Submitted by expert from NGV Global

Informal document **GRSG-107-35**
(107th GRSG, 31 September–3 October 2014
agenda item 11)

Proposal to delay consideration of specific provisions of the proposed amendment to UN Regulation No. 110, submitted by the Netherlands, ECE/TRANS/WP.29/GRSG/2014/29 that reads:

Paragraph 18.5.2.1., amend to read:

"18.5.2.1. ~~The pressure relief device (temperature triggered) shall be fitted to the CNG fuel container(s) in such a manner that can discharge into the gas tight housing if that gas tight housing fulfils the requirements of paragraph 18.5.5. below.~~ **The CNG gas discharge from a pressure relief device (temperature triggered) shall not be directed:**

(a) Towards exposed electrical terminals, exposed electrical switches or other ignition sources;

(b) Into or towards the vehicle passenger or luggage compartments;

(c) Towards any class 0 component;

(d) Forward from the vehicle, or horizontally from the back or sides of the vehicle."

Insert new paragraphs 18.5.2.2. and 18.5.2.3., to read:

"**18.5.2.2. In case the container(s) is (are) fitted inside the vehicle the pressure relief device (temperature triggered) shall, in addition to the provisions of paragraph 17.5.2.1., be fitted to the fuel container(s) in such a manner that it can discharge the CNG into an atmospheric outlet that vents outside the vehicle.**

18.5.2.3. In case the container(s) is (are) fitted on the outside of the vehicle the pressure relief device (temperature triggered) shall, in addition to the provisions of paragraph 15.5.2.1., be fitted to the fuel container(s) in such a manner that it can discharge the CNG only in a vertical upward direction."

AND

5.2.1.3.1. (iv) Forward from the vehicle, or ***horizontally (parallel to road)*** from the back or sides of the vehicle."

I. Proposal

This informal document addresses a provision in the amendment to Regulation 110 submitted by the expert from the Netherlands, document ECE/TRANS/WP.29/GRSG/2014/29, regarding the discharge of compressed natural gas (CNG) from a pressure relief device (temperature triggered) and specifically the sections (highlighted in yellow, above) 18.5.2.1 (d), 18.5.2.3. and 5.2.1.3.1.

NGV Global respectfully requests that this proposed amendment be postponed for discussion and decision because of on-going research and study by experts in the United States (including NGV Global) that will draw conclusions and prescribe 'best practices' as to the safe location and venting of PRDs.

II. Justification

NGV Global agrees in principal with the basic rationale that requires specification and changes to the directional venting of PRDs. The issue of location and venting of PRDs has been a source of concern to the international NGV industry (also in consideration of the incident in Wassenaar, Netherlands in October 2012 resulting in a horizontal release of a CNG plume from a bus that had caught on fire).

The proposed amendment is not appropriate for all conditions
NGV Global believes that the proposed amendment prescribing vertical venting in an upward direction does not fully take into consideration chassis-mounted CNG cylinders on passenger cars (typical of those in original equipment manufactured NGVs) and that upward vertical venting might not be the best approach in such vehicles. Additionally, with roof-mounted CNG cylinders on buses or trucks operating in congested populated areas, vertical upward venting also could have negative effects in underpasses or if there are electrical cables used by city trams in some locations above the road-level. As such, consideration is being given in the NGV industry to develop improved designs of PRDs that could have multiple directional venting ports (such as a 'diffuser-type-ring' familiar on natural gas household stoves) to reduce the type of plume affect that occurred in the 2012 Netherland bus fire. A regulatory requirement for vertical upward venting of a PRD might have a negative effect on the changes being considered to overcome the concerns of mono-directional, horizontal gas release.

Research on positioning and venting of PRDs is underway
The Clean Vehicle Education Foundation, a non-profit affiliate of NGVAmerica, the U.S. NGV trade association, held a 'Critical Issues Workshop on 23-24 June 2014 with the National Renewable Energy Laboratory (U.S. Department of Energy) in Golden, Colorado that addressed a series of safety issues and concerns, including the location and venting of PRDs. The workshop indicated that there is no consistent industry practice on where to discharge a PRD to minimize hazards to occupants, bystanders, and first responders – horizontal, vertical, or dispersed. Further consideration must be given to the fuel storage 'system' as well as the potential for and results of a fire caused by an ignited gas release from a CNG cylinder. As an outcome of this workshop CVEF will work with the Canadian Gas Association Group Auto Technical Committee, and including other NGV industry equipment suppliers of cylinders, General Motors, Chrysler, Daimler and others to develop a best practices document that will consider vehicle types and to differentiate between typical installations of cylinders and PRDs. The results are anticipated in 2015, however, they may not be published in time for the April 2015 GRSG meeting.

NGV Global proposes to work with the experts from the Netherlands to ensure that their proposal is fully considered in the U.S. work and to keep the experts from the Netherlands informed of the on-going work. Additionally, NGV Global welcomes the input and advice from the Netherlands experts to participate, to the best extent possible, in the on-going deliberations and work on PRD location and venting.