

National Transportation Safety Board

Office of the Chair

Washington, DC 20594



August 22, 2022

Docket Management Facility, M-30
US Department of Transportation
1200 New Jersey Avenue SE
Room W12-140
West Building Ground Floor
Washington, DC 20590

Re: Docket Number NHTSA-2022-0021

Dear Sir or Madam:

The National Transportation Safety Board (NTSB) has reviewed the National Highway Traffic Safety Administration (NHTSA) notice of proposed rulemaking (NPRM) titled "Event Data Recorders," published at 87 *Federal Register* 37289 on June 22, 2022. In the notice, the NHTSA announced its intent to amend its regulations regarding event data recorders (EDR) to extend the EDR recording period and increase the data recording frequency. The NPRM references section 24303 of the 2015 Fixing America's Surface Transportation Act (FAST Act), which states the following:

(a) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the Administrator of the National Highway Traffic Safety Administration shall submit to Congress a report that contains the results of a study conducted by the Administrator to determine the amount of time event data recorders installed in passenger motor vehicles should capture and record for retrieval vehicle-related data in conjunction with an event in order to provide sufficient information to investigate the cause of motor vehicle crashes.

(b) RULEMAKING.—Not later than 2 years after submitting the report required under subsection (a), the Administrator of the National Highway Traffic Safety Administration shall promulgate regulations to establish the appropriate period during which event data recorders installed in passenger motor vehicles may capture and record for retrieval vehicle-related data to the time necessary to provide accident

investigators with vehicle-related information pertinent to crashes involving such motor vehicles.¹

The NTSB recognizes the benefits of the proposed increase in EDR precrash recording duration and data recording frequency. However, while we appreciate the constraints of addressing only the metrics currently required in 49 *Code of Federal Regulations* Part 563, we are concerned about the limited scope of NHTSA's study and the associated proposed rule changes. We do not believe that the proposed rule is sufficient to enable full understanding of crashes involving vehicles with advanced driver assistance systems (ADAS), particularly those with SAE International (SAE) Level 2 (L2) capabilities.² We offer the following comments for NHTSA to consider while updating the EDR regulations.

Proposed Changes

To meet the requirements of section 24303, NHTSA contracted with researchers at the Virginia Polytechnic Institute and State University (Virginia Tech) to conduct the *Event Data Recorders Duration Study*.³ The study was conducted in two phases to estimate how often EDRs fail to record a sufficient duration of precrash data and to provide insight into what duration beyond 5 seconds of precrash data is needed to capture crash causation. On September 28, 2018, NHTSA submitted a Report to Congress summarizing the results of the study to the House Committee on Energy and Commerce and the Senate Committee on Commerce, Science, and Transportation.

The EDR duration study concluded that, in many cases, the 5-second recording duration may not be sufficient to determine what factors led to the crash or to identify the precrash actions taken by the driver to avoid the collision for the three different crash scenarios the study considered.⁴ Further, the study concluded that 20 seconds of precrash data would capture this information for at least 90 percent of each of the three crash scenarios.

NHTSA also examined data recording frequency and believes that a sampling rate of 10 Hz will provide the resolution to capture a more detailed representation of

¹ Fixing America's Surface Transportation Act, [Public Law 114-94](#), 129 Stat. 1713 (2015), accessed July 20, 2022.

² ADAS is an umbrella term that describes collision avoidance systems (for example, automatic emergency braking and lane departure warning), as well as systems with SAE Level 1 (such as adaptive cruise control) and L2 capabilities. L2 vehicles have partial automation systems designed to maintain longitudinal and lateral control of the vehicle (for example, adaptive cruise control with lane centering), but, due to technology limitations, still require constant driver monitoring and readiness to take over from these systems.

³ See [Event Data Recorder Duration Study \[Appendix to a Report to Congress. Report No. DOT HS 813 082B\] \(bts.gov\)](#), accessed on July 20, 2022.

⁴ The three crash scenarios examined were rear crashes, intersection crashes, and road departures.

precrash data than is possible with the current 2 Hz sampling rate and non-synchronized data collection. Based on these conclusions, NHTSA proposes to change the EDR regulations to expand the recording duration for timed data metrics from 5 seconds of precrash data at a frequency of 2 Hz to 20 seconds of precrash data at a frequency of 10 Hz (that is, to increase from 2 samples per second to 10 samples per second).

The NTSB agrees with NHTSA that increasing the precrash recording duration to 20 seconds with a data recording frequency of 10 Hz will improve the data available to manufacturers, crash investigators, and regulators. We also believe that the proposed changes should be practical to implement, given today's technology. We do not have specific input on memory capacity or cost estimates. We believe that updates to EDR regulations are long overdue, and a year of lead time is more than reasonable.

Data Needs for Vehicles Equipped with Crash Avoidance and L2 Systems

On September 28, 2017, we issued Safety Recommendations [H-17-37](#), [-39](#), and [-40](#) as a result of our investigation of the May 7, 2016, collision between a car operating with automated vehicle control systems and a tractor-semitrailer truck near Williston, Florida.⁵ This was our first crash investigation involving automated vehicle control systems, and we called on NHTSA to require the reporting of standardized crash data on similarly equipped vehicles. These three recommendations from the Williston report read as follows:

To the US Department of Transportation (DOT):

Define the data parameters needed to understand the automated vehicle control systems involved in a crash. The parameters must reflect the vehicle's control status and the frequency and duration of control actions to adequately characterize driver and vehicle performance before and during a crash. ([H-17-37](#))

To NHTSA:

Use the data parameters defined by the US Department of Transportation in response to Safety Recommendation [H-17-37](#) as a benchmark for new vehicles equipped with automated vehicle control systems so that they capture data that reflect the vehicle's control status and the frequency and duration of control actions needed to adequately characterize driver and vehicle performance before and during a crash; the captured data should be readily available to, at a minimum, National

⁵ Use the NTSB's [CAROL Query](#) for more information about these safety recommendations.

Transportation Safety Board investigators and National Highway Traffic Safety Administration regulators. ([H-17-39](#))

Define a standard format for reporting automated vehicle control systems data, and require manufacturers of vehicles equipped with automated vehicle control systems to report incidents, crashes, and vehicle miles operated with such systems enabled. ([H-17-40](#))

We reiterated these recommendations in 2020 in our Mountain View, California, crash report and classified them as “Open–Unacceptable Response.”

On June 20, 2020, NHTSA updated the NTSB on its progress in addressing these three safety recommendations.⁶ In the NTSB’s March 1, 2021, response to the update, we stated that we were pleased to learn of NHTSA’s efforts to work with SAE to refresh SAE J1698, “Event Data Recorder Recommended Practice,” and to develop the new SAE J3197 standard for an automated driving system data logger. We also expressed satisfaction with NHTSA’s work with the United Nations World Forum for the Harmonization of Vehicle Regulations to develop harmonized draft technical requirements for automated driving and EDR data storage systems, including precrash and crash data elements. We further stated that, although NHTSA’s efforts are crucial to the future development of vehicles with high levels of automation, Safety Recommendations [H-17-37](#), [-39](#), and [-40](#) are focused on vehicles with L2 automation capabilities.

In our March 2021 response, we acknowledged that providing a longer recording duration would be a valuable update to the current precrash recording duration for motor vehicles equipped with EDRs, but we urged NHTSA also to expand the required recording metrics to include ADAS-relevant variables. Examples of such variables include the status of adaptive cruise control, lane centering, automatic emergency braking, and driver monitoring systems (for example, steering wheel torque and head and eye trackers). Further, we stated that, until more tangible progress was made and pending further updates on NHTSA’s efforts and publication of the final rule, Safety Recommendations [H-17-39](#) and [-40](#) would remain classified “Open–Unacceptable Response.” (The March 2021 response stated that Safety Recommendation H-17-37 would be addressed separately.)

The NTSB continues to believe that NHTSA should implement these 2017 recommendations, and we are disappointed that this rulemaking barely addresses the issues they raise. Regarding crash avoidance technologies, NHTSA specifically noted in the NPRM that—

⁶ In the update, NHTSA told the NTSB that the DOT had delegated responsibility for Safety Recommendation [H-17-37](#), and all related correspondence with the NTSB, to NHTSA.

[...] although SAE has specifications on them and some vehicle manufacturers have started to record crash avoidance EDR data elements, there are no required or optional EDR data elements specific to these crash avoidance technologies. However, knowing the status of required data elements such as service brake application and accelerator pedal percent and optional data elements such as steering input, will assist in understanding the performance of these technologies.

NHTSA further noted that–

An increasing number of vehicles in the fleet today have advanced safety technologies, including advanced driver assistance system technologies. We anticipate that a better understanding of driver pre-crash behavior may assist in the evaluation of these emerging crash avoidance systems (e.g., lane departure warning, lane keeping assist, forward collision avoidance, automatic emergency braking, and intersection safety assistance systems).

We disagree with NHTSA's approach. It has been over 15 years since NHTSA finalized the rule establishing the list of required (and optional) EDR data elements. Although NHTSA has made minor updates to the rule since 2006, the list of data elements has not changed, despite significant developments in technology, including the increasing numbers of vehicles equipped with L2 systems. Although the limited required and optional data elements may provide some safety benefit, they will not provide comprehensive insight into the L2 systems' use before and during crash events, which is necessary to enable investigators, regulators, and members of the transportation industry to critically evaluate these technologies and take appropriate data-based action.

Although the NTSB recognizes that there are concerns about whether air bag control modules have the capacity to record additional data elements, we believe this issue is important enough that NHTSA should make a concerted effort to address the problem and update the data elements. As of July 2022, the European Union (EU) has mandated that EDRs in new vehicles be required to record all ADAS elements, including those pertaining to L2 systems.⁷ NHTSA should take similar action.

⁷ According to EU regulation 2019/2144 (adopted November 27, 2019), new models of light vehicles in the EU are required to be equipped with EDRs by July 2022. This mandate extends to all new passenger vehicles by July 2024. For more information, see [Regulation \(EU\) 2019/2144 of the European Parliament and of the Council](#), accessed July 20, 2022.

NHTSA Standing General Order on Incident Reporting for Automated Driving Systems and L2 Systems

In June 2021, NHTSA issued a standing general order (SGO) requiring that manufacturers and operators of vehicles equipped with L2 systems or automated driving systems (ADS) (SAE Levels 3-5) report to NHTSA certain crashes that occur while those automation systems are engaged or are disengaged up to 30 seconds before the crash. On June 15, 2022, NHTSA published the initial set of data collected through its SGO. The NTSB acknowledges that the SGO is a positive step; however, manufacturers' awareness of incidents and crashes involving L2 systems and ADS appears to vary considerably, and the amount of data available from vehicles equipped with these two types of systems is drastically different. Because ADS is still in the early stages of development and deployment, manufacturers are recording vast amounts of data on these systems to use to improve their vehicles. Consequently, manufacturers and operators of ADS-equipped vehicles are most likely notified of crashes and can access extensive data involving these complex systems. By contrast, vehicles equipped with L2 systems may only record data elements such as those required by the EDR regulation, which does not include data associated with ADAS. As a result, due to manufacturers' variable practices, their awareness of crashes involving L2 systems is inconsistent, which brings into serious question the accuracy of the information on reported crashes involving vehicles equipped with L2 systems.

To help address these concerns, the NTSB again urges NHTSA to implement Safety Recommendations [H-17-37](#), [-39](#), and [-40](#). These recommendations are now nearly 5 years old, and it is long past time to improve the data recorded and collected for vehicles equipped with various automation systems.

In conclusion, the NTSB is pleased that NHTSA is taking steps to increase the precrash recording frequency and duration for EDRs, but we remain concerned that, because of the narrow scope of this NPRM, it does not adequately address the rapidly increasing prevalence of vehicles equipped with L2 systems. A lack of comprehensive, standardized data concerning vehicles equipped with all types of automated systems hampers not only crash investigations, but also NHTSA's efforts to protect the public from potential safety risks involving these systems and to ensure the continued progress of these potentially life-saving technologies.

Thank you for the opportunity to provide comments.

Sincerely,

Jennifer Homendy
Chair

cc: darren.hall1@dot.gov