

Proposal for amendments to GRPE working document ECE/TRANS/WP.29/GRPE/2014/14

The purpose of this document is to update the working document ECE/TRANS/WP.29/GRPE/2014/14 on-board diagnostics (OBD) requirements in Regulation No. 83 (emissions of M₁ and N₁ vehicles), following the latest status of discussion in the European OBD working group. The modifications to ECE/TRANS/WP.29/GRPE/2014/14 are marked in track changes.

I. Proposal

A. Proposal for amendments to the 06 series of amendments to UN Regulation No. 83

1. Definitions

Annex 11, paragraph 2, amend to read:

"2. Definitions

For the purposes of this annex **only**:"

Erasure of fault codes

Annex 11, paragraph 3.8.1., amend to read:

"3.8.1. The OBD system may erase a fault code and the distance travelled and freeze-frame information if the same fault is not re-registered in at least 40 engine warm-up cycles or 40 driving cycles with vehicle operation in which the criteria specified in sections 7.5.1 (a) – (c) of Annex 11, Appendix 1 are met."

Kleiser, Alexander (E..., 5/20/14 11:18 AM

Deleted: *Annex 11, Paragraph 2.10.*, amend to read: -

2. Electrical failures

Annex 11, Appendix 1, paragraph 1., amend to read:

"1. ...

The manufacturer shall make available the defective components and/or electrical devices which would be used to simulate failures. When measured over the Type I Test cycle, such defective components or devices shall not cause the vehicle emissions to exceed the limits of paragraph 3.3.2 by more than 20 per cent. For electrical failures (short/open circuit), the emissions may exceed the limits of paragraph 3.3.2. by more than 20 per cent.

When the vehicle is tested with the defective component or device fitted, the OBD system is approved if the MI is activated. The OBD system is also approved if the MI is activated below the OBD threshold limits."

Kleiser, Alexander (E..., 5/20/14 11:18 AM

Deleted: For electrical failures (short/open circuit), the OBD system is also approved if a DTC is stored at vehicle emissions exceeding the limits of paragraph 3.3.2 by more than 20 per cent.

Annex 11, Appendix 1, insert paragraphs 6.1.1. to read:

"6.1.1. The Type I Test need not be performed for the electrical disconnection failure modes. The manufacturer may demonstrate this failure mode using driving conditions in which the component is used and the monitoring conditions are encountered. These conditions shall be documented in the type approval documentation."

Annex 11, Appendix 1, insert paragraph 6.2.3. to read:

"6.2.3. The use of additional preconditioning cycles or alternative preconditioning methods shall be documented in the type approval documentation."

Annex 11, Appendix 1, paragraph 6.3.1.5., amend to read:

6.3.1.5. Electrical disconnection of the electronic evaporative purge control device (if equipped and if active on the selected fuel type)▼▼

3. OBD system test

Annex 11, Appendix 1, paragraphs 6.4.1.1. and 6.4.2.1., amend to read:

"6.4.1.1. ...
The MI shall be activated at the latest before the end of this test under any of the conditions given in paragraphs 6.4.1.2. to 6.4.1.5. **The MI may also be activated during preconditioning.** The Technical Service may substitute those conditions with others in accordance with paragraph 6.4.1.6.

6.4.2.1. ...
The MI shall be activated at the latest before the end of this test under any of the conditions given in paragraphs 6.4.2.2. to 6.4.2.5. **The MI may also be activated during preconditioning.** The technical service may substitute those conditions by others in accordance with paragraph 6.4.2.5.
..."

4. IUPR reporting

Annex 11, Appendix 1, paragraph 7.6.2, amend to read:

"7.6.2. For specific components or systems that have multiple monitors, which are required to be reported by this paragraph (e.g. oxygen sensor bank 1 may have multiple monitors for sensor response or other sensor characteristics), the OBD system shall separately track numerators and denominators for each of the specific monitors ~~except those monitoring for short circuit or open circuit failures~~ and report only the corresponding numerator and denominator for the specific monitor that has the lowest numerical ratio. If two or more specific monitors have identical ratios, the corresponding numerator and denominator for the specific monitor that has the highest denominator shall be reported for the specific component."

Annex 11, Appendix 1, insert new paragraph 7.6.2.1. to read:

Kleiser, Alexander (E..., 5/20/14 11:40 AM)
Deleted: s 6.3.1.4. and

Kleiser, Alexander (E..., 5/20/14 11:40 AM)
Deleted: "6.3.1.4. . Electrical disconnection of any other emission-related component connected to a power-train management computer (if active on the selected fuel type). For these failure modes, a Type I Test need not be performed. [1]"

Kleiser, Alexander (E..., 5/20/14 11:40 AM)
Deleted: For this specific failure mode, the Type I Test need not be performed. .

Kleiser, Alexander (E..., 5/20/14 11:20 AM)
Deleted: The manufacturer may demonstrate the failure using driving conditions, in which the component is used and the monitoring conditions are encountered."

Kleiser, Alexander (E..., 5/20/14 11:41 AM)
Deleted: Annex 11, Appendix 1, paragraphs 6.3.2.3. and 6.3.2.4., amend to read: .

"7.6.2.1. Numerators and denominators for specific monitors of components or systems, that are monitoring continuously for short circuit or open circuit failures are exempted from reporting."

Paragraph 9.3.5.2, amend to read:

"9.3.5.2. [...]"

Vehicles of small series productions with less than 1000 vehicles per OBD family are exempted from minimum IUPR requirements as well as the requirement to demonstrate these to the approval authority"

B. Proposal for amendments to the 07 series of amendments to UN Regulation No. 83

1. Update of communication standards

Annex 1, paragraph 3.2.12.2.7.6.3., amend to read:

"3.2.12.2.7.6.3. A comprehensive document describing all sensed components with the strategy for fault detection and MI activation (fixed number of driving cycles or statistical method), including a list of relevant secondary sensed parameters for each component monitored by the OBD system. A list of all OBD output codes and format used (with an explanation of each) associated with individual emission related power-train components and individual non-emission related components, where monitoring of the component is used to determine MI activation. In particular, a comprehensive explanation for the data given in service \$05 Test ID \$21 to FF and the data given in service \$06 must be provided. In the case of vehicle types that use a communication link in accordance with ISO 15765-4 "Road vehicles—Diagnostics on Controller Area Network (CAN)—Part 4: Requirements for emissions-related systems" **the standard listed in paragraph 6.5.3.1.(a) of Annex XI, Appendix 1 of this Regulation**, a comprehensive explanation for the data given in service \$06 Test ID \$00 to FF, for each OBD monitor ID supported, must be provided."

Annex 2, Appendix 1, paragraph 3., amend to read:

"3. A comprehensive document describing all sensed components with the strategy for fault detection and MI activation (fixed number of driving cycles or statistical method), including a list of relevant secondary sensed parameters for each component monitored by the OBD system and a list of all OBD output codes and format used (with an explanation of each) associated with individual emission related power-train components and individual non-emission related components, where monitoring of the component is used to determine MI activation. In particular, a comprehensive explanation for the data given in service \$05 Test ID \$21 to FF and the data given in service \$06 shall be provided. In the case of vehicle types that use a communication link in accordance with **the standard listed in paragraph 6.5.3.1(a) of Annex XI, Appendix 1 of this Regulation** ~~ISO 15765-4 'Road vehicles—Diagnostics on Controller Area Network (CAN)—Part 4: Requirements for emissions-related systems'~~, a comprehensive explanation

Kleiser, Alexander (E..., 5/20/14 11:47 AM

Deleted: 5. . IUPR reporting – Hybrids - Annex 11, Appendix 1, paragraph 7.1., amend to read:

Kleiser, Alexander (E..., 5/20/14 11:21 AM

Deleted: "7.1. . General Requirements -

for the data given in service \$06 Test ID \$00 to FF, for each OBD monitor ID supported, shall be provided."

Annex 11, paragraph 3.9.3.1., amend to read:

"3.9.3.1. On a request from a diagnostic scan tool, the diagnostic signals shall be transmitted on one or more source addresses. The use of source addresses is described in the **standard listed in paragraph 6.5.3.1(b) of Annex XI, Appendix 1 of this Regulation** ~~ISO DIS 15031-5 "Road vehicles - communication between vehicles and external test equipment for emissions-related diagnostics - Part 5: Emissions-related diagnostic services", dated 1 November 2001.~~"

Annex 11, Appendix 1, paragraph 6.5.3, amend to read:

"6.5.3. The emission control diagnostic system must provide for standardised and unrestricted access and conform with the following ISO standards and/or SAE specification. **Later versions may be used at the manufacturers' discretion.**

All references to standards in UN/ECE Regulation No 83, if listed in paragraph 6.5.3.1. of this appendix, shall be understood as references to the standards mentioned in the abovementioned paragraph.

The standards in 6.5.3.1(f) and (g) may be used as an option instead of 6.5.3.1(b) not earlier than 01.01.2019.

6.5.3.1. **The following standard (a) shall be used for transmission of OBD relevant information.**

~~One of the~~The following standards ~~with the restrictions as described~~ must be used as the on board to off-board communications link:

~~ISO 9141-2: 1994 (amended 1996) "Road Vehicles - Diagnostic Systems - Part 2: CARB requirements for interchange of digital information;~~

~~SAE J1850: March 1998 Class B Data Communication Network Interface". Emission related messages must use the cyclic redundancy check and the three-byte header and not use interbyte separation or checksums;~~

~~ISO 14230:2000 - Part 4 "Road Vehicles - Keyword protocol 2000 for diagnostic systems - Part 4: Requirements for emission-related systems";~~

(a) ISO DIS 15765-4:2011 "Road vehicles - Diagnostics on Controller Area Network (CAN) - Part 4: Requirements for emissions-related systems", dated 1 November 2001 February 2011;

(b) ISO 15031-5 "Road vehicles - communication between vehicles and external test equipment for emissions-related diagnostics - Part 5: Emissions-related diagnostic services", dated 1 April 2011 or SAE J1979 dated 23 February 2012;

(c) ISO 15031-4 "Road vehicles - Communication between vehicle and external test equipment for emissions related diagnostics - Part 4: External test equipment", dated 1 June 2005 or SAE J1978 dated 30 April 2002;

(d) ISO 15031-3 "Road vehicles - Communication between vehicle and external test equipment for emissions related diagnostics Part 3: Diagnostic connector and related electrical circuits: specification and use", dated 1 July 2004 or SAE J 1962 dated 26 July 2012;

(e) ISO 15031-6 "Road vehicles – Communication between vehicle and external test equipment for emissions related diagnostics – Part 6: Diagnostic trouble code definitions", dated 13 August 2010 or SAE J2012 dated 07 March 2013;

(f) ISO 27145 "Road vehicles -Implementation of World-Wide Harmonized On-Board Diagnostics (WWH-OBD)" dated 2012-08-15 with the restriction, that only 6.5.3.1 (a) may be used as a data link;

(g) ISO 14229:2013 "Road vehicles — Unified diagnostic services (UDS) with the restriction, that only 6.5.3.1 (a) may be used as a data link".

6.5.3.2. Test equipment and diagnostic tools needed to communicate with OBD systems must meet or exceed the functional specification given in **the standard listed in paragraph 6.5.3.1.(c) of this Appendix ISO DIS 15031-4** "~~Road vehicles — Communication between vehicle and external test equipment for emissions-related diagnostics — Part 4: External test equipment"~~", dated 1 November 2001.

6.5.3.3. Basic diagnostic data, (as specified in paragraph 6.5.1.) and bi-directional control information must be provided using the format and units described in **the standard listed in paragraph 6.5.3.1.(b) of this Appendix ISO DIS 15031-5** "~~Road vehicles — Communication between vehicle and external test equipment for emissions-related diagnostics — Part 5: Emissions-related diagnostic services"~~", dated 1 November 2001, and must be available using a diagnostic tool meeting the requirements of **the standard listed in paragraph 6.5.3.1.(c) of this Appendix ISO DIS 15031-4**.

The vehicle manufacturer shall provide to a national standardisation body the details of any emission-related diagnostic data, e.g. PID's, OBD monitor Id's, Test Id's not specified in **of the standard listed in paragraph 6.5.3.1.(b) of this Regulation ISO DIS 15031-5** but related to this Regulation.

6.5.3.4. When a fault is registered, the manufacturer must identify the fault using an appropriate **ISO/SAE controlled** fault code ~~consistent with those given in Section 6.3 of~~ **specified in one of the standards listed in paragraph 6.5.3.1.(c) of this appendix ISO DIS 15031-6** "~~Road vehicles — Communication between vehicle and external test equipment for emissions-related diagnostics — Part 6: Diagnostic trouble code definitions"~~", relating to "emission related system diagnostic trouble codes". If such identification is not possible, the manufacturer may use **manufacturer controlled** diagnostic trouble codes according to ~~Sections 5.3 and 5.6~~ **the same standard of ISO DIS 15031-6**. The fault codes must be fully accessible by standardised diagnostic equipment complying with the provisions of paragraph 6.5.3.2. of this annex.

The vehicle manufacturer shall provide to a national standardisation body the details of any emission-related diagnostic data, e.g. PID's, OBD monitor Id's, Test Id's not specified in **of the standard listed in paragraph 6.5.3.1.(b) of this appendix ISO DIS 15031-5** but related to this Regulation.

6.5.3.5. The connection interface between the vehicle and the diagnostic tester must be standardised and must meet all the requirements of **the standard listed in paragraph 6.5.3.1.(d) of this Appendix ISO DIS 15031-3** "~~Road vehicles — Communication between vehicle and external test equipment for emissions-related diagnostics — Part 3: Diagnostic connector and related electrical circuits: specification and use"~~", dated 1 November 2001. The installation position must be subject to agreement of the administrative department such

that it is readily accessible by service personnel but protected from tampering by non-qualified personnel."

Annex 11, Appendix 1, paragraph 7.6.1., amend to read:

"7.6.1. The OBD system shall report, in accordance with the **ISO 15031-5 specifications of the standard listed in paragraph 6.5.3.1.(b) of this Appendix**, the ignition cycle counter and general denominator as well as separate numerators and denominators for the following monitors, if their presence on the vehicle is required by this annex:

- (a) Catalysts (each bank to be reported separately);
- (b) Oxygen/exhaust gas sensors, including secondary oxygen sensors (each sensor to be reported separately);
- (c) Evaporative system;
- (d) EGR system;
- (e) VVT system;
- (f) Secondary air system;
- (g) Particulate filter;
- (h) NOx after-treatment system (e.g. NOx adsorber, NOx reagent/catalyst system);
- (i) Boost pressure control system."

2. Definitions

General

Annex 11, paragraph 2, amend to read:

"2. ...
For the purposes of this annex **only**:"

Kleiser, Alexander (E..., 5/20/14 11:23 AM
Deleted: Definition driving cycle

Erase of fault codes

Annex 11, paragraph 3.8.1., amend to read:

"3.8.1. The OBD system may erase a fault code and the distance travelled and freeze-frame information if the same fault is not re-registered in at least 40 engine warm-up cycles or 40 driving cycles with vehicle operation in which the criteria specified in sections 7.5.1 (a) – (c) of Annex 11, Appendix 1 are met."

3. Electrical failures

Annex 11, Appendix 1, paragraph 1., amend to read:

"1.
[...]

The manufacturer shall make available the defective components and/or electrical devices which would be used to simulate failures. When measured

over the Type I Test cycle, such defective components or devices shall not cause the vehicle emissions to exceed the limits of paragraph 3.3.2 by more than 20 per cent. **For electrical failures (short/open circuit), the emissions may exceed the limits of paragraph 3.3.2. by more than 20 per cent.**

When the vehicle is tested with the defective component or device fitted, the OBD system is approved if the MI is activated. The OBD system is also approved if the MI is activated below the OBD threshold limits."

Annex 11, Appendix 1, insert paragraphs 6.1.1. to read:

"6.1.1. The Type I Test need not be performed for the electrical disconnection failure modes. The manufacturer may demonstrate this failure mode using driving conditions in which the component is used and the monitoring conditions are encountered. These conditions shall be documented in the type approval documentation."

Annex 11, Appendix 1, insert paragraph 6.2.3. to read:

"6.2.3. The use of additional preconditioning cycles or alternative preconditioning methods shall be documented in the type approval documentation."

Annex 11, Appendix 1, paragraph 6.3.1.5., amend to read:

6.3.1.5. Electrical disconnection of the electronic evaporative purge control device (if equipped and if active on the selected fuel type). 4. OBD system test

Annex 11, Appendix 1, Amend paragraphs 6.4.1.1. and 6.4.2.1., amend to read:

"6.4.1.1. [...].

The MI shall be activated **at the latest** before the end of this test ~~at the latest~~ under any of the conditions given in paragraphs 6.4.1.2. to 6.4.1.5. **The MI may also be activated during preconditioning.** The Technical Service may substitute those conditions with others in accordance with paragraph 6.4.1.6.

[...].

6.4.2.1. [...].

The MI shall be activated **at the latest** before the end of this test ~~at the latest~~ under any of the conditions given in paragraphs 6.4.2.2. to 6.4.2.5. **The MI may also be activated during preconditioning.** The technical service may substitute those conditions by others in accordance with paragraph 6.4.2.5."

[...].

5. IUPR reporting

Annex 11, Appendix 1, paragraph 7.6.2, amend to read:

"7.6.2. For specific components or systems that have multiple monitors, which are required to be reported by this point (e.g. oxygen sensor bank 1 may have multiple monitors for sensor response or other sensor characteristics), the OBD system shall separately track numerators and denominators for each of

Kleiser, Alexander (E..., 5/20/14 11:23 AM)
Deleted: For electrical failures (short/open circuit), the OBD system is also approved if a DTC is stored at vehicle emissions exceeding the limits of paragraph 3.3.2 by more than 20 per cent.

Kleiser, Alexander (E..., 5/20/14 11:41 AM)
Deleted: s 6.3.1.4. and

Kleiser, Alexander (E..., 5/20/14 11:41 AM)
Deleted: "6.3.1.4. . . Electrical disconnection of any other emission-related component connected to a power-train management computer (if active on the selected fuel type). **For these failure modes, a Type I Test need not be performed.** . .

Kleiser, Alexander (E..., 5/20/14 11:24 AM)
Deleted: For this specific failure mode, the Type I Test need not be performed. .
The manufacturer may demonstrate the failure using driving conditions, in which the component is used and the monitoring conditions are encountered." .
Annex 11, Appendix 1, paragraphs 6.3.2.3. and 6.3.2.4., amend to read: .
 "6.3.2.3. . . Electrical disconnection of any fuelling system electronic fuel quantity and timing actuator. **For these failure modes, a Type I Test need not be performed.** . .
 . . **The manufacturer may demonstrate the failure using driving conditions, in which the component is used and the monitoring conditions are encountered.** .
 6.3.2.4. . . Electrical disconnection of any other emission-related component connected to a power-train management computer. **For these failure modes, a Type I Test need not be performed.** . .
 . . **The manufacturer may demonstrate the failure using driving conditions, in which the component is used and the monitoring conditions are encountered."** .

the specific monitors ~~except those monitoring for short circuit or open circuit failures~~ and report only the corresponding numerator and denominator for the specific monitor that has the lowest numerical ratio. If two or more specific monitors have identical ratios, the corresponding numerator and denominator for the specific monitor that has the highest denominator shall be reported for the specific component."

Annex 11, Appendix 1, insert new paragraph 7.6.2.1., to read:

"7.6.2.1. Numerators and denominators for specific monitors of components or systems, that are monitoring continuously for short circuit or open circuit failures are exempted from reporting."

Paragraph 9.3.5.2. amend to read:

"9.3.5.2. [...]"

Vehicles of small series productions with less than 1000 vehicles per OBD family are exempted from minimum IUPR requirements as well as the requirement to demonstrate these to the approval authority"

II. Justification

A. Justification for the proposal in part A above

1. Definition

General

1. To avoid confusion and contradictions with future amendments of other provisions the definitions of Annex 11 should be amended to be valid only for OBD

Erasure of fault codes

2. Annex 11 of Regulation 83 contains the definition of a warm-up cycle in the definition section under para 2.11:

3. Under section 3.8 "Erasing a Fault Code" this defined cycle is used to erase healed error code information from the fault code memory:

"3.8.1. The OBD system may erase a fault code and the distance travelled and freeze-frame information if the same fault is not re-registered in at least 40 engine warm-up cycles."

4. The intention of this section is to keep fault code information in the memory long enough to give the service technician this information if a customer shows up at the workshop driven by the previous MIL illumination. Assuming 2 to 3 warm up cycles per day this information on healed codes (the system is OK and does not need repair!) stays 13 to 20 days in the memory which is long enough for the above described purpose.

5. For hybrid electrical vehicles which are plugged in regularly causing rare engine operation, the history information on healed errors will most likely stay much longer in the fault code memory. Customers showing up at their service garage for the regular service intervals might get unnecessary repairs because this information is still present. Costumers will fail PTI in some member states because of not erasing a fault code.

Kleiser, Alexander (E..., 5/20/14 11:25 AM

Deleted: 6. . IUPR reporting – Hybrids - Annex 11, Appendix 1, paragraph 7.1, amend to read: -

"7.1. . General Requirements -

- . For the purpose of calculating counters and ratios under the In-use performance requirements, "engine start" is defined as the start of the internal combustion engine. -

- . For the calculation of the General Denominator and the Denominator_M "cumulative time since engine start" in 7.5.1(a) and "cumulative vehicle operation" in 7.5.1(b) the manufacturer may choose the option to consider only times where the internal combustion engine is running."

Paragraph 9.3.1, amend to read: -

- . "[...]" -

- . For OBD IUPR_M testing only, vehicles fulfilling the criteria of paragraph 2.2.1. of Appendix 3 shall be included in the test sample. -

- . Vehicles of small series productions with less than 1000 vehicles are exempted from minimum IUPR requirements as well as the requirement to demonstrate these to the approval authority."

Kleiser, Alexander (E..., 5/20/14 11:25 AM

Deleted: 7. . Monitoring of Diesel after treatment devices -

Kleiser, Alexander (E..., 5/20/14 11:26 AM

Deleted: Definition driving cycle -

2. . Annex 11 of Regulation 83 contains the

Kleiser, Alexander (E..., 5/20/14 11:26 AM

Deleted: Definition warm up cycle -

Kleiser, Alexander (EA..., 5/20/14 2:17 PM

Deleted: 6

Kleiser, Alexander (EA..., 5/20/14 2:17 PM

Deleted: 7

Kleiser, Alexander (EA..., 5/20/14 2:17 PM

Deleted: 8

6. To erase a fault code, the engine has to be operated (7.5.1(a) requires an engine start). For this reason 3.8.1. should be amended.
- 2. Electrical failures**
7. Electrical failures (disconnection, short to battery and short to ground) have only one of two states, present or not present. There is no such thing as a partial failure therefore the concept of threshold monitoring is inappropriate.
8. Demonstrating these types failures in a type 1 test is often inappropriate or wasteful. The demonstration of the monitor working properly should therefore be possible in a driving cycle defined by the manufacturer, in which the component (sensor/actuator) is used. This is true also for the electronic evaporative control device. Paragraphs 6.1.1 and 6.3.1.5 should be amended.
9. The proposed changes do not alter the requirements of monitoring the electrical failures, but intend to clarify the situation during the OBD system test.
- 3. OBD system test**
10. Typically an OBD system test consists of two preconditioning cycles and a final type 1 test. The type 1 test is always performed, even if alternative driving cycles are used, more preconditioning cycles are added or the MI is activated during one of the preconditioning cycles.
11. UN Regulation 83 allows in paragraph 3.5.2 more than two preconditioning cycles for MI activation. According to paragraph 6.2.2. the manufacturer may request alternative preconditioning cycles.
12. One reason for doing this might be that the operating conditions for monitoring a component might not be encountered in a type 1 test. In such a case, the MI has to be illuminated before the type 1 test, in which emissions are measured.
13. For vehicles developed according to CARB OBD II requirements, the MI has to be illuminated after two driving cycles with the fault detected. Such vehicles will illuminate the MI during the second preconditioning cycle as well.
14. Additionally there should be no bar to activating the MIL earlier than the minimum requirements. In some cases it is desirable to alert the driver as soon as possible to the fault condition.
- 4. IUPR reporting**
15. The intention of the text of paragraph 7.6.2. in Appendix 1 to Annex 11 saying "... except those monitoring for short circuit or open circuit failures ..." was to exempt the ratios of monitors for electrical failures from being reported. This wording could however give the impression that electrical failures are exempted from being reported only for systems with multiple monitors but are requested for systems consisting of only one electrical monitor.
16. Although any reporting of electrical failure ratios is not possible due to the regulations and standards concerning scan tool communication, the proposed new text confirms this, thus avoiding any ambiguities.

Kleiser, Alexander (EA..., 5/20/14 2:17 PM)
Deleted: 9

Kleiser, Alexander (EA..., 5/20/14 2:17 PM)
Deleted: 10

Kleiser, Alexander (EA..., 5/20/14 2:17 PM)
Deleted: 11

Kleiser, Alexander (E..., 5/20/14 11:26 AM)
Deleted:

Kleiser, Alexander (E..., 5/20/14 11:27 AM)
Deleted: Paragraphs 6.3.1.4 6.3.1.5, 6.3.2.3 and 6.3.2.4 should be amended.

Kleiser, Alexander (E..., 5/20/14 11:27 AM)
Deleted: - ... [2]

Kleiser, Alexander (EA..., 5/20/14 2:17 PM)
Deleted: 13

Kleiser, Alexander (EA..., 5/20/14 2:17 PM)
Deleted: 14

Kleiser, Alexander (EA..., 5/20/14 2:17 PM)
Deleted: 15

Kleiser, Alexander (EA..., 5/20/14 2:17 PM)
Deleted: 16

Kleiser, Alexander (EA..., 5/20/14 2:17 PM)
Deleted: 17

Kleiser, Alexander (EA..., 5/20/14 2:17 PM)
Deleted: 18

Kleiser, Alexander (EA..., 5/20/14 2:18 PM)
Deleted: 19

Kleiser, Alexander (EA..., 5/20/14 2:18 PM)
Deleted: 20

Kleiser, Alexander (E..., 5/20/14 11:27 AM)
Deleted: . 5. . IUPR reporting – Hybrids .

B. Justifications for proposal in part B above

1. Update of communication standards

1. The communication standards referenced throughout the regulation are outdated. All references to ISO 15031-x and 15765-4 should be updated to the latest version. With the standards currently referenced it would be impossible to fulfil other requirements in Regulation No. 83, i.e. reporting of IUPR information. Furthermore some standards are referenced several times throughout the document, which may result in future inconsistencies. To avoid this, it was decided to move all references to communication standard to a separate paragraph and delete the version information from all other references.

Kleiser, Alexander (EA..., 5/20/14 2:18 PM)
Deleted: A

2. Two new standards for communication to external test equipment are introduced into the regulation. ISO 27145 (WWH OBD), which is already used in Heavy Duty vehicles and ISO 14229, which forms the basis for WWH OBD.

3. Such an introduction needs to be carefully considered, as OBD is not only used in independent workshops but also during PTI in several regions.

4. To introduce these new protocols in workshop testers and on the equipment of PTI stations, a lead time of approx. 4 years is introduced to allow the update testers in the workshop and the PTI equipment.

2. Definition

General

5. To avoid confusion and contradictions with future amendments of other provisions, the definitions of Annex 11 should be amended to be valid only for OBD.

Kleiser, Alexander (EA..., 5/20/14 2:18 PM)
Deleted: B

Kleiser, Alexander (EA..., 5/20/14 2:20 PM)
Deleted: 7.

Erasure of fault codes

6. Annex 11 of Regulation No. 83 contains the definition of a warm-up cycle in the definition section under para. 2.11:

7. Under section 3.8 "Erasing a Fault Code" this defined cycle is used to erase healed error code information from the fault code memory:

Kleiser, Alexander (E..., 5/20/14 11:28 AM)
Deleted: 8. Definition driving cycle

Kleiser, Alexander (E..., 5/20/14 11:28 AM)
Deleted: Definition warm up cycle

"3.8.1. The OBD system may erase a fault code and the distance travelled and freeze-frame information if the same fault is not re-registered in at least 40 engine warm-up cycles."

8. The intention of this section is to keep fault code information in the memory long enough to give the service technician this information if a customer shows up at the workshop driven by the previous MIL illumination. Assuming 2 to 3 warm up cycles per day this information on healed codes (the system is OK and does not need repair!) stays 13 to 20 days in the memory which is long enough for the above described purpose.

9. For hybrid electrical vehicles which are plugged in regularly causing rare engine operation, the history information on healed errors will most likely stay much longer in the fault code memory. Customers showing up at their service garage for the regular service intervals might get unnecessary repairs because this information is still present. Customers will fail PTI in some member states because of not erasing a fault code.

10. To erase a fault code, the engine has to be operated (7.5.1(a) requires an engine start). For this reason 3.8.1. should be amended.

3. Electrical failures

11. Electrical failures (disconnection, short to battery and short to ground) have only one of two states, present or not present. There is no such thing as a partial failure therefore the concept of threshold monitoring is inappropriate.

12. Demonstrating these types failures in a type 1 test is often inappropriate or wasteful. The demonstration of the monitor working properly should therefore be possible in a driving cycle defined by the manufacturer, in which the component (sensor/actuator) is used. This is true also for the electronic evaporative control device. Paragraphs 6.1.1., and 6.3.1.5 should be amended.

13. The proposed changes do not alter the requirements of monitoring the electrical failures, but intend to clarify the situation during the OBD system test.

4. OBD system test

14. Typically an OBD system test consists of two preconditioning cycles and a final type 1 test. The type 1 test is always performed, even if alternative driving cycles are used, more preconditioning cycles are added or the MI is activated during one of the preconditioning cycles.

15. Regulation No. 83 allows in paragraph 3.5.2 more than two preconditioning cycles for MI activation. According to paragraph 6.2.2., the manufacturer may request alternative preconditioning cycles.

16. One reason for doing this might be that the operating conditions for monitoring a component might not be encountered in a type 1 test. In such a case, the MI has to be illuminated before the type 1 test, in which emissions are measured.

17. For vehicles developed according to CARB OBD II requirements, the MI has to be illuminated after two driving cycles with the fault detected. Such vehicles will illuminate the MI during the second preconditioning cycle as well.

18. Additionally there should be no bar to activating the MIL earlier than the minimum requirements. In some cases it is desirable to alert the driver as soon as possible to the fault condition.

5. IUPR reporting

19. The intention of the text of paragraph 7.6.2. in Appendix 1 to Annex 11 saying "... except those monitoring for short circuit or open circuit failures ..." was to exempt the ratios of monitors for electrical failures from being reported. This wording could however give the impression that electrical failures are exempted from being reported only for systems with multiple monitors but are requested for systems consisting of only one electrical monitor.

20. Although any reporting of electrical failure ratios is not possible due to the regulations and standards concerning scan tool communication, the proposed new text confirms this, thus avoiding any ambiguities.

Kleiser, Alexander (EA..., 5/20/14 2:21 PM)
Deleted: -
 CARB will amend the Warm Up Cycle definition for

Kleiser, Alexander (EA..., 5/20/14 2:21 PM)
Deleted: C

Kleiser, Alexander (EA..., 5/20/14 2:21 PM)
Deleted: 10

Kleiser, Alexander (EA..., 5/20/14 2:21 PM)
Deleted: 11

Kleiser, Alexander (E..., 5/20/14 11:29 AM)
Deleted: Paragraphs 6.3.1.4, 6.3.1.5, 6.3.2.3 and 6.3.2.4 should be amended. -

Kleiser, Alexander (EA..., 5/20/14 2:22 PM)
Deleted: D

Kleiser, Alexander (EA..., 5/20/14 2:22 PM)
Deleted: E

Kleiser, Alexander (E..., 5/20/14 11:29 AM)
Deleted: F. - IUPR reporting – Hybrids -
 21. - Hybrids with an increased electrical range, especially those, which could be charged externally (plug in hybrids), are using the internal combustion engines less frequent than non-hybrid vehicles, thereby minimizing fuel consumption and emissions but also time for running monitors to detect a malfunction of the internal combustion engine. -
 22. - For "non-hybrid" vehicles, the definition: - "3.5.1. - The general denominator is a counter measuring the number of times a vehicle has been operated. It shall be incremented within 10 seconds, if and only if, the following criteria are satisfied on a single driving cycle: -
 (a) - Cumulative time since engine start is greater than or equal to 600 seconds while at an elevation of less than 2,440 m above sea level and at an ambient temperature of greater than or equal to -7° C; -
 (b) - Cumulative vehicle operation at or above 40 km/h occurs for greater than or equal to 300 seconds while at an elevation of less than 2,440 m above sea level and at an ambient temperature of greater than or equal to -7° C;" implies, that the engine, e.g. the internal combustion engine, is working constantly. To avoid misunderstandings add the above to Annex 11, Appendix 1 under paragraph 3. ..." implies, that the engine, i.e. the internal combustion engine, is working constantly. To avoid misunderstandings, amend the requirements accordingly. -
 - G. - Monitoring of Diesel after treatment devices -
 23. - Emission after treatment systems for Diesel vehicles may comprise multiple elements related to a single pollutant in order to comply to very strict emission limits and by the need to fulfil the OBD requirements. -
 24. - An example if NOx after treatments where a small catalyst to avoid slip of ammonia is used downstream of the main conversion catalyst: this device in turn makes a small contribution to the overall NOx conversion. In this case robust monitoring of the smaller unit alone is difficult or impossible. Analogous situations arise for the catalysis of other pollutants. -
 25. - In some split systems it is more robust / reliable to monitor the upstream catalyst of ... [3]