

NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Materials Laboratory Division
Washington, D.C. 20594



November 3, 2021

MATERIALS LABORATORY FACTUAL REPORT

Report No. 21-084

A. ACCIDENT INFORMATION

Place : Greenville, Alabama
Date : June 1, 2021
Vehicle : Multiple commercial and passenger vehicles (See Section C)
NTSB No. : HWY21MH009
Investigator : Dennis Collins OHS-IIC

B. CRASH SUMMARY

For a summary of the events with regards to the crash, refer to the Crash Summary Report. An aerial photograph of all involved vehicles in the final resting position is shown in Figure 1. The fire involved vehicles are labeled in the photograph as Vehicle 1, 2, 3, 4, 5 and 12.



Figure 1. Aerial view of final rest positions of involved vehicles.

C. VEHICLES EXAMINED

- Vehicle 1: 2020 Volvo VAH truck-tractor in combination with a 2020 Cottrell auto transporter trailer
- Vehicle 2: 2005 Freightliner Cascadia truck-tractor in combination with a 2009 Wabash National Corporation van trailer
- Vehicle 3: 2017 VW Passat
- Vehicle 4: 2017 Ford F-350 Transit Van
- Vehicle 5: 2019 Ford F-150 King Ranch Crew Cab
- Vehicle 6: 2016 Ram 1500

D. DETAILS OF THE EXAMINATION

A visual examination of the six vehicles involved in the postcrash fire was performed on June 26, 2021. The damage to each vehicle is summarized below.

1. 2020 Volvo VAH truck-tractor and 2020 Cottrell auto transporter trailer

a. *General Vehicle Information*

Engine: Volvo D13

Fuel Type: Ultra-low sulfur diesel

b. *Examination Details*

The tractor body sustained extensive impact and fire/heat related damage. The tractor body exhibited warpage and discoloration consistent with exposure to heat/fire and most polymeric and non-ferrous components were melted or missing. A section of the trailer was still attached to the tractor. The remaining section exhibited thermal related discoloration and warpage and was heavily sooted. A photograph of the tractor with the attached trailer section is shown in Figure 2. One aluminum fuel tank, located on the right side of the tractor, was intact as shown in Figure 3. The front of the tank was sooted and exhibited some thermal related discoloration. The forward wall of the tank had a small dent with a hole present. The fuel tank located on the left side of the vehicle was missing, presumed destroyed in the fire, with only the mounting straps still present. The section of trailer located behind the tractor had some thermal discoloration and sooting but was otherwise intact as shown in Figure 4.



Figure 2. 2020 Volvo VAH Truck-Tractor.



Figure 3. Intact Fuel Tank.



Figure 4. Car Trailer.

2. 2005 Freightliner Cascadia CST120.truck-tractor and 2009 Wabash National Corporation van trailer

a. General vehicle information

Engine: Detroit Diesel Series 60
Fuel Type: Ultra-low sulfur diesel

b. Examination details

The tractor body sustained extensive fire/heat related damage. The tractor body and trailer were mostly consumed in the fire with only ferrous-based metallic components remaining. The tractor is shown in Figure 5 and the trailer in Figure 6.



Figure 5. Freightliner CST120 tractor.



Figure 6. Wabash National Trailer.

3. 2017 VW Passat

a. General vehicle information

Engine: 4 Cylinder

Fuel type: Gasoline

Fuel tank fill capacity: 18.5 gallons¹

b. Examination details

The passenger car sustained extensive impact and fire/heat related damage. The car body exhibited warpage and discoloration consistent with exposure to heat/fire and most polymeric and non-ferrous components were melted or missing. There were several dents and tears in the body consistent with impact. The interior exhibited similar fire related damage. The

¹ 2017 Volkswagen Passat Owner's Manual

fuel tank was missing and presumed destroyed in the fire. The passenger car is shown in figure 7.



Figure 7. 2017 VW Passat.

4. Vehicle 4: 2017 Ford F-350 Transit Van

a. General vehicle information

- Engine: 6 Cylinder
- Fuel type: Gasoline
- Fuel tank fill capacity: 25.1 gallons²

b. Examination details

The van sustained extensive impact and fire/heat related damage. The body exhibited warpage and discoloration consistent with exposure to heat/fire and most polymeric and non-ferrous components were melted or missing. The rear portion of the van was significantly deformed upwards from its original position. There were two separations of the body panels at the floor level where the rear section was bent upwards. Sections of the drive shaft were visible through the floor of the passenger compartment. The roof was removed during the emergency response. The interior exhibited significant fire related damage. The fuel tank was missing and presumed destroyed in the fire. The van is shown in figure 8.

² 2017 Ford TRANSIT Owner's Manual



Figure 8. 2017 Ford Transit Passenger Van.

5. 2019 Ford F-150 King Ranch Crew Cab

a. General vehicle information

Engine: 8 Cylinder
Fuel type: Gasoline
Fuel tank fill capacity: 26 gallons³

b. Examination details

When examined, the truck was found in an inverted position. The remaining body of the cab and bed had collapsed. The truck sustained extensive fire/heat related damage. The body exhibited warpage and discoloration consistent with exposure to heat/fire and most polymeric and non-ferrous components were melted or missing. The interior exhibited similar fire related damage. The fuel tank was missing and presumed destroyed in the fire. The truck is shown in Figure 9.

³ 2019 Ford F-150 Owner's Manual



Figure 9. Ford F150 King Ranch Pickup Truck.

6. 2016 Ram 1500

a. General vehicle information

Engine: 8 Cylinder
Fuel type: Gasoline
Fuel tank fill capacity: 26 gallons⁴

b. Examination details

The pickup sustained impact and extensive fire/heat related damage. The body exhibited warpage and discoloration consistent with exposure to heat/fire and most polymeric and non-ferrous components were melted or missing. There were several dents and tears in the body consistent with impact. The interior exhibited similar fire related damage. The fuel tank was missing and presumed destroyed in the fire. The truck is shown in figure 10.

⁴ 2016 Ram 1500 Owner's Manual



Figure 10. Ram 1500 Pickup Truck.

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