

Economic Commission for Europe

Inland Transport Committee

20 December 2019

English

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)

Thirty-sixth session

Geneva, 27-31 January 2020

Item 6 of the provisional agenda

Reports of informal working groups

Report of the fourth meeting of the informal working group “loading on top in barges”

Transmitted by the Netherlands

Summary

Executive summary: The informal working group worked on the inventory of items to be addressed and the identification of case-studies.

Action to be taken: The Safety Committee is requested in paragraph 7 to consider the results of the informal working group and to decide whether the informal working group can proceed

Related documents: Informal document INF.15 of the thirtieth session
Informal document INF.6 of the thirty-first session as addendum to document ECE/TRANS/WP.15/AC.2/2017/44
Informal document INF.9 of the thirty-second session ECE/TRANS/WP.15/AC.2/2018/39
ECE/TRANS/WP.15/AC.2/70
Informal document INF.5 of the thirty-fifth session ECE/TRANS/WP.15/AC.2/72

Introduction

1. The Committee may recall that at its 35th session the mandate for the informal working group was extended under the terms agreed during the 34th session:

“After some discussion, the Safety Committee agreed to limit the scope of the work on this matter to activities already covered by ADN provisions. Considering that loading was one of the operations addressed by ADN, the Safety Committee agreed to set up an informal working group that would address specifically loading on top of the same cargo, in accordance with the following step-by-step approach:

- *Step 1: Provide an inventory of the items to be addressed.*

- *Step 2: Identify real case-studies that would provide more information about the types of substances involved, the challenges faced, etc, to be used as a basis to determine whether the current provisions need to be amended and how.*”

2. The informal working group had a working session in Rotterdam, on the 4th and 5th of December 2019. Representatives of EBOTA, EBU/ESO, FETSA, FuelsEurope, Belgium, Germany, and the Netherlands participated in the session.

Considerations

3. The informal working group provides the following inventory of items/issues to be addressed in a later stage, as requested by the committee:
 - a. a definition of loading on top, including the differences between blending, mixing or comingling;
 - b. does ADN (in accordance with the other dangerous goods regulations) – as a general legal principle - allow to carry two different substances within the same cargo tank of a conveyance;
 - c. reasons for loading on top: whether there is a difference between loading on top with an aim to top up the cargo tanks (because of nautical reasons or to avoid two journeys with partial-load only) and loading on top with an aim to alter specifications of the cargo to be delivered;
 - d. a definition of “the same cargo”;
 - e. the differences (from a safety aspect) between regular loading operations and loading on top operations;
 - f. whether the ADN is the correct legal instrument to prescribe loading on top operations;
 - g. aspects of taxation of the partial loads during the journey before and after “loading-on-top”, risk of creating a bypass using ADN;
 - h. general allowance or regulations only for special dangerous goods / UN-Numbers;
 - i. how to perform the classification of the final load in the cargo tank;
 - j. the enforceability of any set of rules prescribed for loading on top;
 - k. if mixing or comingling of substances takes place, how to ensure that only operations permitted on that installation/premise take place;
 - l. the roles and responsibilities of the participants;
 - m. how many consignors allowed;
 - n. chain of transport documents;
 - o. the training of experts;
 - p. whether a maximum number of blended substances is desirable;
 - q. the suitability of the ADN checklist for loading on top operations;
 - r. the experience and solutions in the maritime world.
4. For the identification of real case-studies the informal working group discussed the document as annexed to this report. This document was provided by FuelsEurope to facilitate the discussions of the group. The group identified the following three examples that could be classified as loading on top and could be further investigated:
 - a. case of loading on top of Gasoil (UN 1202) after water levels allow a deeper draft;

- b. case of loading on top Marine Diesel and Gasoil with different quality aspects, which have no bearing on the classification of the substances involved;
 - c. case of loading on top Marine Diesel of same UN number but with different quality aspects, which might have a bearing on the classification of the substances;
 - d. case of loading on top of substances with the same UN number, same dangers, from different shore tanks on the same location or on different locations, as 1 batch.
5. The group noticed a clear distinction between loading on top operations of the exact same substance with the aim to top up cargo tanks, which could not be filled earlier because of nautical or other reasons on the one hand and loading on top operations with the aim to alter (quality) aspects of the substances on the other.
6. The group also discussed the examples of loading a non-dangerous good on top of Diesel and concluded that this was no examples of a real case-study of loading on top of the same cargo as requested by the Safety Committee. However the informal working group felt that this case-study is of interest to the work that has been done. The mixing of a non-dangerous bio-component to a Diesel could turn out to be a relevant example of loading on top in the light of the European Union's Renewable Energy directive.
7. The list of "articles for review" provided by industry for the meeting could be a matter of further consideration.

Action to be taken

8. The Committee is invited to consider the report of the informal working group and to decide whether the group can continue to work. If that is the case, the Committee is requested to mandate the working group to consider the following items:
- a. to analyse all safety aspects of the real case-studies, as mentioned in paragraph 4 of this report;
 - b. to extend this analysis with the other example of interest, as mentioned in paragraph 6 of this report;
 - c. to use the inventory, as mentioned in paragraph 3 of this report, as a basis for these analyses;
 - d. to identify options for further development of the policy towards loading on top.
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Annex 1

I. INTRODUCTION

1. This paper is drawn up by FuelsEurope and aims to trigger the discussion in the IWG Loading on Top meeting in Rotterdam to be held on December 4 and 5, in line with the mandate as given by the Safety Committee, as stated in paragraphs 75-79 of the report of the 34th meeting of the ADN safety Committee:

B. Road map on blending on board of inland tankers

Document: ECE/TRANS/WP.15/AC.2/2019/16 ([Netherlands](#))

75. There was agreement within the Safety Committee that an agreed regulatory framework covering blending on board/loading on top operations was desirable. However, it was noted that ADN might not be the right place to address all types of blending on board/loading on top operations. Some delegations considered for instance that provisions addressing blending operations involving mixing different substances with an aim to obtain a final product to be carried should not be addressed by ADN but by regulations applicable to industrial facilities.

76. On the other hand, they felt that ADN could address loading on top of the same cargo at different locations. Others considered that additional cases such as those involving “full load” and “partial load” situations and carriage of dangerous goods with non-dangerous goods in separate compartments of the same vessel could also be considered, as well as all matters related to the information to be included in the transport document for each situation (e.g. in the case of partial load or unload of the cargo at different locations).

77. After some discussion, the Safety Committee agreed to limit the scope of the work on this matter to activities already covered by ADN provisions. Considering that loading was one of the operations addressed by ADN, the Safety Committee agreed to set up an informal working group that would address specifically loading on top of the same cargo, in accordance with the following step-by-step approach:

- Step 1: Provide an inventory of the items to be addressed.
- Step 2: Identify real case-studies that would provide more information about the types of substances involved, the challenges faced, etc, to be used as a basis to determine whether the current provisions need to be amended and how.

78. Once the work on steps 1 and 2 has been completed, the Safety Committee would evaluate the results and consider how to proceed.

79. The representative of the Netherlands volunteered to lead the work of the informal working group with support from industry representatives.

2. For discussion in the IWG, FuelsEurope provides real life case studies as well as an inventory of possible items to be addressed;

II. REAL LIFE CASE STUDIES

3. Real-life case studies under 5, 6, and 8 describe several regularly occurring operations (ranging from weekly to daily). Item 7 describes a much less frequent but still important operation. Item 9 describes a normal loading operation of a dangerous substance from more shore tanks. All studies involve the comingling of dangerous goods. These can be categorized as follows:
4. The loading (on top) of:
 - a. Dangerous Goods with Non-Dangerous Goods;
 - i. no change of DG classification of the commingled substance
 - b. Dangerous Goods with identical Class, different dangers and/or packaging group
 - i. Always within the same Class
 - ii. Classification of dangers of the commingled substance as per table of precedence of hazards
 - iii. Limited to 4 UN numbers (UN 1202, UN 1268, UN 3295, UN 3082)
 - c. Dangerous Goods with identical Class, Dangers and Packaging Group but with different quality aspects;
 - i. always within same range of Class, Dangers and Packaging Group
 - ii. no change of DG classification of the commingled substance
5. *Case – Loading on top of B7 diesel on inland waterway tanker*
 Substances involved: **UN 1202 and Non-Dangerous goods**
 - Each compartment loaded with 279 cbm of Diesel (UN 1202 (N2,F), III)
 - Same compartment loaded with 21 cbm of Fatty Acid Methyl Ester (FAME) or Hydrogenated Vegetable Oil (HVO, Not regulated under ADN)
 - The commingled product is 1500 cbm of B7 Diesel UN 1202, N2, F), III

Example 1: Loading on top at different locations

Explanation of operation: Barge loads Diesel UN 1202 at a terminal in Rotterdam, subsequently sails to Amsterdam and loads FAME (Not regulated as dangerous goods under ADN) in the same cargo tanks. Ships sails to end destination.

Example 2: Loading on top at same location (from different shore tanks and/or jetties)

Explanation of operation: Barge loads Diesel UN 1202 at a terminal in Rotterdam, subsequently shifts to another jetty of same terminal and loads FAME (Not regulated as dangerous goods under ADN) in the same cargo tanks. Ships sails to end destination.

What are we solving here?

B7 Diesel can be delivered to smaller storage locations with a certainty of product being homogenous in receiving shore tank. If the individual component would have to be discharged one after the other, the components would not mix in the tank as these are often not equipped with mixers.

These smaller storage locations often do not have separate B0, B7 and or FAME storage tanks.

6. *Case - loading on top of Marine Diesel and Gasoil with different quality aspects.*

Substances involved: UN 1202

- 10 compartments each loaded with 150 cbm of Marine Diesel (UN 1202, 3(N2,CMR,F), III), 1000 ppm Sulphur (0.1 wt%)
- Same 10 compartment each loaded with 50 cbm of Gasoil (UN 1202, 3(N2,CMR,F), III), 10 ppm Sulphur (0.001 wt%)
- The commingled product is 2000 cbm of Marine Diesel (UN 1202, 3(N2,CMR,F), III) with a lower Sulphur content.

Explanation of operation: 1000 ppm Sulphur Gasoil is a Marine Diesel Grade used as a bunker grade for seagoing vessels. For logistic reasons, it happens that the 1000 ppm grade is loaded with a Gasoil 10 ppm grade. Whereas some of the product characteristics may differ slightly, the DG classification of these products are identical: UN 1202, 3(N2,CMR,F), III. Note that Sulphur content has no influence on the DG classification).

What are we solving here?

The seagoing vessel is provided with the requested quantity, as one parcel (not two) which requires the two Gasoil grades with different Sulphur contents to be loaded in the barge one over the other. Preblending on shore is often not possible because of lack of storage capacity. Shore tanks are often much bigger than the barge and 10 ppm Sulphur Marine Diesel, being a more expensive grade is usually not blended in 1000 ppm Marine Diesel on shore.

7. *Case - loading on top of Marine Diesel of same UN number but with different quality aspects.*

Substances involved: UN 1202

- 10 compartments each loaded with 25 cbm of Marine Diesel (UN 1202, 3(N2,CMR,F), III), FP > 60C
- Same 10 compartment each loaded with 175 cbm of Marine Diesel (UN 1202, 3(N2,CMR,F), III), FP: 58C
- The commingled product is 2000 cbm of Marine Diesel (UN 1202, 3(N2,CMR,F), III) with FP > 60C

Explanation of operation: Marine Diesel for seagoing vessels has a Flash point specification of minimum 60C. After blending a full shore tank, it may happen that the established FP is 58C which is 2C short of the specification. The blend ratio (1/8) is calculated beforehand.

What are we solving here?

PG III for Class 3 products covers Flash-point of 58C as well as 60C product. For bunkering purposes, the product must meet the IMO specification for flashpoint however the shore tank is full with no room to correct the flashpoint.

The composite in the barge would have the minimum 60C flashpoint and the classification of the loaded mixture would not change.

8. *Case - Loading on top of substances with same UN number, different dangers from different shore tanks on same or different locations.*

Substances involved: **UN 1202 or UN 1268 or UN 3082 or UN 3295**

- 10 compartments each loaded with 50 cbm of NAPHTA (UN 1268, 3(N2,CMR,F), I)
- Same 10 compartment each loaded with 200 cbm of NAPHTA (UN 1268, 3(N2,F), II)
- The commingled product is 2500 cbm of NAPHTA (UN 1268, 3(N2,CMR,F), I)

Explanation of operation: Barge loads 2 products with same UN number and class. 500 cbm from 1 shore tank is CMR, 2000 cbm from the other shore tank is not. One product is PG I, the other is PG II. Products are being loaded from different shore tanks in the same barge cargo holds.

What are we solving here?

Product movements like this are usually aimed to move different products in 1 or more inland waterway tankers to a blending location such as an oil terminal. Products cannot always be loaded segregated and for operations, this does not matter. The comingled substance is not being sold as a finished product but is moved from one location to another with the aim to blend in really big shore tanks upto a certain volume and specification.

9. *Case - Loading on top of substances with same UN number, same dangers from different shore tanks on same or different locations, as 1 batch.*

NB: A normal, regular loading operation:

Substances involved:

- o Specific substances non regulated under ADN (Non dangerous) or;
- o Substances of Class 3 or Class 9, classified in accordance with 2.1.1.2 either as a:
 - single entry (A) or;
 - a generic entry for a well-defined group of substances or articles, which are not N.O.S. entries (Collective entry B) or;
 - specific N.O.S. entries covering a group of substances or articles of a particular chemical nature, not otherwise specified (collective entry C) or;

Excluded substances:

- General n.o.s. entries covering a group of substances or articles having one or more dangerous properties, not otherwise specified (collective entry D in accordance with 2.1.1.2)
- Example : UN 1993 FLAMMABLE LIQUID, N.O.S.
Example 1 – loading 1 product – 1 DG classification from 1 or more location (different shore tanks)

Explanation of operation: Barge loads 1 batch 4000 cbm at 1 location. Loading location decides from which tanks the barge will load. If shore tank A contains only 3000 cbm, the balance of the batch will load from shore tank B, containing the same product with identical DG classification. Whereas the product in different shore tanks can slightly differ in terms of quality parameters such as Density, Sulphur, Flash-point, the product still falls

within the same DG classification. (i.e. same class, same packaging group, same dangers, same criteria of aquatotoxicity)

What are we solving here?

The loading of 1 substance from one or more shore tanks at one or more locations should not be considered as loading on top and therefore out of scope for this working group, when the substances loaded have the same class, dangers, packaging groups.

III. INVENTORY OF ITEMS FOR DISCUSSION

10. Based on the above real-life case studies we present an inventory of items for discussion in the group:
11. Scope of the IWG Loading on Top
 - a. Loading on top of “same cargo”
 - b. What is same cargo?
 - i. “Same cargo” can be described as products or substances which are classified under the same UN number and having different dangers. We should ask ourselves if this applies to all liquid substances in Table C, or that some UN numbers due to their composition should be excluded, such as UN 1993?
 - c. For consideration: Reference ADN 2.1.1.2, single entries under A, and collective entries under B and C. (Not D)?
12. A normal regular loading operation:
 - a. Loading of one product with one classification from different shore tanks as described under 9:
 - b. Example: Barge has 1 order to load 4000 cbm of UN 1268 NAPHTA at location A
 - i. Location A stores NAPHTA in Shore tanks 1 and 2
 - ii. Shore tank 1 has a balance of 2000 cbm, shore tanks 2 has 4000 cbm.
 - iii. Terminal loads from Shore tank 1 upto empty, them switches to Shore tank 2 and completes the loading of the 4000 cbm batch.
 - iv. Ship sails with 1 transport document for 4000 cbm.
 - v. Products: All; for consideration: Reference ADN 2.1.1.2, single entries under A, and collective entries under B and C. (Not D)?
13. Are geographical limitations to be applied to the loading on top operation?
 - a. International, i.e. start loading in Belgium, complete loading in Germany?
 - b. National, i.e. start loading in Rotterdam, complete loading in Amsterdam?
 - c. Regional, i.e. start loading in Rotterdam, complete loading in Dordrecht?
 - d. Local, i.e. start loading in Rotterdam-Botlek, complete loading in Rotterdam-Europoort?
14. Which UN numbers/substances are in scope of this proposal?
 - a. UN 1202, UN 1268, UN 3295, UN 3082, any other?
15. Roles & Responsibilities of the participants – Further highlighted under V.
 - a. The main participants are the Filler, the Consignor and the Carrier; it should be established if the current description of roles and responsibilities need to be amended to reflect the loading on top operation.

- b. It should be established if, besides filler, consignor, carrier, there are other roles/responsibilities which would be impacted?
16. Is there a chance of a chemical reaction?
- a. A chemical reaction must always be excluded.
 - b. A chemical reaction between 2 substances of the same UN number is not likely
 - i. If the substance is classified in accordance with 2.1.1.2, and falling under A or B or C.
 - ii. How do we feel about Substances falling under 2.1.1.2, D?
17. Is there a risk of blending illegal streams or substances and if so, how can it be contained?
- a. In the event of regular loading operations at terminals, oil installations, refineries, this risk is excluded.
 - b. Should a loading on top operation be documented? (i.e. in the form of a detailed loading plan and instructions to and communicated with participants in a traceable form?)
 - c. Do we need a clear description of responsibilities of participants in ADN in this type of operation?
18. Classification of the commingled substance
- a. Who is responsible for the classification of the commingled substance?
 - b. Further highlighted under V.
19. Choice of ship type
- a. Substances to be loaded as well as the commingled substance must appear on the ship's substance list in accordance with 1.16.1.2.5
 - b. A suitable ship to load and carry the commingled substance is the ship which must be able to carry:
 - i. The commingled substance and
 - ii. All the substances of which the commingled substance is made of.
20. Operations traceability: How is this enforceable?
- a. What documents should be made available to carrier and loading facility?
 - i. Can be: a detailed loading plan issued by the carrier (7.2.4.11?)
 - 1. Based on the consignor's instruction?
 - 2. Showing details of this operation (product, UN number/dangers, qty, etc.
 - ii. Voyage registration (in the spirit of 8.1.11?)
 - iii. Must be:
 - 1. ADN compliant Transport according to 5.4.1
 - a. For each individually loaded parcels;
 - b. For the commingled product
 - 2. ADN Checklist according to 8.6.3
 - b. Who is responsible for providing these?
 - c. Who is responsible for its contents?

IV. ARTICLES FOR REVIEW

21. The inventory of items for discussion result in the below mentioned list of articles for review. The IWG members can discuss if a regulation of loading on top would require amending existing articles and/or proposing new articles for ADN:

1.1.2	Scope	Is it desirable and if yes is it possible to approach this type of operation similar to 5.4.1.1.7: "carriage in accordance with 1.1.4.2.1" ?
1.2.1	Definitions	Discuss to develop a definition of "same cargo" and "loading on top"?
1.4.2	Obligations of the main participants	
	1.4.2.1 Consignor	As highlighted under V., item 17a
	1.4.2.2 Carrier	As highlighted under V., item 17b
1.4.3	Obligations of the other participants	
	1.4.3.3 Filler	As highlighted under V., item 17c
5.4.1	Dangerous Goods Transport Document	
	5.4.1.1.2 Carriage in tank vessels	Anything to be added/amended here?
	5.4.1.1.7	refers to scope 1.1.2 - (scope and applicability), which could bear a reference to loading on top such as 1.1.x.x.x? – for discussion
7.2.3.42	Cargo heating system	To be discussed if this poses challenges?
7.2.4.7	Places of loading and unloading	Does the current text cover a loading on top operation?
7.2.4.10	Checklist	In conjunction with 8.6.3 - Is the current format suitable for a loading on top operation?
7.2.4.11	Loading plan	Discuss if and how to incorporate details of a loading on top operation in the loading plan. Should this be formalized?
7.2.4.12	Registration during voyage	refers to 8.1.11 - register of operations UN 1203 - discuss if it is desirable to use/amend these articles to formalize could band how to extend to a loading on top operation?
7.2.4.13	Measures to be taken before loading	Does the current text cover a loading on top operation?
7.2.4.16	Measures to be taken during loading, carriage, unloading and handling	Does the current text cover a loading on top operation?
7.2.4.21	Filling of cargo tanks	Does the current text cover a loading on top operation?
8.1.2	Documents	Does the current text cover a loading on top operation?
8.1.11	Register of operations UN 1203	relates to discussion on 7.2.4.11 and 7.2.4.12
8.6.3	ADN checklist	Is the current format suitable for a loading on top operation?

V. ROLES AND RESPONSIBILITIES FOR PARTICIPANTS IN THE LOADING ON TOP OPERATION

22. The key participants in the operation of loading on top in barges are the Consignor, Filler and Carrier. Their relevant responsibilities are described in 1.4.1
23. To what extent, if any, do the responsibilities of Consignor, Filler and/or Carrier change in the event of a loading on top operation;
24. Notwithstanding the above, the consignor, carrier and filler must always comply with their other respective obligations in accordance with ADN, as referred to in Annex III of [ECE/TRANS/WP.15/AC.2/2018/39](#) as submitted and introduced by the IWG “loading on top” during the 33rd session of the Joint Meeting of Experts, 27-31 August 2018:

a. The Consignor:

For the Consignor, it means that he:	Action:	ADN
Ascertains that the dangerous goods are classified and authorized for carriage in accordance with ADN.	Identifies compatible substances and their locations; classifies the commingled substance	2.1.2; 2.1.3.5.1; 2.1.3.5.2; 2.1.3.5.3; 1.4.2.1.1 (a); 7.2.4.13.1 3rd paragraph
Furnishes the carrier with information and data ...	Submits a request to the Carrier for a barge to be suitable for all substances to be loaded as well as the final commingled substance, provides the transport document (or the required information in a traceable format) in line with requirements of 5.4 and table C	1.4.2.1.1(b); 5.4.1
Uses only approved tank-vessels suitable for the carriage of the goods in question;	For each individual substance and the commingled substance, checks the Carrier’s barge suitability against a vetting system (i.e. EBIS) or international regulation.	1.4.2.1.1(c)
Furnishes the carrier with information and data ...	Communicates to the carrier the loading plan, containing information and ADN proper Shipping Names per substance and quantity to be loaded	1.4.2.1.1(b)

b. The Carrier:

For the Carrier, it means that he must:	Action	ADN
Ascertain that the dangerous goods in question are authorized for carriage;	Assign a suitable barge against Consignors request by checking the ADN Proper Shipping Names to be loaded against the Ships Substance list of the performing barge	1.4.2.2.1(a); 1.16.1.2.5
Ascertain that all information prescribed in ADN related to the dangerous goods to be carried has been provided by the consignor;	Verify that all transport documents (or the required information in a traceable format), the loading plan and loading sequence has been received from the Consignor; he receives, evaluates, forwards the relevant transport documents (or the required information in a traceable format, loading plan to the Master of the performing barge.	1.4.2.2.1(b)
Ascertain that the vessel substance list in accordance with 1.16.1.2.5 complies with Table C of chapter 3.2 including the modifications made to it.	Check by visual inspection that the individual components and the commingled mixture as mentioned on the Transport Document (or the required information in a traceable format) and accompanying documents are on the Ships Substance list in accordance with 1.16.1.2.5 and that this list complies with Table C of chapter 3.2 including the modifications made to it.	1.4.2.2.1(j)
Ascertain that during loading, carriage, unloading and any other handling of the dangerous goods in the holds or cargo tanks, special requirements are complied with.	Must ensure that the specific requirements for each substance and the commingled substance are complied with, perform his obligations under 1.4.2.2 and 8.6.3 jointly with the filler	1.4.2.2.1(i)

c. The Filler

For the Filler, it means that he:	Action	ADN
Shall complete his section of the checklist referred to in 7.2.4.10 prior to the loading of the cargo tanks	Informs the Carrier about the loading agreement, performs his obligations according to 1.4.3.3, 7.2.4.10 and 8.6.3 jointly with the Carrier	1.4.3.3(m)
shall only fill cargo tanks with the dangerous goods accepted in such tanks	Performs his obligations according to 1.4.3.3, 7.2.4.10 and 8.6.3 jointly with the Carrier	1.4.3.3(n)
shall ascertain that, when prescribed in 7.2.4.25.5, there is a flame-arrester in the vapor return piping to	Performs his obligations according to 1.4.3.3, 7.2.4.10 and 8.6.3 jointly with the Carrier	1.4.3.3(r)

protect the vessel against detonations and flame-fronts from the landward side		
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