

Meeting Minutes
LNG TASK FORCE
Meeting 4
21st MARCH 2012
EUROGAS/NGVA Europe OFFICES
BRUSSELS
10.00– 16.30

I. Welcome & introduction of the members

1. Welcome to the attendees

II. Approval of the minutes of the previous meeting (Document LNG-TF-03-04)

2. No changes to the minutes are noted and the minutes of the previous meeting are accepted

III. Approval of the agenda for today's meeting (Document LNG-TF-04-01)

3. Mr. Dijkhof plans to try to finish a preliminary version of the document today to send as an informal document to GRSG for their upcoming meeting April 19-20.
4. From the GFV meeting, Mr. Rijnders wanted to ensure that the LNG-TF is in contact with the European Commission assigned to GRSG (and others) to make sure they are knowledgeable about the TF's work and documents being forwarded. Mr. Jean-Paul Delneufcourt at DG Enterprise is the responsible person and it was suggested that first we check with Bernardo Martinez (DG Enterprise) who is working on the Dual Fuel regulations with the HDDF-TF and GFV. Then we can make contact with Mr. Delneufcourt to familiarize him with R.110 and the LNG amendments. Mr. Seisler will contact Mr. Martinez for his input and then Mr. Delneufcourt to determine the next step with him.
5. As informed by Mr. Murray and Mr. Dijkhof, the voting on the ISO/CD 12991 has been done already, but the period for participants to send comments is still open.

IV. Review of the current work (Document LNG-TF-04-2)

6. Items in blue have been dealt with and agreed upon. Items in red have been proposed but need further attention. Items in red/yellow have been proposed, discussed, and are still open.
7. A new title in Annex 3B is added: "LNG tanks for the on board storage of liquefied natural gas (LNG) as a fuel automotive vehicles,"
8. Annex 7, Provisions regarding LNG mark for all vehicles. Discussion from last meeting that manufacturers of passenger cars would not want an LNG label. But for public service vehicles a green diamond with white lettering 'LNG' would be the vehicle label. The language will be made compatible with other aspects of R.110.
9. Should training requirements be specified? In regulations installation manuals are required (to be consistent for each vehicle of the same type) and a users manual for the drivers and service manual is required for the maintenance staff. Issues such as pressures of the fuel delivered would need to be specified, particularly and specifically at the fuel station.
10. From this discussion the issue of different pressures is relative to fuel connectors is raised. But should different pressures require a different fuelling connector? Who would be responsible for assuring the pressures stated are the pressures of the fuel being

delivered. The RFID systems also are mentioned as a possibility to help control what pressures are delivered to which vehicles. The question also raised is if the pressure of the systems (and the fuel connectors) are a safety issue or not? Higher pressure fuel in a lower pressure system could trigger venting, which becomes an environmental issue. As stated by Mr. Murray, these aspects do not pose safety problems, but environmental problems. After some discussion, the group agreed that if an LNG tank would be filled with LNG pressurized above the relief pressure setting of the automatic valve and the maximum flow that the valve is able to vent is lower than the amount of LNG being put into the tank, the system may run into a potential problem of rupture.

11. There could be a label on the tank that specifies the range of the pressure of the fill required (if no pump, the minimum pressure will be given by the required engine inlet pressure, and the maximum will typically be limited by the holding time requirement).
12. Annex 3- Appendix 3B addresses tank labels, but the issue being discussed is a fuel system issue that relates to the maximum working pressure of the vehicle system and the pressure delivered at the fuelling station. Section 17.1.8.1. is amended, taking out reference to M2 and M3 vehicles which, instead is moved to Annex 7 in the Provision Regarding LNG Vehicles and identification (M2 and M3).
13. Annex 7 requirement for the label is changed to read, "A label should be placed adjacent to the fill receptacle stating the required fuel properties. The required fuel properties should be as recommended by the manufacturer."
14. Annex 7. Section 2.2 Specific Components, (k) non-return valve, added is 'check valve.'
15. Annex 7. After section 2.31 all the definitions now included are removed and are added in Annex 3 to have one place and not two where the definitions can be found.
16. Annex 7. Section 2.28 corrected temperature of LNG from -163° to -162°C .
17. Annex 7. Section 9.1 adding the words 'CNG cylinder' to clarify the testing is not for LNG tanks. Also added is, "Every LNG tank shall be tested at a minimum pressure of 1.3 times the working pressure plus 0.1 MPa with the prescriptions of Annex 3B of this Regulation.
18. Annex 7. Section 9.2 added the words, :For CNG containers (referring to burst test that is not appropriate for LNG.)
19. Annex 7. (page 18) Section 2.54, definition of working pressure, add the words 'CNG cylinder' to specify that this does not refer to LNG tanks, which is not appropriate.
20. Annex 7. Section 2.1.2 'Working Pressure' is added, "for CNG cylinders' (to accompany the rest of the provision that the settled pressure is 20 MPa at a uniform temperature of 15°C .) which is not appropriate to LNG). This, then, is made to conform to section 2.54 definition of working pressure.
21. Annex 2C. Arrangement of Approval Marks: Added letter 'L' to designate LNG components. Example: 110R – 002439L.
22. Annex 3. Gas cylinders added," AND TRANSPORTABLE LNG (LIQUEFIED NATURAL GAS) TANKS FOR USE ON BOARD VEHICLES. Also added, "This annex 3B sets out minimum requirements for refillable fuel tanks for liquefied natural gas (LNG) used in vehicles as well as the testing methods required.
23. Annex 3. Section 6, New LNG-specific language related to LNG tanks has been added from section 6.1 through section 6.15: 6.1 General; 6.2 design; 6.3 materials; 6.4 test pressure; 6.5 stress analysis; 6.6. inspection and testing; 6.7 fire protection; 6.8 openings; 6.9 cylinder support; 6.10 design qualifications tests; 6.11 production examinations and tests; 6.12 failure to meet test requirements; 6.13 change of design; 6.14 pressure testing; 6.15 cylinder design qualification tests; (See new document for complete new texts within these sections LNG-04-02.)

24. Annex 3. New section 6.11 referenced from EN 21026, which mirrors EN 1252
Production examination and test: There is agreement on the new provisions provided in the document.
25. Annex 3. Section 6.12, Failure to meet requirements. Discussion about failure of tank and the reuse of the tank for additional testing. The language created says, "If the failure is found during a non-destructive test, all the identified defective tanks shall be rejected or repaired by an approved method. The non-rejected cylinders are then considered as a new batch." Also, "In both cases the new batch shall be retested. All the relevant prototype or batch tests need to prove the acceptability of the new batch shall be performed again. If one or more tests prove even partially unsatisfactory, all tanks of the batch shall be rejected.
26. Annex 3, Appendix D, it's agreed that the material requirements will only be applicable to the inner vessel

V. Conclusions

27. Mr. Dijkhof asks to receive comments on this current document that have not yet been covered. He will collect and collate these to create a new document. We can provide an informal document to the upcoming GRSG (16-20 April 2012, Geneva) but the document will be incomplete. Mr. Dijkhof will not be available to present the materials to GRSG but the RDW Netherlands representative (Mr. Jongenelen) will present the materials to GRSG.
28. We also have asked what support is required from one of the associations (NGV Global or NGVA Europe) to support Mr. Jongenelen's presentation in order to address any questions. Mr. Del Alamo and Mr. Seisler will identify which of them will provide support to GRSG.
29. Mr. Dijkhof will provide the document from today's work (LNG-TF-04-02) for circulation to the group. This plus any additions based on comments from the principals will form the informal document provided to GRSG.
30. We will consider developing an additional presentation (PowerPoint) for Mr. Jongelen to introduce the work of the Task Force to the GRSG.

VI. Any other business

31. No new business identified at this time.

VII. Next meeting: date and venue

32. Mr. Seisler will send security forms and instructions to the group in preparation for the next meeting on 6th June 2012 at the UN in Geneva in order to gain access to the Palais Nations.

VIII. Meeting Close

Attendees

Paul Dijkhof (KIWA)
Jaime Del Alamo (NGVA Europe)
Jeff Seisler (NGV Global/Clean Fuels Consulting)
Mihai Ursan (Westport Power)
Peter Murray (Chart)
Andrew Whitehouse (CAP)
Nathaneal Crut (Volvo)