

condition, and the speed of the vehicle as recorded by the module will drop dramatically—it may reach zero before the collision. Did the vehicle stop that quickly? Was its speed really zero at impact? In general, the answers are “no.” The data for vehicle speed comes from the same data source as the chassis speedometer and is based on the speed at which the driven wheels are turning. For a vehicle without ABS, a hard brake application can cause the driven wheels to stop turning in a very short time span, which would result in a “reported” speed of zero while the vehicle in question was still in the process of sliding to its point of impact. But, it might have stopped. Is an impact speed of zero consistent with the other aspects of the collision? Without a reconstruction, how will you know?

Some late-model Ford vehicles contain EDRs which can be downloaded. The typical Ford crash-protection system incorporates position sensors in the seats, multi-stage firing of the airbags, and pretensioners which fire when the occupant in that seat is wearing the safety belt. The pretensioners fire in a manner analogous to the firing of the airbags, but they function to quickly remove slack and to tension the safety belts. This prevents the wearer of that belt from traveling forward any more than is caused by the elasticity of the belt. In a car without pretensioners, the safety belted occupants in a crash will move forward until all slack is removed from their belts, then they will continue to move forward because of the elasticity of the belt. The belt doesn't seem very stretchy, does it? When the occupants are being decelerated at ten times the acceleration of gravity or more, those belts will stretch! And you want them to! Another interesting aspect of the Ford EDRs is that they record instantaneous longitudinal acceleration and resultant delta-v in increments of one millisecond. That's a rate of one thousand times a second! But they don't record a whole second of data, because the crash pulse typically lasts one hundred to two hundred milliseconds—one to two tenths of a second. In a collision, what happens in that 150 milliseconds or so may make the difference between living and dying. The EDRs will help us all learn much more about the dynamics and other details of motor vehicle collisions.

Thank you for reading this newsletter. I welcome your inquiries concerning the motor-vehicle-related consulting services I offer.

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