

# Decoding 'The Black Box' with Expert Advice

Investigating causation of an automobile accident is routine for many trial lawyers. In most instances, sufficient details of the accident can be gathered from the client, police report, witness accounts, and photographs of the scene or site of the accident. In more complicated cases, physical evidence of the crash may require more in-depth study: an accident reconstructionist's personal inspection of the

particular injuries and involved vehicles, roadway, and objects can prove invaluable.<sup>1</sup>

A relatively new tool in accident analysis exists, however, with inclusion of the "black box" in select vehicles manufactured since 1994. Engaging a qualified expert to recover data captured by this new tool in a crash may greatly enhance your ability to both accurately understand and reconstruct the accident.



By Timothy D. Lange

## The "Black Box," aka Event and Crash Data Recorders

Industry terminology varies, though the National Highway Traffic Safety Administration (NHTSA) refers to the devices commonly called "black boxes" as Event Data Recorders (EDRs). Many manufacturers refer to the devices as Crash Data Recorders (CDRs). These devices essentially record technical vehicle and occupant-based data at the moment of an impact, and, in some cases, for a brief period of time prior to a triggering event. This being the case, the "black box" may provide critical evidence of what happened immediately before and during an accident.

## Do Not Delay—Preserving the Data is Time Sensitive

The recorders will trigger when preset physical conditions nearing those sufficient for the airbag to deploy are met—"waking-up" and recording data. Extraction of the data after the event is time sensitive. In general, if an airbag deploys, the unit will permanently write and capture data. Therefore, if that unit is to be replaced when the vehicle is repaired, measures must be taken to collect and preserve the unit and its data. Losing the unit loses the data. Likewise, if the vehicle is involved in an accident in which the airbag is not deployed, the recorder may still trigger during this "non-deployment event." It will write data from a non-deployment event and retain that data for a limited time period. In some units, that period consists of 250 engine-ignition cycles. Low-impact collisions, therefore, will require early retrieval of the recorder to prohibit loss of the data upon ignition at the 251st start after the collision.

## The Information Available Varies Significantly by Vehicle

Data recorders varies by manufacturer, make, and model. Some units are more advanced than others. The "crash pulse" is recorded in seemingly all recorders—this relates to the Delta V at the time of the crash. The wealth of data recorded may include:

- lateral acceleration
- longitudinal acceleration
- vertical acceleration
- deceleration
- heading
- vehicle speed
- engine speed
- seat belt status
- braking input
- steering input
- gear selection
- delta v

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- turn signal status
- brake light status
- head/tail light status
- hazard light status
- brake system status
- ABS status
- stability control status
- environmental conditions
- cruise control status
- throttle position
- airbag deployment criteria
- airbag deployment time
- airbag deployment energy
- time between airbag non-deploy and deploy event
- ignition cycle count at investigation and event times.

Some (nearly all GM) units also record data from five seconds prior to the crash. NHTSA has required new buses and motor coaches manufactured after January 1, 2003, to incorporate very advanced systems capturing most of the data referenced above.

### **Access to the Data is not Publicly Available from All Manufacturers**

The recorders vary by both the manufacturer of the vehicle, as well as the model/year of the vehicle. Specialized knowledge and equipment are required to extract and interpret the data preserved. Some manufacturers have, however, elected to keep the process of extraction and interpretation of the data proprietary. Attempts can be made to require these proprietary manufacturers to extract, preserve, and provide the data in an understandable format. An accident reconstructionist providing information for this column advised that his experience in obtaining help from proprietary manufacturers has shown that they are not always receptive to such requests.<sup>2</sup> In direct actions like product liability cases involving the manufacturer of the vehicle, it is easiest to require produc-

tion of the data in an understandable format through discovery. In cases between third parties (in which the manufacturer is not a party), the task of requiring the non-party manufacturer to participate can be much more difficult and expensive.

### **Vertronix Corporation's Crash Data Retrieval System**

General Motors, Ford, Isuzu and Saab are current industry leaders in manufacturing recorders with information accessible to the public. Vertronix Corporation manufactures and sells a crash data retrieval system that integrates with recorders from these manufacturers.<sup>3</sup> The system retrieves information from select 1994-2005 GM vehicles, 2001-2005 Fords, 2000-2005 Isuzu's, and 2005 Saabs.


The retrieval system permits the download of data from the airbag module to a laptop through a specialized cable—which varies by airbag module model. It can also be downloaded through the diagnostic link connector on certain vehicles, which is typically located under the dashboard. The system sells for \$2,495, with added costs of software and cable updates when necessary. The Vertronix system will generate a report with easy-to-read graphics and charts from the data extracted. If the involved vehicle is covered by the Vertronix system, retrieving the data will be fairly easy if you employ a qualified reconstructionist or other expert.

As always, when engaging an accident reconstructionist or other

expert to assist you in obtaining “black box” data, be advised to seek references from fellow KATA members or other counsel having previously worked with the expert. Use KATA's ListServ to network and discover helpful information about the person under consideration. Request references and background information on any expert with whom you are interested in working. Confirm the pertinent schedule of fees and document terms concerning payment and billing before engagement. Clearly convey your case timetables with respect to discovery and trial, and leave ample time for the scheduling and preparation of this expert for his or her discovery and trial depositions. Remember, experts can make or break your case. Choose wisely!

<sup>1</sup> *Expert Advice* featured accident reconstructionists in the March/April 2002 issue of *The Advocate*. Copies may be obtained by request to KATA or the author.

<sup>2</sup> Kevin Johnson is an accident reconstructionist graciously providing research and information to the author for this work. Kevin works with event data recorders regularly, including the Vertronix, Inc. devices used by GM, Ford, Isuzu and Saab. Kevin is employed with Wolf Technical Services, Inc. and may be reached through his firm's website of [wolftechnical.com](http://wolftechnical.com).

<sup>3</sup> Vertronix Corporation has a considerable amount of information relating to its crash data retrieval system available on its web site at [vertronix.com](http://vertronix.com), including an informative PowerPoint presentation on the system. 

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