

Submitted by the experts from
CITA, EVU

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**Proposal for amendments to Event Data Recorder
(EDR) Performance Elements Appropriate for Adoption
in 1958 and 1998 Agreement Resolutions or Regulations
(SG-EDR-01-02-EDR Working Draft-Rev3)**

The text reproduced below aims at proposing improvements to the text Event Data Recorder (EDR) Performance Elements Appropriate for Adoption in 1958 and 1998 Agreement Resolutions or Regulations. The modifications to the existing text of the proposed EDR Performance Elements (SG-EDR-01-02-EDR Working Draft-Rev3) are marked in **green** for new text and strikethrough for deleted text.

1. Scope

1.1. These performance elements apply to all passenger cars and light duty vehicles (vehicle categories according to R.E.: M1, N1. **[Should we use harmonized 58/98 agreement categories 1-1, and 2, with a gross vehicle mass (GVM) of 3,855 kilograms or less instead?]**

[Remark: reflect in the scope

- that EDR regulation does not require systems to be fitted to a vehicle
- define “mandatory if equipped”
- clarify that retro-fitted devices are not in the scope
- clarify that any requirements on the VIN are excluded from this regulation (subject to national law)
- US would like it to be clear that nothing in this regulation should require changes to existing architectures.]

1.2. This do not apply to:

- (a) **The additional data elements to be collected by national or regional laws**
- (b) **Privacy, data protection and personal data processing, including requirements on the VIN and information to the driver;**
- (c) **Retro-fitted EDR devices**

1.3. **Mandatory data elements listed in paragraph 3 may be partially or fully exempted from the scope of these performance elements if the vehicle is not equipped with the associated vehicle system and/or sensor.**

2.11 “Event” means a crash or other physical occurrence that causes the trigger threshold to be met or exceeded, **or any non-reversible deployable restraint to be deployed, or a signal input of a sensor for detecting crash-impulses against the vehicle whichever occurs first. An event may also be the input of a signal that the driver generates to store EDR data manually on demand.** ~~], or an air bag to be deployed, whichever occurs first.]~~ **Note: this was removed from the “comparison chart” – Need to confirm if this is necessary?**

2.12. “Non-deployment event” indicates that the algorithm wakeup or threshold conditions were achieved but no device was commanded.

2.13 “Pedestrian Impact Event” is a physical occurrence that causes a Pedestrian Impact trigger threshold to be met or exceeded or activation of any pedestrian protection device, whichever occurs first.

2.14 “Rollover Event” is a physical occurrence in which the occupant protection control algorithm initiates deployment of a rollover occupant protection system. For purposes of recording event data, only one Rollover Event can be in progress at a given time.

2.12 “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. [should we delete “crash” throughout this EDR definition? It concerns an “event” here according to the definition of event above]

2.27 “Record” means the process of saving captured EDR data into a non-volatile device memory for subsequent retrieval.

Commented [SK1]: See 2.22 „Non-volatile memory“

2.45 “Time zero” means whichever of the following occurs first:

- (1) For systems with “wake-up” air bag control systems, the time at which the occupant restraint control algorithm is activated; or
- (2) For continuously running algorithms,
 - (i) The first point in the interval where a longitudinal, cumulative delta-V of over 0.8 km/h is reached within a 20 ms time period; or
 - (ii) For vehicles that record “delta-V, lateral,” the first point in the interval where a lateral, cumulative delta-V of over 0.8 km/h is reached within a 5 ms time period; or
- (3) ~~Deployment of a non-reversable deployable restraint. An air bag deployment.~~ [non-reversable deleted according to earlier discussions in IWG. We may have to see how to include non-airbag deployable safety systems (e.g., pop up bonnets for pedestrian safety)]
- (4) For systems with “wake-up” pedestrian protection control algorithms, the time which the pedestrian protection control algorithm is activated.

2.46 “Trigger threshold” means a change in vehicle velocity, in the longitudinal direction, that equals or exceeds 8 km/h within a 150 ms interval. For vehicles that record “delta-V, lateral,” trigger threshold means a change in vehicle velocity in either the longitudinal or lateral direction that equals or exceeds 8 km/h within a 150 ms interval **or a change in longitudinal or lateral acceleration, which is able to determine an impact to the vehicle.**

Table 1. [Content of this paragraph to be discussed in Tokyo]

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

3.3.2 In an event that does not meet the criteria in paragraph 3.3.1 **or in a non-deployment event**, capture and record the current event data, ~~up to two events~~ **at least three events**, subject to the following conditions: [To be discussed in the group. I am not sure if this meets the expectations of covering also non-airbag deployment events.]

3.3.3. If no event described under 3.3.1. or 3.3.2 is recorded or buffered, it shall be possible to trigger the data capture manually. Capture and record the current manual triggering event data shall meet the conditions described in paragraphs 3.3.2.1. to 3.3.2.3.

3.3.4. Notwithstanding paragraph 3.3.3., any stop of the vehicle shall trigger the storage of data elements - identical to a non-deployment event, but distance-oriented instead of time-oriented.

3.3.4.1. These data elements shall be deleted automatically, if the vehicle was moved over a distance exceeding 300 meters.

3.4.3. The data elements required by paragraph 3.1, except for the “Engine throttle, percent full,” “engine RPM,” and “service brake, on/off,” shall be recorded in the format specified by paragraph 3.2, exist at the completion of the crash test, and be retrievable by the methodology specified by the vehicle manufacturer under paragraph 3.5 for not less than 10 days after the test, and the complete data recorded element shall read “yes” after the test.

Commented [SK2]: Test procedures for 1958 Agreement at least UN Regulations Nos. 94, 95 or 137

3.5. Data retrievability ~~retrieval tools~~

~~Each manufacturer of a motor vehicle equipped with an EDR shall ensure by licensing agreement or other means that a tool(s) is commercially available that is capable of accessing and retrieving the data stored in the EDR that are required by this part. The tool(s) shall be commercially available not later than 90 days after the first sale of the motor vehicle for purposes other than resale.~~

3.5.1. The data shall be retrievable by the electronic communication interface. If the main-on-board vehicle power supply is not available, it shall be possible to retrieve stored data from the EDR by a vehicle manufacturer-specific method.

3.5.2. The manufacturer shall provide an information package to any interested manufacturer or repairer of components, diagnostic tools or test equipment in machine-readable format (e.g. ISO 22901) which includes the information about how the data elements can be retrieved and interpreted via the use of the electronic communication interface.

3.5.3. If the access to data elements is protected by a security algorithm, the manufacturer shall ensure authorities and parties authorized by national or regional legislation the authorization to access the data elements in an easy manner.

3.5.4. At Roadworthiness testing, including the periodic technical inspection, it shall be possible to access at least the most recent data elements that are triggered according to paragraph 3.3.4. via the electronic communication interface to test the storage functionality and the plausibility of the data elements.