C13 Case Study: Throttle Malfunction in a 2004 Ford Escape

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After attending this presentation, attendees will understand a mecha- nism for throttle pedal "sticking" that may occur in a 2004 Ford Escape equipped with a 3.0L V6 engine and subjected to Ford Recall No. 04S25.

The presentation will impact the forensic community by providing an example of how a malfunction that is undescribed in the available literature can lead to the same symptoms produced by another malfunctioning part.

In December of 2004, the Ford Motor Company issued Ford Recall No. 04S25. The recall covered certain 2002 through 2004 model years Ford Es- capes originally equipped with 3.0L V6 engines manufactured from May 30, 2001 through January 23, 2004. The item affected by the recall was the ac- celerator cable.[1]

According to the recall documentation, the inner liner of the accelera- tor cable could migrate out of the outer casing at the dash panel fitting, pos- sibly coming into contact with the accelerator pedal to a degree that would prevent the pedal from returning to the fully released position.

Utilizing the National Highway and Traffic Safety Administration's (NHTSA) consumer complaints database for the date range covered by the above recall revealed 36 complaints regarding the accelerator pedal stick- ing. Of these complaints, 22 were most likely related to the recalled accel- erator cable while the remaining 14 were either unexplained or due to reasons not directly related to an accelerator cable failure.[2] One of the failure modes described is demonstrated in the following case study.

A 2004 Ford Escape was traveling on a highway when the driver de- cided to exit the freeway. Upon exiting, the driver attempted to bring the vehicle to a stop and was unable, resulting in a crash. Statements from the driver, tow truck driver and other witnesses indicated that the engine sounded as though it was "revving" after the crash, even though the transmission was in neutral.

Inspection of the subject vehicle confirmed that the accelerator pedal was stuck in an applied position. The recall dealt with migration of the inner lining at the dash panel fitting however, as shown in Figure 1, the cable ap- peared to be intact. The cable was inspected from its insertion point in the firewall to the termination point on the throttle body and was found to be free of bends, twists or kinks that may have prevented the accelerator pedal from returning to its fully released position.

Figure 1: Accelerator cable at firewall and accelerator pedal installation point.

However, Figure 2, it appears that the throttle position sensor became caught on the underside of the plastic engine cover, thereby preventing the throttle body pulley/spring combination from rotating which prevented the taking up of slack in the accelerator cable. This not only prevented the accelerator pedal from returning to its fully released position, but also kept the throttle plate (located inside the throttle body) open.

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Figure 2: Throttle position sensor entrapment at plastic engine cover.

Since the subject vehicle had been serviced under the above mentioned recall, it is not known if the pulley was able to rotate to the position shown in Figure 2 due to an error during the installation of replacement cable, a difference in the length of the pre- and post-recall accelerator cables, or some other factor. The accelerator cable was not released from this position, and therefore an attempt to replicate the circumstances that led to the throttle position sensor becoming trapped on the plastic cover was not conducted.

The above case study demonstrates a possible cause of accelerator pedal "sticking" in a 2004 Ford Escape affected by Ford Recall No. 04S25 that is unrelated to the safety issue addressed by said recall.

References:

[1] Ford Motor Company, "49 CFR Part 573 – Defect Information Report 04S25 – Certain 2002 Through 2004 Model Year Ford Escape Vehicles," Dearborn, MI, December 2004.

[2] National Highway Traffic Safety Administration – Office of Defects Investigation, http://www-odi.nhtsa.dot.gov/cars/problems/complain

Ford Escape, Accelerator Cable, Throttle

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