



October 12, 2006

Honorable Nicole R. Nason
Administrator
National Highway Traffic Safety Administration
400 Seventh Street, SW
Suite 5220
Washington, DC 20590

Chairman
J. MORTON, Jr.
Nissan

President
M. STANTON

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MANUFACTURERS

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Ferrari/Maserati
Honda
Hyundai
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Mitsubishi
Nissan
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Subaru
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AFFILIATES

ADVICS
Bosch
Delphi
Denso
Hitachi
JAMA
Yazaki

Re: Docket No. NHTSA 2006-25666
Petition for Reconsideration
Event Data Recorders

Dear Ms. Nason:

Enclosed is the petition for reconsideration of the Technical Affairs Committee of the Association of International Automobile Manufacturers, Inc. ("AIAM")¹, with respect to the above-referenced final rule. If you have any questions on this matter, please contact me at (703) 247-2105.

Sincerely,

A handwritten signature in black ink that reads "Michael X. Cammisa". The signature is written in a cursive, slightly slanted style.

Michael X. Cammisa
Director, Safety

Enclosure

¹ AIAM Technical Affairs Committee members are American Honda Motor Co., American Suzuki Motor Corp., Aston Martin Lagonda of North America, Inc., Ferrari North America, Inc., Hyundai Motor America, Isuzu Motors America, Inc., Kia Motors America, Maserati North America, Inc., Nissan North America, Inc. Peugeot Motors of America, Renault, SA, Subaru of America, ADVICS North America, Inc., Delphi Corporation, Denso International America, Inc., Hitachi Automotive Products (USA), Robert Bosch Corporation, and Yazaki North America, Inc.

**PETITION FOR RECONSIDERATION OF
THE TECHNICAL AFFAIRS COMMITTEE OF
THE ASSOCIATION OF INTERNATIONAL AUTOMOBILE
MANUFACTURERS, INC. (“AIAM”)
REGARDING NHTSA FINAL RULE ON
EVENT DATA RECORDERS**

October 12, 2006

AIAM's Technical Affairs Committee¹ appreciates the opportunity to request reconsideration of certain aspects of NHTSA's final rule on event data recorders (“EDRs”). See 71 Fed. Reg. 50998, August 28, 2006. We request that NHTSA revise the final rule in several areas, and we request clarification of the agency's intent in other areas. Our specific concerns regarding these matters are described below.

1. Accuracy levels for acceleration, velocity change, and vehicle speed data.

a. Acceleration and delta-V. Table III, Recorded Data Element Format in section 563.8(a) of the final rule specifies an accuracy level of plus-or-minus 5 percent for the acceleration and delta-V data that is recorded in the EDR. The accelerometers that are currently used on vehicles to obtain this data typically have an accuracy level of plus-or-minus 10 percent, so new sensors would be required to meet the more stringent accuracy criterion. The agency appears to recognize the need for new sensors to meet the more stringent accuracy level, stating in the preamble to the final rule that, “based on our research and the comments, we believe that the new range and accuracy requirements are more realistic based upon what we now understand to be commercially available for vehicle production.” See 71 Fed. Reg. 51021. We interpret this statement as not challenging the manufacturer statements regarding the accuracy of current accelerometers, but arguing that more accurate accelerometers are “commercially available.” However, the agency's Final Regulatory Evaluation states that

“current sensors/accelerometers have adequate precision, accuracy, and resolution to comply with the data format requirements. No additional costs for sensors are required.”

¹ *AIAM Technical Affairs Committee members are American Honda Motor Co., American Suzuki Motor Corp., Aston Martin Lagonda of North America, Inc., Ferrari North America, Inc., Hyundai Motor America, Isuzu Motors America, Inc., Kia Motors America, Maserati North America, Inc., Nissan North America, Inc. Peugeot Motors of America, Renault, SA, Subaru of America, ADVICS North America, Inc., Delphi Corporation, Denso International America, Inc., Hitachi Automotive Products (USA), Robert Bosch Corporation, and Yazaki North America, Inc.*

See FRE, page IV-3. AIAM requests that the agency revise its accuracy criterion to be consistent with the current technology (plus-or-minus 10 percent) or make adjustments in its lead time allowance to reflect the need to adopt new accelerometers. The agency's economic analysis should reflect the higher cost of more accurate sensors and should be based upon a consideration of the extent to which the EDR is integrated into the occupant restraint system. Changes to higher accuracy accelerometers will impose direct costs and will require software changes. Resulting costs will be higher when the changes are required to be implemented separate from a full model change of the affected vehicle.

In addition, there are certain severe crashes where the longitudinal acceleration will be higher than the required range of +/-50g. In these cases, the acceleration value will be truncated at 50g and the resulting delta-V calculation may not meet the accuracy requirements defined by Part 563. We request that NHTSA clarify that inaccuracies caused by sensor truncation are allowable under the Final Rule.

We also request that NHTSA confirm our understanding that manufacturers are free to establish ranges for various data elements that are broader than the ranges set forth in Table III of the regulation. In other words, we request that NHTSA confirm that the Table III ranges are **minimum** range requirements.

b. Vehicle speed. The "Speed, Vehicle Indicated" data element requires an accuracy of plus-or-minus 1 km/h. If this accuracy level is intended to specify a limit only for data transmission inaccuracy, then the level in the rule is appropriate. However, if the agency intends this accuracy level to apply to all forms of data error, so that the measured speed may not differ from "true" vehicle speed by more than 1 km/hr, the criterion in the rule is infeasible. As many manufacturers measure this element using wheel speed sensors, the required accuracy level (if compared with actual vehicle speed measurements) would be very difficult to attain given the production variation in tire and rim sizes. It is the experience of our members that vehicle speed estimated using wheel speed sensors can have an inaccuracy in excess of +/-10km/h due to these production variations, and that this inaccuracy is very difficult to control. The ECE and SAE have established criteria for speedometer accuracy, and these criteria could be an appropriate starting point if NHTSA intends this data element to assess discrepancies from "true" speed.

c. Data format verification. The final rule provides no methods for verifying the format of data elements, such as the accuracy level of the accelerometers, creating uncertainty as to the meaning and level of stringency of the required format. Several of the data elements are essentially undefined, providing no basis for vehicle manufacturers to understand NHTSA's intended meaning for the data element, much less to measure it objectively. As an

example of the uncertainty regarding data format, does the agency intend to apply the accuracy criterion to the accelerometer or sensor only, or is the intent that the data achieve that level of accuracy (reflecting the combination of sensor, transmission, and recording error)? If the latter is intended, achieving the 5 percent accuracy criterion would be significantly more difficult and beyond the capability of currently used technology.

We urge the agency to specify in the regulation procedures to be used to assess the format (accuracy, range, resolution, etc.) of data elements as specified in Table III of the final rule. The agency should provide an opportunity for public comment on these procedures in advance of their adoption. In addition, AIAM urges the agency to hold a workshop so that technical experts in the industry can assist the agency in developing the necessary procedures. AIAM member companies would be pleased to work with the agency to develop these procedures. With regard to data elements involving accelerometer accuracy, it may be appropriate for the agency to simply rely on the nominal accuracy level specified by the supplier of the accelerometer. Vehicle manufacturers rely on the accelerometers to assure proper functioning of restraint systems, so there is ample incentive for manufacturers to assure that accelerometers perform as claimed by the suppliers.

2. Frontal air bag warning lamp function. Table I states that all vehicles having an EDR must record “frontal air bag warning lamp, on/off.” We request that NHTSA confirm that this requirement refers to the “readiness indicator” in section 4.5.2 of FMVSS 208. We also request that the agency confirm that the EDR must record the status of the air bag system, and not simply whether the readiness indicator lamp is illuminated. Recording the state of readiness of the air bag system is a relatively straight-forward task, but verifying whether the lamp was actually illuminated is more problematic.

We also request that the agency confirm that the EDR may record additional safety system readiness information, such as the state of readiness of side air bag systems. The required “readiness indicator” is used by many manufacturers to provide a warning in the event of a malfunction for safety systems in addition to the frontal air bag system. We request that NHTSA clarify that the readiness indicator element requires that the EDR must record whether or not a safety system malfunction triggered the readiness indicator, but would not by itself specify which safety system caused the trigger event (the specific malfunction can be identified by other means). Requiring that manufacturers only record frontal air bag system malfunctions based upon the readiness indicator system status would require significant modification to current control systems.

3. Range for acceleration data elements. Table III, section 563.8(a), specifies a range of plus-or-minus 50 g’s for lateral, longitudinal, and normal acceleration data elements in EDRs that record those elements. Accelerometers/sensors currently used in some vehicle applications provide a

range as low as plus-or-minus 30 g's for longitudinal and lateral acceleration and 1 g for normal acceleration. It should be noted that these accelerometers have been placed on vehicles primarily to support air bag system activation decisions. For purposes of air bag activation, precise data on acceleration levels beyond the activation threshold is of no value - all that needs to be known is that the acceleration equals or exceeds the threshold. The EDR systems frequently are designed simply to "piggy-back" on the existing sensors. If NHTSA wishes to require sensors that provide data for purposes beyond the original design intent, then changes to the sensors will be required, along with software changes and resulting costs. Otherwise, the agency should specify acceleration ranges consistent with the minimum current levels described above (30 g longitudinal and lateral and 1 g normal/vertical).

Changing to accelerometers with a greater range could affect the sensitivity of the accelerometer and potentially affect the crash detection capabilities of the restraint system. As noted previously, there appear to be conflicting viewpoints expressed in the Final Rule and FRE regarding whether or not it is NHTSA's intent to require advanced sensors which would increase the cost of the EDR. If, as we anticipate, new accelerometers/sensors are required to meet the EDR rule, the cost to implement such a change would not be negligible, as claimed in the FRE. See page IV-3.

4. Recording interval for velocity changes (delta-V). Table I specifies recording intervals for longitudinal delta-V (0-250 ms) and longitudinal maximum delta-V (300 ms). Table II specifies recording intervals for lateral delta-V (0-250 ms), maximum lateral delta-V (0-300 ms), time of the maximum lateral delta-V (0-300 ms), and time for the resultant maximum delta-V (0-300 ms). However, the preamble to the final rule states that the agency decided to change the delta-V recording intervals from the proposed levels (-0.1 to 500 ms) to 0-250 ms. In explaining this change from the proposed level, the agency stated that

We agree with the commenters that recording these data elements [delta-V and acceleration elements] for 500 ms challenges the microprocessing system, raising the risk of losing a complete crash record. We also believe that a lesser recording time would still be sufficient for our purposes. Further research conducted after our proposal indicates that the maximum delta-V will be reported 95% percent (sic) of the time with a recording time of 250 ms. Our research also reveals that a 150 ms recording duration would not be sufficient. Based upon this information, we believe that a 250 ms recording time is sufficient for our purposes and also reduces the risk of losing EDR data because of a system malfunction.

See 71 Fed. Reg. 51020. Thus, for four of the six delta-V data elements, the rule establishes a recording interval of 300 ms, not the 250ms specified in the preamble.

We urge the agency to reconcile the language in the preamble and rule by specifying a 0-250 ms recording interval for all six delta-V elements. As noted in the preamble, longer recording intervals are undesirable due to the resulting need for increased memory storage capacity and the rarity of maximum delta-V occurring beyond the 250 ms interval. We also believe that longer recording intervals increase the risk of overlapping recording periods for multiple events. A 250 ms interval is adequate for 95 percent of events, according to the agency, with regard to maximum delta-V elements. It is also unclear to us how maximum delta-V could be determined for times after 250 ms when data on delta-V is only recorded up to 250 ms. For these reasons, we urge the agency to apply the 250ms interval to all six delta-V elements.

5. Data survivability/retrievability. Section 563.10(c) of the rule specifies that most data elements must be retrievable for not less than 10 days after the crash test. We agree, as a general matter, that this is a reasonable criterion. In typical outdoor conditions, current EDRs could be expected to comply with the 10 day survivability criterion. However, in the event that a crashed test vehicle were left unprotected from severe elements for 10 days, it is possible that there could be data loss. Consistent with the agency's decision not to require survivability in crashes involving fire or fluid immersion, we urge the agency to specify that the 10 day survivability requirement is to be applied based upon storage of the crashed vehicle under conditions not involving extreme weather conditions (temperature or precipitation).

6. Multi-event crashes. Table I requires that EDRs be capable or recording up to 2 "events" and the time between such events. Because motor vehicle crashes are severe and unpredictable events, AIAM requests that NHTSA clarify that the requirement for the EDR to have the capability of recording multiple events applies only to the extent that the EDR external power source and the sensors which provide the data to the EDR are not damaged in the first event.

7. Lead-time/phase-in. Because of the significant redesign tasks that may be required in order to comply with the rule and to provide for lower volume models, we request that the agency add a phase-in period to the lead-time provided in the final rule. As noted above, the EDR is an integral part of the occupant restraint system that interacts with other parts of that system. Changes to the EDR and related sensors may require new software and changes to other components. The changes to current EDRs that are required in order to comply with the final rule can be accomplished most efficiently (i.e., at lowest cost) if those changes can be coordinated with full model changes of vehicle models. Smaller volume models often have longer redesign cycles; the phase-in approach is very helpful in allowing manufacturers to bring such models into compliance in an efficient manner. In order to minimize the costs associated with making necessary design changes in accordance with the EDR final rule, we request that the agency specify a 50 percent phase-in level for the 2011 model

year, 80 percent for 2012, and 100 percent for 2013. Consistent with other agency rules that provide a phase-in period, small volume manufacturers should be permitted to comply beginning in the final year of the phase-in period at the 100 percent level. Allowing a deferred compliance date for such companies recognizes the higher relative burden of the regulations and the longer redesign cycles for these companies. Credits should be available for early compliance, as under other agency rules.