52nd GRPE: Report from OCE Informal Working Group Chair to the 52nd Session of GRPE

8 June 2006

The following was presented in Microsoft PowerPoint slide format (see GRPE-52-15)

Slide 2: Overview

- OCE GTR draft development
- Draft OCE GTR Status
  - Table of Contents
  - Section-by-Section overview
- Priority Open Issues

Slide 3: OCE GTR draft development

- March 2004 OCE Plenary Meeting
  - Agreement to draft OCE GTR using the U.S. not-to-exceed approach as starting point
- June 2004 OCE Plenary Meeting
  - Editorial Committee formed
- September 2004 Plenary Meeting
  - Outline of GTR developed and discussed
- Nov. 2004: 1st meeting of OCE Editorial Committee
- Jan. 2005 OCE Plenary Meeting
  - 1st draft of GTR distributed to OCE members
- April 2005: 2nd Editorial Committee meeting
- June 2005: GTR discussed at OCE Plenary Meeting
- September 2005: 3rd Editorial Committee meeting
- January 2006: GTR discussed at OCE Plenary meeting
- April 2006: 4th Editorial Committee meeting

Slide 4: Draft OCE GTR - Table of Contents

A. Statement of Technical Rationale and Justification
   1. Introduction
   2. Background on Off-cycle Emissions
   3. Procedural Background and Development of GTR
   4. Technical and Economic Feasibility
   5. Anticipated Benefits
   6. Potential Cost Effectiveness

B. Text of Regulations
   1. Scope and Purpose
   2. Application
   3. Definitions
   4. General Requirements
   5. Performance Requirements
   6. Applicable Ambient Conditions
   7. WNTE Test Procedures
   8. WNTE Deficiencies
   9. WNTE Exemptions
   10. Documentation for Application for Compliance

Slide 5: Draft OCE GTR – Section A.1 – A. 2

A. Statement of Technical Rationale and Justification
   1. Introduction
   2. Background on Off-cycle Emissions

- Introduction Section
  - GTR addresses OCE from HD diesel engines;
    - Provisions prohibiting the use of defeat strategies
    - World-harmonized Not-to-Exceed (WNTE)
    - OCE GTR compliments the WHDC GTR
- Background on Off-cycle Emissions
  - Broad overview of what off-cycle emissions are in the context of modern HD diesel engines

Slide 6: Draft OCE GTR – Section A.3

A. Statement of Technical Rationale and Justification

3. Procedural Background and Development of GTR

- Overview of the work of the OCE informal working group
  - Provides reader with references to appropriate WP.29 & GRPE documents
  - Highlights any key issues discussed during the development of the GTR
- Discusses relationship between OCE GTR & In-use Testing;
  - GTR has been developed with the specific intent to allow for testing of compliance with the WNTE during in-use, on the road operation of the engine
  - GTR does not include requirements or specifications for in-use testing, or for on-vehicle emission measurement equipment
  - Individual countries and regional authorities may specify their own provisions in this regard in order to enforce this GTR, and such enforcement provisions could include requirements for in-use, on-vehicle emissions testing of heavy-duty engines

Slide 7: Draft OCE GTR – Section A.4 – A.6

A. Statement of Technical Rationale and Justification

4. Technical and Economic Feasibility

5. Anticipated Benefits

6. Potential Cost Effectiveness

- A.4.
  - Will follow format used by WMTC, WHDC, and WWH-OBD
- A.5 - Highlights 3 potential benefits
  - Improved emissions control
  - Improved certification/type-approval reviews
  - Reduced costs for industry from global harmonization
- A.6.
  - Will follow format used by WMTC, WHDC, and WWH-OBD

Slide 8: Draft OCE GTR – Section B.1 – B.4

B. Text of Regulations

1. Scope and Purpose

2. Application

3. Definitions

4. General Requirements

- B.1. – GTR establishes performance based emission requirements (WNTE) and a prohibition on the use of defeat strategies
- B.2. – GTR applies to CI, natural gas, and LPG positive ignition engines used in highway vehicles
- B.3. – Definition
  - Draft definitions for defeat strategy, element of design, emission control strategy, base emission control strategy, auxiliary emission control strategy, engine system, emission control system, etc.
- B.4. – Engine systems and vehicles must be designed, constructed and assembled to comply with the GTR; they must not be equipped with a defeat strategy; and must comply with the WNTE limits

Slide 9: Draft OCE GTR – Section B.5

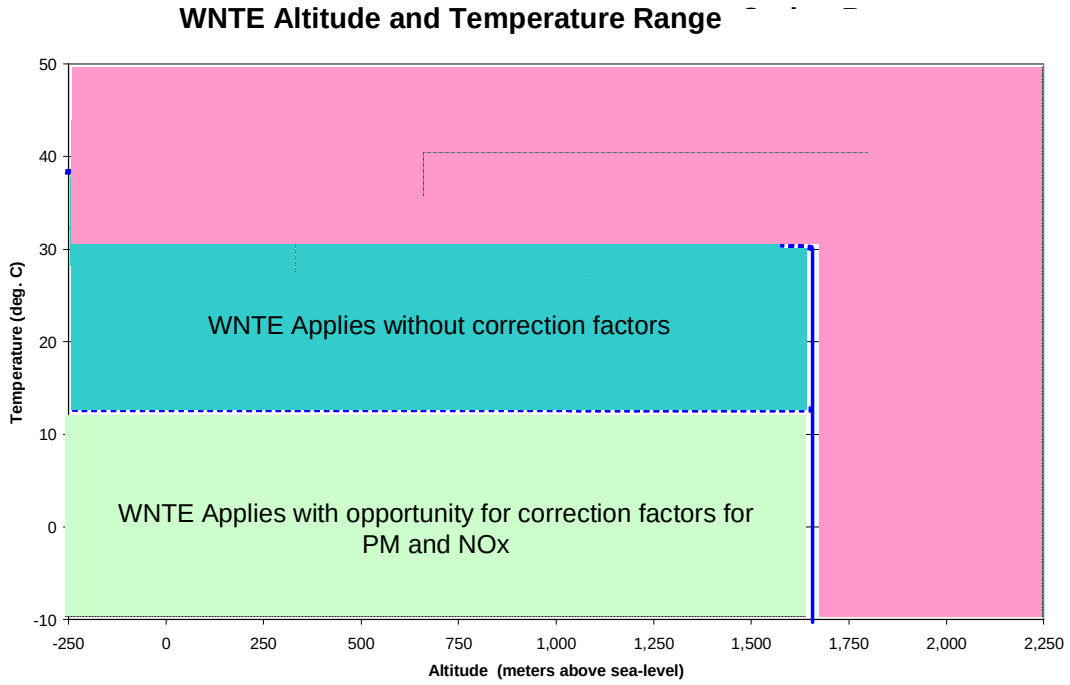
B. Text of Regulations

5. Performance Requirements

- B.5. – WNTE Limits specified (Note: Numerical values suggested by OICA)
- NOx, CO, (NM)HC, PM
  - WNTE Emission Limit = WHTC Emission Limit x WNTE Factor
- Smoke limits also specified

Pollutant	WHTC Limit*	WNTE Factor*
NOx	Less than "x" "x" ≤ 2.0 g/kWh "x" > 2.0 g/kWh	"y" 1.5 1.25
(NM)HC	≤ 0.6 g/kWh > 0.6 g/kWh	1.5 1.25
CO	≤ 1.0 g/kWh > 1.0 g/kWh	1.5 1.25
PM	≤ 0.05 g/kWh > 0.05 g/kWh	1.5 1.25

Slide 10: Draft OCE GTR – Section B.6



Slide 11: Draft OCE GTR – Section 6.2 & 7

B. Text of Regulations

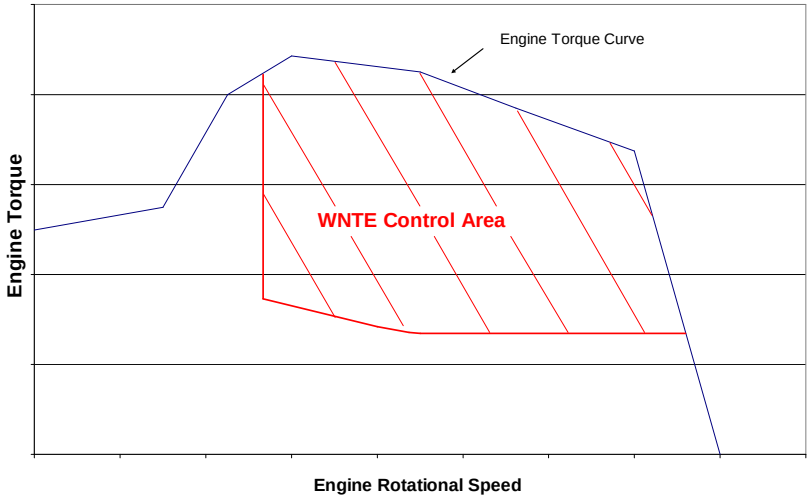
6. Applicable Ambient Conditions

7. WNTE Test Procedures

- B.6.2 Ambient temperature & humidity correction procedures
- B.7.1 Defines WNTE control area
- B.7.2 & 7.3 WNTE minimum sampling period
  - 30 second average of emissions
- B.7.4 WNTE smoke measurement procedures

- B.7.5 Numerical rounding requirements

Slide 12: Draft OCE GTR – Section B.7.1
Example WNTE Control Zone



Slide 13: Draft OCE GTR – Section 8

B. Text of Regulations

8. WNTE Deficiencies

- WNTE Deficiencies
  - Allowed for first 3 years after a new emission limit is implemented
  - A deficiency allows an engine family to be approved, even if some limited WNTE requirements are not met
  - Unmet provisions must be limited in scope, and due to feasibility or reasonability issues
  - Approval is at the discretion of the type approval/certification authority
  - No more than 3 WNTE deficiencies can be granted per engine family
  - Similar in concept to WWH-OBD deficiencies

Slide 14: Draft OCE GTR – Section 9

B. Text of Regulations

9. WNTE Exemptions

- B.9 WNTE Exemptions
  - Allows a contracting party to specify aspects of the WNTE which do not apply to all manufacturers
  - Considered to be a provisional requirement until final limit values are specified in the WHDC & OCE gtrs

Slide 15: Draft OCE GTR – Section 10

B. Text of Regulations

10. Documentation for Application for Compliance

- B.10 Documentation for OCE GTR
  - B.10.1 Statement of WNTE Compliance
  - B.10.2 Basis for WNTE Compliance Statement
  - B.10.3 Optional WNTE Data submission requirements
    - Contracting party can decide to require specific data submission requirements
    - Current draft GTR includes a series of steady-state points tested at a wide range of temperature and simulated altitude

Slide 16: Key Issues being discussed by Plenary Group

- WNTE Compliance Statement
- Defeat Strategy and related definitions
- WNTE control zone
  - Size of control zone
  - 30 second emissions averaging period
  - Alternative approach's to the control zone
- Ambient conditions during which WNTE applies (altitude & temperature)

WNTE Factors and Associated WHDC Emission Limits