A NEW DIRECTION IN AUTO CLAIMS
Inside the World of Event Data Recorders

By Lou Stanley

Fraudfighters are constantly looking for new approaches to old problems and old approaches to new problems. Within the realm of automobile claims, a sister industry has developed and implemented a tool that may have a huge impact on the future of insurance handling.

The Crash Data Retrieval (CDR) Tool is a combination of hardware and software that reads the crash data found in a vehicle's Event Data Recorder (EDR). The EDR, a name coined by the National Highway Transportation Safety Administration (NHTSA), was developed to obtain the information needed to reduce deaths, injuries, and property damage due to vehicle crashes on the nation's highways. EDRs give government researchers and investigators information with which they can assess motor vehicles crashes in real world events with real people. Even though it was developed for one purpose, it's a valuable tool for another purpose: Claims investigations.

Think of an EDR as a vehicle's "little black box," one that is designed and programmed to record pure data -- making EDRs a valuable objective tool in our arsenal. Sensors located to the "brains," or electronic control units (ECUs), contained within the vehicles Air Bag Control Module (ACM), which is typically found in a fairly well protected area, e.g. under the driver's seat, the center console, or any other "safe" and protected location.

TRUE LIFE EXAMPLE NUMBER ONE

Adjuster: Policyholder Phillips, I'm here to look at the damage to your 2006 Toyota Camry.

PP: Yeah, like I reported on the phone, it was fine when I parked it last night, but this morning there was all this damage! Some hit and run driver must have crashed into it during the middle of the night while it was parked in front of my house.

Adjuster: (Opening the Door) No problem. I'm just going to take a quick read from the EDR.


Adjuster: An Event Data Recorder. Gee, this says that the seat belts were buckled and the car was being driven at 32 mph at impact, backing up from 55 mph a few seconds before the crash. Are you sure the vehicle was parked?

OOPS.

The EDR is designed and programmed to collect data from the vehicle computers. Collected data can provide valuable information on the severity of the crash, the operation of the air bag, and what deployment strategies were used during the event. EDUs are working for them just like they intended to do.

What aspects of this event data is of value to insurers? Some of the collected data points include any change in forward crash speed, the maximum change in forward crash speed, the time from the beginning of the crash at which the maximum change in forward crash speed occurs, whether the gas pedal was pressed and whether the brake was applied, whether the driver's seat belt was buckled before the crash, whether the air bag worked correctly, etc. Under specific conditions the EDR will also record the following information: sideway acceleration or force, forward or rearward acceleration or force, vertical acceleration or force, engine RPMs, whether the vehicle rolled over, steering wheel operation five seconds before the crash, and a host of other items you can check out in the tables near the end of this article.

Flash backward 45 years to the insurance world in the late sixties A Midwest insurer, at the top of its game, bought a Honeywell 58 computer -- so technologically advanced that it allowed a machine to type policies with amazing speed, while, at the same time, generating billings to individual agents. Even more spectacular, in July 1969, a pilot named Michael Collins flew the Apollo 11 spacecraft to the moon -- using some of that same astounding computer technology that so amazed those watching that Honeywell spit out policies. In the intervening 45 years, that initial technology has evolved to the point that every Apple iPhone carrying teenager has more computing power in his/her pocket than was used to make the 239,000-mile trip to the moon.

It's enough for an insurance claims adjuster/fraud investigator to get a fairly good portrayal of what actually happened. Witnesses disagree because they must relearn how to use this evolving tool. So far, the feedback has been promising, and the positive results are beginning to accumulate.

The considerations of a trial program include:

Standardization -- While the majority of vehicles now on the streets have EDRs, there was never any absolute standardization between EDR reporting methods. EDR data is proprietary to each auto manufacturer. Ford has its version; Toyota has another version; GM has still another. What is different now? NHTSA has issued a regulation to standardize the data collected and recorded by an EDR. Beginning with the model year 2013, NHTSA defined the minimum data set (15 items) that must be collected if a manufacturer decides to voluntarily install an EDR in its vehicle lines, along with requirements for the technology and accuracy of EDR data. Additionally, as of 2014, it is proposed that any new car sold in the United States must be equipped with an EDR. This also applies to foreign manufacturers; if you sell the vehicle in the United States, you get to have an onboard EDR. Since the designs are proprietary, many manufacturers have significantly added to those minimum data points defined by NHTSA. Items of measurement are continually being added to the units, limited only by cost and imagination.

Cost of Equipment -- If Gigantic Insurance Company (GIC) has 10 regional claims processing centers, the trial program shopping cart would look like this. Two regions (Atlanta serving the Eastern USA and Los Angeles serving the Western USA) would each own one top-of-the-line Premium EDR Tool (approximately $10,000 each). Satellite claims personnel, twenty four on each side of the county, forty eight in total would each get a basic EDR Tool, currently priced just under $3,000 each. (Both commercially available units can take the EDR data snapshots. Premium kits contain additional cables to take the EDR data snapshots from more seriously damaged vehicles.) EDR tool hardware is purchased once time with an annual software renewal required to keep up with manufacturer changes and data reporting utilities. Add in the cost of training and the cost to deliver that training to those so designated, and GIC is up another couple hundred thousand dollars a year, conservatively be less than one serious fraudulant claim. After that, it's all uphill.

Application -- GIC's 50 units would be in contrast to Captive's 100 units, and the data science readout is, in fact, just one more witness statement, unenhanced by memory, hypothesis, interpretation or any other human variable.

Recognition of Value -- The old adage, "A picture is worth a thousand words" has lost much of its weight with the advancement of technology -- at least a visual image. To be clear, in the case of EDRs, there are no actual pictures. An EDR report is an objective printout of...
true life example number three

Adjuster: Ms. Smith, you reported that your son was driving your husband’s 2009 Toyota Tundra and the side air curtains deployed on their own. Your son had said you that he had no idea how that happened and you thought the truck may have a defect in it and want to file a claim to repair the vehicle and consider legal action against the manufacturer.

Ms. Smith: That’s right. The truck’s air bags going off unexpectedly could have caused a serious accident and hurt my son, or worse.

Adjuster: Yes, that would be unfortunate.

Ms. Smith: Ok then, what are you going to do about it? (Smiling)

Adjuster: (After imaging the truck and looking at EDR report). The EDR data shows the vehicle was actually involved in what it thought was going to be a roll over, deploying the side curtain air bags to protect the occupants. The truck speed was constant at 60 mph and there was no attempt to stop the truck. It appears that the truck may have gone for a rough joy ride that ultimately deployed the air bags. Are you sure you wish to proceed with a claim?

Ms. Smith: (No longer smiling) I believe I need to have a talk with my son.

oops.

New emerging applications

While EDR reports have been widely used by law enforcement and the accident reconstruction communities, there is currently a push to involve EDR reporting in the used car and fleet management industries to help

Table 1 – Data Elements Required for All Vehicles Equipped with an EDR

<table>
<thead>
<tr>
<th>Data Element</th>
<th>Layman’s Description</th>
<th>Recording Interval / Data Sample Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta-V, longitudinal</td>
<td>Change in forward crash speed</td>
<td>(Relative to time zero)</td>
</tr>
<tr>
<td>Maximum delta-V, longitudinal</td>
<td>Maximum change in forward crash speed</td>
<td>0 to 250 ms</td>
</tr>
<tr>
<td>Time, maximum delta-V</td>
<td>Time from beginning of crash at which the maximum change in forward crash speed occurs</td>
<td>60-300 ms</td>
</tr>
<tr>
<td>Speed, vehicle indicated</td>
<td>Speed the vehicle was traveling</td>
<td>-5.0 to 0 sec</td>
</tr>
<tr>
<td>Engine throttle, % full</td>
<td>Was the accelerator pedal pressed?</td>
<td>-5.0 to 0 sec</td>
</tr>
<tr>
<td>Service brake, on/off</td>
<td>Was the brake applied?</td>
<td>-5.0 to 0 sec</td>
</tr>
<tr>
<td>Ignition cycle, crash</td>
<td>Number of times the engine had been started since being manufactured prior to the crash</td>
<td>3.0 sec</td>
</tr>
<tr>
<td>Ignition cycle, download</td>
<td>Number of times the engine had been started since being manufactured prior to downloading the EDR.</td>
<td>At time of download</td>
</tr>
<tr>
<td>Safety belt status, driver</td>
<td>Was the driver safety belt buckled 1 second prior to the crash?</td>
<td>-1.0 sec</td>
</tr>
<tr>
<td>Frontal air bag warning lamp, on/off</td>
<td>Was the air bag system properly working 1 second prior to the crash?</td>
<td>-1.0 sec</td>
</tr>
<tr>
<td>Frontal air bag deployment, time to deploy, in the case of a single stage air bag, or time to first stage deployment, in the case of a multi-stage air bag, driver</td>
<td>Time from the beginning of the crash at which the driver air bag begins to deploy.</td>
<td>Event</td>
</tr>
<tr>
<td>Frontal air bag deployment, time to deploy, in the case of a single stage air bag, or time to first stage deployment, in the case of a multi-stage air bag, right front passenger</td>
<td>Time from the beginning of the crash at which the right front passenger air bag begins to deploy.</td>
<td>Event</td>
</tr>
<tr>
<td>Multi-event, number of events (1.2)</td>
<td>How many crash events? 1 or 2?</td>
<td>Event</td>
</tr>
<tr>
<td>time from event 1 to 2</td>
<td>time between two crash events (if applicable)</td>
<td>As needed</td>
</tr>
<tr>
<td>Complete file recorded (yes, no)</td>
<td>Did the EDR complete the recording?</td>
<td>Following other data</td>
</tr>
</tbody>
</table>

insurance policies may have contract terms related to data collection from EDRs. Nearly 100 court cases have used EDR data in the proceedings, showing a willingness to allow EDR data entered as evidence.

Right to Accessibility — Who owns the information collected by an EDR? Can the government, insurance investigators or police just walk in and download the data? Ownership of the EDR and its data is a matter of state law, and such provisions vary considerably. NHTSA considers the owner of the vehicle to be the owner of the data collected from an EDR. The owner can give permission to download EDR data or courts can subpoena EDR data. Big city police agencies and Highway Patrol units that use the EDR tool collect data under their existing state laws governing crash investigations. For crash investigations conducted by NHTSA, the agency obtains permission from the vehicle owner before downloading the EDR data. Up-to-date policy language includes contract terms related to data collection from EDRs.

Once a year, late in the spring, the Las Vegas Speedway comes to life in a whole different way. An estimated 200 accident reconstruction specialists arrive to witness the latest antics (insanity being far too harsh of a word) of Rusty Flaitz, best described as the human crash dummy. Rusty, at last count, was within near-striking distance (no pun intended) of hitting (again) the 1,000 crash mark. Those who know him well were said to be placing sideline wagers on what that 1,000th crash would look like.

During the course of staged crashes, the series of donated automobiles, trucks, and (this year) even a bus, have cameras installed on the inside — to allow a slow motion view of the body's movement upon impact — and placed at strategic outside locations — to show, in slow motion, the sometimes spectacular crumbling of the vehicles.

Due to the lack of data if there was no measurable impact and has withstood legal challenges because it rises above speculation. Courts can subpoena EDR data through court orders, and some States collect data under their existing State laws governing crash investigations. Some
improve the transparency of the vehicle being offered for sale and close the gap in vehicle history reporting. A typical scenario would be to get the EDR data from a vehicle being brought in for a trade-in or lease return to get a true representation of the vehicle’s condition. An EDR report may help analyze the vehicle safety systems along with verification that there are no unreported stored events that may degrade the vehicle’s safety systems or the vehicle itself. Again, while the system was initially developed for one purpose, could not the same technology become an integral aspect of new policy underwriting?

ADDITIONAL INFORMATION

Many States are considering legislation to regulate EDR disclosure, data ownership, and other privacy concerns. Some States have already passed such laws. State Attorney-General’s offices can provide information on any State regulations affecting EDRs.

Those interested in additional information and research about EDRs can examine the NHTSA EDR web site at: http://www-nrd.nhtsa.dot.gov/edr-site/index.html

PREDICTION TIME

What does the future hold for EDR technology? The majority of vehicles on the roads -- and thus the majority of vehicles involved in claims -- are equipped with the units. Objective information is at our fingertips, some with the potential to replace conflicting witness statements, assist in lengthy court battles, determine true liability, and take the guess work out of many accident scenarios. Major carriers have already gone to computer aided adjusting (while still retaining the human element); it may be just a matter of time before EDRs become routine underwriting and claims tools.

EDR tool hardware is purchased one time with an annual software renewal required to keep up with manufacturer changes and data reporting abilities. It took more than 40 years to get from Honeywell’s to I-phones. It’s going to be far less time to get from the claims world of today to the claims world of ten years from now.

Our thanks to the Crash Data Group for their assistance in gathering the material to write this article and for supplying the photographs and information charts provided. For more information, see their web site at http://www.cdr-system.com/or call 800-280-7940.

Writers Wanted

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