
Economic Commission for Europe

4 August 2014

Inland Transport Committee

Working Party on the Transport of Dangerous Goods

Joint Meeting of Experts on the Regulations annexed to the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN) (ADN Safety Committee)

Twenty-fifth session

Geneva, 25-29 August 2014

Item 5 of the provisional agenda

Reports of informal working groups

Report of the 5th and 6th meetings of the Informal Working Group "Explosion protection on tank vessels"

Transmitted by the Central Commission for the Navigation on the Rhine (CCNR)¹

Introduction

The 5th meeting of the informal working group 'Explosion protection on tank vessels' was held on 10 and 11 May. The 6th meeting was held on 10 and 11 July. The following participants attended the meetings:

5th meeting:

Y. Adebahr-Lindner, BAM; H.-J. Braun, CIPA; B. Bürgi, BAV; J.-P. de Maat, MIM; K. den Braven, UPC; T. Dosdahl, DNVGL; D. Gerstenkorn, BDB; H. Klopp, DNVGL; F. Krischok, BAM; T. Speermann, BDB; R. Vermeulen, EUROPIA; K. Vinke, LR; M. Zevenbergen, CBRB; E. Brandes, PTB.

Only for agenda item *Developing regulations for the joint transport of containers containing dangerous good and reefers*: A. de Velde, CBRB; M. Weiner, BMVI.

6th meeting:

Y. Adebahr-Lindner, BAM; H.-J. Braun, CIPA; J.-P. de Maat, MIM; K. den Braven, UPC; T. Dosdahl, DNVGL; D. Gerstenkorn, BDB; H. Klopp, DNVGL; T. Speermann, BDB; R. Vermeulen, EUROPIA; K. Vinke, LR; M. Zevenbergen, CBRB; E. Brandes, PTB

Only for agenda item: *Developing regulations for the joint transport of containers containing dangerous good and reefers*) and partially for *Development of the changes to implement the proposals for the modified explosion protection concept*: A. de Velde, CBRB; M. Weiner, BMVI.

The informal working group dealt with the topics 'Reefers' and 'Modification of the explosion concept of the recent ADN' at both meetings.

Results

I. Reefers

According to the mandate of the ADN Safety Committee

(ECE/TRANS/WP.15/AC.2/50 B. Informal working group on explosion protection on tank vessels *Informal document*: INF.17 (CCNR):

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74. *The Safety Committee was of the view that there is currently a gap in the Regulations when refrigerated containers (“Reefers”) are transported on board vessels. The Safety Committee considered that these containers were “electrical installations” in the sense of 7.1.3.51 and 9.1.0.52.1 of ADN. The informal working group was invited to develop proposals to add suitable provisions.)*

The informal working group developed proposals. The informal working group proposes to implement special stowage regulations in the ADN where the joint transport of containers with non explosion proof electrical equipment (e.g. reefers) and containers carrying dangerous goods which may create explosive gas/air- or vapour/air-mixtures is concerned.

The respective proposal is summarized in annex 1. The ‘Examples for mixed loading’ are provided for demonstration.

It is written in a way that no new definition will be necessary.

The Safety Committee is asked to examine this proposal.

II. Modification of the explosion protection concept of the recent ADN

1. The work the informal working group has done until now with respect to a possible modification of the explosion protection concept of the recent ADN aims to improve the safety level for the transport of goods which may create explosive gas/air- or vapour/air-mixtures. This work is based on:

1.1 The in principal substance-related concept of the recent ADN (update of ADNR 1995).

The substance-related concept of the recent ADN is reflected most clearly by Table C which contains individual, detailed substance related transport provisions. For example:

(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1145	CYCLO- HEXANE	3	F1	II	3+ N1	C	2	2	3	50	95	0,78	2	yes	T3	II A	yes	PP, EX, A	1	6: +11 °C; 17
1275	PROPIONAL- DEHYDE	3	F1	II	3+ N3	C	2	2	3	50	95	0,81	2	yes	T4	II B	yes	PP, EX, A	1	15; 23
1831	SULPHURIC ACID, FUMING	8	CT1	I	8+ 6.1	C	2	2		50	95	1,94	1	no			no	PP, EP, TOX, A	2	8
2754	N-ETHYL- TOLUIDINES (N-ETHYL-o- TOLUIDINE)	6.1	T1	II	6.1 +F	C	2	2		25	95	0,94	2	no			no	PP, EP, TOX, A	2	

1.2 The fact, that all parties concerned work on the basis of this substance-related concept.

1.3 The fact that this substance-related concept is not consequentially realized with respect to explosion protection for vessels the substance list of which contains only substances for which explosion protection is not necessary.

For example in **9.3.2.52.1 a)** or **9.3.2.52.3 a)** explosion protected equipment is required. Which equipment to choose? There are is a ‘No’ in column 14. Which lower explosion limit should be chosen to switch off the ventilation?

1.4 The fact that explosive gas/air- or vapour/air mixtures from the shore will also be able to reach the tank vessel, if the vessel enters areas where shoreside zones are displayed.

According to the understanding of most of the members of the IWG, who attended the 24th meeting of the Safety Committee in January 2014, taking into account possible shoreside gas/air or vapour/air mixtures addresses the Safety Committee's discussion in documents ECE/TRANS/WP.15/AC.2/2014/24 (EBU), INF.32 (EBU), INF.33 (EUROPIA), INF.17 (ZKR).

2. The report of the last meeting of the Safety Committee (ECE/TRANS/WP.15/AC.2/50) states with regard to ECE/TRANS/WP.15/AC.2/2014/24:

63. *The first part of the proposal, relating to the assignment of provisions concerning flame arresters, was adopted with some changes (see annex I).*

64. *Several delegations were not in favour of the second part, relating to protection against explosion of electrical equipment, and the representative of EBU withdrew that proposal.*

and to INF.17 (CCNR)

73. *The Safety Committee felt that protection measures against explosion had to be linked to the type of vessel, as foreseen currently and it would be too complicated to develop scenarios for construction taking into account the different substances carried, with the exception of specific protective equipment such as flame arresters that can be removed depending on the substance carried.*

3. This paragraph 73 could be read as a turn away from the substance-related concept of the recent ADN. Some of the members of the IWG understood it like that and questioned the basis on which the work of the informal working group had been based until (see WP.15/AC.2/20/INF.12, WP.15/AC.2/22/INF.23g, ECE/TRANS/WP.15/AC.2/2013/46).

4. The informal working group therefore asks the Safety Committee to clarify the following questions and to specify the mandate of the IWG:

Is the substance-related concept for explosion protection as presented in WP.15/AC.2/20/INF.12

- Assigning a clearly defined zone 2 on deck,
- Widening explosion protection measures to cover also non electrical equipment,
- Preventing the spreading of dangerous liquids into areas on deck, where no zones are displayed,

supported and should this concept be developed further for all vessel types affected (Table C, Column 6) to cover possible shoreside explosion risks (see 1.4)? (For example by specifying a minimum level of explosion protection for vessels carrying only dangerous goods for which explosion protection is not necessary which however will pass through or stay in areas where zones are displayed)?

Or

Do Member States and members of the Safety Committee see a fundamental need for changes (see ECE/TRANS/WP.15/AC.2-50, para.73) with respect to the applicable regulations concerning explosion safety? For example: Should there be a fundamental demand on explosion safety – independent of the carried goods?

This would be a turn away from the substance- related concept of the recent ADN.

**Annex 1 to the report of the 5. and 6. meeting of the informal working group
'Explosion protection on tank vessels'**

Proposal for the implementation of stowage provisions for the joint transport of containers with electrical equipment which is not explosion protected and containers containing dangerous goods which may form explosive gas/air or vapour/air mixtures

1. Add in 7.1.4.4 an additional paragraph

7.1.4.4.4

Containers with electrical equipment are allowed to be connected with removable electric cables according 9.1.0.56 and/or put into operation only if:

- a) The electrical equipment is of a certified safe type
or;
- b) The source of ignition of the container is separated sufficiently from containers containing substances of class 2, subclass 2.1, Class 3 packing group I + II, class 8, packing group I, additional hazard of class 3 or Class 4.3. This is fulfilled if no container, containing the above mentioned substances is stowed within an area defined as follows:
The area is a cylinder having a radius of 2.4 m around the ignition source and an unlimited vertical extension.

This provision does not apply if the containers which are not of a certified safe type and the containers containing the above mentioned substances are stowed in separate holds

2. Necessary follow-up

7.1.3.51.4

The electrical installations in the holds shall be kept switched off and protected against unintentional connection.

This provision does not apply to permanently installed cables passing through the holds, to movable cables connecting containers, stowed according to 7.1.4.4.4 and to apparatus of a "certified safe type".

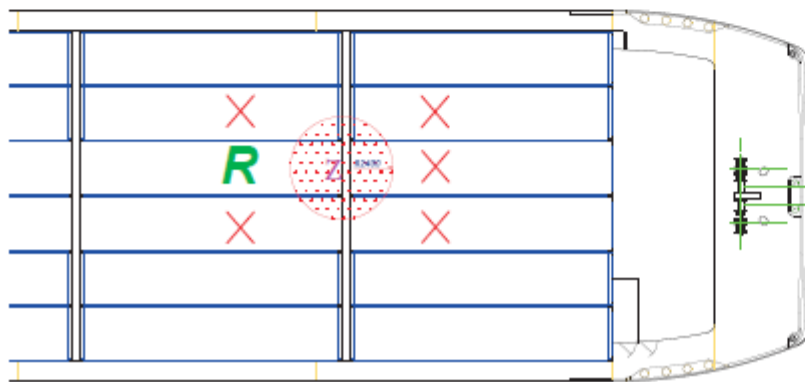
Note: The followings figures shall serve as illustration

Examples for mixed loading

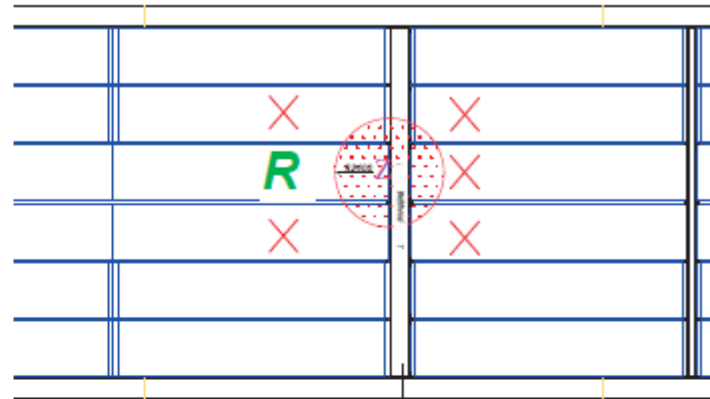
Legende

- x: dangerous goods not allowed ;
- R: container with non explosion proof electrical equipment (reefer)
- Z: source of ignition

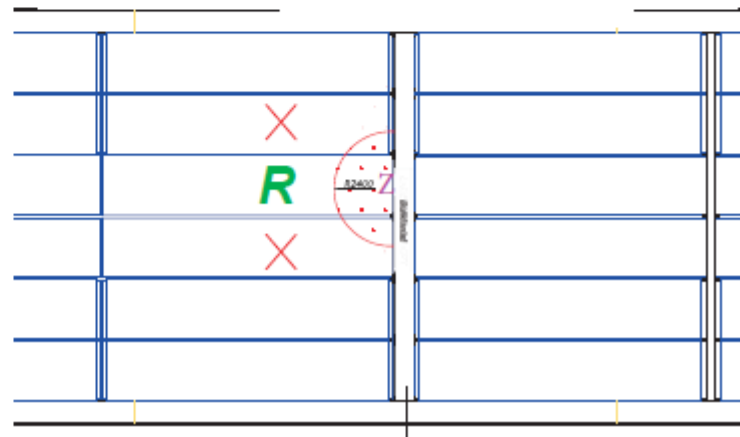
Topview
2. In the hold



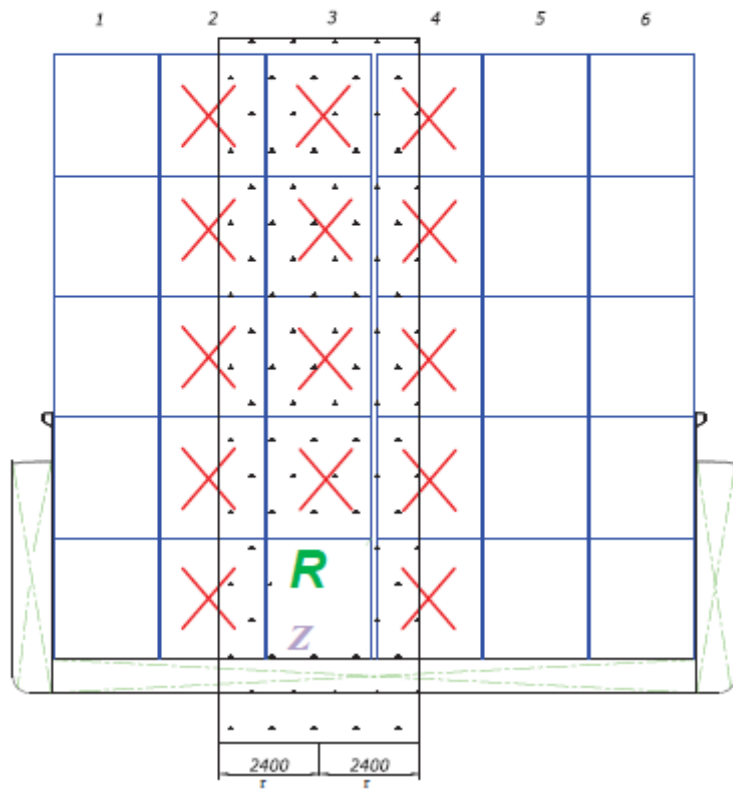
Topview
1. On Deck



Topview
2. In the hold



Front view



Front view

