Options

- Option 1: New structure of § 6.3 (engine power) and new Annex 7
- Option 2: Average reference fuel as placeholder, until measurement programs are completed (amended § 6.9 and Annex 2)
- Option 5: Deletion of 70 mm filter, allowance of both filter materials, higher filter face velocity (amended § 9.4.2), extended static electricity provisions (amended § 9.4.3)

Other amendments

- Clarification on charge air cooling (§ 6.2)
- Clarification on intake and exhaust systems (§ 6.4 and 6.5)
- Allowance of additive regeneration adjustment factors (§ 6.6.2)
- Amendments and new structure for § 7
- Amendments on exhaust dilution (§ 8.3.3 and 8.4.3)
- New pure gas specifications (§ 9.3.3.1 b)
Option 1 – Engine Power/Work

The new structure for § 6.3 has been agreed by WHDC group

- 6.3 Engine power
- 6.3.1 General engine installation
- 6.3.2 Auxiliaries to be fitted for the emissions test
- 6.3.3 Auxiliaries to be removed for the emissions test
- 6.3.4 Determination of auxiliary power
- 6.3.5 Reference power
- Annex 7: Installation of the auxiliaries for the emissions test
Option 1 – Principles

- **General engine installation**
  
  Engine to be tested only with the auxiliaries needed for operating the engine. Other auxiliaries should be removed.

- **Auxiliaries to be fitted for the emissions test**
  
  If required auxiliaries are not fitted, their power shall be subtracted from engine power.

- **Auxiliaries to be removed for the emissions test**
  
  If non-required auxiliaries are fitted, their power may be added to engine power.
Option 2 - Reference Fuel

- Introduction of average reference fuel that covers national reference fuel specifications is generally supported
  - 5% biofuel content accepted by WHDC group
- DG-JRC test program started in October 2008
  - 2 engines (US07 with DPF, Euro V with SCR)
  - Preliminary results from Euro V engine were presented by JRC
- Japanese test program with JP05 engine (NSR + DPF) finished; results were presented by NTSEL
- Preliminary test results from both programs suggest acceptance of average reference fuel
- EMA test program with US07 engine not yet finished; results will be presented at next WHDC meeting
Option 2 – Japanese Results

- Emissions with US reference fuel slightly higher for NOx, no clear trend with PM
- No significant influence of soaktime
**Option 2 – JRC Results**

- Emissions with US reference fuel slightly higher for NOx and PM
- No significant influence of soaktime
- Test results in relative terms, since validation still under work
Option 3 – Hot Soak Period

- Original USA EPA proposal for validation program not feasible within WHDC time line
- WP.29/AC.3 therefore agreed to exclude soak time from the current mandate
- Industry does not like gtr with options
  - 10 minutes (EU-COM proposal) could still be compromise solution
- EMA/ACEA/JAMA met with EPA senior management on 25 November to find possible solution
- EPA recognized the tight Euro VI timing, and agreed to separate soaktime evaluation from general stringency evaluation
- Industry agreed to deliver test data within few months
- Possible solution must be ready for June 2009 GRPE
Option 4 – Cold Start Weighting

- General problem
  - only limited field data with cold start statistics available
  - USA EPA proposal for validation program not feasible within WHDC time line
- WP.29/AC.3 therefore agreed to exclude cold start weighting from the current mandate
- Basically, no compromise solution feasible due to lack of statistical data
- OICA indicated acceptance of the 14% weighting factor in case of a compromise solution on option 3 (soaktime)
  - could be taken into account for Euro VI via WHTC/ETC correlation study
Option 5 – PM Measurement

- PM test program at TÜV Nord has just been finished
- Current status on option 5 (decision at 25th WHDC meeting)
  - Since filter size did not show significant influence, it was agreed to delete 70 mm filter
  - Since both filter materials showed good low PM measurement accuracy, it was agreed to permit both materials at the choice of the manufacturer
- Test results were presented by TÜV Nord
- Decisions on filter size and material have been confirmed
- Additional investigations within the program not yet finished
  - determination of NOx measurement accuracy at very low levels
  - measurement of particle number according to PMP protocol
Option 5 – PM Results of Engine 1

- Lowest variability with variant 2 (low dilution, high filter face velocity)
- No significant influence of filter size (variant 6 compared to variant 3)
Option 5 – PM Results of Engine 2

- Lowest variability with variant 2 (low dilution, high filter face velocity)
- No significant influence of filter size (variant 6 compared to variant 3)
- No significant difference between TX 40 and Teflo filters
Gasoline Engines

- China and Japan presented test results showing that
  - current WHDC procedure is not fully applicable to gasoline engines
  - major modifications would be needed to extend the scope
- WHDC group agreed to drop the issue from this gtr
- Regional regulations are acceptable for the major stakeholders (Japan, China, USA, EU)
Alignment with Nonroad gtr

- WHDC and NRMM secretaries will put together differences between NRMM and WHDC gtr's
- WHDC secretary will present a proposal for solution at the March 2009 WHDC meeting
- Status:
  - US Part 1065 amendments have been published, which now allows to complete the nonroad gtr
  - the nonroad gtr includes many minor details that are not covered within WHDC gtr
  - it will be possible to align the broad technical requirements to a high degree
Proposal for New Structure of Section 7

- 7.1 Principles
- 7.2 Test cycles
- 7.3 Engine mapping
- 7.4 Reference cycle
- 7.5 Pre-test procedures
- 7.6 WHTC cycle run
- 7.7 WHSC cycle run
- 7.8 General test sequence
- 7.9 Post-test procedures
Next Meetings

- 27th meeting: 10 to 12 March 2009, Budapest, Hungary
- 28th meeting: 09(?) June 2009, Geneva (to prepare final GRPE approval)
Summary

- Options 1 and 5 basically solved
- Option 2 test programs at JRC and EMA behind schedule; test results will be finally discussed at March 2009 meeting; preliminary results suggest acceptance of average reference fuel
- Option 3 test results from engine manufacturers will be available by March 2009, but on a reduced scale compared to the original EPA proposal
- Extension of scope to gasoline engines will be dropped
- Editorial and technical comments to gtr n°4 by GRPE members to be submitted to secretary by February 2009
- gtr time line is confirmed and WP.29 adoption in November 2009 not in jeopardy
- Solution of options 3 and 4 might still be feasible by June 2009