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Economic Commission for Europe**Inland Transport Committee****Working Party on the Transport of Dangerous Goods****Joint Meeting of the RID Committee of Experts and the
Working Party on the Transport of Dangerous Goods**

Geneva, 17-27 September 2013

Item 7 of the provisional agenda

Reports of informal working group**Report of the informal working group on the reduction of the
risk of a BLEVE****Transmitted by the Government of the Netherlands on behalf of the
working group^{1,2}**

1. The working group held its tenth session from 15-17 April 2013 in Berlin, Germany, under the chairmanship of Mr. Claude Pfauvadel (France). The meeting was attended by representatives of Belgium, France, Germany, Italy, the Netherlands, Norway, Poland, and the following non-governmental organisations: European Liquefied Petroleum Gas Association (AEGPL), the International Union of Private Wagons (UIP) and the International Union of Railways (UIC).

2. Documents related to previous work were as follows:

- Report Joint Meeting March 2006, ECE/TRANS/WP.15/AC.1/102 (OCTI/RID/GT-III/2006-A), para. 5-12, 20 and 21;
- Report Joint Meeting working group on tanks, ECE/TRANS/WP.15/AC.1/102/Add. 1 (OCTI/RID/GT-III/2006-A/Add.1), item 4;
- ECE/TRANS/WP.15/AC.1/2006/8 (OCTI/RID/GT-III/2006/8) (Netherlands);
- March 06/ INF. 3 (Netherlands);
- March 06/ INF. 26 (AEGPL);

¹ In accordance with the programme of work of the Inland Transport Committee for 2010–2014 (ECE/TRANS/208, para. 106, ECE/TRANS/2010/8, programme activity 02.7 (c)).

² Circulated by the Intergovernmental Organisation for International Carriage by Rail (OTIF) under the symbol OTIF/RID/RC/2013/61.

- ECE/TRANS/WP.15/AC.1/2007/11 - Report of the first informal working group on the reduction of the risk of a BLEVE (meeting in The Hague, 8-10 November 2006);
 - March 07/INF.22 (AEGPL);
 - Report Joint Meeting March 2007, ECE/TRANS/WP.15/AC.1/106 (OTIF/RID/CE/2007-A), para. 62;
 - September 07/INF. 9 – Report of the second informal working group on reduction of the risk of a BLEVE (meeting in Tønsberg, 20-22 June 2007);
 - Report Joint Meeting September 2007, ECE/TRANS/WP.15/AC.1/108 (OTIF/RID/CE/2007-B), para. 105;
 - March 08/INF.5 – Report of the third informal working group on reduction of the risk of a BLEVE (meeting in Rome, 27-28 November 2007);
 - September 08/INF.6 – Report of the fourth informal working group on reduction of the risk of a BLEVE (meeting in The Hague, 16-18 June 2008);
 - Report Joint Meeting September 2008, ECE/TRANS/WP.15/AC.1/112 (OTIF/RID/RC/2008-B), para. 41;
 - March 09/INF.25 – Report of the fifth informal working group on reduction of the risk of a BLEVE (meeting in Paris, 4-6 February 2009) ;
 - Report Joint Meeting March 2009, ECE/TRANS/WP.15/AC.1/114 (OTIF/RID/RC/2009-A), para. 62;
 - ECE/TRANS/WP.15/AC.1/2010/9 (OTIF/RID/RC/2010/9 - Report of the sixth informal working group on reduction of the risk of a BLEVE (meeting in Paris, 21-23 October 2009);
 - ECE/TRANS/WP.15/AC.1/2010/47 (OTIF/RID/RC/2010/47 - Report of the seventh informal working group on reduction of the risk of a BLEVE (meeting in Berlin, 19-21 April 2010) ;
 - Report Joint Meeting September 2010, ECE/TRANS/WP.15/AC.1/120 (OTIF/RID/RC/2010-B), para. 60-61;
 - March 11/INF.3/Rev.1 - Report of the eight informal working group on the reduction of the risk of BLEVE (meeting in Paris, 20-22 December 2010);
 - Report Joint Meeting March 2011, ECE/TRANS/WP.15/AC.1/122 (OTIF/RID/RC/2011-A), para. 57-58;
 - September 11/INF. 14 - Report of the ninth informal working group on the reduction of the risk of BLEVE (meeting in Oslo, 8-10 June 2011);
 - Report Joint Meeting September 2011, ECE/TRANS/WP.15/AC.1/124 (OTIF/RID/RC/2011-B), para.107-110;
 - March 13/INF. 25 (Germany and France) - Announcement and scope of next meeting of the working group;
 - Report Joint Meeting March 2013, ECE/TRANS/WP.15/AC.1/130 (OTIF/RID/RC/2013-A), para.64.
3. The key elements of the mandate given by the RID/ADR/ADN Joint Meeting are:
- (a) Prevention of a BLEVE;
 - (b) Reduction of the effect of a BLEVE;

- (c) Hot BLEVE and cold BLEVE should be considered;
- (d) Technical and other measures should be taken into account;
- (e) Other matters of principle.

4. Annexes 1 to 3 of this report are reproduced in English only in informal document 7.

5. A presentation by BAM on the testing programme on tanks with thermal coating and/or pressure relief valve (PRV) and discussion on the test results (see annex 2 of this report) were the main agenda items to be discussed.

The report of the tests done in 2011-2012 was not (yet) provided to the working group participants.

6. The working group discussed the conclusions of a testing programme of the Federal Institute for Materials Research and Testing (BAM) in Germany (tests based on 2.75m³ storage tanks equipped with brass PRVs, under 75kW/m² pool type fire conditions):

- (a) A PRV gives not enough protection against a thermal BLEVE.
- (b) An appropriate (type and thickness) thermal coating can delay a thermal BLEVE by approximately one hour
- (c) A tank equipped with an appropriate (type and thickness) thermal coating and a PRV can delay a thermal BLEVE by 1.5 hour.

7. The participants discussed and in general accepted the BAM conclusions, except the representative of AEGPL who could only accept some of them. There were some questions with respect to some uncertainties in the BAM testing programme and extrapolation of the conclusions to RID/ADR conforming full tank sizes (see details on the discussion in annex I to this report and list of still open questions in annexes 2 and 3).

8. The Government of the Netherlands offers to produce a scientific state of the art report to answer the questions with respect to the uncertainties and extrapolation of the BAM research to full RID/ADR road and rail tank sizes.

9. The next meeting of the BLEVE informal working group to discuss the Dutch report as mentioned under 8 and further instructions of the Joint Meeting in September 2013 will be planned after that Joint Meeting session.
