2]

The upper firewall and lower windshield frame were deformed in the aft direction, progressing from no deformation on the passenger side, to about 8 inches of aft deformation on the outboard driver side edge. The driver side A-pillar and driver door frame were cut at approximately the mid-window level, apparently during the wreckage recovery. The driver door and aft portion of the driver side cab exhibited deformation across the surfaces, as shown in Figure 1.

Figure 1. Driver side view of the Volvo truck-tractor showing fire damage, deformation of the firewall, driver door, and aft portion of the cab.

The driver seat frame, dashboard, steering wheel, and other metal components did not exhibit deformation. The metal steering wheel was displaced from its normal position and resting on the floor of the cab in front of the driver seat. The cab floor and mounting base of the passenger

[1] The last digits of Vehicle Identification numbers have been replaced with X.
[2] Refer to the Materials Laboratory Factual Report No. 21-084.

seat was deformed inward and upward, causing the passenger seat to be rotated inboard at an angle of approximately 12 degrees, as shown in Figure 2.

Figure 2. View from the firewall looking aft of the Volvo truck-tractor showing fire damage, the driver and passenger seat frames, and deformation of the passenger seat.

1.2. 2020 Ford Explorer

Exterior

The 2020 Ford Explorer had VIN: 1FMSK8DH6LGCXXXXX. The vehicle was destroyed, having sustained several severe impacts that crushed or deformed all exterior surfaces. The most severe impact was at the right rear and right side of the vehicle. The rear end was crushed inward, compromising the rear seat survivable space on the right side, as shown in Figure 3. Upon inspection, the right-side doors were missing, and the entire right side of the vehicle had intrusion and was exposed, as shown in Figure 4. The fuel tank of the Explorer was intact, and the vehicle exhibited no fire damage.

Figure 3. Left-rear view of the Explorer

Figure 4. Right-rear view of the Explorer

The roof of the Explorer was buckled at the location of the C-Pillar from the rear impact. The roof was also crushed downward about 10 inches at the front and displaced several inches to the left, as shown in Figure 5. The front of the vehicle was not crushed aft, but the lower portion and front surface of the vehicle was displaced, and the hood exhibited deformation and deep scratches, as shown in Figure 6. The left front and right rear tires were displaced from the wheels. Only the left-rear passenger door glass was intact.

Figure 5. Left-side view of the Explorer

Figure 6. Right-front view of the Explorer

Interior- Driver Area

The driver seat of the Explorer had the headrest missing. The upholstery at the mounting holes was not torn, but the plastic clips were broken. The upper inboard corner of the driver seatback was twisted forward about 20 degrees. The driver seatbelt was cut. The left side of the dashboard was deformed aft and down about 3 inches. The steering-wheel rim was deformed about 5 inches forward at bottom half and left spoke, and the top half was deformed forward about 3 inches. There were small blood spots on the occupant side of the driver airbag and driver side curtain airbag. The driver footwell area was not deformed and did not exhibit intrusion.

Interior- Front Passenger Area

The right front seatback was deformed forward and slightly to left, at an angle of about 85 degrees. The headrest was missing and the mounting holes in upholstery were torn to the left and aft. There was a large tear in the aft portion of seatback in the proximity to the top of a rear facing child seat installed in the rear seat. The seatbelt was cut (apparently from responders), and blood was present on the front passenger airbag. The center consul was deformed aft and had blood on it. It was in contact with the left (inboard) corner of the front passenger seat. The front passenger footwell was deformed aft, with the inboard side about 3 inches from the front of the passenger seat, and the outboard side about 8 inches to the front of the passenger seat. The distance from the middle of the seatback to the front surface of the dashboard was about 12 inches. The aft surface of the front passenger seat had a large tear across the upper surface seatback in the vicinity of the top edge of the infant seat installed in the right rear seat.

Interior - Right Rear

There was a Britax Safecell rear-facing infant seat installed in the right-rear passenger seat during the crash. Responders removed the child and seat after the crash. The infant seat was severely deformed. The upper right portion of the seat (as oriented from a child seated in the seat) was twisted and crushed downward and forward, with the upper right corner nearly in contact with the bottom seat cushion, as shown in Figure 7. The bottom left corner of the seat was deformed upward, and the left side was crushed inward, as shown in Figure 8.

Figure 7. Front view Britax infant seat

Figure 8. Left view Britax infant seat

The right-rear passenger seat had the left side of the headrest deformed up and left about 3 inches. The right outboard corner of the seat was deformed upward several inches. The seatback was deformed in the reclined direction with the front surface of the seatback about 20 inches relative to the back surface of the driver seatback. The right-rear passenger seatback was at an angle of 140 degrees. The floor just forward of the right rear seat was buckled at the location of the seat mounting track, and displaced about 32 degrees up from horizontal.

Interior- Left Rear

The headrest of the left rear seat was broken at the inboard mount, and the inboard side of the headrest was deformed aft about 45 degrees. There was a large pool of blood on the headliner just inboard of the B pillar. The distance between the front surface of the left rear seat to the aft surface of the driver seatback was measured to be 18 inches on the left (outboard) side 20 inches on right (inboard) side. The upper-right corner of the seatback was deformed. The distance from the front of the left rear seat to the driver seatback was 7 inches. The floor in front of the seat was buckled at the location of the seat track, with the floor displaced about 15 degrees from horizontal. The seatbelt was cut. A forward facing child seat with 5-point harness was found in the left rear seat.

1.3. 2017 Ford F-350 Transit Van

The 2017 Ford Transit van had VIN: 1FBZX2YM2HKB05018. The van was severely fire damaged. The Ford Transit van had a variety of seat types, some of which can be changed depending on the desired configuration. At the time of the crash, the van had 12 total seats in the configuration shown in the Table 1.

Table 1: Transit Van seating configuration

(Engine bay)		
Row 1 Driver		Row 1 Right-Passenger
Row 2 Left-Passenger	Row 2 Middle-Passenger	(Loading area)
Row 3 Left-Passenger	Row 3 Middle-Passenger	Row 3 Right-Passenger
Row 4 Left-Passenger	Row 4 Middle-Passenger	Row 4 Right-Passenger
Row 5 Left-Passenger	(cargo area between seats)	Row 5 Right-Passenger

The driver and row 1 right-passenger seats were larger than the others, with the restraint inertia reel mounted on the B-Pillars, and the buckle on the inboard side of the seat-pan frame. The row 2 through 4 seats consisted of a "double seat" on the left and middle, and a single seat on the right (not present in row 2).[3] A double seat consisted of two seat placements with a shared lower structure and separate backrests. Row 5 consisted of seats that were a different design than those in the other rows. The row 5 seats were single seats that were more narrow, and had different seat belt mounting configurations. Row 5 is capable of having 4 seats, but the middle 2 seats were not present in the crash vehicle.

Exterior

The van sustained a severe impact to the rear of the vehicle. The roof structure was cut away from the van and pulled forward, resting in to the right and in front of the van at the time of inspection, as shown in Figure 9. The rear half of the vehicle sustained a broad, severe impact which caused intrusion that extended through the rear half of the occupant compartment. The middle-rear of the van had somewhat more intrusion than the outboard portions. The entire floor structure buckled, with a severe bend in the floor at a location approximately in the middle of the van. The aft half of the van body was displaced upwards to varying degrees, from about 30 to 90 degrees upward from horizontal. The region from just forward of the rear wheels to the back was the most severely displaced.

The middle of the van structure was destroyed. The roof and upper sidewall panels were cut away and displaced. The structure above the sliding cargo door on the right side was resting on the ground at the right-front of the vehicle as previously described. The structure above the passenger windows on the left side had an aft portion bent downward, still attached to the aft structure. The forward portion was displaced and remained with the front roof structure. The cargo door displaced and found in a debris pile. The floor structure below the cargo door and outboard of the passenger seats was cut and bent upwards and aft, at an angle of approximately 80 degrees. The lower sidewall structure on the right side remained roughly in place but was severely deformed. The middle and forward floor structure remained relatively flat and sustained severe fire damage with portions burned completely through.

[3] There was no aisle between the seats, however, the single seats were foldable, in order to access seats further aft.

The sidewall structure just aft of the front seats and below the window level was roughly in place, but severely deformed. The right-front door was severely deformed. The left-front door was cut away and found in a debris pile. The front structure forward of the engine was completely burned away or displaced.

Figure 9. Right-Front view of the Transit Van

The Transit van had a plastic fuel tank with a capacity of 25 gallons and was located roughly in the center of the vehicle, in front of the rear axle.[4] There was significant deformation of the vehicle structure in the region of the fuel tank location. The tank was consumed in the post-crash fire.

Interior

The entire interior was burned down to the steel components. The firewall and dashboard structure had all non-steel components burned away. The steel structure was intact. The driver seat was cut out of the vehicle and found in a debris pile. The right-front passenger seat had a relatively straight seat-pan frame, and the backrest frame was displaced aft and to outside about 3 inches at the top. The right-front seat belt buckle frame was mounted to the inboard seat pan and did not have a belt connector mated to it. A seat belt buckle and mated connector was found on the floor in the area between the front seats. Another buckle and mated connector were found on the floor just behind and at the outside edge of the right-front seat (near the sliding door opening).

[4] The vehicles that sustained fire damage were inspected for vehicle impact deformation in the vicinity of the fuel tank. Most modern vehicles use plastic fuel tanks constructed of High Density Polyethylene (HDPE).

The row 2 double seat (left and middle) was cut away and found in a debris pile. (There was no row 2 seat at the right seat position.) The row 2 seat pan frames were undeformed, but the backrest of the inboard (middle) seat was deformed to the outside several inches, and the left seatback was straight. The outboard seatbelt mounting point was a D-ring. In-between the two seats there was a seat belt buckle with no mated belt connector. The inboard side of the seat pan frame was cut away and missing.

The row 3 left and middle seat pan frames were deformed to the inside about 15 degrees. The row 3 left seat had a seat belt buckle mated with a connector, and the middle seat had an empty buckle. A buckle and mated connector were found on the row 3 right seat pan frame. The row 3 left seatback was twisted to the left (outboard) about 50 degrees, the middle seatback was twisted about 80 degrees and was in contact with the seat pan frame. The right seat was deformed outboard about 20 degrees. The row 3 right seat had the buckle with a mated connector.

The row 4 left and middle seat pan frame was crushed forward and resting at about an 80-degree angle and under row 3. The row 4 left seatback was deformed inboard about 40 degrees, and had a seat belt buckle mated with a connector. The row 4 middle seatback was deformed inboard about 30 degrees and had a seat belt buckle with a mated connector. The row 4 right seat pan frame was deformed inboard (to the left) about 30 degrees and had a seat belt buckle with a mated connector.

Row 5 consisted of a single seat on the outboard left and another on the outboard right, with no seats in the middle two positions. (The last row of the van has capacity for 4 seats.) The row 5 seat belts only had D-rings. These seats used a different style of seat belt buckle which was not mounted directly to the seat pan frame. The seat belt buckles were not found. The row 5 right seatback was deformed outboard about 30 degrees.

1.4. 2005 Freightliner C120 truck-tractor in combination with a 2009 Wabash National Corporation van trailer

The 2015 Freightliner Cascadia had a VIN of 1FUJGLD61FLGLN96875. The trailer had a VIN of 1JJV532W99LXXXXXX. The vehicle had severe fire damage and the cabin portion was destroyed, as shown in Figure 10. The driver seat frame was found in a debris pile and had no deformation. The seat belt buckle was attached and did not have a latchplate mated to it. The steering wheel frame was found in the middle of the burned chassis and had no deformation. The Freightliner had dual, aluminum fuel tanks located outside the frame rails and just aft of the doors on each side. The fuel tanks were missing and presumed consumed in the fire.

Figure 10. Left-side view of Freightliner truck-tractor

1.5. 2016 Ram 1500

The 2016 Ram 1500 pickup had a VIN of 1C6RR7PT9GSXXXXXX. The pickup was severely fire damaged, as shown in Figure 11. Parts of other vehicles had been placed in the bed of the truck, including the driver seats from the Pacifica and the Acura (see below).

There was no significant deformation to the roof or dashboard structure. The upper-aft portion of driver's door was dented inward about 1.5 inches. The driver seat frame had no deformation. The steering column was displaced downward and on the floor. The driver foot well structure was not deformed.

The right-front passenger seat frame had no deformation. The dashboard structure on the right side was also not deformed. The roof was crushed downward slightly, about 1.5 inches, at the aft-middle to right side.

The rear seat frames and rear seat floor areas were not deformed. The right-front quadrant of the front passenger door was deformed with an arcing shaped pattern (consistent with striking a large wheel). The rear passenger door was deformed in a wavy pattern, consistent with thermal damage. The rear driver's door had impact damage from the base of the window extending down to the running board, with displacement of about 2.5 inches on the upper half and 3 to 4 inches on the lower half. The left-rear running board sustained impact damage, and was displaced inward about 2 inches in the middle-aft portion. The right-rear running board was missing.

Figure 11. Left-front view of the Ram 1500

The fuel tank on the Ram 1500 was a plastic tank with a capacity of 26 gallons mounted on the left side of the vehicle, inside the frame rails and just forward of the rear axle. Inspection of this area indicated no intrusion or deformation of the fuel tank region. The tank was consumed in the fire.

1.6. 2017 VW Passat

The 2017 VW Passat had VIN: 1VWBT7A36HCXXXXXX. It was severely fire damaged as shown in Figure 12. All non-metal materials were burned and one of the Ford Transit Van seats was placed in the interior of the VW (apparently during recovery of the wreckage). The windshield frame and roof exhibited a V-shaped crushing deformation at the middle-top of approximately 2 inches deep. The A and B pillars were not deformed. The driver door was not deformed. The steering wheel was missing. The right-rear corner of the vehicle sustained a severe impact which crushed the trunk area on the right side and buckled the left-rear portion of the car outward, as shown in Figure 13. The crush did not intrude into the back seats.

There was a pick-axe blade found on driver seat.[5] The dash structure was not deformed. The driver seat frame was deformed into a reclined angle of about 140 degrees. The inboard top of the driver seat had the structure buckled, with an aft twist of about 10 degrees. The right front passenger seat was in a reclined position of 145 degrees, but with no obvious deformation of the seat frame. There was impact damage to exterior lower aft quadrant of the front passenger door, no obvious interior damage. There was impact damage to the right rear passenger door, at the aft lower quadrant (exterior) with interior deformation at lower aft corner, with the frame buckled and intrusion of about 1 inch. The rear seat structures exhibited no deformation of the seat frames.

[5] The Freightliner had cargo consisting of hand tools. The fiberglass handles were a source of fuel in the post-crash fire.

There was C pillar damage on passenger side, which was crushed downward about 3 inches and inward 1 inch. The rear left side C pillar was crushed downward 1 inch and outboard 4 inches. The left rear door had impact damage and was buckled 21 inches from the B pillar and crushed inward 3 inches.

Figure 12. Right-front view of the VW

Figure 13. Right-rear view of the VW

The VW had a 18.5 gallon plastic fuel tank located along the midline of the vehicle with the filler neck on the right side just aft of the rear axle, and a portions of the tank located above and forward of the rear axle. Figure 14 shows the VW fuel tank and filler neck.

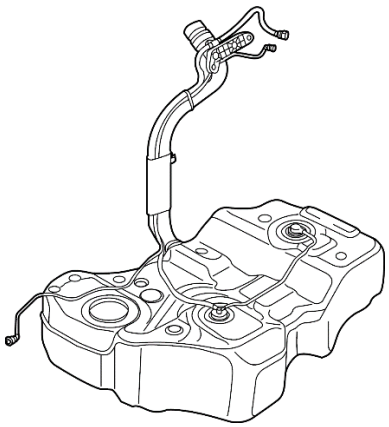

Figure 14. Right-rear view of the VW fuel tank

The rear-end damage to the VW was concentrated aft of the rear axle.[6]

1.7. 2021 Chrysler Pacifica

The 2021 Chrysler Pacifica had VIN 2C4RC3GG3MRXXXXXX. The driver seat airbags were deployed, and the seat belt was intact and unbuckled. The driver seat was cut out of the vehicle. The driver side B-pillar was cut and was lying across the floor. The steering wheel was not deformed. No obvious biological material was observed on the driver frontal airbag. The knee

[6] The fuel tank diagram is shown for the VW to illustrate the configuration of the tank relative to the filler neck and vehicle damage.

bolster airbag had a small amount of blood on the right side. The curtain airbag was dirty but had no apparent biological material. The driver side footwell was undamaged. The driver side dashboard did not exhibit deformation. The driver side of the windshield was broken inwards, and it did not have obvious sign of occupant impact. The driver side headliner was clean. The driver door was cut off the vehicle, and the left front portion of the roof was deformed downward about 3 inches, as shown in Figure 15.

The front passenger area had the front portion of the roof deformed downward 1.5 inches, as shown in Figure 16. The windshield showed no sign of occupant impact. The passenger side curtain airbag and the front passenger airbag had no apparent biological material. The front passenger door in the vicinity of the rear-view mirror was crushed inward about 13 inches. The seat belt was intact and unbuckled, with the inertia reel non-functional. The passenger side seat side and knee bolster airbags had no apparent biological material. The passenger seat was undeformed. The front passenger interior door handle was deformed inward about 3 inches and was in contact with the base of the seat. The right front side of the dashboard was displaced aft, with a distance to seatback measuring 33 inches on the outboard side and 35 inches on the inboard side of seat. The right front door was not functional.

The left rear door was non-functional and crushed inward about 4 inches. The left rear seat (row 2) seatbelt was unbuckled and intact, and the inertia reel was functional. The seat belt buckle for this seat was functional and exhibited faint webbing wrinkles at a location about 11 inches from stowed position of the seat belt connector. The left rear seat was undeformed, and the seatback angle measured 110 degrees. The upper-inboard corner of the seatback was deformed aft 2 inches. The footwell at this seat appeared undamaged, and no biological material was evident. The curtain airbag in this vicinity was dirty but had no apparent biological material. The headliner in this area was clean. There was no middle seat in row 2.

Figure 15. Left-front view of the Chrysler

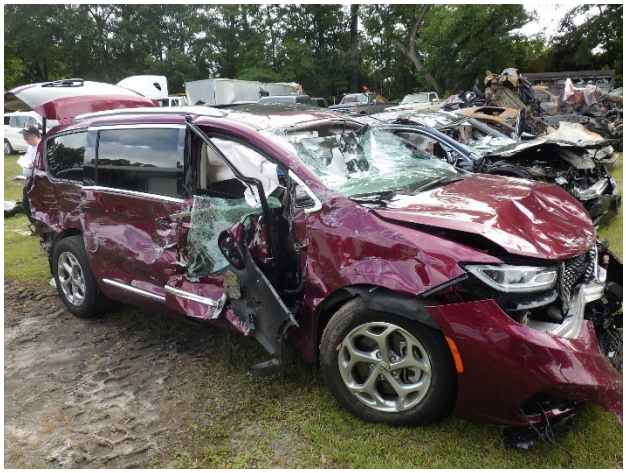

Figure 16. Right-side view of the Chrysler

The right-rear seat area of row 2 had a side curtain airbag that did not exhibit dirt or biological material. The right-rear seat at row 2 had a functional seatbelt that was unbuckled. This seat was undeformed. There was a small amount of blood on left side and front surface of the seatback. There were webbing wrinkles about 9 inches from stowed position of the seat belt connector.

The third row had the left and middle seats folded up into the stowed position. The right seat of row 3 had a forward-facing child seat with a 5 point harness restraint. The child seat was marked as an Evenflo and designed to accommodate a child weighing 22-40 pounds and with a height range of 28-50 inches. The top anchor of the child seat was latched, the lateral strap was not, and the harness was unbuckled. The right-side row 3 vehicle seat had scuff marks on the aft surface of the row 2 seatback (in front of this seat) that aligned with seat pan of the child seat. The seat belt was unbuckled. The headliner in this vicinity was clean. The side curtain airbag in this vicinity had several small red dots (specks) adjacent to the child seat position. The headliner was separated from the roof and displaced about 1.5 inches downward on the right side, due to airbag deployment.

1.8. 2020 Acura TLX

The 2020 Acura TLX had VIN 19UU33F87LAXXXXXX. This vehicle came to rest under the Buick. The car sustained damage on all surfaces and a severe impact to the left-rear corner, as shown in Figures 17 and 18. The roof was crushed downward a few inches, and distance on the right side of the car, from the right front passenger seat pan to the roof measured 32 inches.

Figure 17. Right-front view of the Acura

Figure 18. Left-rear view of the Acura

The driver seat was cut out of the vehicle, and the seatbelt was cut. The driver seat was severely deformed with the seat back twisted to the right, as shown in Figure 19.

Figure 19. Right-front view of the Acura driver seat

The steering wheel was not deformed, and there was biological material on the driver airbag. The driver side-curtain airbag was cut away next to the driver seat position. The headliner was clean. The windshield exhibited no obvious occupant impact marks. The driver knee airbag was dirty. The driver footwell area appeared undamaged.

The front passenger airbag was very dirty, but no biological material was evident. The source of the dirt was road debris that was placed in the vehicle, apparently during recovery of wreckage from the scene. The right front seatbelt inertia reel was not functional. The seatbelt was unbuckled, and the webbing remained extended and bunched up at the connector, The connector had about 26 inches of webbing to the anchor point. The seat appeared to be deformed and was at a reclined angle of about 135 degrees.

1.9. 2017 Buick Lacrosse

The 2017 Buick Lacrosse had VIN 1G4ZN5SS8HUXXXXXX. The Buick sustained a significant impact to the rear end, impacts along the left side that were focused on the front and rear, and scraping damage at the right front, as shown in Figures 20 and 21.

Figure 20. Right-front view of the Buick

Figure 21. Left-rear view of the Buick

The driver seat was deformed aft and twisted to the outboard side, and the seatback angle measured about 140 degrees from seat pan to seatback. The driver inertial reel remained locked with webbing extended out. The driver seatbelt remained buckled. There were no windshield cracks in front of the driver position.

The right front seat was deformed aft approximately 125 degrees. There was biological residue on the front of the seat pan and at the inboard upper quadrant of the seat back. There was a crack in the windshield located at the middle of the passenger side. The windshield laminate was intact without clear evidence if the crack was caused from the inside or the outside. The right front passenger seat seatbelt had the webbing extended, with 68 inches of webbing from lower anchor to inertial reel. The inertia reel was adjusted to the upper position and webbing was bunched up in the D-ring. Investigators freed the webbing and the inertial reel was functional. The seat belt buckle for this right-front passenger seat was functional.

1.10. 2017 Kia Sedona

The 2017 Kia Sedona had VIN: KNDMB5C13H6XXXXXX. The Kia sustained impact damage on all sides. The front fenders and left front door body work were displaced, and the hood was buckled and resting on the windshield, as shown in Figure 22. The right-rear corner of the Kia sustained a severe impact, as shown in Figure 23. The rear impact resulted in intrusion into the rear cargo area, and partial intrusion into the row 3 seats.

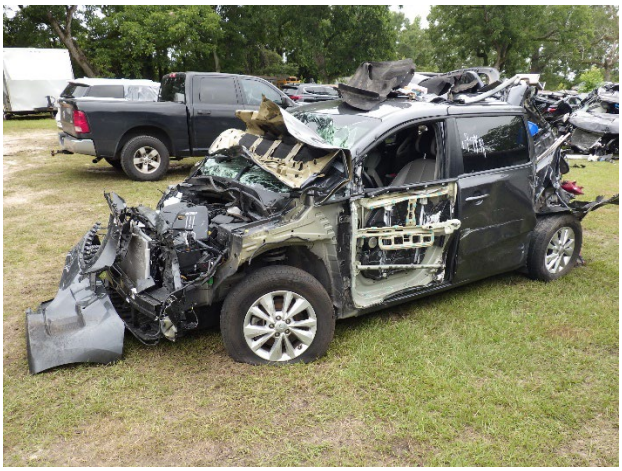

Figure 22. Left-front view of the Kia

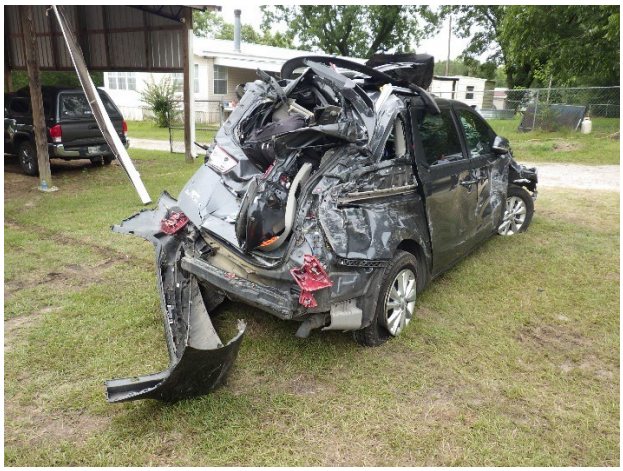

Figure 23. Right-rear view of the Kia

The driver side seatbelt inertia reel was functional. There were faint webbing marks (indentations from tension loads) located 50 inches from lower anchor point. The electric seat was reclined 107 degrees and did not appear to be damaged. The windshield was broken but did not have obvious evidence of occupant impact. There appeared to be blood on the exterior of the A-pillar and on the exterior of the roof above the driver seat. There was small biological material on the left air conditioning vents. The driver door was not functional.

The right front passenger seat had faint biological residue on the seat pan. No other biological material was noted on the interior. The right front seat inertia reel and buckle were functional. There were very faint webbing marks extending from 30 to 42 inches from the lower

anchor point. There was very faint residue of biological material located on the webbing 52 inches from the anchor point. The right front door was functional. The right front seat recline mechanism was functional. The seat back was reclined at an angle of about 110 degrees, and it did not appear to be damaged.

The right-rear and middle seats of the second row had the seatbacks folded down into a stowed position at the time of the vehicle inspection, as shown in Figure 24. The left rear row 2 passenger seat had a forward-facing child car seat with a 5-point harness, as shown in Figure 25. The child car seat was labeled: Graco 4ever and was displaced inboard approximately 20 degrees with the right inboard edge depressed about 3 inches into seat pan. There was blood on the (folded down) middle headrest. The aft surface of the right-rear, second-row seat was deformed in the center at the lower left inboard quadrant.

The third-row, right-side seat had a forward-facing child booster seat without restraint (for use with the OEM seatbelt) labeled as a Chicco seat, as shown in Figure 24. The booster seat was displaced forward at an angle of approximately 35 degrees from seat pan to seat back. The roof of the vehicle was crushed inward and forward and was in contact with top of the Chicco seat. The vehicle 3-point seat belt was unbuckled. The left side third row seat had intrusion at the roof and side wall. There were several pieces of luggage and toys in the cargo area.

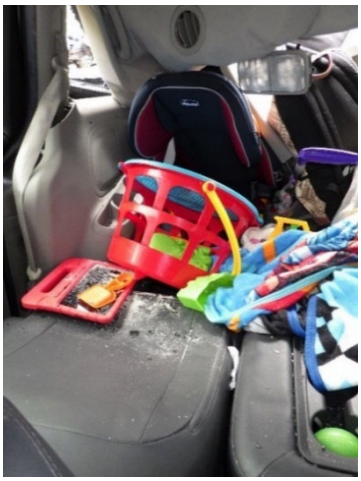

Figure 24. Kia interior looking aft from row 1, passenger side

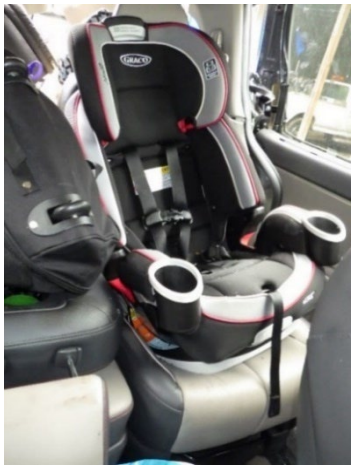

Figure 25. Kia interior looking aft from row 1, driver side

1.11. 2017 Toyota Camry

The 2017 Toyota Camry had VIN: 4T1BF1FKXHUXXXXXX.[7] All the doors were functional except the right rear door, which was not functional due to vehicle deformation. The occupant compartment was intact and appeared undamaged. No airbags were deployed. All the seat belts were stowed and functional. There was no biological material found. All the windows were unbroken, except the right rear window.

[7] The vehicle was removed from the tow yard before a complete inspection could be conducted. No photographs of the vehicle were available.

1.12. 2019 Ford F-150 King Ranch Crew Cab

The 2019 Ford F-150 was found at the impound lot inverted and severely fire damaged, as shown in Figure 23. The front seats were displaced to the left. The rear seat frames were also displaced left about 5 inches. The right rear seat was displaced forward about 45 degrees.

Figure 26. View of the upside-down Ford from the rear

The fuel tank on the F-150 was a plastic tank mounted on the left side of the vehicle inside the frame rails and between the axles. Inspection of this area indicated no intrusion or deformation of the fuel tank region. The tank was consumed in the fire.

2. Occupants

The crash involved a total of 37 people, as shown in Table 2.

Table 2. Crash Victims

12 Vehicles and 37 total Occupants	**Injury Information***				
	Unknown	**Not Injured**	**Minor**	**Serious**	**Fatal**
2020 Volvo VAH					
Driver (1)			1		
2020 Ford Explorer					
Driver (1)				1	
Passengers (3)			1		2
2017 Ford Transit Van					
Driver (1)				1	
Passengers (8)					8
2005 Freightliner					
Driver (1)		1			
2016 Ram 1500					
Driver (1)			1		
Passenger (1)			1		
2017 VW Passat					
Driver (1)			1		
2021 Chrysler Pacifica					
Driver (1)			1		
Passengers (4)		1	3		
2020 Acura TLX					
Driver (1)	1				
Passenger (1)			1		
2017 Buick Lacrosse					
Driver (1)			1		
Passenger(1)		1			
2017 Kia Sedona					
Driver (1)		1			
Passengers (4)		3	1		
2017 Toyota Camry					
Driver (1)		1			
2019 Ford F-150					
Driver (1)			1		
Passengers (3)			3		
Totals	**1**	**8**	**16**	**2**	**10**

The occupants of each vehicle and their seating location, gender, age, and injury description are provided in the sections that follow. Toxicological testing was performed on some of the drivers; refer to the Medical Factual Report, available in the accident docket. Note that the passenger seating locations in the vehicles and seatbelt use are provided based on evidence from statements to law enforcement, interviews with investigators, or physical evidence from vehicle inspections. The passenger locations for the Ford Transit Van (Section 2.3) are based on the Alabama Law Enforcement Agency investigation. Interviews were conducted with some vehicle

drivers and passengers, and emergency personnel from agencies that responded.[8] The interview with Ford Explorer driver was recorded and transcribed.[9] The Ford Transit Van driver was interviewed; refer the to the Human Performance Group Chairman's factual report.

2.1. 2020 Volvo VAH truck-tractor in combination with a 2020 Cottrell auto transporter trailer

The driver was a 57-year-old male who suffered minor injuries. He was transported to Montgomery Baptist Medical Center South. His medical records found an abrasion of the right knee and a hematoma of the occipital surface of the head and upper lip. His height was recorded as 5 ft 10 inches and weight of 181 pounds.

2.2. 2020 Ford Explorer

The driver was a 25-year-old female who was seriously injured. She was transported to Regional Medical Center of Central Alabama by Greenville Fire Department EMS. The hospital noted she was transferred to Montgomery Baptist Medical Center South at 8:22 p.m.

Her medical records from Regional Medical Center of Central Alabama and Montgomery Baptist Medical Center South were obtained. She sustained an unstable fracture-dislocation of the thoracic spine at T3-4, multiple nondisplaced right rib fractures, and a right transverse process fracture of the L1 lumbar vertebra. She also had a concussion, an 8 centimeter scalp laceration, a forehead abrasion, and multiple back contusions. Her height was recorded as 5 ft 5 inches and weight of 290 pounds.

Passenger 1 was a 29-year-old male who was fatally injured. He was seated in the right front passenger seat. No autopsy was conducted.

Passenger 2 was a 5-year-old male who suffered minor injuries. He was seated in a forward-facing child seat located in the left rear vehicle seat. He was transported to Montgomery Baptist Medical Center South. His medical records were obtained from Baptist Health. The pre-hospital report form listed the EMS notification time of 3:48 p.m. and the physician evaluation time of 4:06 p.m. His injuries were an abrasion to the chin and lower back. His height was recorded as 4 ft 3 inches and weight of 59 pounds 8 oz.

Passenger 3 was a 9-month-old female who was fatally injured. She was seated in a rear facing child seat in the right rear seat. She was transported to Greenville by Gem's Ambulance Service. The hospital noted that she arrived at 3:22 p.m., and was pronounced deceased after showing no response to resuscitative efforts. X-rays showed skull fractures, including a large, displaced fracture.

[8] SF Attachment: Interviews.
[9] SF Attachment: Ford Explorer Driver Interview.

2.3. 2017 Ford F-350 Transit Van

The driver was a 40-year-old female who was seriously injured. The driver stated that she was wearing her seatbelt, that the 3-year-old (passenger 2) was restrained in a Graco child seat, and that all the other passengers were belted because she checks this prior to each trip. [10] She also stated that she crawled out the driver door window with the help of someone outside the van. The other doors were either non-functional or inaccessible due to wreckage. She was transported to Montgomery Baptist Medical Center South. The medical records were. obtained from Baptist Health. The pre-hospital report form listed the EMS notification time of 4:03 p.m. and the physician evaluation time of 4:10 p.m. At the hospital she was diagnosed with a 25-centimeter avulsion/laceration of the scalp, closed fractures of the anterior left 4th and 5th ribs, and nasal bone fractures. Her height was recorded as 5 ft 2 inches and weight of 220 pounds.

Passenger 1 was a 15-year-old female who was fatally injured. She was seated in the right front passenger seat. The autopsy report was obtained. The cause of death was listed as thermal and blunt force injuries. The autopsy found that there was soot in her airways. No specific blunt force injuries were identified, although the examination was limited by the severity of her thermal injuries. Those thermal injuries prevented examination of the extremities, but the autopsy report stated that fractures were probable. Toxicological analysis identified carboxyhemoglobin at 25% and cyanide at 0.86 µg/mL in cardiac blood.[11]

Passenger 2 was a 3-year-old male who was fatally injured. He was seated in the row 2 middle seat. The autopsy report was obtained. The cause of death was listed as thermal and blunt force injuries. The autopsy found that there was soot in his airway. Subdural hemorrhage in posterior cranial fossa was noted as a blunt force injury. No other specific blunt force injuries were identified, although the examination was limited by the severity of thermal injuries. Thermal injuries prevented examination of the extremities, but the autopsy report stated that fractures of the extremities were probable.

Passenger 3 was a 12-year-old male who was fatally injured. He was seated in the row 3 left seat. The autopsy report was obtained. The cause of death was listed as thermal and blunt force injuries. The autopsy found that there was soot in his airway. No specific blunt force injuries were identified, although the examination was limited by the severity of thermal injuries. Thermal injuries prevented examination of the extremities, but the autopsy report stated that fractures of the extremities were probable. Toxicological analysis identified cyanide at 0.12 µg/mL in femoral blood.

[10] Refer the Human Performance Group Chairman's Factual Report.

[11] Carboxyhemoglobin is formed when carbon monoxide binds to hemoglobin in blood, impairing the blood's ability to deliver oxygen to body tissues. Carbon monoxide exposure usually occurs by inhalation of smoke or exhaust fumes. Nonsmokers normally have carboxyhemoglobin levels of less than 1-3%, and heavy smokers may normally have levels as high as 10-15%. Symptoms of low-level carbon monoxide exposure are often vague but increasing levels of exposure may become impairing or incapacitating, progressing to fatality as carboxyhemoglobin surpasses about 40-50%. Cyanide is a fast-acting poison that interferes with cells' ability to use oxygen. Cyanide may be produced as a byproduct of the combustion of nitrogen-containing polymers, which are found in a variety of goods including some plastics, upholstery materials, and synthetic rubbers. Cyanide exposure frequently occurs by inhalation during fires in which such goods are burning. Blood cyanide levels of more than about 0.25 µg/mL are toxic and may cause rapid heart rate and impaired consciousness, progressing to death near levels of about 3 µg/mL.

Passenger 4 was a 14-year-old female who was fatally injured. She was seated in the row 3 middle seat. The autopsy report was obtained. The cause of death was listed as thermal and blunt force injuries. The autopsy found that there was soot in her airway. No specific blunt force injuries were identified, although the examination was limited by the severity of thermal injuries. Thermal injuries prevented examination of the extremities, but the autopsy report stated that fractures of the extremities were probable. Toxicological analysis identified cyanide at 0.1 µg/mL in cardiac blood.

Passenger 5 was an 8-year-old male who was fatally injured. He was seated in the row 3 right seat. The autopsy report was obtained. The cause of death was listed as thermal and blunt force injuries. The autopsy found that there was soot in his airway. No specific blunt force injuries were identified, although the examination was limited by the severity of thermal injuries. Thermal injuries prevented examination of the extremities, but the autopsy report stated that fractures of the extremities were probable. Toxicological analysis identified cyanide at 0.36 µg/mL in cardiac blood.

Passenger 6 was a 16-year-old female who was fatally injured. She was seated in the row 4 left seat. The autopsy report was obtained. The cause of death was listed as thermal and blunt force injuries. The autopsy found that there was soot in her airway. The spleen was fragmented, with an unquantifiable amount blood noted in the abdominal cavity. No other specific blunt force injuries were identified, although the examination was limited by the severity of thermal injuries. Thermal injuries prevented examination of the extremities, but the autopsy report stated that fractures of the extremities were probable. Toxicological analysis identified cyanide at 0.12 µg/mL in cardiac blood.

Passenger 7 was a 17-year-old female who was fatally injured. She was seated in the row 4 middle seat. The autopsy report was obtained. The cause of death was listed as thermal and blunt force injuries. The autopsy found that there was soot in her airway. No specific blunt force injuries were identified, although the examination was limited by the severity of thermal injuries. Thermal injuries prevented examination of the extremities, but the autopsy report stated that fractures of the extremities were probable.

Passenger 8 was a 16-year-old female who was fatally injured. She was seated in the row 4 right seat. The autopsy report was obtained. The cause of death was listed as thermal and blunt force injuries. There was soot in the airways. Possible facial fractures from blunt force injury were noted. No other specific blunt force injuries were identified, although the examination was limited by the severity of thermal injuries. Thermal injuries prevented examination of the extremities, but the autopsy report stated that fractures of the extremities were probable. Toxicological analysis identified carboxyhemoglobin at 22% and cyanide at 1 µg/mL in cardiac blood.

2.4. 2005 Freightliner C120 truck-tractor in combination with a 2009 Wabash National Corporation van trailer

The driver and sole occupant was a 41-year-old male who was not injured.

2.5. 2016 Ram 1500

The driver was a 61-year-old male who had minor injuries. He was transported to Montgomery Baptist Medical Center South. His medical records were obtained from Baptist Health. The pre-hospital report form listed the physician evaluation time as 4:42 p.m. He complained of pain and tenderness of the left wrist and right ankle. No fractures were present. His height was recorded as 5 ft 9 inches and weight of 202 pounds.

The passenger was a 66-year-old female who had minor injuries. She was seated in the right front seat and transported to Montgomery Baptist Medical Center South. Her medical records were obtained from Baptist Health. The pre-hospital report form listed the EMS notification time of 4:17 p.m. and the physician evaluation time of 4:40 p.m. She complained of right shoulder pain, bilateral knee pain, and right lower leg pain. She had bruising to both knees. Her height was recorded as 5 ft 2 inches and weight of 150 pounds.

2.6. 2017 VW Passat

The driver was a 53-year-old male who had minor injuries, and was transported to Jackson Hospital. His medical record was obtained from Jackson Hospital. His injuries included neck muscle strain and a laceration to his left eyebrow area. His height was recorded as 6 ft and weight of 175 pounds. The medical report included the trip report from Hayes Ambulance for unit M-BLS3. It noted that the call was taken, they were dispatched, and enroute at 3:08 p.m., at scene at 3:48 p.m., transporting at 4:07 p.m., at destination at 4:39 p.m. and available at 5:09 p.m. with a loaded trip distance of 32.8 miles.

2.7. 2021 Chrysler Pacifica

The driver was a 48-year-old male who had minor injuries. He was wearing his seatbelt and the airbag deployed. He was transported to Regional Medical Center of Central Alabama by private vehicle. His medical record was obtained. It noted that he arrived at 10:34 p.m. His injuries included a muscle strain of the neck, anterior chest wall, and lower back. His height was recorded as 5 ft 9 inches and weight of 160 pounds.

Passenger 1 was a 41-year-old female who was not injured. She was seated in the right front seat.

Passenger 2 was a 15-year-old female who suffered minor injuries. She was seated in the row 2 left seat and was wearing her seat belt. She was transported to Regional Medical Center of Central Alabama by private vehicle. Her medical records indicated mild abrasions on right and left lower legs. Her height was recorded as 5 ft 3 inches and weight of 198 pounds.

Passenger 3 was a 15-year-old female who suffered minor injuries. She was seated in the row 2 right seat and was wearing her seat belt. She was transported to Regional Medical Center of Central Alabama by private vehicle. Her medical records indicated muscle strain of the neck, upper back and right trapezius at the shoulder. Her height was recorded as 5 ft 5 inches and weight of 164 pounds.

Passenger 4 was a 4-year-old male who suffered minor injuries. He was seated in the row 3 right seat was seated in a child seat. His medical records indicated a single contusion to the

forehead and small abrasions to the forehead, left upper arm and left forearm. His height was recorded as 3 ft 1 inch and weight of 40 pounds.

2.8. 2020 Acura TLX

The driver was a 38-year-old female who was injured. Attempts to locate records of her post-crash medical care were unsuccessful, and the driver declined to provide information to investigators. The police reported that she refused medical treatment on scene and later sought medical attention. The level of injury was unknown due lack of medical records or other evidence.

The passenger was a 42-year-old female who had minor injuries, based on a partial self-description of injury. The passenger was seated in the right front seat. She declined to provide complete information to investigators. The police reported that she refused medical treatment on scene and later sought medical attention. She did not disclose details of her post-accident medical care; attempts to locate records of that care were unsuccessful. The passenger described the event and her injuries in a statement delivered via text messaging. Her injury description and comments about vehicle safety are provided below.[12]

Injury description from text statement from passenger received on September 19, 2021:

I got glass in my legs and my eye. We were trapped underneath the other black car. I have damage to my back and my neck, but most damage is having to hear the kids burn up, and there was nothing we could do. The car we were in, I believe it saved our lives. It had the best Safety features. The only airbag that didn't deploy was my airbag in the dash, and it deployed out under the hood.[13]

2.9. 2017 Buick Lacrosse

The driver was a 41-year-old female who had minor injuries. She was transported to Montgomery Baptist Medical Center South. The pre-hospital report form listed the EMS notification time of 3:42 p.m. and the physician evaluation time of 4:09 p.m. She had a scalp hematoma. Her height was recorded as 5 ft 6 inches and weight of 170 pounds.

The passenger was a 66-year-old female who was not injured. She was seated in the right front seat. The police notes indicated that she was transported to Montgomery Baptist Medical Center South. The hospital noted that she was assessed but not treated because she was not injured.[14]

[12] Refer to the SF Attachment Interviews for the complete statement.
[13] The statement has been edited to remove abbreviations and spelling errors.
[14] Further information about the assessment or injury was not available.

2.10. 2017 Kia Sedona

The driver was a 37-year-old male who was uninjured. He was transported to Regional Medical Center of Central Alabama in a private vehicle. The hospital noted that he arrived at 10:51 p.m. but left without being treated.

Passenger 1 was a 61-year-old female who was uninjured. She was seated in the right front seat and transported to Regional Medical Center of Central Alabama in a private vehicle. The hospital noted that she arrived at 10:41 p.m. but left without being treated.

Passenger 2 was a 4-year-old male who was not injured. He was seated in row 2 left seat in a forward-facing child seat using the child seat 5-point harness belt.

Passenger 3 was a 35-year-old female who had minor injuries. She was seated in row 2 in the right seat. She was transported to Jackson Hospital. Her medical record was obtained, and it noted that she arrived at 4:29 p.m. She was diagnosed with neck muscle strain. Her height was recorded as 5 ft 3 inches and weight of 155 pounds.

Passenger 4 was a 6-year-old male who was not injured. He was seated in row 3 right seat in a booster seat using the vehicle 3-point belt.

2.11. 2017 Toyota Camry

The driver and sole occupant was a 43-year-old male who was uninjured.

2.12. 2019 Ford F-150 King Ranch Crew Cab

The driver was a 44-year-old male who had minor injuries. He was seated in the right front seat and wearing his seatbelt. The driver airbag did not deploy. He was transported to Regional Medical Center of Central Alabama by private vehicle. The hospital noted that he arrived at 6:45 p.m. He noted that he exited the vehicle through the sunroof, as the vehicle came to rest on its side. His medical records indicated an acute cervical strain, muscle strain to the lower back, and a contusion of the left ankle. His height was recorded as 5 feet 11 inches and weight of 150 pounds.

Passenger 1 was a 42-year-old female who had minor injuries. She was seated in the right-front seat and wearing her seatbelt. The passenger airbag did not deploy. She was transported to Regional Medical Center of Central Alabama by private vehicle. The hospital noted that she arrived at 6:36 p.m. She noted that she exited the vehicle through the sunroof, as the vehicle came to rest on its side. Her medical records indicated acute cervical strain and a contusion to the left knee. Her height was recorded as 5 feet and weight of 135 pounds.

Passenger 2 was a 13-year-old male who had minor injuries. He was seated in the left rear seat and was wearing his seat belt. He was transported to Regional Medical Center of Central Alabama by private vehicle. The hospital noted that he arrived at 6:20 p.m. His medical records indicated a muscle strain to the neck and a contusion of the scalp. His height was recorded as 5 feet 6 inches and weight of 132 pounds.

Passenger 3 was a 15-year-old female who had minor injuries. She was seated in the right rear seat and was wearing her seat belt. She was transported to Regional Medical Center of Central

Alabama by private vehicle. The hospital noted that she arrived at 6:13 p.m. Her medical records indicated acute cervical strain. Her height was recorded as 5 feet 5 inches and weight of 100 pounds.

3. Emergency Response

The location of the crash was northern Butler County near the border with Lowndes County. The crash occurred at mile marker (MM) 138.18, and the Butler/Lowndes county line crosses I-65 at MM139. The closest I-65 exit to the south of the crash site is the Butler County Rest Area at MM 133. The first exit past the crash site to the north is the Fort Depot/Logan exit at MM 142, in Lowndes County.

3.1. Law Enforcement

3.1.1. Alabama Law Enforcement Agency

The Alabama Law Enforcement Agency (ALEA) conducted the police crash investigation. The large scale crash involved several events. The NTSB investigation selected vehicles and crash segments to investigate, and three Alabama Uniform Traffic Crash Reports were obtained that related to these crash segments and vehicles. These reports and the vehicles covered in each are as follows.

- Report 1681935: Vehicle 1, 2, 3, 5, 6, 7, 8, 9, 10, 12.[15]
- Report 1681937: Vehicle 3, 4, 5, 12.[16]
- Report 1681939: Vehicle 2, 9.[17]

The Alabama State Troopers were dispatched out of the ALEA Dispatch, Dothan State Trooper Post, Division B. The ALEA Road Call Log Detail report was obtained. This report was marked confidential. The following items regarding the crash were included in the report.

- The crash with unknown injures was reported at 2:30 p.m. (Note that the ALEA Traffic Crash Reports listed the crash time as 2:20 p.m.)
- The first units were being notified and dispatched at 2:32 p.m.
- A tow truck company was put on standby at 2:45 p.m.
- Possible fatalities were reported at 3:02 p.m.
- It was reported that Greenville Police Department was diverting traffic off the exit at Mile Marker 130, onto US Highway 331 at 4:03 p.m.
- Details of vehicles and drivers involved started to be reported at 5:19 p.m.
- Fatalities in the transit van were confirmed at 7:00 p.m.

[15] SF Attachment: Alabama Uniform Traffic Crash Report 1681935.
[16] SF Attachment: Alabama Uniform Traffic Crash Report 1681937.
[17] SF Attachment: Alabama Uniform Traffic Crash Report 1681939.

- The southbound lanes and one northbound lane were opened at 5:24 a.m. on June 20, 2021.
- The interstate was fully opened at 3:10 p.m. June 20, 2021.

The ALEA also provided notes about the vehicles involved and statements from drivers or witnesses[18].

3.1.2. Alabama DOT

The Alabama DOT responded to the crash, assisted with traffic control including lane and roadway closures, and assisted with the ALEA and NTSB investigations.

3.1.3. Butler County 911 and Butler County Sheriff's Department

The Butler County 911 Public Service Answering Point (PSAP) created incident detail report ID: ANGEN-78958, which was obtained.[19] The incident log was created at 2:23 p.m. The Greenville Fire Department and Gem's Ambulance Service were dispatched at 2:27 p.m. Between 2:28 and 2:38 p.m., other agencies were being notified, and units were being dispatched and going enroute. Gem's Ambulance Service unit 103 was marked on-scene at 2:38 p.m. At 2:30 p.m. dispatch was informed that it was a multiple vehicle crash involving a tractor-trailer, entrapped people, and leaking fuel. Unit 103 noted efforts to treat the 9-month-old from the Ford Explorer and requested that all available EMS units be dispatched. Note that the interview with Greenville Fire Department staff notes some discrepancies in the Butler County 911 report; refer to section 3.2.1.

At 2:44 p.m. it was noted that there were possible fatalities, injuries, and fully fire engulfed vehicles. Mutual aid from Lowndes County was requested. The Greenville Fire Department requested 10 ambulances from Haynes and CARE EMS at 2:56 p.m., and requested water tanker support from Searcy Volunteer Fire Department at 2:58 p.m. Also at 2:58 p.m., Butler County 911 attempted to coordinate air EMS support, which was not possible due to weather. At 2:59 p.m. Liberty Volunteer Fire Department was contacted to provide a tanker truck. EMS reported the first victim being transported from the scene at 2:55 p.m. The first fire units started clearing the scene at 4:03 p.m. The incident was closed at 4:01 a.m. on June 20, 2021.

The Butler County Sheriff's department, located at 700 Court Square, Greenville, AL 36037 assisted with the response. An email from the Sheriff was received on August 5, 2021 describing their response as follows.

B-8 and B-9 were trying to assist in getting the fire departments and EMS to the location. B-1 after arriving was assisting EMS to get victims headed to the emergency room and even escorted one of the ambulances to the hospital. After that B-1 went back to the scene to assist with

[18] SF Attachment: ALEA Vehicle Notes and Driver and Witness Statements.
[19] See SF Attachment: Butler County Incident Detail Report.

whatever needed to be done. At one point B-1 went to assist with getting our refrigerated trailer getting to the scene but otherwise was at the scene until 2:33 the next morning.

3.1.4. Greenville Police Department and District Attorney's Office

The Greenville Police Department (GPD) and District Attorney worked with the ALEA investigation and cooperated with the NTSB investigation.

3.1.5. Butler County Coroner and Alabama Department of Forensic Sciences

The Butler County Coroner was also an EMS responder from Gem's Ambulance Service, and he was interviewed by an NTSB investigator.[20] The coroner also provided notes on the location of the bodies retrieved from the van, labeled according to the body bag number. This information was used to identify seating locations for the deceased.

Autopsies of the 8 fatally injured van passengers were conducted at the Alabama Department of Forensic Sciences, Montgomery Medical Center, 8160 AUM Dr., Montgomery AL 36117. NTSB investigators attended 5 of those autopsies on June 22, 2021.

3.1.6. Lowndes County 911 and Lowndes County Sheriff's Office

The Lowndes County 911 call center is located at the Lowndes County Sheriff's Office (LCSO), 1 Washington Street, Hayneville, AL 36040. Lowndes County 911 provided information about the 911 calls received about this incident, and the incident detail report.[21] The first 911 call was at 2:26 p.m., and the dispatcher had already been informed of the incident and was in the process of dispatching resources. The LCSO incident detail report reported that units were dispatched at 2:20 p.m., and an arrival time of 2:38 p.m. It listed 4 LCSO units responding. They provided traffic control and scene security.

3.2. Fire and EMS

3.2.1. Greenville Fire Department

The Greenville Fire Department (GFD) had jurisdiction for the crash. The GFD Chief provided the National Incident Fire Reporting System (NFIRS) report with a narrative description of the GFD response.[22] The NFIRS report noted that GFD received a call for a traffic crash with victim entrapment and injuries. Engine 42 responded, and the Captain, while en-route to the scene, saw the large column of black smoke and requested additional resources while still traveling to the scene. He asked Butler County 911 to dispatch the Fort Deposit Volunteer Fire Department, Liberty Volunteer Fire Department, and Searcy Volunteer Fire Department in order to support. Engine 42 arrived on scene to find vehicles fully engulfed with fire and entrapment. Engine 42

[20] See SF Attachment: Interviews.
[21] Lowndes County Incident Detail Report. Note that the report is hand written as Lowndes County does not have a computer aided dispatch (CAD) system.
[22] SF Attachment: Greenville Fire Department NFIRS report.

initiated fire suppression and the captain assessed the wounded and requested further support on-scene. When the second engine arrived (Fire/Rescue 36), he transferred triage to the other engine captain when he arrived. The water supply of Engine 42 was depleted after a few minutes and IC requested the Liberty Volunteer Fire Department to assist with more water, Engine 42 resumed fire suppression with water and foam. After the fire suppression was completed, Engine 42 assisted the medical crews with multiple patients.

The GFD Chief provided a list of responding Greenville Fire Units that responded, which included the following.

- Engine 42 (Which was the first on scene)
- Fire/Rescue 36 (Which has medical transport capability.)
- Fire/Rescue 39 (Which has medical transport capability.)
- Engine 33 (Which was used to shuttle water.)

The GFD Chief also provided a list of other responding agencies, which included the following fire services and emergency medical services (EMS).

- Searcy Volunteer Fire Department (Which provided water with tanker.)
- Shackleville Volunteer Fire Department (Which provided water with tanker.)
- Liberty Volunteer Fire Department (Which provided water with tanker.)
- Fort Deposit Volunteer Fire Department (Which provided water with tanker.)
- Montgomery Fire and Rescue
- Gem's Ambulance Service (GEMS)
- Haynes/CARE Ambulance Services (Both are owned by Haynes.)

A meeting and interviews with GFD staff was held on June 25, 2021.[23] The meeting and interviews with the staff provided a description of the fire response. The use of radio systems in the area was discussed during the interview. This discussion noted that GFD recently switched to a digital system (May 1, 2020) due to poor reception of analog systems experienced in the past. It was noted that some issues with poor reception in low-lying areas persist with the digital system. An issue with communication between GFD and the volunteer fire services is that the digital system can receive the analog systems used by the volunteer services, but the analog can not receive the digital signals. They noted that the volunteer services do not use digital due to budget issues. This geographic area was also noted to have poor cell phone reception. Responder noted that during the crash, they expected that the cell tower capacity may have been overloaded, contributing to poor cell phone performance.

The GFD Fire/Rescue unit 36 was the first EMS unit to arrive on scene and conducted medical coordination. GFD Fire/Rescue 39 was the next EMS unit to arrive, and transported the Ford Transit driver to Montgomery Medical Center Baptist South. The GEMS units arrived after the GFD Fire/Rescue units, and then the Hayes and CARE EMS after that. Refer to sections 3.2.3 and 3.2.4 for more information. The NFIRS report listed the arrival times of GFD 36 as 2:49 p.m. and GFD 39 as 2:56 p.m.

3.2.1. Other Butler County Fire Services

[23] See SF Attachment: Interviews.

The Searcy Volunteer Fire Department provided mutual aid support.

The Shackleville Volunteer Fire Department (SVFD) provided mutual aid support. The SVFD responded with Engine 3. They had 2 fire fighters on the engine and another fire fighter from SVFD arrived in a private vehicle. They supported firefighting efforts with water from the engine and manpower working the water lines.

The Liberty Volunteer Fire Department (LVFD) provided mutual aid support. The LVFD responded with one truck, a tanker, which provided water and manpower supporting the fire operations and extrication. The tanker was staffed with 5 firefighters. When they arrived on scene, they took over fire suppression operations that had been in process with help from two bystanders who were trained fire fighters. One of the staff also helped assess the right front passenger of the Ford Explorer, who was found to be not-viable. The LVFD Chief arrived in his supervisor vehicle. The LVFD Chief and a fire fighter were interviewed by an NTSB investigator.[24]

3.2.2. Lowndes County and Montgomery County Fire Services

Fort Deposit Volunteer Fire Department (FDVD) provided mutual aid in the form of water tanker support.

Montgomery Fire Rescue (MFR) provided mutual aid support. MFR assisted with the extrication of the deceased.

3.2.3. Gem's Ambulance Service (GEMS)

GEMS's Ambulance Service was the Emergency Medical Services (EMS) agency with jurisdiction for the crash. GEMS responded with 2 units. An NTSB investigator interviewed GEMS staff.[25] GEMS provided a description of which agencies responded to the crash. They noted that GEMS has two units, both are Advanced Life Support (ALS) units staffed with paramedics.

GEMS unit 103 transported the 9-month-old passenger of the Ford Explorer. The patient care report was obtained. It indicated that Unit 103 was dispatched at 2:25 p.m., was enroute at 2:27 p.m., arrived on scene and at the patient at 2:38 p.m., left the scene at 2:55 p.m., and arrived at the hospital at 3:07 p.m.

GEMS Unit 101 did the initial transport of the Ford Explorer driver to Greenville Regional Medical Center of Central Alabama (This patient was later transported to Montgomery Baptist Medical Center South.) The patient care report was obtained. It indicated that Unit 101 was dispatched at 2:32 p.m., was enroute at 2:37 p.m., arrived on scene and at the patient at 2:56 p.m., left the scene at 3:26 p.m., and arrived at the hospital at 3:40 p.m.

GEMS Unit 101 returned to the scene and transported the left-rear passenger and the right-rear passenger of the Ford F150. The patient care reports were obtained. They indicated that Unit

[24] See SF Attachment: Interviews.
[25] See SF Attachment: Interviews.

101 was dispatched at 5:30 p.m., was enroute at 5:31 p.m., arrived on scene and at the patient at 5:41 p.m., left the scene at 5:49 p.m., and arrived at the hospital at 6:00 p.m.

3.2.4. Haynes EMS, CARE EMS, and Other Victim Support

Haynes EMS and CARE EMS are both owned by Haynes and responded to the crash. They have an independent dispatch, and both have Basic Life Support (BLS), Advanced Life Support (ALS), and air EMS operations. A Haynes supervisor arrived after the GFD and GEMS EMS units had transported the Ford Transit Van driver, the Ford Explorer driver, and the Ford Explorer 9-month-old passenger. Haynes and CARE units transported the remaining injured victims from the scene. Haynes air EMS attempted to provide support, but it was grounded due to weather.

Approximately 20 uninjured victims were taken to the First Baptist Church in Greenville by two church vans, with each making a couple of trips to the scene. This effort was organized by a member of the church who is also a volunteer fireman at Shackleville VFD. The firefighter also enlisted the assistance of his wife, who is a registered nurse. She assisted Alabama State Troopers, who were at the church, take blood samples from drivers involved in the crash. The church later used the vans to transport victims to local hotels.

3.3. Hospitals

Victims were transported to 3 hospitals by ground ambulance and some victims transported themselves to the hospital by private car.

3.3.1. Regional Medical Center of Central Alabama

Regional Medical Center of Central Alabama (also known as Greenville Regional), located at 29 L V Stabler Dr. Greenville, AL, received 10 patients associated with the crash. NTSB investigators met with the Chief Operating Officer on June 24, 2021. A list of patients received from the crash was provided and the hospital response was described.[26]

3.3.2. Montgomery Baptist Medical Center South

Montgomery Baptist Medical Center South, located at 225 E. South Blvd, Montgomery, AL 36116, received 7 patients associated with the crash. NTSB investigators met with the Chief Operating Officer, the Director of the Emergency Department and Trauma Critical Care, and the Assistant Director of Emergency and Trauma Services on June 23, 2021. They provided information about the hospital response to the event.[27]

3.3.3. Jackson Hospital

Jackson Hospital, located at 1725 Pine St. Montgomery, AL 36106, received two patients associated with the crash. NTSB investigators met with the Director of Risk Management and the Chief Nursing Officer to obtain information regarding patients treated at the hospital.

[26] See SF Attachment: Interviews
[27] See SF Attachment: Interviews

4. Docket Material

The following attachments and photographs are included in the docket for this investigation:

LIST OF ATTACHMENTS

Survival Factors Attachment – Interviews

Survival Factors Attachment – Ford Explorer Driver Interview

Survival Factors Attachment – Alabama Uniform Traffic Crash Report 1681935.

Survival Factors Attachment – Alabama Uniform Traffic Crash Report 1681937.

Survival Factors Attachment – Alabama Uniform Traffic Crash Report 1681939.

Survival Factors Attachment – ALEA Vehicle Notes and Driver and Witness Statements.

Survival Factors Attachment – Butler County Incident Detail Report

Survival Factors Attachment – Lowndes County Incident Detail Report

Survival Factors Attachment – Greenville Fire Department NFIRS Report

END OF REPORT

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