

**Meeting Minutes**  
**21<sup>st</sup> Informal Group on Gaseous Fuelled Vehicles (GFV)**  
**5 June 2012**  
**14.30-17.30**

United Nations, Palais Nations, Geneva

**I. Welcome and introductions**

1. Mr. Rijnders welcomed the group. All the participants went around the table for brief introductions.

**II. Agenda for today (changes/additions)**

2. The HDDF TF issues will be brought forward on the agenda.

**III. Adoption of minutes of the 20th GFV on 14-15 May 2012. (GFV-20-07)**

3. Mr. Rijnders asked for comments. AECC provided written comments on the minutes which were read to the group. Some of the comments are additional to the discussion that were not raised at the meeting. The decision was made to correct the minutes based on comments that were spoken but to add their other comments in a separate document to be returned to AECC so that they may make further comments at the next GFV. Thereafter the group will be asked to approve the minutes of GFV-20 at GFV-22.
4. Mr. Piccolo had sent an email to Mr. Seisler with some minor corrections and these will be reflected in the new, corrected minutes (GFV-20-07 rev.1)
5. **Heavy Duty Dual-Fuel Task Force: Progress report:** HDDF TF progress report (GFV-21-03) (PowerPoint presentation) (Mr. Renaudin.)
6. Amendments to rev. 6 of Regulation 49 (Euro VI) drafting work has been finalized and submitted to GRPE. Four complementing informal documents have been submitted.
7. Amendments to rev.5 of Regulation 49 (Euro V) have not made progress since January 2012 and will be delayed by 1 year. The current plan is to submit an informal document by January 2013 GRPE; formal document in June 2013 with final amendments submitted in November 2013 WP29.
8. Amendments to the main body of R.49 (rev.6) were identified (Please refer to GFV-21-03). Also there will be allowances for the use of liquefied natural gas (LNG) in order to have fuel-specific type approval of these engines.
9. Amendments were made to the existing Annexes of R.49 (rev.6) for Annexes 1, 2A, 2C, 3,4,5, and 9B
10. Introduction of the dual-fuel dedicated Annex 15 of Regulation 49 (rev.6) includes a list of specific dual-fuel items ranging from definitions, family concepts, operational requirements, emissions, and various calculations (please refer to GFV-21-03).
11. Annex 4 corrections were made to some equations to align them on the ISO convention related to separators in numbers to avoid substantial errors; decimals and commas used as separators (European vs. Anglo-American style). No separator or space to express 'thousands' and a comma used as a decimal separator.
12. Mr. Renaudin asked for a GFV recommendation to be made to limit the risk of real errors by forbidding the use of a comma being used as a 'thousands' separator and by correcting R.49 and GTR 4 accordingly. It is agreed in principle that all the documents should be harmonized in line with the ISO guidelines 81/78. There will be consistency in GFV documents using a comma as a normal separator and address the point in GRPE that there are different usages in other regulations and that these should be harmonized. Dots are to be used as decimal separators and commas are basically recommended to be forbidden as a 'thousands' separator. R.49 will need to have the commas deleted as thousand separators.
13. Mr. Radzimirski (Poland) suggested that this be discussed with the GRPE Secretariat as well.

14. Annex 15-Calculation of exhaust emissions. Due to difficulties to determine the instantaneous gas/fuel ratio the calculation methods described in Annex 4 have been modified and introduced in Appendices 4 & 6 of Annex 15. (Please refer to GFV-21-03 for details related to the calculation.)
15. Amendments to R.85, as submitted in an informal document submitted to GRPE in June 2011. Comments by the Polish delegation were taken into consideration. The GFV 21-07 document highlights these.
16. Summary regarding Euro VI dual-fuel engines: Working documents containing the essential supplements to enable the type approval of dual-fuel engines are asked for approval. Informal document Informal document GRPE-xx3 is a consolidated version of three documents and Informal document GRPE-xxx4 contains the necessary amendments to R.85 (Power)
17. The draft time schedule is on time for Euro VI with approval of Amendments to R.49 rev.6 and R85 by WP29 November 2012; target GRPE January 2013 amendments of rev.5 of R.49 (informal) with approval of R.49 rev.5 by GRPE June 2013 and approval of WP29 by November 2013. Retrofits (R115) provisions could begin in June 2013. Also, the LNG Task Force work should be concluded in mid-2013, which would complement the completion of the dual-fuel regulations.
18. Mr. Martinez (European Commission) comments that 20% of the contracting parties (to 1958 agreement) must agree to these revisions before they come into effect. Question is raised what is the actual process to gain the approval of the contracting parties. Mr. Martinez indicates that he needs to check this with the GRPE/WP29.
19. Mr. Cagnolati (Landi Renzo) asked about regulations relative to dual-fuel retrofit systems of heavy duty vehicles. Mr. Renaudin remarks that today R.115 is only applicable to retrofit of existing vehicles and the work on R.49 was specific to manufactured vehicles and not retrofit (which isn't possible similar to a bi-fuel vehicle on gasoline). It also might be possible to create a new retrofit regulation for heavy duty vehicles, or something that can be included in the REC process (Retrofit of Emission Control systems).
20. There is a further question as to whether a delay is due to technical requirements or administrative requirements. Mr. Rijnders and Mr. Renaudin feel that the technical aspects of the R.49 should be solved first. Mr. Renaudin said that work will start on Euro 5 R.49 and that will deal with retrofits with an informal document prepared for January 2013 and a formal document by June 2013.
21. Mr. Piccolo suggested that REC is for retrofits and it tends to be for exhaust after-treatment devices and not for fuelling systems. Mr. Renaudin suggests that we must look at the various options as to where the discussion of the retrofits will be most applicable.
22. Mr. Eberhardt (BMU, Germany) said he has been working on the REC since the beginning and indicated that their work is not oriented to getting type approval of a vehicle but is confined to ensuring that replacement parts are compliant with the current regulations. But there may be some overlap.
23. There was a general discussion about which regulations could apply to retrofit systems versus OEM systems, as well as retrofit components (that are not considered 'systems') The key will be to get common agreement on the differences and similarities between retrofits and OEMs and decide into which various regulations these components and systems will be addressed.
24. GFV-21-08. Mr. Radzimirski's commented on Annex 15. He indicated two issues: 1) classification of engines as positive ignition, compression ignition, and dual-fuel. In his view, D-F are compression ignition engines, which is not just an 'editorial' issue but, as an example, can affect the way in which the test requirements are made on dual-fuel engines versus compression ignition engines; and 2) Emissions from the dual-fuel systems are widely different than standard diesel engines and questions remain how to measure these.
25. It is important to discuss the application of the 1997 Agreement and to explore this point in next GFV meetings.as we have no direct answer.

26. Mr. Rijnders will bring the issues of heavy duty and light duty to the GRPE in different parts of the current GRPE agenda, as agreed with the GRPE Chairman.
27. There was a discussion of how the various amending documents will be dealt with by the GRPE and to decide which documents are formal and informal. Working documents will be supplemented by corrigendum. Mr Rijnders proposed that Mr Renaudin introduce all the HDDF documents in the GRPE Mr. Renaudin will discuss the approach of the dual-fuel documents with Mr. Albus of the GRPE directly, to create a smooth handling in the GRPE.
- IV. Bi-fuel LD vehicles;** view on GRPE formal documents for R83 and R115 (highlight discussion at GFV-20 and anticipated at GRPE-64). With respect to informal documents on which the two formal ones are based, in line with comments received in GRPE-63rd and as agreed by the group in GFV-18th, only that concerning R 115 has been subject to a significant modification: new requirements for petrol use in the gas mode have been restricted to direct injection petrol engines..
28. GFV-21-02 aims at introducing a mass correction factor for CNG reference fuel G25 in both documents ECE/TRANS/WP.29/GRPE/2012/6 and /7. A minor correction for the formulae used in both documents and for both gaseous fuels is highlighted: the proposed requirements make reference to gas ratios in percentage while the formulae generate decimal numbers. Attendees agree to correct the formulae making them consistent with the related requirements. Mr. Piccolo commits to drafting a proposal to be circulated to the group for final approval before tomorrow.
- V. LNG TF meeting report (GFV-21-09)**
29. Mr. Seisler presented the update of the LNG Task Force based on the same presentation made at GFV-20 (document GFV-20-06). (See minutes of GFV-20 meeting and/or PowerPoint presentation)
- VI. Upcoming Meetings of GFV & Task Forces**
1. LNG TF; 6 June 2012 (Geneva) All day meeting (Salle IX)
  2. GFV Meeting 12 July 2012 (Brussels-DG Enterprise)
- VII. Other Items**
30. One of the future topics that involve Euro 6 vehicles would be to look at R.115 to ensure that it is current and that input from retrofit suppliers is secured. There also might be some input from the REC group. More challenging requirements in Euro 6 will require a higher performing level of equipment.
31. There still is a distinction between OEM and retrofit equipment but so long as OEMs do not produce the widest range of NGVs then retrofits will have a role to play. But these retrofit systems will be challenged to meet stricter emissions limits so it is important that R.115 is evaluated carefully to address the current and future market realities.

## **PARTICIPANTS**

André Rijnders (Chairman) (RDW)  
 Jeffrey Seisler (NGV Global/Clean Fuels Consulting) (co-secretariat)  
 Salvatore Piccolo (Assogasliquidi/AEGPL) (co-secretariat)  
 Francesco Cagnolati (Landi Renzo)  
 Alberto Castagnini (AEB)  
 Susanne Leifheit (VW/ACEA)  
 Jean-François Renaudin (Volvo Group/OICA)  
 Stanislaw Radzimirski (Motor Transport Institute-Poland)  
 Wang Shilong (China MEP)  
 Magnus Lindgren (Swedish Transport Ministry)  
 Bernardo Martinez (European Commission DG Enterprise)  
 Oliver Ebenhardt (BMU, Germany)  
 Ravi Muthachari (Ashok Leyland)  
 Thomas Korn (Alset, Australia)