

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 571

Docket No. NHTSA-2012-0177

RIN 2127-AK86

Federal Motor Vehicle Safety Standards; Event Data Recorders

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: In August 2006, NHTSA established a regulation that sets forth requirements for data elements, data capture and format, data retrieval, and data crash survivability for event data recorders (EDRs) installed in light vehicles. The requirements apply to light vehicles that are manufactured on or after September 1, 2012, and are equipped with EDRs. However, the regulation does not mandate the installation of EDRs in those vehicles. This notice of proposed rulemaking would establish a new safety standard mandating the installation of EDRs in most light vehicles manufactured on or after September 1, 2014. The EDRs in those vehicles would be required by the new standard to meet the data elements, data capture and format, data retrieval, and data crash survivability requirements of the existing regulation. This proposal would not modify any of the requirements or specifications in the regulation for EDRs voluntarily installed between September 1, 2012 and September 1, 2014.

DATES: You should submit your comments early enough to be received not later than

[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL

REGISTER]. In compliance with the Paperwork Reduction Act, NHTSA is also seeking comment on a new information collection. See the Paperwork Reduction Act section under Rulemaking Analyses and Notices below. Please submit all comments relating to new information collection requirements to NHTSA and to the Office of Management and Budget (OMB) at the address listed in the **ADDRESSES** section on or before **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Comments to OMB are most useful if submitted within 30 days of publication.

FOR FURTHER INFORMATION CONTACT: The following persons at the National Highway Traffic Safety Administration:

For technical and policy issues: Christopher J. Wiacek, Office of Crashworthiness Standards, NHTSA, 1200 New Jersey Ave., S.E., West Building, W43-320, Washington, DC 20590. Telephone: (202) 366-4801.

For legal issues: William Shakely, Office of the Chief Counsel, NHTSA, 1200 New Jersey Ave., S.E., West Building, W41-227, Washington, DC 20590. Telephone: (202) 366-2992. Fax: (202) 366-3820.

ADDRESSES: You may submit comments, identified by the docket number at the heading of this notice, by any of the following methods:

Online: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments on the electronic docket site by clicking on “Help” or “FAQs.”

Fax: 1-202-493-2251.

Mail: U.S. Department of Transportation, Docket Operations, M-30, Room W12-140, 1200 New Jersey Avenue, S.E., Washington, DC 20590.

Hand Delivery: 1200 New Jersey Avenue, S.E., West Building Ground Floor, Room W12-140, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Comments regarding the proposed information collection should be submitted to NHTSA through one of the preceding methods and a copy should also be sent to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725-17th Street, NW, Washington, D.C. 20503, Attention: NHTSA Desk Officer.

Instructions: All submissions must include the agency name and docket number. Note that all comments received will be posted without change to <http://www.regulations.gov>, including any personal information provided. Please see the Privacy Act discussion below. We will consider all comments received before the close of business on the comment closing date indicated above. To the extent possible, we will also consider comments filed after the closing date.

Docket: For access to the docket to read background documents or comments received, go to <http://www.regulations.gov> at any time or to 1200 New Jersey Avenue, S.E., West Building Ground Floor, Room W12-140, Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. Telephone: (202) 366-9826.

Privacy Act: Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477-78) or you may visit <http://www.dot.gov/privacy.html>.

Confidential Business Information: If you wish to submit any information under a claim of confidentiality, you should submit three copies of your complete submission, including the

information you claim to be confidential business information, to the Chief Counsel, NHTSA, at the address given under FOR FURTHER INFORMATION CONTACT. In addition, you should submit two copies, from which you have deleted the claimed confidential business information, to Docket Operations at the address given above. When you send a comment containing information claimed to be confidential business information, you should include a cover letter setting forth the information specified in our confidential business information regulation (49 CFR part 512).

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I. Executive Summary

An event data recorder (EDR) is a function or device installed in a motor vehicle to record technical information about the status and operation of vehicle systems for a very brief period of time (i.e., a few seconds) and in very limited circumstances (immediately before and during a crash), primarily for the purpose of post-crash assessment of vehicle safety system performance.¹ EDR data are used to improve crash and defect investigation and crash data collection quality to assist safety researchers, vehicle manufacturers, and the agency to understand vehicle crashes better and more precisely. Additionally, vehicle manufacturers are able to utilize EDR data in improving vehicle designs and developing more effective vehicle safety countermeasures. EDR data can also be used by Advanced Automatic Crash Notification (AACN) systems to aid emergency response teams in assessing the severity of a crash and estimating the probability of serious injury before they reach the site of the crash.

The installation of EDR technology has increased considerably within the light vehicle fleet, as most manufacturers have voluntarily chosen to install some type of EDR capability in their vehicles. The light vehicles most likely to be equipped with EDRs are those that are required to be equipped with frontal air bags, i.e., passenger cars, multipurpose passenger vehicles (MPVs), trucks, and buses with a gross vehicle weight rating (GVWR) of 3,855 kilograms (kg) (8,500 pounds) or less and an unloaded vehicle weight of 2,495 kg (5,500 pounds) or less. We estimate that about 92 percent of model year (MY) 2010 passenger cars and other vehicles with a GVWR of 3,855 kg or less have some EDR capability.

¹ An EDR does not make an audio or video recording, nor does it log data such as hours of service for commercial operators.

In August 2006, NHTSA established 49 CFR Part 563 (Part 563), which sets forth requirements for data elements, data capture and format, data retrieval, and data crash survivability for EDRs. The requirements apply to light vehicles required to have frontal air bags (those with a GVWR of 3,855 kg or less and an unloaded vehicle weight of 2,595 kg or less)² that are manufactured on or after September 1, 2012, and are equipped with EDRs. Thus, the regulation applies to only those vehicles that are voluntarily equipped with EDRs.

This notice of proposed rulemaking would establish a new safety standard mandating the installation of EDRs for all light vehicles that are required to have frontal air bags and are manufactured on or after September 1, 2014. The EDRs in those vehicles would be required by the new standard to meet the data elements, data capture and format, data retrieval, and data crash survivability requirements contained in Part 563. The agency is issuing this proposal because we believe that, without a regulation, EDRs will remain absent from the estimated 8 percent of the current light vehicle fleet that lacks an EDR. We believe that requiring all light vehicles required to have frontal air bags to be equipped with EDRs would help improve vehicle safety for consumers, while imposing relatively limited costs on the automobile industry.

NHTSA is proposing today's NPRM under the National Traffic and Motor Vehicle Safety Act ("Motor Vehicle Safety Act"). Under 49 U.S.C. Chapter 301, Motor Vehicle Safety (49 U.S.C. 30101 et seq.), the Secretary of Transportation is responsible for prescribing motor vehicle safety standards that are practicable, meet the need for motor vehicle safety, and are stated in objective terms.³ "Motor vehicle safety standard" means a minimum performance standard for motor vehicles or motor vehicle equipment. When prescribing such standards, the

² Walk-in van-type trucks or vehicles designed to be sold exclusively to the U.S. Postal Service are excluded from air bag and EDR requirements.

³ 49 U.S.C. 30111(a).

Secretary must consider all relevant, available motor vehicle safety information.⁴ The Secretary must also consider whether a proposed standard is reasonable, practicable, and appropriate for the types of motor vehicles or motor vehicle equipment for which it is prescribed and the extent to which the standard will further the statutory purpose of reducing traffic accidents and associated deaths.⁵ The responsibility for promulgation of Federal motor vehicle safety standards is delegated to NHTSA. In proposing to require the installation of EDRs in most light vehicles manufactured on or after September 1, 2014, the agency carefully considered these statutory requirements.

Placing the mandate in a FMVSS, instead of Part 563, would expand its ability to avail itself of the enforcement authority of the Motor Vehicle Safety Act, making it possible to seek civil penalties for failure to provide an EDR or for failure to provide one that performs properly. We believe that this step is necessary to ensure that all manufacturers install EDRs and that the agency has full and accurate EDR information for all light vehicles required to have frontal air bags.

The benefits of this proposal would be to expand and, therefore, enhance the utilization of the recorded information and lead to further improvements in the safety of current vehicles as well as future ones. A disproportionately high percentage of the light vehicles that would be affected by this proposal are relatively expensive vehicles and thus are significantly more likely than the typical light vehicle to be equipped with advanced safety features and systems, including advanced collision avoidance technologies. Thus, the light vehicles that would be affected by this proposal are the ones on which data regarding real world performance will most

⁴ 49 U.S.C. 30111(b).

⁵ Id.

likely first be generated. It is important to have EDR data relating to the crash experiences of vehicles with these advanced safety systems so that the agency can, at the earliest possible time, gather enough information about emerging advanced technologies to conduct reliable analyses and make policy judgments. Additionally, the agency's experience in handling unintended acceleration and pedal entrapment allegations has demonstrated that EDR data from a particular vehicle model can have significant value to both the agency and the vehicle's manufacturer to identify and address safety concerns associated with possible defects in the design or performance of the vehicle. To serve this purpose for all light vehicles required to have frontal air bags, EDR data must be available for all such vehicles.

This proposal would not change any of the substantive requirements of Part 563. The agency recognizes that there have been advances in vehicle safety systems and the implementation of new FMVSSs since the publication of the EDR final rule in 2006.⁶ However, the issue of whether there should be any changes to the amount and type of information that EDRs must collect is not being considered in this rulemaking. This proposal would also not modify any of the requirements or specifications for EDRs voluntarily installed between September 1, 2012 and September 1, 2014.

We believe that the costs of installing EDRs are minimal because the devices involve the capture into memory of data that are already being processed by the vehicle, and not the much higher costs of providing sensors to obtain much of that data in the first place. The cost for an EDR is estimated to be \$20 per vehicle. The estimated total incremental costs associated with this proposal would be \$26.4 million (2010 dollars), which reflects the need for technology

⁶ FMVSS No. 214, "Side impact protection," FMVSS No. 126, "Electronic stability control," and FMVSS No. 226, "Ejection mitigation," all have been updated since the publication in 2006 of the EDR final rule.

improvements, as well as assembly costs, compliance costs, and paperwork maintenance costs for those 1.32 million vehicles that have a GVWR of 3,855 kg or less, but do not currently have EDRs. Technological improvements account for the majority of these costs.

The agency acknowledges that consumer privacy concerns persist regarding EDR data: who owns it, who has access to it and under what circumstances, and what are the purposes for which it may be used. Approximately one dozen states have enacted laws addressing these issues. While these issues are of continued importance in the public discussion on the use of EDR technology, as an agency, we do not have the statutory authority to address many of these privacy issues because they are generally matters of State and Federal law that we do not administer. Within the limits of its authority, NHTSA has consistently sought to promote the recording of vital crash event information and to access and use that information in ways that safeguard privacy. For example, the agency seeks to access EDR data only with the vehicle owner's permission.

II. Background

A. Overview of Event Data Recorder (EDR) Technology

An EDR is a function or device installed in a motor vehicle to record technical information about the status and operation of vehicle systems for a very brief period of time (i.e., a few seconds immediately before and during a crash), primarily for the purpose of post-crash assessment of vehicle safety system performance.⁷ In most cases, the type of crash that leads to the capturing of data is a frontal or side collision that is sufficiently severe to cause the air bags to deploy. Data collected from the EDR of a crash-involved vehicle can provide valuable

⁷ An EDR does not make an audio or video recording, nor does it log data such as hours of service for commercial operators.

information on the severity of the crash, operation of its air bags, and what air bag deployment decision strategies were used during the event. Additionally, the data can be used to assess whether the vehicle was operating properly at the time of the event, or to help detect undesirable operations that may lead to a recall of the vehicle to remedy the problem. The information obtained by manufacturers from EDRs aids them in improving vehicle performance in crash events.

In recent years, the installation of EDR technology has increased considerably within the light vehicle fleet, as most manufacturers have voluntarily chosen to install some type of EDR capability in their vehicles. The light vehicles most likely to be equipped with EDRs are those that are required to be equipped with frontal air bags, i.e., passenger cars, multipurpose passenger vehicles (MPVs), trucks, and buses with a GVWR of 3,855 kilograms (kg) (8,500 pounds) or less and an unloaded vehicle weight of 2,495 kg (5,500 pounds) or less. These vehicles compose the vast majority of light vehicles. We estimate that about 92 percent of model year (MY) 2010 passenger cars and other vehicles with a GVWR 3,855 kg (8,500 pounds) or less have some EDR capability. This estimate is based on information that was taken from manufacturer-reporting to the agency regarding their 2010 vehicles and then weighting using 2010 corporate-level vehicle projected sales figures to estimate an overall industry-wide fleet figure.

For manufacturers that install EDRs in most light vehicles on or after September 1, 2012, the current regulation, 49 CFR Part 563 (Part 563), requires that their EDRs record 15 data elements at a minimum, and sets requirements for the range and accuracy of the EDR data collected under the regulation. The discussion below explains in detail the requirements of Part 563.

For more background information on NHTSA's rulemaking actions regarding EDR technologies, please see the Notice of Proposed Rulemaking (NPRM) at 69 FR 32932 (June 14, 2004),⁸ the final rule at 71 FR 50998 (August 28, 2006),⁹ and amendments to the final rule and responses to petitions for reconsideration at 73 FR 2168 (January 14, 2008),¹⁰ 76 FR 47478 (August 5, 2011), and 77 FR 47552 (August 9, 2012).

B. EDR Regulatory History—The Establishment of Part 563

For more than a decade, the agency has been assessing the potential value of real-world EDR crash data for improving our understanding of vehicle safety system performance and our analysis of vehicle crashes. Several years ago, NHTSA working groups¹¹ examined data elements for the purpose of identifying the most useful set of crash data to aid the agency in achieving its goal of reducing highway deaths.

On August 28, 2006, following public notice and comment, the agency's early research efforts culminated in the publication of a final rule that established Part 563.¹² Part 563 establishes uniform performance requirements for the accuracy, collection, storage, survivability, and retrievability of that set of onboard motor vehicle crash event data in passenger cars and other light vehicles equipped with EDRs.

In response to petitions for reconsideration, the agency amended Part 563 in January 2008 to make several technical changes to the regulatory text and to set a later compliance date

⁸ Docket No. NHTSA-2004-18029.

⁹ Docket No. NHTSA-2006-25666.

¹⁰ Docket No. NHTSA-2008-0004.

¹¹ See reports numbered DOT-HS-043334, Event Data Recorders: Summary of Findings by the NHTSA EDR Working Group, August 2001, Docket No. NHTSA-1999-5218-9; DOT-HS-809432, Event Data Recorders: Summary of Findings by the NHTSA EDR Working Group Volume II, Supplemental Findings for Trucks, Motorcoaches, and School Buses, May 2002, Docket No. NHTSA-2000-7699-6.

¹² 71 FR 50998, 51043 (Aug. 28, 2006), amended 73 FR 2168, 2179 (Jan. 14, 2008), corrected 73 FR 8408 (Feb. 13, 2008), amended 76 FR 47478 (August 5, 2011), amended 77 FR 47552 (August 9, 2012).

of September 1, 2012.¹³ The new compliance date helped manufacturers to avoid incurring significant redesign costs for EDR system architectures outside of the normal product cycle. Again in response to petitions for reconsideration, the agency amended Part 563 on August 5, 2011, to revise the acceleration data elements, clarify the event storage definition and make other minor technical modifications.¹⁴ Finally, in response to further petitions for reconsideration, the agency amended Part 563 on August 9, 2012, to revise the steering input data element and delay the compliance date for the data clipping flag requirement.¹⁵

C. Summary of Part 563

Part 563 regulates EDR-equipped vehicles by specifying a minimum core set of required data elements and accompanying range, accuracy, and resolution requirements for those elements. The regulation also specifies requirements for vehicle manufacturers to make data retrieval tools and/or methods commercially available so that crash investigators and researchers are able to retrieve data from EDRs. Part 563 is technology-neutral, permitting the use of any available EDR technology that complies with the specified performance requirements.

Part 563 applies to passenger cars, MPVs, trucks, and buses with a GVWR of 3,855 kg (8,500 pounds) or less and an unloaded vehicle weight of 2,595 kg (5,500 pounds) or less,¹⁶ that are voluntarily equipped with an event data recorder. It also applies to manufacturers of these

¹³ 73 FR 2168 (Jan. 14, 2008), corrected 73 FR 8408 (Feb. 13, 2008). Vehicles that are manufactured in two or more stages, or that are altered after having been previously certified to the Federal motor vehicle safety standards (FMVSS), have a compliance date of September 1, 2013.

¹⁴ 76 FR 47478.

¹⁵ 77 FR 47552.

¹⁶ Walk-in van-type trucks or vehicles designed to be sold exclusively to the U.S. Postal Service are excluded from air bag and EDR requirements.

vehicles, who must ensure the commercial availability of data retrieval tools. The regulation became effective on September 1, 2012.¹⁷

1. Data Elements Recorded

Part 563 specifies minimum requirements for the types of data that EDR-equipped vehicles are required to record. In all, there are 15 data elements that must be recorded during the interval/time and at the sample rate specified in Table I of Part 563.¹⁸ Some of the required pre-crash data are vehicle speed, engine throttle position, brake use, driver safety belt status, and air bag warning lamp status. Some of the required crash data are measured changes in forward velocity (delta-V) and air bag deployment times.

In addition, a vehicle equipped with an EDR that records any of the 28 data elements listed in Table II of Part 563, identified as “if recorded,” must capture and record information according to the minimum interval/time and at the sample rate specified in that table.¹⁹ There are two data elements listed in Table II, identified as “if equipped.” If a vehicle carries this equipment, it must record the specified information (i.e., “frontal air bag deployment, time to nth stage, driver” and “front air bag deployment, time to nth stage, right front passenger”).²⁰

When retrieved, the data elements collected by the EDR pursuant to Tables I and II must be reported in accordance with the range, accuracy, and resolution requirements specified in

¹⁷ 73 FR 2168 (Jan. 14, 2008).

¹⁸ See 49 CFR 563.7, Table I.

¹⁹ See 49 CFR 563.7, Table II. Examples of the “if recorded” data elements include lateral acceleration, longitudinal acceleration, stability control status, and frontal air bag suppression switch status.

²⁰ See 49 CFR 563.7, Table II. The “frontal air bag deployment, time to nth stage” data elements provide critical timing data for vehicles equipped with multi-stage air bags, which will help in assessing whether an air bag is deploying correctly during a crash (i.e., whether the sensors are functioning properly).

Table III. Reported Data Element Format.²¹ All three tables have been included in Appendix A to this preamble.²²

2. Data Retrieval

Part 563 requires that each vehicle manufacturer ensure, by licensing agreement or other means, the commercial availability of retrieval tool(s) for downloading or imaging the required EDR data.²³ The data-imaging tool must be commercially available no later than 90 days after the first sale of the vehicle for purposes other than resale.²⁴

3. Data Survivability and Crash Test Performance Requirements

To ensure that data are recorded in a crash and that the data survive the crash, EDRs must record and retain in retrievable condition certain data when the vehicles in which they are installed are tested in accordance with crash test procedures specified in Federal Motor Vehicle Safety Standard (FMVSS) Nos. 208, “Occupant crash protection,” and 214, “Side impact protection.”²⁵ These crash tests represent the modes of a majority of real-world crashes and severities observed. For example, several FMVSS No. 208 crash tests are performed at speeds of up to 56 km/h (35 mph), which represent the cumulative delta-V for 99 percent of frontal crashes.²⁶ The EDR data must be retrievable for no less than 10 days after the crash test.

D. NHTSA’s Validation of and Reliance on EDR Data in its Crash Investigations Relating to Unintended Acceleration

²¹ See 49 CFR 563.8, Table III.

²² Table I and Table II were most recently amended by the August 5, 2011 final rule responding to petitions for reconsideration. 76 FR 47478. Table III was most recently amended by the August 9, 2012 final rule responding to petitions for reconsideration 77 FR 47552.

²³ The term “imaging” refers to the process by which the agency retrieves data from an EDR. When imaging the data on an EDR, the original data set remains intact and unchanged in the memory banks of the EDR.

²⁴ See 49 CFR 563.12.

²⁵ See 49 CFR 563.10.

²⁶ See 49 CFR 571.208; Docket No. NHTSA-2006-26555-1, at 60.

Based on the agency's experience with EDRs over the past decade, as well as with recent investigations of alleged unintended acceleration and pedal entrapment, the agency has found EDR data to be an important tool that provides valuable insight. EDR data provides vehicle-recorded pre-crash information, supplementing information obtained from the driver and physical evidence from the scene.

A number of technical papers have been published on EDR accuracy in the crash test environment. Early studies focused on the full frontal barrier crash test environment where the reported EDR data was compared to instrumentation grade accelerometers mounted on the vehicle. Due to the limited availability of EDRs at that time, these studies were exclusively based on EDRs produced by General Motors. The studies reported a small amount of underestimation in the EDR delta-V reporting.²⁷

More recent technical papers²⁸ have incorporated EDRs from other vehicle manufacturers, such as Ford and Toyota. They have also looked at a variety of impact scenarios including full frontal, offset frontal, side impact, and vehicle-to-vehicle angled tests. Better correlation between EDR and crash test delta-V were reported, particularly at higher impact

²⁷ Chidester A.B., Hinch J., & Roston, T.A., "Real World Experience with Event Data Recorders," 17th International Technical Conference on the Enhanced Safety of Vehicles, 2001.

Lawrence, J.M., Wilkinson, C.C., King, D.J., Heinrichs, B.E., & Siegmund, G.P., "The Accuracy and Sensitivity of Event Data Recorders in Low-Speed Collisions," Society of Automotive Engineers, 2003.

Comeau, J.L., German, A., & Floyd, D., "Comparison of Crash Pulse Data from Motor Vehicle Event Data Recorders and Laboratory Instrumentation," Canadian Multidisciplinary Road Safety Conference XIV, 2004.

²⁸ Niehoff, P., Gabler, H.C., Brophy, J., Chidester, C., Hinch, J., & Ragland C., "Evaluation of Event Data Recorders in Full Systems Crash Tests," 19th International Technical Conference on the Enhanced Safety of Vehicles, 2005.

Gabler, H.C. & Hinch, J., "Characterization of Advanced Air Bag Field Performance Using Event Data Recorders," 20th International Technical Conference on the Enhanced Safety of Vehicles, Paper 07-0349, 2007.

DaSilva, M., "Engineering Analysis of EDR Data in NHTSA's NASS CDS Database," Presentation at the Society of Automotive Engineers Government/Industry Meeting, Washington, D.C., 2007.

Gabler, H.C. & Hinch, J., "Preliminary Evaluation of Advanced Air Bag Field Performance Using Event Data Recorders," DOT HS 811 015, August 2008.

Bare, C., Everest, B., Floyd, D., & Nunan, D., "Analysis of Pre-Crash Data Transferred over the Serial Data Bus and Utilized by the SDM-DS Module," Society of Automotive Engineers, 2011.

speeds where more serious injuries occur. Accurate reporting of seat belt use and pre-crash data was also observed. The findings from these studies are generally consistent with the agency's experience to date; however, monitoring of EDR performance will continue as more vehicle manufacturers incorporate EDRs into the fleet. Furthermore, the agency continues to emphasize that EDRs provide one valuable piece of information, along with on-site evidence, needed to reconstruct crash events.

In March 2010, the agency began to obtain data from Toyota EDRs as part of its inquiry into allegations of unintended acceleration (UA), and as follow-up to the recalls of some Toyota models for sticking and entrapped accelerator pedals.²⁹ The agency conducted a thorough process of validating the accuracy of Toyota's EDR data and has high confidence in the accuracy of the data recovered.³⁰ In the NHTSA report³¹ on the analysis and findings concerning UA in vehicles manufactured by Toyota, the validation efforts were described. The validation work was extensive and ultimately NHTSA established a high level of confidence in the veracity of pre-crash data recovered from Toyota's EDRs. Those data were found to be very valuable when considered in concert with the physical facts of a given incident.

When the agency received an allegation of UA or pedal entrapment, it interviewed the complainant and obtained permission for agency investigators to inspect the vehicle and, if it was EDR-equipped, attempted to download any data on the EDR.³² NHTSA investigators also

²⁹ See for Pedal Entrapment: NHTSA Recall Nos. 06V-253, 07E-082, 09V-388, and 10V-023. See for Sticking Pedals: NHTSA Recall No. 10V-017.

³⁰ Event Data Recorder-Pre Crash Data Validation of Toyota Products. February 2011 (NHTSA-NVS-2011-ETC-SR07). http://www.nhtsa.gov/staticfiles/nvs/pdf/NHTSA-Toyota_EDR_pre-crash_validation.pdf.

³¹ Technical Assessment of Toyota Electronic Throttle Control (ETC) Systems, February 2011, page 43 (footnotes omitted). http://www.nhtsa.gov/staticfiles/nvs/pdf/NHTSA-UA_report.pdf.

³² Not all of the vehicles for which the agency received consumer complaints were equipped with EDRs or had EDRs capable of capturing pre-crash data.

visited the location of the alleged incident to evaluate the complaint fully.³³ Complainants might state that while coming to an intersection, the vehicle suddenly accelerated without warning, resulting in a crash, or while driving on the highway, the vehicle continued to accelerate without the complainant's having stepped on the accelerator pedal and the brakes would not stop the vehicle.

Typically, EDRs store data specific to the dynamic state of the vehicle just prior to a crash, the performance of the air bag system in a crash, and a deceleration trace. The EDRs in Toyota vehicles examined by NHTSA captured vehicle speed, accelerator pedal voltage, brake light switch status, and engine revolutions per minute (rpm) at five, one-second intervals prior to a crash. A sixth and final interval of data was recorded at algorithm enable or when the EDR sensed an impact. While non-crash impacts such as curb and pothole strikes might enable an EDR algorithm and cause it to store data, aggressive throttle application or braking (without impact) would not enable the EDR.

For further information on the agency's field inspections of recent crashes alleging one or more forms of UA and the contribution of EDR data to the agency's investigations, please see [Technical Assessment of Toyota Electronic Throttle Control \(ETC\) Systems, February 2011](#).³⁴

III. Proposal

A. Overview

1. Overall Plan for Reviewing and Upgrading EDR Requirements

Based on its experience with EDR data in the unintended acceleration studies and on the potential role of EDR data in investigations of future vehicles and technologies, the agency has

³³ The agency does not limit its follow-up investigations to consumers whose vehicles are equipped with EDRs.

³⁴ See <http://www.nhtsa.gov/UA> for the reports related to the agency's investigation into Toyota's electronic throttle system and unintended acceleration.

been reviewing the requirements of Part 563 and assessing whether the applicability of the requirements should be expanded or the capabilities of EDRs should be increased. NHTSA plans on publishing an advance notice of proposed rulemaking in the near future to explore the potential for, and future utility of, capturing additional EDR data in light vehicles.

2. This Proposal

The agency proposes a new FMVSS, FMVSS No. 405, “Event data recorders,” which would mandate the installation of EDRs in most light vehicles manufactured on or after September 1, 2014. This proposal would also require that the vehicles meet the requirements for data elements, data format, and data capture contained in Part 563. Additionally, this proposal would require compliance with the crash test performance and survivability requirements in Part 563. This would mean that the data elements required by the regulation, with certain exceptions, must be recorded in the format specified by the regulation, exist at the completion of the crash test, and be retrievable by the methodology specified by the vehicle manufacturer. This proposal would also require manufacturers to comply with the requirements for such data retrieval tools listed in § 563.12. Finally, this proposal would require that the owner’s manual in each vehicle contain the statement regarding EDRs required by § 563.11.

A key priority of this NPRM is for the agency to require EDRs in light vehicles with a GVWR of 3,855 kg or less and an unloaded vehicle weight of 2,595 kg or less, without disrupting the initiative and efforts of those manufacturers who already have voluntarily installed Part 563 compliant EDRs. Accordingly, we are not now proposing any modifications to Part 563 itself, e.g., not to any EDR data elements, data capture and format requirements, data retrieval specifications, or data survivability and crash test requirements. Likewise, we are not proposing revisions to the definitions section of Part 563.

The agency recognizes that that there have been advances in vehicle safety systems and the phase-in of new FMVSSs since the publication of the EDR final rule in 2006.³⁵ However, the issue of whether there should be any changes to the amount and type of information that EDRs must collect is not being considered in this rulemaking. Any significant revision to the substantive components of Part 563 is outside the scope of this NPRM.

B. Reasons to Mandate the Installation of EDRs

In the 2006 EDR final rule, the agency chose not to mandate installation of EDRs at that time for purposes of encouraging the voluntary development and installation of EDRs and alleviating costs on automobile manufacturers and consumers. Although we did not mandate EDRs in 2006, we stated that it was our intention that their use continue to expand.³⁶

The agency explained further that the “marketplace appears to be adopting EDRs and we do not currently see a need to mandate their installation.”³⁷ The agency gave the following reasons for reaching this conclusion:

The challenge for NHTSA has been to devise an approach that would encourage broad application of EDR technologies in motor vehicles and maximize the usefulness of EDR data for the medical community, researchers, and regulators, without imposing unnecessary burdens or hampering future improvements to EDRs.

. . . .

. . . We believe that the industry's voluntary development and installation of EDRs, combined with the standardization requirements in this rule, will be sufficient to meet the agency's and public's near term needs. . . .

. . . [A]dopting a rule mandating EDR installation would result in an unnecessary cost for automobile manufacturers and consumers. Since less

³⁵ FMVSS No. 214, “Side impact protection,” FMVSS No. 126, “Electronic stability control,” and FMVSS No. 226, “Ejection mitigation,” all have been updated since the publication in 2006 of the EDR final rule.

³⁶ 71 FR 50998 at 51010 (Aug. 28, 2006).

³⁷ Ibid at 51011 (Aug. 28, 2006).

expensive vehicles are not equipped with a databus, a rule mandating EDR installation would require manufacturers to install a databus in those vehicles. . . .

. . . .

. . . [W]e expect the extent of installation in new vehicles to continue increasing and to reach approximately 85 percent by model year 2010. . . . [T]he new vehicles lacking an EDR in that model year will be primarily those manufactured either in Germany or Korea. As Korea has expressed interest in the development of an EDR standard under the International Standards Organization, it appears that Korean built vehicles also might eventually be voluntarily equipped with EDRs.

. . . We believe that the current level of EDR installation, combined with our standardization requirement, will yield data of statistical significance. . . .

We will monitor future increases in the extent of installation of EDRs and revisit this issue if appropriate.³⁸

Thus, the agency did not deem it necessary to propose to require the installation of EDRs, but remained open to considering this in the future. We are now revisiting that decision and the reasons given to support it. The agency has tentatively reached different conclusions about the issues it discussed in its 2004 and 2006 explanations of its decision not to seek to mandate EDRs.

Our first line of reasoning for an EDR mandate is driven by a need to fully cover light vehicles required to have frontal air bags (those with a GVWR of 3,855 kg or less and an unloaded vehicle weight of 2,595 kg or less) in order to improve vehicle safety and aid the agency in investigating potential safety defects. Although the percentage of light vehicles voluntarily equipped with EDRs has steadily increased as anticipated, EDRs remain absent from about 8 percent of the current production of all light vehicles regulated by Part 563. We believe that EDRs will remain absent from these vehicles without a regulation.

³⁸ Ibid at 50999, 51010–11 (Aug. 28, 2006).

While it remains true that the current and expected levels of voluntary installation of EDRs may be sufficient to generate data for assessing performance of the general vehicle population to support future rulemaking, the agency notes that many of the vehicles without EDRs are high end vehicles and that advanced safety technologies, including advanced collision avoidance technologies, are typically first introduced on high end vehicles. Thus, it is particularly important to be able to obtain EDR data generated by the crash experience of these particular vehicles so that the agency has as much information about emerging advanced technologies as possible.

In its 2006 determination, the agency did not take into consideration the significant value that EDR data from a particular vehicle model can have, as subsequently shown in the recent Toyota unintended acceleration study, in aiding the agency in assessing the performance of that vehicle model in the course of a safety defect investigation. To serve this purpose, EDR data must be available for all applicable light vehicles.

Finally, the agency does not believe that a mandate whose practical effect would be to require the installation of EDRs would impose unnecessary burdens on less expensive vehicles or hamper future improvements to EDRs given that vehicle electronics on even the least expensive vehicles are much more sophisticated today than they were in 2004 and 2006.

C. Reasons to Place the Mandate in a Safety Standard

As noted above, we are proposing to establish a new FMVSS that requires each light vehicle having a GVWR of 3,855 kg or less and an unloaded weight of 2,495 kg or less to be equipped with an EDR capable of recording, at a minimum, the data elements specified in Table I of section 563.7. These vehicles would also need to meet the data capture and data format requirements for these elements. FMVSS No. 405 would further require that these vehicles

meet the crash test performance and survivability requirements in section 563.10 with respect to the required data elements. This would have the effect of requiring that all required data elements in Part 563, except engine throttle, engine RPM, and service brake status, be retrievable for 10 days after the specified crash test. Section 563.10(c) also specifies the use of the data retrieval tool in section 563.12, and FMVSS No. 405 would make such a tool mandatory by incorporating the requirements of section 563.12. Finally, FMVSS No. 405 would require that the owner's manual in each vehicle contain the statement regarding EDRs required by section 563.11. Although by virtue of being equipped with an EDR, the vehicles affected by this rule would still need to meet all other applicable requirements of Part 563, the expanded enforcement authority available for a FMVSS, described below, would only apply to requirements listed in FMVSS No. 405.

NHTSA recognizes that it previously expressed the view that the requirements for voluntarily-installed EDRs should be placed in a regulation instead of in a standard:

Similar to our approach in the area of vehicle identification numbers, we decided to develop a general regulation for EDRs rather than a Federal motor vehicle safety standard. We did not believe it was appropriate to issue an FMVSS that would trigger the statute's recall and remedy provisions, because the benefits of EDRs are expected to be derivative from better crash-related information, rather than having a direct impact on the safety of the individual vehicle equipped with an EDR. A failure to meet the EDR requirements would, however, be subject to an enforcement action.³⁹

We have reconsidered that position in light of subsequent experience and in the different context of this rulemaking, which seeks to mandate the installation of EDRs. Our experience in addressing unintended acceleration and pedal entrapment allegations demonstrated the value that EDR data can have for the safety of current as well as future motor vehicles. EDR data from a

³⁹ 71 FR 50998, 51040 (August 28, 2006).

particular vehicle model already on the road can aid NHTSA and the model's manufacturer in their efforts to identify and address safety concerns associated with possible defects in the design or performance of those vehicles.

As to our 2006 statement about a failure to meet EDR requirements being subject to an enforcement action, we note that there is more than one form of enforcement action. Collecting penalties is one. Seeking an injunction is another. We had the latter type of enforcement action in mind when making that statement.

Placing the mandate in a FMVSS, instead of Part 563, would expand our access to the Safety Act's enforcement authority, enabling us to assess civil penalties for failure to provide an EDR or for failure to provide one that performs properly. We believe that being able to avail ourselves of this authority is necessary to ensure that all manufacturers install EDRs and that the agency has full and accurate EDR information. Such information can be vital to an agency investigation seeking to determine whether there is a safety defect in vehicles that are being driven by consumers on the road and to agency efforts to assess the performance of advanced safety technologies for possible future regulatory action. Not having an EDR or not recording such safety information has assumed even greater importance in the last several years and is far more consequential than a minor informational error, such as those involving the regulation on Vehicle Identification Numbers, for example.⁴⁰

Failure to comply with a FMVSS would violate the prohibition in 49 U.S.C. § 30112 against manufacturing for sale, selling, offering for sale, introducing or delivering for introduction in interstate commerce, or importing into the United States any motor vehicle that

⁴⁰ 49 CFR Part 565. The requirements of that regulation were originally placed in a FMVSS, but subsequently moved in stages into their current location.

does not comply with any applicable FMVSS. It would also subject them to the recall and remedy provisions of 49 U.S.C. §§ 30118 and 30120. In turn, violations of that prohibition or the recall and remedy provisions would be subject the violator to civil penalties under 49 U.S.C. § 30165(a)(1).

For the reasons stated above, we tentatively conclude that placing the requirements, including the EDR requirement itself, in a FMVSS is better than placing the requirements in Part 563. We acknowledge, however, that placing all of the requirements in Part 563 is an alternative to placing them in a FMVSS. We seek comment on the relative merits of placing the requirements in a FMVSS versus in Part 563. The agency requests comments on (1) which, if any, portions of Part 563 should be moved to the new FMVSS and which portions should remain in Part 563, and (2) whether some provisions should be set out in full in both or at least be set out in full in one and be incorporated by reference in the other. Should FMVSS No. 405 require that only some of the Table I elements be recorded? Should the requirements for the optional data elements listed in Table II not be incorporated into FMVSS No. 405? Would it be preferable to simply rebadge Part 563 in its entirety as FMVSS No. 405? What would be the potential problems with such an approach? How do manufacturers verify or plan to verify EDRs meet the recording requirements of Table I and II elements in Part 563?

Because EDRs, unlike other safety equipment, do not directly mitigate the risk or severity of a crash, the agency is considering how the recall and remedy provisions of the Safety Act would apply to noncompliance with the proposed FMVSS. The agency notes that 49 U.S.C. § 30118(d) authorizes the Secretary to exempt individual manufacturers from the recall and remedy provisions if the Secretary decides that a defect or noncompliance is inconsequential to

motor vehicle safety.⁴¹ The Secretary has delegated this exemption authority to NHTSA. NHTSA established 49 CFR Part 556, Exemption for Inconsequential Defect or Noncompliance, to implement the statutory provisions concerning these exemptions. The agency requests comment on what factors the agency should consider, if the proposed FMVSS is adopted, in determining whether an identified noncompliance is inconsequential. Should any noncompliance with the proposed FMVSS be subject to remedy and recall? Should recall and remedy be limited to noncompliance with certain requirements, such as noncompliance with the Table I data element requirements or the crash survivability requirements? Should noncompliance with the optional data element requirements be considered inconsequential?

D. Privacy issues

The agency acknowledges that consumer privacy concerns persist regarding EDR data: who owns it, who has access to it and under what circumstances, and what are the purposes for which it may be used. While these issues are of continued importance in the public discussion on the use of EDR technology, as an agency, we do not have the statutory authority to address many of these privacy issues because they are generally matters of State and Federal law that we do not administer. Currently, 13 states⁴² have EDR laws to address vehicle owners' privacy and consumer concerns. Since 2006, more than a dozen other states have considered enacting similar legislation.

⁴¹ The agency notes that the granting of an inconsequentiality petition exempts a manufacturer from the remedy and recall provisions, but provides no exemption from civil penalties under 49 U.S.C. § 30165 for violations of § 30112.

⁴² The states include: Arkansas, California, Colorado, Connecticut, Maine, Nevada, New Hampshire, New York, North Dakota, Oregon, Texas, Virginia, and Washington.

Within the limits of its authority, NHTSA has consistently sought to promote the recording of vital crash event information and to access and use that information in ways that safeguard privacy.

1. Agency Tailored EDR Performance Requirements to Minimize Data Gathering

Many of the public's concerns about EDRs appear to arise from misconceptions about how long and under what circumstances EDRs capture and permanently store data. Concerns raised in the past about EDRs and privacy arose from the misconceptions that EDRs record data for prolonged intervals and that they record personal information. We have sought, in developing and establishing the EDR requirements, to minimize the types of data recorded and the duration of any recording. We do not require the recording of data for prolonged intervals (i.e., several minutes) or audio/visual data that the public may associate with event data recorders in other modes of transportation. We believe that our objectives can be met by using a very brief snapshot of EDR data in the time period immediately surrounding a crash.

The EDR requirements we adopted standardize EDR data recording for an extremely short duration (i.e., a few seconds immediately before and during a crash). EDRs compliant with Part 563 requirements continuously record and seconds later erase data unless and until a frontal air bag or in some cases, a side air bag deploys. If no frontal or side air bag ever deploys, no data are ever permanently captured and stored.⁴³ Other types of events can result in storage of data that can be overwritten by subsequent events. Data are only required to be locked and cannot be overwritten when an air bag deploys in a crash event. When recordable events do

⁴³ Side air bag deployments may result in permanent data capture under certain conditions.

occur, EDRs only capture data for a few seconds. EDRs do not record any personal information. They do not record either location identification information or any audio or video data.

2. Agency Seeks Vehicle Owner Permission to Access EDR data

NHTSA does not have any authority to establish legally binding rules regarding the ownership or use of a vehicle's EDR data.⁴⁴ Its authority to regulate safety performance of new vehicles, prohibit commercial entities from rendering federally required safety performance features inoperative and require the recalling and remedying of noncompliant vehicles and vehicles containing a safety related defect does not enable NHTSA to control who has access to the data, specify the circumstances in which access can be obtained, or regulate how those who obtain access to the data use it.

Nevertheless, the agency strives in its own actions relating to EDR requirements and data to avoid or at least minimize any impacts on privacy. NHTSA's longstanding policy has been to treat EDR data as the property of the vehicle owner. (Note, however, that complications may arise when ownership of the vehicle or EDR is transferred after a crash.) For this reason, before we attempt to obtain EDR data in a crash investigation, our first step is always to obtain the vehicle owner's consent. Once we obtain EDR data, we take measures to protect all personally identifiable information (e.g., the vehicle identification number (VIN) may be associated with the identity of the vehicle owner), and we assure the vehicle owner that all such information will be held confidential. In handling EDR and related personal information, the agency carefully complies with applicable provisions of the Privacy Act of 1974, the Freedom of Information Act,

⁴⁴ NHTSA did require a statement in owner's manuals disclosing the existence and discussing the purpose of an EDR.

and other statutory requirements that limit the disclosure of personal information by Federal agencies.

3. Necessity of VIN Collection

Part 563 does not require the EDR in a motor vehicle to record that vehicle's VIN. However, for the reasons set forth in the next paragraph, when NHTSA collects the EDR data from a vehicle, the agency also separately collects the VIN of that vehicle. The following discussion explains why it is necessary for the agency to collect VIN in connection with EDRs, how the VIN is used by the agency, and the safeguards the agency takes related to avoid the release of the VIN.

Collecting the VIN is necessary to download and process the EDR data correctly. The commercial EDR download tools require a vehicle's VIN be inputted into the program in order to link the EDR data from that vehicle with parameters that ensure proper conversion of the data to a usable format. A partial VIN will not suffice for this purpose. The full VIN of a vehicle must be inputted into current EDR extraction tools as a key to ensure proper output and to account for running changes that may occur during a particular model year, thereby rendering it infeasible to use a shortened VIN.

4. Agency Protects VINs Needed to Download EDR Data

NHTSA takes care to protect the VINs that are collected along with EDR data. The VIN data identify the vehicle itself and do not provide name, address, or other personal identifier information regarding an individual. Further, EDR data alone cannot establish who was driving the vehicle at any given time (e.g., vehicle owner or other individuals (either with or without permission)).

Nevertheless, NHTSA has taken steps to prevent the release of any VIN because it can be used in various commercially-available programs to determine the identity of the current owner of a vehicle. As a practical matter, information contained in these records that has the potential of indirectly identifying individuals is not made public by the agency, except as specifically required by law. Further, prior to the release of information from databases containing EDR data (usually aggregated reports), the agency strips out the last six characters of the VIN (i.e., the portion that would allow identification of a specific vehicle and, potentially by indirect means, the identity of the vehicle's current owner).

5. Agency Uses and Stores EDR Data in Ways to Preserve Privacy

In using EDR data, the agency takes the EDR-generated information that it collects and incorporates the information into large crash-related databases in order to gain a more comprehensive understanding of certain crash events. The information contained in these databases is not retrieved or retrievable by name or other individual identifier.

In light of the above, we believe that the agency has taken adequate steps to ensure individual privacy vis-à-vis its use of EDR data. Additional information on EDRs may be found on the agency's Web site where we address a range of EDR issues. The Web site is accessible at <http://www.nhtsa.gov/EDR>. For more background information on privacy issues related to EDRs, please see the NPRM at 69 FR 32932 (June 14, 2004), the final rule at 71 FR 50998 (August 28, 2006), and amendments to the final rule and response to petitions for reconsideration at 73 FR 2168 (January 14, 2008) and 76 FR 47478 (August 5, 2011).

E. Lead Time

We are proposing an effective date of September 1, 2014. The agency estimates that approximately 92 percent of the light vehicle fleet is equipped with Part 563 compliant EDRs.

The lead time we are proposing is sufficient to ensure that manufacturers of the remaining portion of the fleet that are not equipped with an EDR can redesign the data bus architecture, air bag control module, other electronic hardware and software calibration, conduct the requisite validation testing, and ensure that a tool that can retrieve the EDR data is commercially available. The proposed lead time should address the practical concerns of small volume manufacturers and many new electric and hybrid electric manufacturers who are entering the market and who may not have been planning to install EDRs.

F. Benefits and Costs of this Proposal

Mandating the installation of EDRs in light vehicles required to have frontal air bags would provide for a standardized set of EDR data elements and formats throughout most of the light vehicle fleet rather than on just those manufacturers who chose to voluntarily install EDRs. This would expand and, therefore, potentially enhance the utilization of the recorded information and lead to further improvements in the safety of current and future motor vehicles.

Although the benefits of this NPRM derive from expansion of EDR coverage, we will briefly review the general benefits related to EDRs. EDR data improve crash investigation and crash data collection quality to assist safety researchers, vehicle manufacturers, and the agency to understand vehicle crashes better and more precisely.⁴⁵ While crash investigators gather insightful information about the dynamics of crashes, some of these parameters cannot be determined (such as anti-lock braking system or electronic stability control functioning status) or cannot be as accurately measured (such as the change in velocity) by traditional post-crash investigation procedures such as visually examining and evaluating physical evidence, e.g., the

⁴⁵ Since the beginning of EDR data collection at NHTSA (late 1999 through January 2010), over 7,600 EDRs have been imaged through our various programs. The programs include: the National Automotive Sampling System Crashworthiness Data System (NASS-CDS), the National Motor Vehicle Crash Causation Study (NMVCCS), Special Crash Investigations (SCI) and Crash Injury Research and Engineering Network (CIREN).

crash-involved vehicles and skid marks. Further, some vehicle crash dynamics related to rollover (such as roll angle, roll rate and normal acceleration) cannot be effectively estimated by crash investigators post-crash. Data collected by the EDR can provide a direct means for measuring these needed crash parameters.

Similarly, vehicle manufacturers are able to utilize EDRs in improving vehicle designs and developing more effective vehicle safety countermeasures. Additionally, many vehicle manufacturers are developing active safety systems (or crash avoidance systems) that assist drivers in reducing the likelihood of crash occurrence. EDR recorded pre-crash data (e.g., vehicle speed and engine throttle) could be used to further improve active safety systems and reduce crash involvement rates. Additionally, the data can be used to assess whether the vehicle was operating properly at the time of the event, or to help detect undesirable operations.

Currently, Advanced Automatic Crash Notification (AACN) systems may make use of some of the Part 563 required data elements such as change in velocity, air bag deployments, and safety belt status to aid emergency response teams in assessing the severity of a crash and estimating the probability of serious injury before they arrive at the scene of the crash.⁴⁶ Overall, we believe there are many safety-related benefits that would derive from requiring light vehicles to be equipped with EDRs.

In addition to the general benefits derived from EDR installation, there are benefits specific to this NPRM to mandate EDRs. As shown in the recent Toyota unintended acceleration studies, EDR data from a particular vehicle model can have significant value in aiding the agency in assessing the performance of that vehicle model and in determining the need for, or conducting, a safety defect investigation that may lead to a recall of the vehicle model for repair

⁴⁶ We note, however, that AACN systems do not require a vehicle to be equipped with an EDR.

or replacement of problem parts or systems. To serve this purpose for all light vehicles required to have frontal air bags, EDR data must be available for those vehicles.

EDR data can also aid in the improvement in existing safety standards and the development of new ones. Many of the vehicles anticipated to continue to lack EDRs, absent a mandate, are high end vehicles that have advanced safety technologies, including advanced collision avoidance technologies. Such technologies are typically first introduced on high end vehicles. Thus, it is particularly important to be able to obtain EDR data generated by the crash experience of these particular vehicles.

The cost for an EDR is estimated to be \$20 per vehicle. The estimated total incremental costs associated with this proposal would be \$26.4 million (2010 dollars), which is measured from a baseline of 91.6 percent EDR installation to 100 percent installation, assuming the sale of 16.5 million light vehicles per year with a GVWR up to 4,536 kg. This cost reflects the need for technology improvements, as well as assembly costs, compliance costs, and paperwork maintenance costs for those 1.32 million vehicles with a GVWR of 3,855 kg or less that do not have EDRs. Technological improvements account for the majority of these costs.

IV. Rulemaking Analyses and Notices

A. Executive Orders 12866 and 13563 and DOT Regulatory Policies and Procedures

NHTSA has considered the potential impacts of this proposed rule under Executive Order 12866, "Regulatory Planning and Review," and Executive Order 13563, "Improving Regulation and Regulatory Review," and the Department of Transportation's regulatory policies and procedures. This document was reviewed by the Office of Management and Budget under those orders. This document has been determined to be significant under the Department's regulatory

policies and procedures. While the potential cost impacts of the proposed rule are far below the level that would make this an economically significant rulemaking, the rulemaking addresses a topic of substantial public interest.

The agency has prepared a separate document addressing the benefits and costs for the proposed rule. A copy is being placed in the docket.

As discussed in that document and in the preceding sections of this NPRM, the crash data that would be collected by EDRs under the proposed rule would be extremely valuable for the advancement of vehicle safety by enhancing and facilitating crash investigations, the evaluation of safety countermeasures, advanced restraint and safety countermeasure research and development, certain safety defect investigations, and AACN. The improvements in vehicle safety will occur indirectly from the collection of crash data by EDRs. Since the establishment of Part 563 in 2006, the agency has observed an increasing percentage of light vehicles utilizing EDR technology, and researchers, vehicle manufacturers, AACN and emergency medical service (EMS) providers, government agencies, and other members of the safety community are using the EDR data in ways that contribute to overall vehicle safety. EDR data can also have significant value in aiding the agency in assessing the performance of particular vehicle models in determining the need for, or conducting, a safety defect investigation that may lead to a recall of the vehicle for repair or replacement of problem parts or systems, as was made evident in the recent UA investigations involving Toyota vehicles, discussed earlier in this NPRM.

We estimate that about 92 percent of new light vehicles are already equipped with EDRs. As discussed earlier, vehicle manufacturers have provided EDRs in their vehicles by adding EDR capability to their vehicles' air bag control systems. The costs of EDRs have been

minimized, because they involve the capture into memory of data that is already being processed by the vehicle, and not the much higher costs of sensing much of that data in the first place.

The costs of the proposed rule would be the incremental costs for vehicles currently not equipped with EDRs to comply with the proposed EDR mandate and Part 563's requirements. We estimate the total annual costs of the proposed rule to be \$26.4 million. While the potential costs include technology costs, paperwork maintenance costs,⁴⁷ and compliance costs, the paperwork maintenance and compliance costs are estimated to be negligible. The proposal would not require additional sensors to be installed in vehicles, and the major technology cost would result from a need to upgrade memory chips and hardware for housing the recorded data. The total cost for the estimated 1.2 million vehicles that do not have an EDR to comply with the proposed mandate and Part 563 requirements is estimated to be \$26.4 million (2010 dollars). A complete discussion of how NHTSA arrived at these costs may be found in the separate document on benefits and costs.

B. Regulatory Flexibility Act

NHTSA has considered the impacts of this rulemaking action under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*). We certify that the proposed amendment would not have a significant economic impact on a substantial number of small entities.

The following is the agency's statement providing the factual basis for the certification (5 U.S.C. 605(b)). If adopted, the proposal would directly affect motor vehicle manufacturers, second stage or final manufacturers, and alterers. SIC code number 3711, Motor Vehicles and Passenger Car Bodies, prescribes a small business size standard of 1,000 or fewer employees.

⁴⁷ These paperwork maintenance costs consist of the costs to modify the owner's manual with the required statement specified in 49 CFR 563.11.

SIC code No. 3714, Motor Vehicle Part and Accessories, prescribes a small business size standard of 750 or fewer employees.

Nine motor vehicle manufacturers affected by this proposal would qualify as a small business, as identified in the Preliminary Regulatory Evaluation.⁴⁸ Most of the intermediate and final stage manufacturers of vehicles built in two or more stages and alterers have 1,000 or fewer employees. However, these small businesses adhere to original equipment manufacturers' instructions in manufacturing modified and altered vehicles. Based on our knowledge, original equipment manufacturers do not permit a final stage manufacturer or alterer to modify or alter sophisticated devices such as air bags or EDRs. Therefore, multistage manufacturers and alterers would be able to rely on the certification and information provided by the original equipment manufacturer. Accordingly, there would be no significant impact on small businesses, small organizations, or small governmental units by these amendments. For these reasons, the agency has not prepared a preliminary regulatory flexibility analysis.

C. Executive Order 13132 (Federalism)

NHTSA has examined today's proposal pursuant to Executive Order 13132 (64 FR 43255, August 10, 1999). Because multiple States have enacted laws related to EDRs and may thus have a particular interest in this rulemaking, NHTSA has initiated efforts to consult with associations representing officials of those States⁴⁹ to obtain their views of the impact, if any, of this proposed rulemaking.

NHTSA rules can preempt in two ways. First, the National Traffic and Motor Vehicle Safety Act contains an express preemption provision: When a motor vehicle safety standard is in

⁴⁸ The docket for this NPRM contains the Preliminary Regulatory Evaluation for FMVSS No. 405, Event Data Recorders (EDRs).

⁴⁹ The states include: Arkansas, California, Colorado, Connecticut, Maine, Nevada, New Hampshire, New York, North Dakota, Oregon, Texas, Virginia, and Washington.

effect under this chapter, a State or a political subdivision of a State may prescribe or continue in effect a standard applicable to the same aspect of performance of a motor vehicle or motor vehicle equipment only if the standard is identical to the standard prescribed under this chapter.⁵⁰ It is this statutory command by Congress that preempts any non-identical State legislative and administrative law addressing the same aspect of performance. Thus, to the extent that aspects of EDR performance would be addressed by a safety standard, States would be expressly preempted by section 30103(b)(1) from adopting or maintaining any non-identical statute or regulation addressing those aspects of performance. With respect to this proposal, such aspects would include State EDR technical requirements requiring that EDRs record specific data elements, and/or requiring EDRs to meet specific technical performance or survivability requirements. Further, it is our view that any State laws or regulations that imposed, for the types of EDRs addressed by this proposal, additional disclosure requirements on vehicle manufacturers or dealers would likewise create a conflict and therefore be preempted. The disclosure requirements in Part 563, which we are proposing to incorporate into FMVSS No. 405, require a statement in the owner's manual to make the operator aware of the presence, function, and capabilities of the EDR. We believe that inconsistent or additional State disclosure requirements would frustrate the purposes of our regulation by potentially creating confusion or information overload, thereby reducing the benefit of the required statement.

In promulgating Part 563, the agency stated that it was our intent to provide one consistent set of requirements, including a specified statement in the owner's manual, for vehicles equipped with EDRs. In proposing to establish FMVSS No. 405, we continue to believe that this approach will enhance the quality of EDR data by standardizing the content, format, and

⁵⁰ 49 U.S.C. 30103(b)(1).

accuracy of such data, thereby increasing its comparability and overall usefulness. We further believe that the standardized data will be of greater benefit for safety equipment analysis and crash reconstruction.

This proposed rule does not address certain other issues generally within the realm of State law, such as whether the vehicle owner owns the EDR data, how EDR data can be used/discovered in civil litigation, how EDR data may be used in criminal proceedings, whether EDR data may be obtained by the police without a warrant, whether EDR data may be developed into a driver-monitoring tool, and the nature and extent that private parties (including insurance companies, car rental companies, and automobile manufacturers) will have or may contract for access to EDR data.

The express preemption provision described above is subject to a savings clause under which “[c]ompliance with a motor vehicle safety standard prescribed under this chapter does not exempt a person from liability at common law.”⁵¹ Pursuant to this provision, State common law tort causes of action against motor vehicle manufacturers that might otherwise be preempted by the express preemption provision are generally preserved. However, the Supreme Court has recognized the possibility, in some instances, of implied preemption of such State common law tort causes of action by virtue of NHTSA's rules, even if not expressly preempted. This second way that NHTSA rules can preempt is dependent upon there being an actual conflict between an FMVSS and the higher standard that would effectively be imposed on motor vehicle manufacturers if someone obtained a State common law tort judgment against the manufacturer, notwithstanding the manufacturer's compliance with the NHTSA standard. Because most NHTSA standards established by an FMVSS are minimum standards, a State common law tort

⁵¹ 49 U.S.C. 30103(e).

cause of action that seeks to impose a higher standard on motor vehicle manufacturers will generally not be preempted. However, if and when such a conflict does exist—for example, when the standard at issue is both a minimum and a maximum standard—the State common law tort cause of action is impliedly preempted. See *Geier v. American Honda Motor Co.*, 529 U.S. 861 (2000).

Pursuant to Executive Order 13132 and 12988, NHTSA has considered whether this rule could or should preempt State common law causes of action. The agency's ability to announce its conclusion regarding the preemptive effect of one of its rules reduces the likelihood that preemption will be an issue in any subsequent tort litigation.

To this end, the agency has examined the nature (e.g., the language and structure of the regulatory text) and objectives of today's rule and finds that this rule, like many NHTSA rules, prescribes only a minimum safety standard. The agency does not anticipate any State common law tort judgments concerning EDRs that could create any actual conflict. Without any conflict, there could not be any implied preemption of a State common law tort cause of action.

D. Executive Order 12988⁵² (Civil Justice Reform)

This proposed rule would not have any retroactive effect. Under section 49 U.S.C. 30103, whenever a Federal motor vehicle safety standard is in effect, a state may not adopt or maintain a safety standard applicable to the same aspect of performance which is not identical to the Federal standard, except to the extent that the state requirement imposes a higher level of performance and applies only to vehicles procured for the state's use. General principles of preemption law would apply, however, to displace any conflicting state law or regulations. If the

⁵² Executive Order 12988 (February 5, 1996).

proposed rule were made final, there would be no requirement for submission of a petition for reconsideration or other administrative proceedings before parties could file suit in court.

E. Paperwork Reduction Act

Under the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501, et. seq.), Federal agencies must obtain approval from the Office of Management and Budget (OMB) for each collection of information they conduct, sponsor, or require through regulations. This proposal would mandate the installation of EDR devices in most light vehicles manufactured after September 1, 2014, and would require such vehicles to meet the EDR requirements contained in Part 563.

In compliance with the PRA, we announce that NHTSA is seeking comment on a new information collection.⁵³

Agency: National Highway Traffic Safety Administration (NHTSA).

Title: Event Data Recorders.

Type of Request: New collection.

OMB Control Number: Not assigned.

Form Number: The collection of this information uses no standard form.

Requested Expiration Date of Approval: Three years from the date of approval.

Summary of the Collection of Information:

NHTSA is proposing to create a new FMVSS in Part 571 that would require vehicle manufacturers to install EDRs in most light vehicles manufactured on or after September 1,

⁵³ As noted earlier in the preamble, most manufacturers are already voluntarily installing compliant EDRs and are already voluntarily collecting the specified information. Nevertheless, because voluntary compliance with a paperwork requirement is regarded under the Paperwork Reduction Act as proposing to require a new collection of information, NHTSA must comply with the Act.

2014. The EDRs in those vehicles would be required by the new standard to meet the data elements, data capture and format, data retrieval, and data crash survivability requirements of Part 563, the existing regulation setting forth requirements for voluntarily-installed EDRs. This proposal would also require manufacturers to comply with the Part 563 requirements for ensuring the availability of EDR data retrieval tools and the requirement that the owner's manual in each vehicle contain a specified statement regarding EDRs.

Description of the Need for the Information and Use of the Information

The agency believes that requiring all light vehicles to be equipped with EDRs would help improve vehicle safety for consumers, while imposing relatively few costs on the automobile industry. EDR data are used to improve crash investigation and crash data collection quality to assist safety researchers, vehicle manufacturers, and the agency to understand vehicle crashes better and more precisely. Similarly, vehicle manufacturers are able to utilize EDRs in improving vehicle designs and developing more effective vehicle safety countermeasures, and EDR data may be used by AACN systems to aid emergency response teams in assessing the severity of a crash and estimating the probability of serious injury.

Additionally, the agency's experience in handling unintended acceleration and pedal entrapment allegations over the past year has demonstrated that if a vehicle is equipped with an EDR, the data from that EDR can improve the ability of both the agency and the vehicle's manufacturer to identify and address safety concerns associated with possible defects in the design or performance of the vehicle. Moreover, this proposal to mandate EDRs across the entire light vehicle fleet would contribute to advancements in the designs, particularly with respect to occupant restraints and other safety systems, of future vehicles.

Description of the Likely Respondents:

The respondents are manufacturers of passenger cars, multipurpose passenger vehicles, trucks, and buses having a GVWR of 3,855 kg (8,500 pounds) or less and an unloaded vehicle weight of 2,495 kg (5,500 pounds). The agency estimates that there are approximately 30 such manufacturers.

Estimate of the Total Annual Reporting and Recordkeeping Burden Resulting from the Collection of Information:

There are no annual reporting or recordkeeping burdens associated with this proposed rule. Vehicle manufacturers are not required to retain or report information gathered by EDRs because the devices themselves continuously monitor vehicle systems and determine when to record, retain, and/or overwrite information. The information is collected automatically by electronic means. Data are only required to be locked and cannot be overwritten when an air bag deploys in a crash event. When recordable events do occur, EDRs only capture data for a few seconds.

The costs to respondents are the costs of designing and equipping each covered vehicle with a compliant EDR. These costs include technology improvements, assembly costs, and paperwork maintenance costs.⁵⁴ Technology improvements account for the majority of these costs. Because the costs of EDRs under the PRA are those associated with the capture of data that is already being processed by the vehicle, the additional burden hours necessary to equip vehicles with EDR capability are minimal.

⁵⁴ These paperwork maintenance costs consist of the costs to modify the owner's manual with the required statement specified in 49 CFR 563.11. Because this statement is supplied by the agency to manufacturers for the purpose of public disclosure, it is not considered a collection of information for purposes of the Paperwork Reduction Act.

In determining the costs of this proposed rule under the PRA, we estimate that there are approximately 15.71 million applicable vehicles produced annually, 14.39 million of which are already voluntarily equipped with EDRs. The cost to install an EDR meeting the requirements of this proposed rule is \$20 per vehicle if a vehicle does not have an EDR. The costs of this proposed rule under the PRA include the costs of installing compliant EDRs on all applicable vehicles, even those that are currently equipped with EDRs. Accordingly, the annual total costs of this proposed rule under the PRA would be \$314.20 million.

We emphasize that the regulatory costs of the proposed rule would only be the incremental costs for the 1.32 million vehicles not currently equipped with EDRs to be equipped with an EDR meeting Part 563's requirements. As discussed above, we estimate the total annual regulatory costs of the proposed rule to be \$26.4 million.

Comments are invited on:

- Whether the collection of information is necessary for the proper performance of the functions of the Department, including whether the information will have practical utility.
- Whether the Department's estimate for the burden of the information collection is accurate.
- Ways to minimize the burden of the collection of information on respondents, including the use of automated collection techniques or other forms of information technology.

Please submit any comments, identified by the docket number in the heading of this document, by any of the methods described in the **ADDRESSES** section of this document.

Comments are due by **[INSERT DATE 60 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER]**.

F. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104-113, section 12(d) (15 U.S.C. 272) directs us to use voluntary consensus standards in regulatory activities unless doing so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies, such as the Society of Automotive Engineers (SAE) and the Institute of Electrical and Electronics Engineers (IEEE). The NTTAA directs us to provide Congress, through OMB, explanations when we decide not to use available and applicable voluntary consensus standards.

There are several consensus standards related to EDRs, most notably those standards published by SAE and IEEE. NHTSA carefully considered the consensus standards applicable to EDR data elements in establishing Part 563. Consensus standards for recording time/intervals, data sample rates, data retrieval, data reliability, data range, accuracy and precision, and EDR crash survivability were evaluated by NHTSA and adopted when practicable. This particular rulemaking, however, does not involve such matters. It is limited to establishing a mandate for certain light vehicles to be equipped with an EDR.

G. Unfunded Mandates Reform Act

Section 202 of the Unfunded Mandates Reform Act of 1995 (UMRA) requires Federal agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of more than \$100 million in any one year (adjusted for inflation with base year of 1995). In 2010 dollars, this threshold is \$136

million.⁵⁵ Before promulgating a rule for which a written statement is needed, section 205 of the UMRA generally requires NHTSA to identify and consider a reasonable number of regulatory alternatives and to adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows NHTSA to adopt an alternative other than the least costly, most cost-effective, or least burdensome alternative if the agency publishes with the final rule an explanation why that alternative was not adopted.

If adopted, this proposed rule would not impose any unfunded mandates under the Unfunded Mandates Reform Act of 1995. This proposed rule would not result in costs in excess of \$136 million (2010 dollars) annually to either State, local, or tribal governments, in the aggregate, or to the private sector. Thus, this proposed rule is not subject to the requirements of sections 202 and 205 of the UMRA.

H. National Environmental Policy Act (NEPA)

NHTSA has analyzed this rulemaking action for the purposes of the National Environmental Policy Act. The agency has determined that implementation of this action would not have any significant impact on the quality of the human environment.

I. Executive Order 13609 (Promoting International Regulatory Cooperation)

The policy statement in section 1 of Executive Order 13609 provides, in part:

The regulatory approaches taken by foreign governments may differ from those taken by U.S. regulatory agencies to address similar issues. In some cases, the differences between the regulatory approaches of U.S. agencies and those of their foreign counterparts might not be necessary and might impair the ability of American businesses to export and compete internationally. In meeting shared challenges involving health, safety, labor, security, environmental, and other issues, international regulatory

⁵⁵ Adjusting this amount by the implicit gross domestic product price deflator for the year 2010 results in \$136 million ($110.644/81.533 = 1.36$).⁵⁵

cooperation can identify approaches that are at least as protective as those that are or would be adopted in the absence of such cooperation. International regulatory cooperation can also reduce, eliminate, or prevent unnecessary differences in regulatory requirements.

NHTSA requests public comment on whether (a) the “regulatory approaches taken by foreign governments” concerning the subject matter of this rulemaking and (b) the above policy statement have any implications for this rulemaking.

J. Regulation Identifier Number (RIN)

The Department of Transportation assigns a regulation identifier number (RIN) to each regulatory action listed in the Unified Agenda of Federal Regulatory and Deregulatory Actions (the Unified Agenda). The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. You may use the RIN contained in the heading at the beginning of this document to find this action in the Unified Agenda.

V. Request for Comments

How do I prepare and submit comments?

Your comments must be written and in English. To ensure that your comments are filed correctly in the docket, please include the docket number of this document in your comments.

Your comments must not be more than 15 pages long. (49 CFR 553.21) NHTSA established this limit to encourage you to write your primary comments in a concise fashion. However, you may attach necessary additional documents to your comments. There is no limit on the length of the attachments.

Please submit one copy (two copies if submitting by mail or hand delivery) of your comments, including the attachments, to the docket following the instructions given above under ADDRESSES. Please note, if you are submitting comments electronically as a PDF (Adobe)

file, we ask that the documents submitted be scanned using Optical Character Recognition (OCR) process, thus allowing the agency to search and copy certain portions of your submissions.⁵⁶

How do I submit confidential business information?

If you wish to submit any information under a claim of confidentiality, you should submit three copies of your complete submission, including the information you claim to be confidential business information, to the Office of the Chief Counsel, NHTSA, at the address given above under FOR FURTHER INFORMATION CONTACT. In addition, you should submit a copy (two copies if submitting by mail or hand delivery), from which you have deleted the claimed confidential business information, to the docket by one of the methods given above under ADDRESSES. When you send a comment containing information claimed to be confidential business information, you should include a cover letter setting forth the information specified in NHTSA's confidential business information regulation (49 CFR Part 512).

Will the agency consider late comments?

NHTSA will consider all comments received before the close of business on the comment closing date indicated above under DATES. To the extent possible, the agency will also consider comments received after that date. If a comment is received too late for the agency to consider it in developing a final rule (assuming that one is issued), the agency will consider that comment as an informal suggestion for future rulemaking action.

How can I read the comments submitted by other people?

⁵⁶ Optical character recognition (OCR) is the process of converting an image of text, such as a scanned paper document or electronic fax file, into computer-editable text.

You may read the comments received at the address given above under COMMENTS. The hours of the docket are indicated above in the same location. You may also see the comments on the Internet, identified by the docket number at the heading of this notice, at <http://www.regulations.gov>.

Please note that, even after the comment closing date, NHTSA will continue to file relevant information in the docket as it becomes available. Further, some people may submit late comments. Accordingly, the agency recommends that you periodically check the docket for new material.

Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the Federal Register published on April 11, 2000 (65 FR 19477-78) or you may visit <http://www.dot.gov/privacy.html>.

Appendix A Part 563 Tables

TABLE I – DATA ELEMENTS REQUIRED FOR ALL VEHICLES EQUIPPED WITH AN EDR

Data element	Recording interval/time ¹ (relative to time zero)	Data sample rate (samples per second)
Delta-V, longitudinal	0 to 250 ms or 0 to End of Event Time plus 30 ms, whichever is shorter	100
Maximum delta-V, longitudinal	0-300 ms or 0 to End of Event Time plus 30 ms, whichever is shorter	N/A
Time, maximum delta-V	0-300 ms or 0 to End of Event Time plus 30 ms, whichever is shorter	N/A
Speed, vehicle indicated	-5.0 to 0 sec	2
Engine throttle, % full (or accelerator pedal, % full)	-5.0 to 0 sec	2

Service brake, on/off	-5.0 to 0 sec	2
Ignition cycle, crash	-1.0 sec	N/A
Ignition cycle, download	At time of download ³	N/A
Safety belt status, driver	-1.0 sec	N/A
Frontal air bag warning lamp, on/off ²	-1.0 sec	N/A
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	Event	N/A
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	Event	N/A
Multi-event, number of event	Event	N/A
Time from event 1 to 2	As needed	N/A
Complete file recorded (yes, no)	Following other data	N/A

¹ Pre-crash data and crash data are asynchronous. The sample time accuracy requirement for pre-crash time is -0.1 to 1.0 sec (e.g., T = -1 would need to occur between -1.1 and 0 seconds.)

² The frontal air bag warning lamp is the readiness indicator specified in S4.5.2 of FMVSS No. 208, and may also illuminate to indicate a malfunction in another part of the deployable restraint system.

³ The ignition cycle at the time of download is not required to be recorded at the time of the crash, but shall be reported during the download process.

TABLE II—DATA ELEMENTS REQUIRED FOR VEHICLES UNDER SPECIFIED MINIMUM CONDITIONS

Data element name	Condition for requirement	Recording interval/time ¹ (relative to time zero)	Data sample rate (per second)
Lateral acceleration	If recorded ²	N/A	N/A
Longitudinal acceleration	If recorded	N/A	N/A
Normal acceleration	If recorded	N/A	N/A

Delta-V, lateral	If recorded	0-250 ms or 0 to End of Event Time plus 30 ms, whichever is shorter	100
Maximum delta-V, lateral	If recorded	0-300 ms or 0 to End of Event Time plus 30 ms, whichever is shorter	N/A
Time maximum delta-V, lateral	If recorded	0-300 ms or 0 to End of Event Time plus 30 ms, whichever is shorter	N/A
Time for maximum delta-V, resultant	If recorded	0-300 ms or 0 to End of Event Time plus 30 ms, whichever is shorter	N/A
Engine rpm	If recorded	-5.0 to 0 sec	2
Vehicle roll angle	If recorded	-1.0 up to 5.0 sec ³	10
ABS activity (engaged, non-engaged)	If recorded	-5.0 to 0 sec	2
Stability control (on, off, or engaged)	If recorded	-5.0 to 0 sec	2
Steering input	If recorded	-5.0 to 0 sec	2
Safety belt status, right front passenger (buckled, not buckled)	If recorded	-1.0 sec	N/A
Frontal air bag suppression switch status, right front passenger (on, off, or auto)	If recorded	-1.0 sec	N/A
Frontal air bag deployment, time to nth stage, driver ⁴	If equipped with a driver's frontal air bag with a multi-stage inflator	Event	N/A
Frontal air bag deployment, time to nth stage, right front passenger ⁴	If equipped with a right front passenger's frontal air bag with a multi-	Event	N/A

	stage inflator		
Frontal air bag deployment, nth stage disposal, driver, Y/N (whether the nth stage deployment was for occupant restraint or propellant disposal purposes)	If recorded	Event	N/A
Frontal air bag deployment, nth stage disposal, right front passenger, Y/N (whether the nth stage deployment was for occupant restraint or propellant disposal purposes)	If recorded	Event	N/A
Side air bag deployment, time to deploy, driver	If recorded	Event	N/A
Side air bag deployment, time to deploy, right front passenger	If recorded	Event	N/A
Side curtain/tube air bag deployment, time to deploy, driver side	If recorded	Event	N/A
Side curtain/tube air bag deployment, time to deploy, right side	If recorded	Event	N/A
Pretensioner deployment, time to fire, driver	If recorded	Event	N/A
Pretensioner deployment, time to fire, right front passenger	If recorded	Event	N/A
Seat track position switch, foremost, status, driver	If recorded	-1.0 sec	N/A
Seat track position switch, foremost, status, right front passenger	If recorded	-1.0 sec	N/A
Occupant size classification, driver	If recorded	-1.0 sec	N/A
Occupant size classification, right front passenger	If recorded	-1.0 sec	N/A
Occupant position classification, driver	If recorded	-1.0 sec	N/A
Occupant position classification, right front passenger	If recorded	-1.0 sec	N/A

¹ Pre-crash data and crash data are asynchronous. The sample time accuracy requirement for pre-crash time is -0.1 to 1.0 sec (e.g. T = -1 would need to occur between -1.1 and 0 seconds.)

² “If recorded” means if the data is recorded in non-volatile memory for the purpose of subsequent downloading.

³ “vehicle roll angle” may be recorded in any time duration; -1.0 sec to 5.0 sec is suggested.

⁴ List this element n - 1 times, once for each stage of a multi-stage air bag system.

TABLE III –REPORTED DATA ELEMENT FORMAT

Data Element	Minimum Range	Accuracy ¹	Resolution
Lateral acceleration	At option of manufacturer	At option of manufacturer	At option of manufacturer.
Longitudinal acceleration	At option of manufacturer	At option of manufacturer	At option of manufacturer.
Normal Acceleration	At option of manufacturer	At option of manufacturer	At option of manufacturer.
Longitudinal delta-V	-100 km/h to +100 km/h	+/- 10 %	1 km/h.
Lateral delta-V	-100 km/h to +100 km/h	+/- 10 %	1 km/h.
Maximum delta-V, longitudinal	-100 km/h to +100 km/h	+/- 10 %	1 km/h.
Maximum delta-V, lateral	-100 km/h to +100 km/h	+/- 10 %	1 km/h.
Time, maximum delta-V, longitudinal	0-300 ms, or 0 – End of Event Time plus 30 ms, whichever is shorter	+/- 3 ms	2.5 ms.
Time, maximum delta-V, lateral	0-300 ms, or 0 – End of Event Time plus 30 ms, whichever is shorter	+/- 3 ms	2.5 ms.
Time, maximum delta-V, resultant	0-300 ms, or 0 – End of Event Time plus 30 ms, whichever is shorter	+/- 3 ms	2.5 ms.
Vehicle Roll Angle	-1080 deg to +1080 deg	+/- 10 %	10 deg.
Speed, vehicle indicated	0 km/h to 200 km/h	+/- 1 km/h	1 km/h.
Engine throttle, percent full (accelerator pedal percent full)	0 to 100%	+/- 5%	1 %.

Engine rpm	0 to 10,000 rpm	+/- 100 rpm	100 rpm.
Service brake	On or Off	N/A	On or Off.
ABS activity	On or Off	N/A	On or Off.
Stability control	On, Off, or Engaged	N/A	On, Off, or Engaged.
Steering input	- 250 deg CW to + 250 deg CCW	+/- 5%	+/- 1%
Ignition cycle, crash	0 to 60,000	+/- 1 cycle	1 cycle.
Ignition cycle, download	0 to 60,000	+/- 1 cycle	1 cycle.
Safety belt status, driver	On or Off	N/A	On or Off.
Safety belt status, right front passenger	On or Off	N/A	On or Off.
Frontal air bag warning lamp	On or Off	N/A	On or Off.
Frontal air bag suppression switch status, right front passenger	On, Off, or Auto	N/A	On, Off, or Auto.
Frontal air bag deployment, time to deploy/first stage, driver	0 to 250 ms	+/- 2 ms	1 ms.
Frontal air bag deployment, time to deploy/first stage, right front passenger	0 to 250 ms	+/- 2 ms	1 ms.
Frontal air bag deployment, time to n th stage, driver	0 to 250 ms	+/- 2 ms	1 ms.
Frontal air bag deployment, time to n th stage, right front passenger	0 to 250 ms	+/- 2 ms	1 ms.
Frontal air bag deployment, nth stage disposal, driver	Yes or No	N/A	Yes or No.
Frontal air bag deployment, nth stage disposal, right front passenger	Yes or No	N/A	Yes or No.
Side air bag deployment, time to deploy, driver	0 to 250 ms	+/- 2 ms	1 ms.
Side air bag deployment, time to deploy, right front passenger	0 to 250 ms	+/- 2 ms	1 ms.
Side curtain/tube air bag deployment, time to deploy, driver side	0 to 250 ms	+/- 2 ms	1 ms.
Side curtain/tube air bag deployment, time to deploy, right side	0 to 250 ms	+/- 2 ms	1 ms.
Pretensioner deployment, time to fire, driver	0 to 250 ms	+/- 2 ms	1 ms.
Pretensioner deployment, time	0 to 250 ms	+/- 2 ms	1 ms.

to fire, right front passenger			
Seat track position switch, foremost, status, driver	Yes or No	N/A	Yes or No.
Seat track position switch, foremost, status, right front passenger	Yes or No	N/A	Yes or No.
Occupant size classification, driver	5th percentile female or larger	N/A	Yes or No.
Occupant size classification, right front passenger	Child	N/A	Yes or No.
Occupant position classification, driver	Out of position	N/A	Yes or No.
Occupant position classification, right front passenger	Out of position	N/A	Yes or No.
Multi-event, number of event	1 or 2	N/A	1 or 2.
Time from event 1 to 2	0 to 5.0 sec	0.1 sec	0.1 sec.
Complete file recorded	Yes or No	N/A	Yes or No.

¹Accuracy requirement only applies within the range of the physical sensor. For vehicles manufactured after September 1, 2014, if measurements captured by a sensor exceed the design range of the sensor, the reported element must indicate when the measurement first exceeded the design range of the sensor.

List of Subjects in 49 CFR Part 571

Motor vehicle safety, Reporting and recordkeeping requirements, Tires.

Regulatory Text

In consideration of the foregoing, NHTSA proposes to amend 49 CFR Part 571 as follows:

PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

1. The authority citation of Part 571 continues to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30117, and 30166; delegation of authority at 49 CFR 1.95.

2. Add § 571.405 to subpart B to read as follows:

§ 571.405 Standard No. 405; Event data recorders.

S1. Purpose and scope. This standard specifies requirements for equipping motor vehicles with event data recorders (EDRs) and for the post-crash survivability and retrievability of onboard motor vehicle crash event data to help ensure that EDRs record, in a readily usable manner, data valuable for effective crash investigations and for analysis of safety equipment performance (e.g., advanced restraint systems). These data will help provide a better understanding of the circumstances in which crashes and injuries occur. That understanding will aid efforts to assess and address safety problems in motor vehicles currently on the road and to develop requirements for safer motor vehicles in the future.

S2. Application. This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses that have a GVWR of 3,855 kg (8,500 pounds) or less and an unloaded vehicle weight of 2,495 kg (5,500 pounds) or less, and that are manufactured on or after September 1, 2014, except for walk-in van-type trucks or vehicles designed to be sold exclusively to the U.S. Postal Service.

S3. Definitions.

Event data recorder (EDR) means a device or function in a vehicle that records the vehicle's dynamic time-series data during the time period just prior to a crash event (e.g., vehicle speed vs. time) or during a crash event (e.g., delta-V vs. time), intended for retrieval after the crash event. For the purposes of this definition, the event data do not include audio and video data.

S4. Requirements. Each vehicle shall be equipped with an event data recorder and meet the requirements of § 563.7 of this chapter for data elements, § 563.8 of this chapter for data format, § 563.9 of this chapter for data capture, § 563.10 of this chapter for crash test

performance and survivability, and § 563.11 of this chapter for information in owner's manual. Each manufacturer of a motor vehicle equipped with an EDR shall comply with the requirements of § 563.12 of this chapter for data retrieval tools.

Issued on: December 7, 2012

Christopher J. Bonanti
Associate Administrator for Rulemaking

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