USE OF EVENT DATA RECORDERS IN CLAIMS INVESTIGATIONS

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I. Background

All modem automobiles equipped with airbag systems contain some type of sensors, of varying sophistication, to govern deployment of the airbag(s). More sophisticated sensors are incorporated into the automobile's computer and receive data about the forces upon the automobile, as well as, e.g., data on engine performance. Many automobiles so equipped contain a device to record some portion of selected data, either temporarily or permanently. The devices, while similar in purpose, are not standardized by manufacturer. The names for the devices vary by manufacturer, but are commonly called 'Black boxes," an allusion to the flight data recorders onboard many commercial aircraft. As done in this paper, it is also popular to refer to these devices generally as "event data recorders, or EDRs" the name given them by General Motors. Some persons and courts call the devices "sensing and diagnostic modules, or SDM," though the recording device is actually a separate or additional component to an automobile's SDM.

In 2003, approximately 40 million automobiles in the United States contain some type of EDR. Of these, approximately 15 million contain a "harvestable" EDR; that is, an EDR that records data in a way that is readily accessible to and understandable by a person other than the manufacturer, provided the person has appropriate training. In their current model years, all General Motors personal automobiles (including those manufactured by the Saturn division) and all Ford personal automobiles are equipped with EDRs. It is anticipated that in the near future, all Lincoln, Mercury, and Toyota personal automobiles will be equipped with EDRs.

Estimates by Injury Sciences, LLC, a leader in evaluation of EDR data, state that of all automobiles in the United States, approximately 23% contain a harvestable EDR. The same estimates predict that the number of U.S. automobiles containing a harvestable EDR increases by 4% per year. As a result of these figures, Injury Sciences estimates that given a two car collision, there is a nearly 50% chance that at least one automobile will yield harvestable data. Yet, according to the National Highway and Traffic Safety Administration, of the approximately 6 million motor automobile accidents m 2003, only 600-or just 1:10,000-used EDR data in accident reconstruction analysis.

II. Technology

Presently, the government does not require that an automobile be equipped with an EDR at all. Instead, manufacturers routinely install an EDR to assist in evaluating the crashworthiness of automobiles and the effectiveness of their safety systems. Two

implications of this purpose are, first, many manufacturers' EDRs are "unharvestable" in that they encrypt the data, and the manufacturer does not disclose what data is recorded. Second, the data recorded by harvestable EDRs is not selected specifically to answer questions of liability and personal injury in a given MVA, though often a specially trained reconstructionist can infer from the data the answers to those questions.

Event Data Recorders also vary in the quality of the data they record. Some only record information in the moments preceding a crash; others record several fractions of a second after a crash. In general, an EDR records data for approximately five seconds preceding a crash, and perhaps for 300-500 milliseconds after the crash. Since the data is derived from the automobile's performance sensors, it does not include any photographs or audible information in the way that some of the commercial tractor trailer recorders or cockpit voice recorders do. Despite that the EDR records only a short span of limited data, the data contained on harvestable recorders is often relevant to many of the questions faced by claims handlers in MVA cases. For example, modern GM EDRs record the following 16 data points during the five seconds preceding a crash:

Throttle Percentage	Driver's Seatbelt (buckled/unbuckled)	Front Passenger Airbag Disable Switch Position	Duration between Impact & deployment
Engine RPM	Longitudinal Δ V and Elapsed Time for Airbag Deployment	Elapsed Time between Deployment and Near-Deployment Events	Airbag System Warning Lamp Status
Automobile Speed	Maximum Longitudinal Δ V Near-Deployment Event	Elapsed Time for Algorithm to Maximum Longitudinal Δ V	Duration of Illuminated Warning lamp
Brake Status (on/off)	Ignition Cycle Count	"Time" at which Crash Sensing Activated	Diagnostic trouble Codes Present at Deployment

With the help of personnel trained in the interpretation of such EDR data, the following sorts of inferences are possible:

Was Automobile in Operation?
Was Driver Speeding/Restrained?
What Was Actual vs. Required Stopping Distance?
Did Braking Occur and How Hard?
Severity/Speed of Impact?
Multiple Collisions/Chain Reaction?
Air Bag Replacement Necessary?
And More!

Such inferences are useful in evaluating, for example, whether an alleged MVA: was staged; produced the injuries claimed; involves the possibility of a jump-in claimant; or whether the automobile had actually been restored to operating condition following the occurrence of a prior severe collision resulting in airbag deployment.

The data recorded on an EDR is persistent and resistant to destruction - it is generally stored on an electrically erasable computer chip that can be read even after, for example periods of submergence or fire. In general, an EDR will permanently record crashes resulting in the deployment of an airbag; however, when such an automobile is repaired, the EDR usually must be removed and replaced. In general, when a crash does not result in the deployment of an airbag, the crash data is stored on the EDR until a more severe near-deployment event, or until the automobile has been restarted a certain number of times, such as 250.

While the government does not presently mandate the use of EDRs or the data sets/data definitions used by EDRs, it is moving in that direction. However the government seeks the cooperation and agreement of interested parties in establishing such standards. Presently there is little agreement between manufacturers and others about the types of data that should be recorded.

III. Applications for the Claims Handler

When properly analyzed, the data from an EDR assists in the conduct of standard accident reconstructions and serves to support the findings of the reconstructions. Inferences drawn from EDR data, considered in light of accident reconstructions, may assist in the assessment of liability and alleged damages, as well as detection and exposure of fraudulent claims.

A. Liability & Damages

Inferences drawn from EDR data and accident reconstruction findings may lead to conclusions about, for example:

* Vehicle speed at and before collision;
* Actual vs. required distance to stop automobile;
* Whether speed was increasing or decreasing when collision occurred;
* Veracity of operator/witness testimony;
* Rule out other alleged causes or contributing factors (such as loss of control on ice/oil, etc.;
* Confirm operator's reaction, including braking and forcefulness of braking;
* Forces involved; and
* Potential for injury.

B. Fraudulent Claims

* Potential to expose jump-in claims;

* Potential to expose damage caused by deliberate collision;
* Whether salvage vehicle/prior loss vehicle was repaired (airbag replaced) before alleged loss; and
* Enhanced ability of insurer and counsel to scrutinize alleged versions of mishap during recorded statement/examination under oath.

Conclusions about these factors may tend to inculpate or exonerate an insured alleged to be liable for a mishap. It is suggested that resources allocated to retrieval and analysis of EDR data will lead to objective data supporting prompt resolution and settlement of those cases where liability is likely, while at the same time offering further support to the insurer's position in those cases in which liability is appropriately contested. In short, more reliable claims assessment results in wiser allocation of resources.

IV. Litigation

As noted, to date, EDR data has been little used in the analysis of crashes, but the ready availability of usable data and the use of the data in recent prominent cases portend an active role for this data in the near future. As a result, we anticipate that courts will increasingly face the question whether the use of this data is permissible at trial.

To date most trial use of this data has resulted in court rulings that are not reported or not appealed, there is little or no mandatory precedent directly on point to guide courts in the use of this data. As such, courts faced with these issues will resort to general principles of law and weigh questions such as a party's right of access to data contained on an EDR; the admissibility of the data at trial; and the consequences deliberate or inadvertent destruction or spoliation of EDR data.

1. Access to Data

Presently, it is generally assumed, and is the position of NHTSA, manufacturers, and many police departments, that the data contained on an EDR is the property of the automobile owner. For example, NHTSA and manufacturers will generally not gather crash data from EDRs in other than anonymous form unless they have the consent of the automobile owner. Many police departments refuse to download from an EDR unless they have obtained either the owner's consent or a warrant (see e.g., Florida v. Matos, unreported, 2003). Additionally, many privacy advocates espouse the view that "unfettered" access to such "intensely personal" information as that contained on an EDR forebodes Big Brother. Examples of the impact of this view can be seen in California Automobile Code §9951 (effective Jul. 1, 2004), which, with limited exceptions, places access rights to the data in the control of the automobile's "registered owner." Similar legislation is pending in Pennsylvania.

It is submitted that the privacy view is shortsighted for technical, practical, and legal reasons. The privacy view ignores that tying data ownership to automobile title really does not answer the question of who owns the relevant data on the EDR. Since the EDR of a damaged automobile may be replaced and discarded or the title to a totaled automobile later may vest to the insurer, the view leads to the key question of whether ownership is critical at the time of the crash, or at the time of data access. Likewise, similar questions exist when the data sought is contained on an EDR in a leased or rented automobile. A more sophisticated view of the issue suggests that these questions are facets of the more general contention, *who controls access to the data port at the time access is sought?* The manner in which these questions are framed is critical to their disposition in the future.

An important, though unreported, case addressing the privacy rights of automobile owners to the EDR data is *Valan v. General Motors*. (N.J Super. Ct. law Div., July 24 2001). In *Valan*, a class action, owners of GM automobiles brought suit contending that their privacy rights had been violated when GM sold them cars without disclosing that they contained EDRs. The plaintiffs faced many complications (including the fact that GM actually did disclose the existence of the EDR, though in tiny type buried in the user manual). Dismissing the action, the court noted in part that there was no privacy right in data contained on the EDR since, in essence, it is the sort of information that is readily visible to all around, such as roadside police with radar units. Moreover, the court opined that even if there was a privacy right in the *data* itself, it is a marginal concern because the automobile owner controls the ability of others to access the data; and a recording of such a short window of limited data is not likely an unreasonable intrusion on privacy. While the law remains unsettled, it is suggested that the *Valan* court's view, to the extent it focused on control of *access* to the data, rather than *ownership of the data itself*, is prescient.

Additionally while the law remains unsettled, it is suggested that, at least given the present limitations and operation of EDRs, the view of a police department that owner consent or a warrant is required to access data is probably unreasonably restrictive. Especially since a driver can deliberately or inadvertently erase non-deployment event data from an EDR by repeated ignition or a more severe collision, unless the police take the automobile into custody following the subject mishap, the further operation of the automobile presents a meaningful risk that the data will be destroyed. In general, where the risk of evidence destruction is high if the police await a warrant a court will permit warrantless search under the exigent circumstances doctrine. Though procurement of consent or a warrant is advisable when practical, it is suggested that given the ease of access to the data port, and the short time necessary for download of data, such a search by police would be only minimally intrusive. These views were endorsed m another unpublished decision, *People v. Christman*, 2004 N.Y. Misc. LEXIS 45 (J*ust*. Ct. N.Y., Jan. 4, 2004). In Massachusetts, these

arguments are presently under consideration in a Barnstable County criminal trial, *Commonwealth v. Fraser*.

While the law remains unsettled, it is suggested that the questions of data right ownership vs. control of access to data will do little to prevent an insurer from eventually obtaining the data it seeks from an EDR. The standard Massachusetts Automobile Insurance Policy, as well as many other similar policies throughout the nation, create various rights in the insurer that it can assert as the basis for its entitlement to access the EDR data in the same fashion as it does accessing, e.g., an odometer reading. The policy also requires the insured to cooperate with the insurer in providing material information required by the insurer. As such, it is suggested that, upon request by the insurer, the insured is required to permit access to the EDR, much the same way that the insured must permit a general automobile inspection. Likewise, it is suggested that in an investigation, an insurer may make a reasonable request for access to the EDR of a third party claimant in the event the data is necessary to address unanswered questions about the validity of the third party claimant's allegations. Similar to the best practices presently employed by police departments, it is highly recommended that insurers seeking access to EDR data obtain from the automobile owner a specially-tailored signed release permitting access to both the EDR itself, and the data it contains.

2. Admissibility

i. Scientific Reliability

Given the relative novelty of the issue, counsel intending to use EDR data at trial are well-advised to be prepared to establish the scientific reliability of the evidence under *Daubert/Kumho/Lanigan or Frye* standards. In broad terms, these standards evaluate whether the EDR data is reliable and relevant to the action (*Daubert/Kumho/Lanigan)* or whether it is generally accepted in the field in which it is offered at trial (Frye). It is suggested that owing to the purpose for which the manufacturers developed the EDR, courts can be expected to find the EDR both reliable and generally accepted.

Notably, the analysis of one prominent case suggests that a scientific reliability analysis may be as unnecessary as proving the reliability of a tape recorder or video recorder, since the manner of recording the data is so well-established, *Bachmann v. General Motors* 776 N.E.2d 262 (111. App. 4th 2002). While there is not direct precedent regarding the reliability of EDR data in Massachusetts courts, it is clear that courts in Massachusetts have relied on EDR data, even if without much or any discussion as to its reliability. See *Perez-Trujillo v. Volvo Car Corp*., 137 F.3d 50 (1st Cir. 1998). Arguments about EDR reliability, as well as their privacy implications in general, are under consideration in an Essex County criminal trial, *Commonwealth v. Zimmerma*n.

ii. Chain of Custody

It is anticipated that establishing a valid chain of custody is key to admissibility of any EDR data. To prove the validity of the data, the proponent must establish that the data was properly retrieved, stored, and evaluated without corruption. At a minimum establishing a chain of custody is likely to require the testimony of the data harvester and the individual analyzing the data. It is recommended that the harvester either retain and preserve the EDR, if possible, or photograph it to establish its authenticity and physical condition at download. Likewise, it is strongly recommended that the insurer require the harvester to produce evidence of appropriate training. Further, it should require that the harvester document in writing, and when possible, photographically, the harvesting. When possible, it is preferable that the harvester take custody of the EDR unit to preserve it from subsequent disposal. Commercial services, such as those provided Injury Sciences, provide turnkey solutions by providing trained harvesters and secure electronic vaulting of the data.

iii. Spoliation

The investigator is well-advised to consider EDR data perishable, despite the manner in which it is recorded. As described above, certain events can cause non-deployment data to be overwritten. Even in the case of permanently-recorded data from a deployment event, the risk that mechanics will remove and discard the EDR means that an investigator should give high priority to pursuing such data. At a minimum, if the insurer wishes to pursue such data, it should consider serving a written request for the data and warning regarding spoliation as soon as possible. Likewise, the insurer should anticipate that in the near future it and its insured will receive discovery demands from opponents that EDR data be preserved. The consequences of knowingly or inadvertently permitting the destruction of evidence relevant to a law suit are generally determined on a case-by-case basis, but can be as severe as to result in default in the entire action.

3. A Note on Unharvestable Data

Additionally, the insurer should be mindful that even “unharvestable” data may be accessible and useful. Though it may only be possible to retrieve and interpret unharvestable data with the assistance of the automobile manufacturer, and the process of doing so could result in significant legal and technical expenses. In the appropriate case a party can consider a subpoena upon the manufacturer for retrieval and interpretation of data that has been preserved.

V. Predictions for the Future

Efforts by NHTSA toward data standardization are driven as much by the desire for design and safety improvements as they are by the desire for prompt, or instant, access to meaningful data

about crash conditions and their effects on occupants, so as to assist in the notification and dispatch of the right numbers of appropriately composed rescue and trauma teams. Additionally, NHTSA foresees an environment in which automobiles will freely exchange performance information with each other and roadside sensors, which will permit warnings about, e.g., roadway conditions and traffic congestion. While expensive to deploy widely, the technical foundations upon which these systems are available today and in use in systems such as GPS devices and services similar to On-Star's crash notification service.

In the present day, the data necessary to make such systems universal is nonstandardized and stored on a device to which the automobile owner can restrict access. However, it is suggested that in the future, the manner in which automobiles sense and record this data will become standardized, and it is likely that the automobile owner will lose the physical ability to restrict access to the data. At that point, it will be unquestionable that automobile owners have no right of privacy in data of the sort presently recorded by EDRs.

Additionally, the general public's knowledge and awareness of the data contained on EDRs is only just beginning to awaken. International case histories involving broadcast installation of aftermarket augmented EDRs in service automobiles such as ambulances and police cars demonstrates drastic decline in the MVAs incurred by the drivers of those automobiles. Similarly, private companies such as Road Safety International supply augmented aftermarket EDRs that are advertised to parents for their utility in reducing and tracking poor driving habits of household drivers. Assuming the "EDR effect" has a lasting impact on society, widespread public knowledge of me devices may contribute to fewer collisions and safer driving.

With respect to fraudulent claims, in the short term, as claimants become aware of the value of EDR data, insurers can expect to see a decline in the number of alleged crashes involving automobiles with harvestable data. Likewise, in automobiles with harvestable data, insurers are likely to see a rise in allegations of previous or subsequent collisions as a manner of explaining data contained on an EDR. In order to produce "good" recordings on EDRs, some claimants may increasingly resort to deliberately staged collisions.

It is suggested that a future wave of claimants will attempt to discredit EDR evidence. For example, in the vehicular homicide trial in Florida v. Matos, the defendant claimed the EDR data was affected by his installation of mag tires and his alleged hacking of the automobile computer. Moreover, it can be expected that organized crime or claimants with electronic savvy will take advantage of one’s naive over reliance on the data it contains, much in the same way certain organized crime rings attempt to "clone" automobiles by duplicating VINs.

VI. Conclusion

It is suggested that over time, EDR data will become increasingly available and prevalent in claims handling. When properly retrieved, handled, and analyzed, the data is a source of unbiased information that will assist in assessing liability and damages, as well as suspected fraud claims.

Those interested in making use of EDR data should instate appropriate protocols to safeguard the legal interests at stake, including:

- Ensuring that properly trained, credible, and reliable employees/contractors are available to harvest the data;
- Establishing protocols to document the harvest and establish a chain of custody;
- Understanding that the insurer's rights to cooperation from the insured and inspection of physical conditions which arise from the terms of the policy and provide the legal basis to request access to EDR-data;
- Ensuring abundance of caution by obtaining a signed release from the vehicle owner tailored to permit access to EDR data;
- Remaining mindful of spoliation issues;
- Safeguarding harvested data from corruption;
- Retaining any removed EDR unit, when practicable; and
- Considering inviting/permitting other interested parties to attend the harvest and providing same with copies of the data.