

# Your Car as a Witness for the Prosecution - Column

On August 17 last year in a south-Florida suburb, 16-year-old Jamie Maier was backing out of her driveway. A vehicle driven by Edwin Matos, 47, crashed into Maier's car, killing her and a friend, Paige Kupperman, 17. During the investigation of the crash, which occurred in a 30-mph zone, Matos said he was driving at about 50 mph.



There was, however, a witness to the crash that contradicted Matos's testimony. Information recorded and stored by a computer in the 2002 Pontiac Grand Am he was driving revealed he was in fact traveling at 114 mph five seconds before the collision and 103 mph one second before the crash. Matos was charged with manslaughter and vehicular homicide. Last June, he was convicted and sentenced to 30 years.

It's hard to argue that justice did not prevail in this circumstance, but just how did Matos's Grand Am record and reveal his speed seconds before the crash? It turns out that tens of millions of cars and trucks—just about every airbag-equipped vehicle ever built by General Motors and many Ford products built since 1998—keep some record of the driving behavior of the vehicle prior to a crash that involves the airbag system.

There have been references to this equipment as "flight data recorders" or "black boxes," but the data are not recorded by a separate device. They're simply byproducts of the airbag module (ABM), which is a small computer that determines if the airbags should be deployed, based on information provided by several sensors. The most important data come from one or more crash sensors, which detect an impact. For the ABM to fire the airbags, the impact must exceed a certain deceleration threshold. The ABM also considers vehicle speed because it doesn't want to trigger the airbags when you hit a light pole at 4 mph in a parking lot.

These two sensors, along with a third that can tell if your seatbelt is fastened, help decide whether to fire a two-stage airbag in full- or reduced-power mode. The ABM records the values of all these sensors at the time of impact, along with the speed change during impact, and the time between impact detection and the firing of the airbags. This record can help determine whether the airbag performed correctly in a crash.

What's more, the ABM records engine rpm, throttle position, and whether the driver is applying the brakes, even though these parameters have nothing to do with the deployment of the airbag. Furthermore, the system records these parameters every second, along with the vehicle speed, and remembers the last five data points.

Therefore, if you have a crash in which the ABM *thinks* about deploying the airbags—even if it doesn't—the *airbag module records onto a memory chip the values for these parameters at the time of impact and for the previous five seconds*. It was this record that revealed the true speed of Edwin Matos's car in the final moments prior to his deadly collision.

Didn't know you had a co-pilot with a computerized memory, did you? In fact, the owner's manual for GM vehicles does refer to this recording capability. But the manual does not mention the time period over which the system operates. Nor is there any "caution" or "warning" indication to draw your attention to this section.

I suspect few owners have any idea these data are being captured. And it's not a difficult task to retrieve them. For \$2495, Vetronix Corporation will sell you a crash-data-retrieval system that can transfer the recorded information from the ABM to a PC. What is unclear is who owns these data and who has the right to read them.

**CAR AND DRIVER**

## The Steering Column

BY CSABA CSERE  
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According to Doug Peters, a local tort lawyer who specializes in civil litigation, there are no court precedents or specific laws controlling such data. Peters hypothesizes that this information might be similar to medical data, which a patient owns, but the doctor owns the formatting method and a copy of the data.

Sure enough, in the Matos case, the police obtained a search warrant before they could download the data from the wrecked Grand Am. But there are no guarantees that courts everywhere would require a warrant. And in the owner's manual for a 2004 Saturn Ion, GM states it would provide the information "in response to an official request of police or similar government agency." That sounds far less formal than a court order to me.

So the question arises: Can an owner erase the data before they can be downloaded? There are certainly ways of clearing a memory chip, or the vehicle's owner could simply destroy or discard the ABM. But lawyer Peters advises against this move: "During a trial, the presumption is that lost evidence goes against the guy who lost it."

So, not only do most Americans have no idea their cars may be recording their driving behavior, but there's also little they can do about it. And think about this: Current ABMs record just five seconds of data before a crash, but computer memory is dirt cheap. For very little cost, that recording time could be extended to five minutes—or five hours!

The type and amount of data collected could be easily broadened, too. As more cars get stability-control and anti-lock brake systems, the car could record your steering-wheel motions, lateral acceleration, and braking force. And with the increasing popularity of navigation and OnStar systems that track the location of your vehicle, your complete driving history could be memorized.

I find this march of technology, unrestrained by any laws or even public discussion, very disturbing. Not surprisingly, so does the American Civil Liberties Union.

"If these devices are going into people's cars without their knowledge, we have a problem," says Jay Stanley, the communications director of the ACLU's Technology and Liberty program. He doesn't shut the door on such data recording completely. "There should absolutely be a right to privacy concerning where one drives, but there could be a reasonable argument for collecting data about your car in the seconds before an accident. But this should be decided publicly and democratically."

I agree. We need to discuss these issues soon, before our cars are programmed to transmit their speeds to traffic cops using the Wi-Fi technology that will quickly be available for pennies per car.