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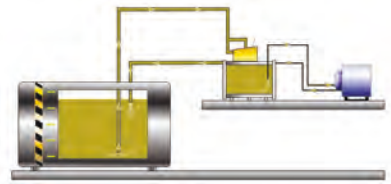

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NHTSA NO. 326272
SECOND GENERATION FORD EXPEDITION 4X4
FUEL TANK PLACEMENT DESIGN DEFECT INVESTIGATION

September 14, 2020
Revision 1

SUBJECT VEHICLE: 2004 FORD EXPEDITION 4X4

Project Technicians: Anthony J. Roston, Manuel Marieiro

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EXECUTIVE SUMMARY

The Second Generation Ford Expedition 4x4 SUV vehicles (2003-2006) have a design defect whereby frontal impact collisions of estimated 35 MPH or greater may cause the drive shaft to break away from the transfer case and rip apart the fuel tank. In easily survivable collisions, the fires have resulted in severe injuries as well as deaths. It is likely the design defect extends to First and Third Generation Ford Expedition 4x4 vehicles as well.

Objective

To study the fatal vehicle collision and fire involving the subject vehicle and determine if a design defect was the cause of the fire and resulting injuries and fatalities.

Summary of Findings

The Second Generation Ford Expedition 4x4 SUV vehicles have plastic (composite) fuel tanks located under the driver's side (left) seats adjacent to the drive shaft and muffler. Multiple Second Generation Ford Expedition vehicles involved in frontal collisions have had their fuel tanks torn apart by the drive shafts, resulting in immediate fire and often deaths. The subject vehicle's drive shaft predictably broke off of the transfer case and ripped through the fuel tank, causing a severe fuel fire which killed the driver of the other vehicle and severely burned the Ford Expedition driver, Mr. Chazz Arriaga.

Recommendations

Recall to install steel fuel tank deflector shield, or employ other effective measures to prevent the drive shaft from striking the fuel tank. Alternatively, install the fuel tank away from the drive shaft.

DETAILS OF THE ACCIDENT

Mr. Arriaga was driving his 2004 Ford Expedition 4x4 on a two-way city road. The accident occurred on Peabody Road, on the border of Fairfield and Vacaville CA, on 12/21/16, at approximately 0024 hours. A speed limit sign is posted on the portion

of the roadway adjacent to residential properties. The accident occurred on a remote portion of the roadway where there were no buildings and no street lights. While parked at the side of the road with the lights off, we observed that the road was pitch black, and there was no ambient lighting of any kind. We further observed that the flow of traffic at this rural part of the road was 55 to 65 MPH, with very light traffic at approximately 0024 hours.

Mr. Arriaga, a 20 year old male, was driving his 2004 Ford Expedition at the time, when it collided head-on with a 2001 Lincoln LS 4-door sedan. The Lincoln was driven by Mr. Forrest Kidwell, a 34 year old man. He had a passenger, Mr. Destry Glick, who was 26 years old at the time. The two vehicles immediately caught on fire as shown.

The Expedition was in it's southbound lane, and came to rest on the same southbound lane, in the right embankment, evidencing a hard right maneuver by Mr. Arriaga at the last minute to avoid the accident. The Lincoln also came to rest, but not in it's northbound lane. Instead, it came to rest in its entirety in the southbound lane, which was the lane of travel of Mr. Arriaga's vehicle. This is a news helicopter image of the

two vehicles at their respective points of rest, noting that the Expedition is the vehicle in the embankment:

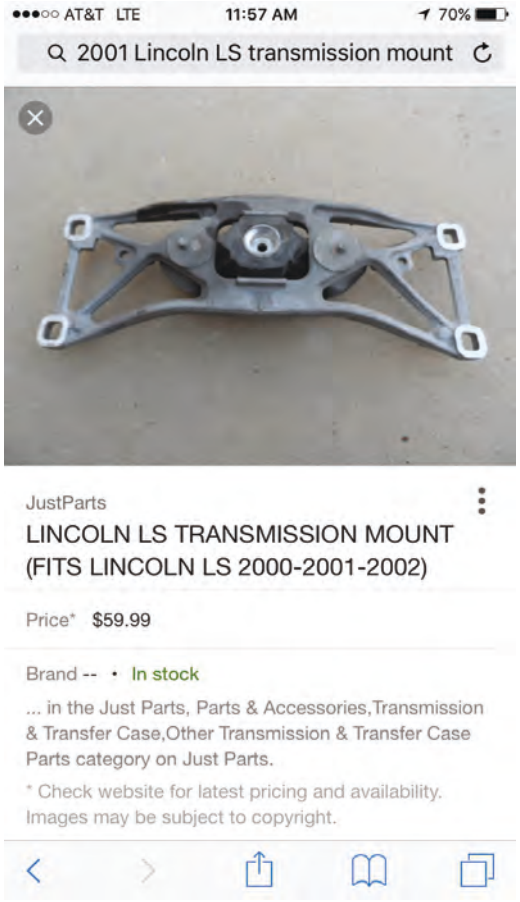
In the morning the Multi Accident Investigation Team (MAIT) took this photograph showing the respective points of rest of the two vehicles:

The transmission pan of the Lincoln had ripped wide open, causing the red transmission fluid to disperse southbound in the trajectory of travel of the Lincoln. The Lincoln's transmission pan was inspected and found to have breached wide open:

Photo of Lincoln transmission pan resting on exhaust pipes.

The transmission mount of the Lincoln, which was located dead-center on the vehicle, was observed to have had yellow paint transfer from the double yellow line that separated the lanes:

The transmission mount was verified as having come off of the Lincoln:



The double yellow line showed the point of contact and paint transfer onto the transmission mount:

By investigating multiple like-kind head-on collision footage, it was observed that typically the smaller vehicle, i.e. the sedan, would be pushed downward by the larger vehicle, i.e. the Ford, causing the transmission mount to make contact with the pavement:

We further determined that the Lincoln was traveling at approximately 0 to 5 mph, which is consistent with the findings of the MAIT team. This conclusion was based on studies of head-on collision footage, much which is posted by the National Highway Traffic and Safety Administration (NHTS), in which it is noted that when two vehicles collide while both are traveling at similar speeds in a forward motion, the would stop moving forward and would bounce backward upon collision. When compared to collisions where one vehicle is moving substantially slower than the other, or not moving at all, then the other vehicle strikes the non-moving vehicle and pushes it backwards, and both come to rest several feet forward of the direction of travel of the moving vehicle. This is consistent with the points of rest of the two vehicles here. The MAIT team similarly concluded that the Lincoln was traveling 5-

10 MPH, while we conclude that it was likely not in motion at all (stopped on the roadway).

Mr. Arriaga advised that the Lincoln did not have it's lights on. He recalls having seen "something" on the roadway, stopped, and having swerved to the right to avoid it, and reports no headlights were on. The Lincoln therefore was not only stopped in the middle of the roadway, but it's lights were apparently off as well.

The news footage shows the Lincoln had jumper cables hanging out of the trunk:

During our inspection we noted the same jumper cables:

The person who sold the Lincoln to Mr. Kidwell, one Mr. London, reported that the vehicle had electrical problems and warning lights stayed on. We therefore conclude that the Lincoln likely lost electrical power (lighting) and either came to a stop, or was stopped by Mr. Kidwell because he was not able to see the roadway once his lights went out. It therefore appears the reason the accident occurred was because the Lincoln's headlights went out, the roadway was pitch-black, and Mr. Kidwell likely stopped his vehicle because he was not able to see his orientation in relation to the roadway. Mr. Arriaga's eyewitness account that he saw "something" on the roadway and did not see lights, and swerved to the right to avoid it, is consistent. Mechanical (electrical) failure in the Lincoln is therefore the likely cause of this accident.

PHYSICAL EVIDENCE

The drive shaft broke out of the transfer case at this location:

It was found several feet away from the Expedition and was severely bent:

The front drive shaft tore off the transfer case:

The entire drive shaft assembly was found ripped off of the expedition and on the roadway:

The muffler, adjacent to the gas tank, was damaged by the drive shaft:

This is an in-tact 2004 Expedition showing the gas tank, drive shaft, transfer case, and muffler:

View from the rear looking forward

The fuel tank of the expedition was ripped to pieces by the driveshaft:

The entire top portion of the tank was destroyed by the shaft, spreading the fuel all over the roadway.

CONCLUSION: DESIGN DEFECT

There is little doubt that the Second Generation Ford Expedition 4x4 suffers a design defect in that the fuel tank is located adjacent to the drive shaft, and it is foreseeable that in a frontal collision of sufficient impact the drive shaft shall break away from the transfer case and rip through the fuel tank, as it no doubt did in this collision.

SAFER ALTERNATIVE DESIGN

The late model Chevrolet Suburban vehicles have similar fuel tank placement, but the tanks are well-protected and the orientation of the parts is sufficiently different to where they do not suffer the same fuel tank fractures as noted on the Expedition.

MULTIPLE EXPEDITION TANK FIRES NOTED

We noted many similar or identical Ford Expedition fuel tank ruptures in frontal

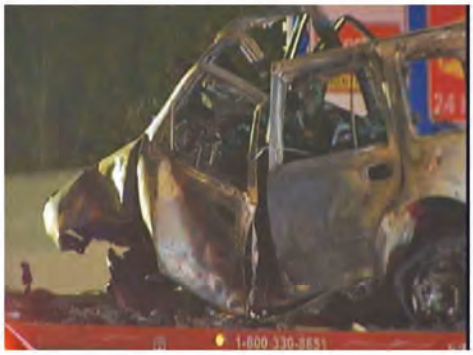
collisions. The following are photos of Mr. Arriaga's Expedition, and another one suffering the same catastrophic fuel tank failure with several fatalities:

Arriaga Vehicle

Ford Expedition in fatal accident in Florida

Similar failures have been observed throughout the country:

SUBJECT



February 9, 2019

December 25, 2017

February 16, 2014

December 4, 2014

February 7, 2010

January 6, 2014

April 3, 2015

CONCLUSION

The Second Generation Ford Expedition 4x4 suffers a lethal design defect. The defect is failure to include a strong protective shield for the fuel tank, and/or placement of the tank too close in proximity to the drive train components, namely the drive shaft. Recall and correction is recommended.

TECHNICIAN CERTIFICATION

UTS, by way of Mr. Anthony Roston and Mr. Manuel Marieiro, hereby certify that they have performed all of the research and investigation herein, and present their opinions, conclusions, and recommendations accordingly.

Dated: September 14, 2020

Anthony J. Roston

Dated: September 14, 20201

Manuel Marieiro