Buyers Up • Congress Watch • Critical Mass • Global Trade Watch • Health Research Group • Litigation Group
Joan Claybrook, President

August 13, 2004

Docket No. NHTSA-2004-18029
U.S. DOT Dockets, Room PL-401
U.S. Department of Transportation
400 7th Street, SW
Washington, DC 20590

Comments on NHTSA Event Data Recorder (EDR) Notice of Proposed Rulemaking 49 FR 32932, February 27, 2004

Introduction: The Benefits of EDRs

Public Citizen welcomes the opportunity to comment on the National Highway Traffic Safety Administration's (NHTSA) proposed rule regarding the standardization of EDR data elements. EDRs offer important benefits in the area of automobile and highway safety, and with over 40,000 people dying on American roads each year, the agency has a unique opportunity and must not squander it.

Where the agency should be maximizing its efficiency and providing certainty and leadership for the benefit of the auto industry, it has instead hesitated to fully outline required next steps and produced only a half-baked pie. Curbing the national epidemic of roadway crashes is of urgent priority, and NHTSA must make full use of the revolutionary potential of EDRs to improve automobile and highway safety by requiring them in all vehicles.

EDR data can contribute to significant improvements in automobile and highway safety. The unprecedented access to objective crash data that EDRs provide would offer such safety benefits as:

- Increased understanding of crash causation and injury sources. EDR data allows for an understanding of crash and injury causation unattainable by current means of crash investigation. What we currently understand of crashes is based on shaky eye-witness testimony and crash reconstruction, which often rely on crash severity calculations that NHTSA's own crash investigators have shown to be at times grossly inaccurate. The objective data that EDRs provide would illuminate crash causation and injury sources in real world crashes, providing insights for engineering safer vehicles. Researchers would also be able to evaluate the real-world performance of safety features and formulate better safety standards.

Additionally, EDR data would reveal where safety advances are most needed, and allow for more accurate analysis of which NHTSA safety programs work best, enabling the agency to more effectively allocate resources. As former NHTSA Administrator Dr. Ricardo Martinez stated in his 2001 petition on EDRs to NHTSA:

> Understanding what happens in a crash is essential to preventing… injuries and deaths. This information is the cornerstone of safety decision-making, whether it is designing the vehicle, making policy, identifying a potential problem or evaluating the effectiveness of safety systems. There is no substitute for objective, accurate data from real-world crashes.[1]

- Enhanced commercial vehicle safety. EDRs would provide similar safety benefits for commercial vehicles. In addition, EDRs would help improve industry practices, particularly the rampant problem of drowsy driving.

- Better data on defect trends. EDR data would allow the Office of Defect Investigations (ODI) to more effectively target defect investigations. A 2002 Office of the Inspector General (OIG) report condemned the data that ODI currently uses as being of limited use and of poor quality. When used in conjunction with the early warning database, EDR data would enable ODI to expeditiously identify some types of defect trends.

- Safer highway designs. EDR data would assist the Federal Highway Administration (FHA) in determining dangerous road designs. This would allow the agency to identify design flaws in existing roads, and avoid such flaws in future roads.

- Improved emergency response to crashes. When combined with an automatic collision notification (ACN) system, EDRs would improve, and in some cases, dramatically improve, emergency response time. Loring Rue, III, M.D., F.A.C.S., Professor of Surgery at the University of Alabama at Birmingham and Director of the Center for Injury Sciences, noted in her response to NHTSA's request for comments on EDRs that the time it takes to transport a patient to a proper medical facility in part determines the patient's chances of survival and the seriousness of his or her injuries.[2] This was echoed by the comments of the New Jersey Department of Transportation, which stated that receiving medical attention in the "golden hour," the first hour following a crash, is critical to increasing a victim's chance of survival.[3]

---

[1] Petition of Dr. Ricardo Martinez; Docket No. NHTSA-01-8876-8; October 31, 2001.
[2] Comments of the University of Alabama at Birmingham; Docket No. NHTSA-2002-13546; 67 FR 63493; October 11, 2002.
[3] Comments of the New Jersey Department of Transportation; Docket No. NHTSA-2002-13546; 67 FR 63493; October 11, 2002.

> EDR data, in combination with ACN, would also improve the effectiveness of emergency responses to crashes, as data on crash forces and belt use would provide emergency personnel with clues as to the type of injuries to expect. This would facilitate quicker, more efficient, and more prepared responses. It would also reduce the chances that emergency personnel would miss "hidden" injuries such as internal bleeding.

The degree to which these benefits are realized, however, depends on several key factors: the compatibility of EDR data; the number and quality of data elements that EDRs record; EDR survivability; investigators' ability to extract EDRs from crashed vehicles and download the recorded data quickly; EDR penetration of the vehicle fleet; and EDR data analysis, presentation, and availability.

Public Citizen is pleased that NHTSA has taken a first step towards reaping the full benefits of EDRs by proposing to standardize a portion of the data elements that EDRs record. The proposed rule, however, only partially addresses the need for compatible EDR data elements, and furthermore, comes up short in all other areas that are critical to realizing the true benefits of EDRs. The agency needs to expand and strengthen this *de minimus* rule to fully reap the many benefits of EDRs.

Many Data Elements Still Need Standardization and More Data Elements Should be Required

Data element standardization ensures compatibility, which is necessary for easy comparison and integration of EDR data. While the proposed rule standardizes a number of data elements that EDRs record, it neglects to standardize a large portion of useful data elements. The Institute of Electrical and Electronics Engineers (IEEE) Project 1616 on EDRs listed 80 data elements used by different groups.[4] The proposed rule, however, standardizes only 42 data elements, and requires only 18. To ensure compatibility of EDR data, NHTSA must standardize all EDR data elements.

The number and utility of data elements that EDRs record contribute to the depth of understanding of crashes that EDR data, for the first time ever, would allow. The proposed rule, however, neglects many of the data elements used in case reports listed by IEEE, as well as those on the NHTSA EDR working group's "top ten" list. NHTSA should require that EDRs record a far more extensive set of data elements, using as a guide the data elements on IEEE's list that groups utilize to improve safety.

The proposed rule also neglects many other useful data elements, cutting short the benefits EDRs offer. The IEEE working group on EDR definition for the MVEDR Committee identified 80 data elements that parties ranging from EMS to defect investigators to the National Transportation Safety Board (NTSB) utilize. The proposed rule only requires that EDRs record a mere quarter of the data elements on the IEEE list, thus neglecting many useful data elements. (See Attachment A)

[4] IEEE P1666; *Draft Use Case Summary Report, Version 1.1*; April 2003.

Some data elements, though, cannot be recorded without the presence of additional safety features. EDRs, for instance, cannot, of course, record ABS data without the presence of ABS. The proposed rule requires that an EDR record ABS data if a vehicle is equipped with ABS, essentially requiring, to the fullest degree possible without requiring manufactures equip all light vehicles with ABS, that EDRs record this data element. The proposed rule, however, misleadingly places other data elements in the same "if equipped" category as ABS, even though they can be required without equipping vehicles with additional safety features. Safety belt status for the front passenger, for instance, must be recorded by an EDR only if the EDR has the necessary sensing capability. Unlike ABS data, safety belt status data does not require additional or complicated safety features, only additional sensing capabilities, which are far less expensive in most cases.

The proposed rule also fails to require some of the most beneficial data elements. In fact, the proposed rule does not require that EDRs record any of the "top ten" data elements listed by the NHTSA EDR working group which do not depend on the presence of additional safety features—ignoring the agency's own record and recommendations.[5] It does, however, require an EDR to record ABS and air bag data if a vehicle is equipped with ABS or any type of air bag, respectively. Data elements from the NHTSA EDR working group's "top ten" that the proposed rule does not actually require EDRs to record are critical factors such as steering input, vehicle roll angle and lateral acceleration.[6]

Another absolutely critical data element that the proposed rule neglects is crash location. Both the NHTSA EDR working group and medical professionals rank this as a top priority. This data, when combined with ACN, would prove critical in improving emergency response time and service. It would also help to identify dangerous road designs and pinpoint hazardous intersections.

Mysteriously, vehicle identification number (VIN) is another important data element not required. It is particularly questionable given that all auto manufacturers maintain their own incidence records by VIN. The absence of the VIN dramatically undermines the usefulness of the EDR data. The VINs of vehicles involved in crashes reported in NHTSA's databases could be used to cross-check reports in those databases against the consumer testimony submitted to NHTSA by manufacturers as part of the early warning database, and by consumers as Vehicle Owner Questionnaires (VOQ), as well as in the agency's own defect investigations. This would create a useful link between databases that would allow for protection against misreporting. It would also increase the accuracy of the databases, as duplicate reports could be identified.

Requiring installation of an EDR with an appropriately large number of data elements would also prove far more cost-effective for both manufacturers and consumers.

---

[5] NHTSA EDR Working Group; "Event Data Recorders: Summary of findings by the NHTSA EDR Working Group;" August 2001.

[6] Steering input, vehicle roll angle, and lateral acceleration are placed in the "if equipped" category of the proposed rule.

Mandated safety features cost consumers as little as a quarter of the cost without an agency requirement. Requiring that EDRs record a comprehensive set of data elements would drive the cost of the necessary technologies, including sensors, down, providing critical crash data with minimal financial burden on the public.

The more data elements that EDRs record, the better understanding of crashes they allow. The proposed rule offers a meager list of data elements required to be recorded by EDRs and neglects the data elements that NHTSA's own working group considered the most important. NHTSA should expand the minimal list of data elements required to be recorded, making sure that those which offer the greatest safety benefits are included.

NHTSA Must Resolve Outstanding Technical Issues

In addition to the paltry list of data elements that EDRs are required to record, Public Citizen takes issue with the technical formulation of several data element requirements of the proposed rule:

- Post-event crash data is neglected. The proposed rule does not require an EDR to record any data elements except for roll angle longer than 0.5 seconds after the trigger threshold is met. This means that EDRs will not record most data from rollover crashes, which typically last for several seconds. Additionally, EDRs will not record important post-event crash information for non-rollover crashes.

- Safety belt status. The proposed rule specifies that safety belt status will be recorded at one second prior to an event. Safety belt status should also be recorded one second after an event so that crash investigators can determine if the belt failed and unbuckled during the crash or if a crash occupant intentionally unbuckled it after a crash.

Strong Survivability Standards Critical to Protecting Important Data

Public Citizen applauds the agency for setting survivability standards, but the standards as proposed, unfortunately, do not ensure that data will survive fire, fluid immersion, or severe crashes, categories which include many fatal crashes. It is of the utmost importance that the agency set survivability standards that will ensure no data is lost.

The proposed rule requires EDRs to function before and after a 35-miles-per-hour (mph) frontal crash test, a 25-mph frontal offset crash test, a 33.5-mph side crash test, and a 50-mph rear crash test. However, in 2002, nearly 75 percent of vehicles with reported speeds involved in fatal crashes were traveling at speeds greater than 35 mph, and nearly 50 percent were traveling at speeds greater than 50 mph. This is a critical segment of crash data which the rule should not neglect. Additionally, the agency's proposal does not ensure that EDR data will survive rollovers, as there is no rollover crash test, and does not ensure that EDRs will survive vehicle fires or fluid immersion.

NHTSA needs to ensure that EDR data will survive severe crashes and rollovers. To best simulate real-world survivability, NHTSA should require that EDRs function before and after severe crash tests. NHTSA should also subject EDRs to a rollover crash test. Another option is to require EDRs to meet survivability tests similar to those that airplane and railroad black boxes must meet. That is, EDRs would be required to survive several different tests, ranging from immersion in water to heat exposure and forceful impact.

Federal Railroad Administration (FRA) Acting Administrator Betty Monro stated after that the agency proposed to improve survivability of railroad EDRs that "the survival of data is key to understanding why a train accident happened. Having a better 'black box' will improve our ability to prevent future accidents."[7] NHTSA must set sufficient EDR survivability standards to ensure that no EDR data is lost.

EDR Retrieval and Data Download Standardization Necessary

Easily retrievable EDR data would help to ensure successful data collection. The proposed rule does not provide against incompatible downloading systems that would hinder data retrieval, decreasing the benefits of EDRs. NHTSA absolutely must standardize extraction protocol and technology so that data may be easily retrieved. This would significantly reduce costs for all concerned. NHTSA must also standardize the location of connectors in vehicles with accessibility in mind so data may be retrieved as quickly as possible.

NHTSA Must Require that Manufacturers Equip All New Vehicles, Including Large Trucks, with EDRs

The greatest failure of the proposed rule may be that it does not require manufacturers to equip all new vehicles with EDRs. The NHTSA EDR working group found that the degree to which the benefits of EDRs are realized is directly proportional to the number of vehicles equipped with the devices. Also, the National Transportation Safety Board (NTSB) has noted the importance of mandatory EDR installation, and recently recommended that NHTSA require installation of EDRs in all new light vehicles once EDR standards are developed. Full fleet penetration of EDRs is critical to the accuracy and utility of EDR data. And while the agency claims that manufacturers have voluntarily expanded their use of EDRs in vehicles, statements of manufacturers and the agency's former Administrator suggest that any expansion is minimal at best. The agency does not ensure that EDRs will fully penetrate the vehicle fleet, and the proposed rule may even undermine whatever voluntary expansion of EDR use there may be. To maximize the benefits of EDRs, NHTSA must require that manufactures equip all new vehicles, including large trucks, with EDRs.

In his 2001 petition to the agency for mandatory EDR installation, Dr. Martinez characterized the overall manufacturer movement towards integration of EDRs into the

[7] Warren Flateu, "FRA Proposes to Improve Crash Survivability of Locomotive 'Black Box.'" *DOT News*, June 30, 2004.

vehicle fleet as "sluggish and disjointed." He also noted that some manufacturers have said that they will only install EDRs if required to do so by the government.[8] NHTSA argues in the proposed rule that manufacturers have installed EDRs as standard equipment on an increasingly large number of vehicles such that "they are now being installed in the vast majority of new vehicles." However, EDRs would achieve full fleet penetration much sooner if NHTSA required that manufacturers install EDRs on all new vehicles. The technology is already there and, if one assumes the agency is correct in its estimation of the degree to which EDRs currently penetrate the vehicle fleet, there is not too far to go, meaning that the costs will similarly be small.

Also, the manufacturer statements claiming some manufacturers may remain truly obstinate without an agency mandate exposes a considerable problem: the agency may achieve near-total fleet penetration without requiring manufacturers to equip all new vehicles with EDRs, but without total fleet penetration, a segment of crash data will remain missing. While this may be only a small portion of data for the vehicle fleet, it would be nonetheless significant, as any missing data could compromise the accuracy of the data collected from the rest of the fleet. Additionally, entire pieces of data may be neglected. For example, ODI would not be able to use EDR data to detect a defect trend in a product used exclusively by a manufacturer that chooses not to equip its vehicles with EDRs.

Most discouragingly, manufacturer comments suggest that the proposed rule may even deter manufacturers from installing their vehicles with EDRs. A recent *Washington Post* article reported that some manufacturers have predicted that the new rule will discourage the further expansion of EDR use.[9] Many manufacturers notoriously resist government regulations, and the proposed rule allows manufacturers to dodge NHTSA's requirements for EDR data standardization by not equipping their vehicles with EDRs. This loophole undermines the purpose of the rulemaking and compromises the utility and accuracy of EDR data, which rests on EDR fleet penetration.

The proposed rulemaking also fails to require EDRs in large trucks, even though mandatory EDR installation in large trucks offers many important benefits. In addition to ensuring full penetration of the light vehicle fleet, NHTSA should initiate a separate rulemaking to require EDRs in large trucks. This would yield data that would improve safety and help improve industry practices and commercial driver behavior, particularly as to the rampant problem of drowsy driving. As a prime example of the need for additional action in this area, we are submitting to this docket under separate cover the recent decision invalidating the Federal Motor Carrier Safety Administration's hours-of-service rule, which was deemed deficient in several key areas affecting safety.

NHTSA has placed safety at the whim of unreliable manufacturers. The proposed rule provides no guarantee that manufacturers will expand EDR use and does not ensure that EDRs will fully penetrate the light vehicle fleet. Leaving EDR data vulnerable to

[8] Petition of Dr. Ricardo Martinez; Docket No. NHTSA-01-8876-8; October 31, 2001.
[9] Skrzycki, Cindy. "Data Recorders in Cars Might Open Pandora's Black Box," *The Washington Post*, July 27, 2004.

market fluctuations and manufacturer caprice will inevitably erode the integrity of this important public health data. NHTSA must require that manufacturers equip all new vehicles with EDRs.

NHTSA Must Integrate EDR Data into Data Collection Systems and Crash Investigations

Data analysis and presentation also are critical to reaping the maximum benefit of EDR data. EDR data, fully integrated into NHTSA data collection systems and crash investigation programs, would improve the depth and quality of crash data and provide researchers with important insights into crash and injury causation. Such advances would enable ODI to expeditiously identify defect trends and allow researchers to assess the effectiveness of emerging safety features, while also providing a basis for sound rulemaking and federal safety standards. Though NHTSA already uses EDR data in some collection systems and crash investigation programs, NHTSA should fully integrate EDR data into all of its data collection systems and crash investigations.

If a requirement for EDRs had been in place when the first passenger air bags were installed, the agency would have been equipped to take immediate steps to address the problem of air bag hazards, rather than letting the problem fester for the four years it took to issue a revised rule. The agency's reputation is, it is no overstatement to say, in the balance here, as literally scores of future hazards could be remedied in a far more timely manner than current data collection systems allow.

NHTSA currently complements the National Automotive Sampling System-Crashworthiness Data System (NASS-CDS), Special Crash Investigations (SCI), and the Crash Injury Research and Engineering Network (CIREN) with EDR data, but not the Fatality Analysis Reporting System (FARS). The insights EDR data provide into crash causation, environmental influence, driver behavior, and safety feature performance would contribute to more detailed, accurate, and comprehensive FARS data. NHTSA should fully incorporate EDR data into FARS, an important tool in understanding real-world crashes, as well as all other data collection systems and crash investigation programs. Also, police and municipal officials should receive training to enable them to collect accurate and complete EDR data for the FARS database.

EDR data would add greatly to NASS-CDS, but years of underfunding have diminished the extent and quality of the data system. NASS-CDS was originally intended to investigate 18,000 crashes per year but now investigates only 4,000 to 5,000 crashes annually. EDR data will significantly augment the limited capacity of NASS-CDS, but the system should receive funding so it can perform the duties it was originally intended to perform. NHTSA should also standardize data collection procedures for NASS-CDS and all other data sampling systems and crash investigations to avoid muddled or incompatible data.

Additionally, NHTSA should create a new database solely for EDR data. A separate storehouse of EDR data might help to corroborate conclusions drawn from other databases. Additionally, EDR data should be flagged in other databases to make its

utility and benefits more apparent. The availability of EDR data is critical to realizing the benefits of EDRs, and NHTSA should enable uninhibited access to data via the Internet.

Privacy Issues Raised by Proposed Rule are Not New; EDR Data is Urgently Needed for Public Safety

It is important to ensure that citizen privacy will be protected against abuses of EDR data. However, NHTSA already collects and uses EDR data. The proposed rule presents no new privacy issues, and further, addresses some of the existing privacy concerns by requiring the owner's manuals of vehicles equipped with EDRs to contain a paragraph informing consumers of the presence of an EDR in their vehicle and the role that EDRs play in improving safety.

Of course, privacy concerns can be addressed with protective laws guarding against possible misuse of EDR data. Additionally, NHTSA has a long history of protecting sensitive data while effectively using such data in service of its essential safety investigations and mission.

EDR data is essentially public health data, which is needed to improve public safety. EDR data is collected from crashes on public roads, and it can be utilized to contribute to improved safety for all Americans. With over 40,000 people dying annually in vehicle crashes, this data is critical to improving the health and wellbeing of the nation. Just as epidemiologists collect data on death and disease trends in the interest of public health, NHTSA rightly collects EDR data in the interest of safer highways.

Conclusion: NHTSA Must Maximize the Benefits of EDRs

The objective, real-world crash data that EDRs record present the opportunity for myriad improvements in automobile and highway safety. The degree to which the benefits of EDRs are realized, however, depends on several factors insufficiently addressed in the proposed rule. NHTSA should not pass up this opportunity to improve automobile and highway safety. It must bolster the proposed rule to reap the full benefits of EDRs.

Sincerely,

Joan Claybrook
President, Public Citizen

Attachment A

Data Element
Acceleration, angular
Acceleration, precrash, x-axis
Acceleration, precrash, y-axis
Acceleration, x axis
Acceleration, y-axis
Acceleration, z-axis
Airbag suppression, passenger airbag
Airbag, deployment level, driver
Airbag, deployment level, pass
Airbag, driver deployment
Airbag, driver's side airbag deployment
Airbag, passenger deployment
Airbag, passenger's side airbag deployment
Airbag, time from enable to first/single stage deploy, driver
Airbag, time from enable to first/single stage deploy, pass
Airbag, time from enable to pretensioner fire, driver
Airbag, time from enable to pretensioner fire, pass
Airbag, time from enable to second stage deploy, driver
Airbag, time from enable to second stage deploy, pass
Battery voltage
Braking activity, ABS
Braking activity, service
Braking, fault codes
Braking, line pressure
Braking, pulses
Braking, retarder
Braking, stability control
Braking, temperature
Braking, timing
Braking, traction control
Braking, truck emergency
Braking, truck trailer
Change in velocity, x-axis
Change in velocity, y-axis
Change in velocity, z-axis
Clutch
Cruise control
Date
Direction of Force
Engine data, manifold pressure
Engine data, rpm
Engine data, temperature
Engine data, throttle (percent open)
Hazard
Heading, direction of vehicle
Ignition cycle, crash
Ignition cycle, investigation
Load, truck
Location of impact on vehicle
Location, lat/long
MVEDR ID
Number of occupants
PRNDL
PRNDL codes
Restraint usage, driver
Restraint usage, other positions
Restraint usage, pass
Roll Rate
Rollover
School bus warning lamps
Seat position, driver
Seat position, pass
Seat, passenger, occupant classification
Speed, Vehicle pre-crash speed
Steering input
Steering input, rear axle
Time between two events, if recorded
Time of day
Tire pressure
Tire failure, time
Turn signal
Vehicle lighting
Vehicle maneuver
Video
VIN
Warning lamp, Airbag
Warning lamp, EDR
Wheel speeds (each wheel end)
Windshield wipers
Yaw Rate

Source: IEEE P1616, "Draft Use Case Report, Version 1.1;" April 2003.