New Jersey Law Journal

VOL. 215 - NO 6 MONDAY, FEBRUARY 10, 2014 ESTABLISHED 1878

Automobile Injury

Did a Faulty Repair Cause the Accident?

In some cases, an engineering expert can pinpoint a critical mechanical deficiency

By Wayne Denham, Larry Sicher and Michael A. Ferrara Jr.

Figure A: Newly purchased replacement end link with included hardware that includes the proper captive nut with insert

PHOTOS COURTESY OF

Figure B: Improper hardware used on left rear link

A prospective client tells you that after recently having her car repaired, while driving normally, she suddenly lost control. When investigating a crash that seemingly involves the loss of vehicle control prior to the impact, it is important to rule out any mechanical deficiencies that may have contributed to the incident, including improper maintenance and repairs. Below is a discussion of how to handle such a case.

First, the injuries must be serious enough to warrant the expense of an engineering inspection. It simply isn't worth the time or money to go through all of the necessary engineering and legal work for a minor injury.

Promptly have the car towed to an expert, such as ARCCA (where two of the authors of this article work as accident-reconstruction engineers), to determine the cause of the loss of control. Was it a problem with the suspension or braking systems, the wheels or steering linkage? You may be lucky enough to learn that the problem found by the engineering analysis was caused by the recent service.

Is this a products liability case? An ordinary negligence case? If the car was new, it may be a products case. See *Moraca v. Ford*, 66 N.J. 454 (1975), involving a six-month-old Lincoln. Also see *Sabloff v. Yamaha,* 59 N.J. 365 (1971), and *Scanlon v. GM*, 65 N.J. 582 (1974). If not a products case, you likely have a negligence case against the car repair facility for the negligent repair work. Or, perhaps a products case if there was a defective part installed. Or a combination of both.

Model Jury Charge 5.40G states:

> An element of the plaintiff's burden of proof is that the defect existed when the product left the defendant's control. However, if the product was altered after it left the defendant's control, then you must decide if the alteration was substantial. A substantial alteration is a change or modification made to the prod-

Denham is an engineer involved in investigating and reconstructing vehicle accidents in the Boston office of ARCCA, a forensic engineering firm. Sicher is an engineer and the director of accident reconstruction in ARCCA's Philadelphia office. Ferrara is an attorney with The Ferrara Law Firm in Cherry Hill.

> uct after it was manufactured or sold that does two things: (1) it alters the design or function of the product and (2) it has a significant or meaningful effect on the product's safety when used. If you find that the alteration was substantial, you must then decide if the alteration was reasonably foreseeable at the time the product left the control of the defendant. If the alteration reasonably could have been anticipated, and if as a result of the alteration made the product was not reasonably safe, the defendant may be responsible even if there was a substantial alteration. If alteration was not foreseeable, then the defendant is not responsible for injuries caused by that alteration.

For a full explanation of when the work done at the repair facility may still implicate the car manufacturer, see, e.g., *Soler v. Castmaster, Div. of the H.P.M. Corp.,* 98 N.J. 137 (1984); *Brown v. United States Stove Co.,* 98 N.J. 155 (1984). *States Steamship Co. v. Stone Manganese Marine Ltd.*, 371 F. Supp. 500, at 505 (D.N.J. 1973). *Ortiz v. Farrel Co.* 171 N.J. Super. 109 (Law Div. 1979).

Finally, you may also want to explore a res ipsa case. See MJC 5.10D. However, with substantial injuries and a target defendant, there are very few cases where res ipsa should be your only legal theory.

Mechanical deficiencies may be design issues, but often they involve improper repair, including the use of inappropriate parts or procedures. Mechanical failure leading to a collision may be obvious. For example, if a wheel falls off of the car prior to a collision, there is often witness testimony and/or physical evidence of such an event. But if a part breaks, it needs to be determined if the failure occurred as a result of the collision or if the part failed prior to the collision and if the failure contributed to the collision.

When investigating a loss-of-control case, the investigator should look at all possible contributing factors, including: current condition of the vehicle, recent repair history, road conditions and weather. Witness statements should be obtained that might assist with determining a cause. This is especially important if the driver cannot explain why he lost control, is unable to speak about the event, and/or he says that something unusual happened (i.e., strange sound, an unusual feeling with the handling of the vehicle, or the car failed to respond normally) prior to loss of control.

Here, we will look at a case study where it appeared that a driver had lost control of his vehicle, causing it to strike an oncoming vehicle and ending in tragedy. However, it was not just a matter of the driver losing control that ultimately led to the accident. The case involved the use of the wrong fastener by a repair facility, which led to the failure of a suspension component.

A sport-utility vehicle (SUV) being driven along a curved section of a local highway, went out of control, entering the oncoming lanes. The SUV struck a sedan traveling in the oncoming lane, fatally injuring two of the sedan's four occupants. The SUV driver indicated that the vehicle did not steer normally when it was coming out of the curve, but he couldn't provide more detail.

ARCCA conducted a mechanical inspection of the SUV to determine if there were any mechanical components on the SUV that contributed to the SUV driver losing control.

During examination of the SUV, ARCCA discovered a broken rear suspension component (the stabilizer bar end link on the right rear side) fractured at a location on the vehicle that was not impacted during the collision and in a manner inconsistent with the crash forces. The passenger (right) rear stabilizer link was fractured in half, with the lower portion of the link missing. This was an unusual finding, as both ends of the link are normally attached with locking hardware. Further, there was no impact mechanism to explain both the fracture and the missing lower half of the stabilizer link, which is normally secured by locking nuts. ARCCA also observed localized bending and markings on an adjacent suspension component.

Further examination of the SUV revealed that the upper connections for these stabilizer bar links had been installed with incorrect fasteners. One of these end links had been loose for a period of time prior to the crash.

Exemplar (rear) stabilizer bar end links and service records were obtained for the subject SUV. The service records indicated that a local repair facility had recently replaced both pairs of front and rear stabilizer bar links. The newly acquired exemplar stabilizer bar end link kit included fasteners (nuts) with captive inserts designed to prevent the attachment nuts from loosening after installation from normal road use and vibration. When compared against the hardware observed on the subject SUV, it became clear that common hex nuts without locking inserts were installed by the repair facility instead of the proper hardware (locking nuts) provided with the replacement end links.

This finding uncovered the stabilizer link's mechanism of fracture failure. The common hex nuts installed had loosened from vibration and cyclic loading of the vehicle suspension over time, until the link completely separated at its bottom attachment. The end link was then free to swing beyond its intended position, thus contacting an adjacent suspension component, causing interference with other suspension components. The link became trapped and loaded in compression by an adjacent suspension arm and then fractured. This mechanism created forensics in the form of scrapes and bending of the suspension arm. (See Figures A and B.)

Stabilizer end links connected to stabilizer bars (also known as "sway" or "anti-sway" bars) function to help resist body roll and maximize tire contact with the roadway, thus improving vehicle steering and handling. Body roll is encountered when lateral forces act on the vehicle. It is typically generated when a vehicle turns or travels at higher speeds on road curves. In this case, the SUV was attempting to negotiate a curve in the road just prior to the crash. As a result of the link fracture and detachment, the vehicle's right rear stabilizer bar became useless and could no longer contribute to vehicle handling and stability. ARCCA determined that this was a contributing factor to the crash.

A suit, including the local repair facility, was filed on behalf of the occupants of the sedan, resulting in a favorable settlement for the plaintiff's estate.

When faced with an incident involving serious or fatal injuries, it is important to examine the vehicles for potential contributing design defects and mechanical deficiencies. These contributors occur in many forms, including component design issues, neglect, improper service or defec-

tive replacement parts. They can remain undiscovered causes of an incident unless they are thoroughly investigated.

In the preceding example, the use of improper fasteners (nuts) led to the failure. In other cases, especially "wheel off" cases, the proper fasteners (lug nuts) have been used, but have not been tightened properly. The failure to follow proper lug-nut tightening procedures was the proximate cause of the wheel separating from the vehicle.

The most common areas of repair that result in accidents are those that involve the sudden loss of vehicular control. These include repairs/replacement of wheels, braking systems, suspension systems and steering linkages. While these are not the only areas of a car that could lead to an accident if improperly repaired, they are the areas that should be inspected first. And again, one should consider not only the potential for repair/replacement errors, but also the replacement parts should be inspected for potential manufacturing and design defects. Counterfeit parts should also be investigated.■