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Economic Commission for Europe**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)****Forty-second session**

Geneva, 21-25 August 2023

Item 5 of the provisional agenda

Reports of informal working groups**Report of the second meeting of the informal working group
on loading and unloading instructions****Transmitted by the Government of the Netherlands**,*****Summary*

Related documents: Informal document INF.12 of the thirty-fourth session – (Netherlands)
ECE/TRANS/WP.15/AC.2/70 (Paragraphs 16-17) – Report of the thirty-fourth session
Informal document INF.9 of the thirty-fifth session – (Netherlands)
ECE/TRANS/WP.15/AC.2/72 (Paragraphs 14-16) – Report of the thirty-fifth session
ECE/TRANS/WP.15/AC.2/2020/37 – (Netherlands)
ECE/TRANS/WP.15/AC.2/76 (Paragraphs 71-72) – Report of the thirty-seventh session
ECE TRANS/WP15/AC.2/2021/26 – (Netherlands)
ECE/TRANS/WP.15/AC.2/78 (Paragraphs 35-36) – Report of the thirty-eighth session
ECE/TRANS/WP.15/AC.2/2022/14 – (Netherlands)
ECE/TRANS/WP.15/AC.2/80 (Paragraph 66) - Report of the thirty-ninth session
Informal document INF.13 of the fortieth session – (Netherlands)
ECE/TRANS/WP.15/AC.2/82 (Paragraph 68) - Report of the fortieth session

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** A/77/6 (Sect. 20), table 20.6.



Introduction

1. The informal working group on loading and unloading instructions held its second meeting on 4 and 5 May 2023 in Utrecht in a hybrid format. Members of the Austrian and the Dutch delegations, and representatives of European Chemical Industry Council (Cefic), European Barge Union (EBU), European Skippers Organization (ESO), FuelsEurope, Vemobin, Association of Dutch Tank Storage Companies (VOTOB) and Bureau Veritas attended the meeting. The informal working group continued its discussions on the items that were agreed to be the terms of reference during the thirty-ninth session of the ADN Safety Committee.

2. The Chair (Netherlands) briefly recalled the discussion of the last meeting, where the group proposed to make a clear distinction between the ship-based information and the operational document by introducing a new document. This "ship-based-information" document should contain the necessary information from the ship to draw up the loading and unloading instructions and could be provided/approved by a recognized classification society. The loading and unloading instruction could therefore become an operational document provided by the carrier, containing information on the maximum initial loading speed and the maximum middle loading speed. The group recalled that during the initial loading phase, electrostatic build-up is the main factor to consider, while during the middle phase, the build-up of an over-pressure could lead to the undesirable opening of the pressure relief valve.

I. Review of the calculation

3. The group reviewed 9.3.2.25.9 and 9.3.3.25.9 and 7.2.4.16.15 of ADN. The representative of Bureau Veritas explained that the calculation was developed for the Regulation on the Transport of Dangerous Goods on the Rhine (ADNR) some 20 years ago, before loading with a connected vapour return piping was commonplace. The calculation includes assumptions and safety-margins for a process that has since been used for more and more loading operations. The representative of Bureau Veritas explained that the existing 50 per cent volume cargo vapour and 50 per cent volume air model is not always accurate in practice. Furthermore, he pointed out that the calculation prescribes that the return piping has to be assumed to be cut-off. The result of the calculation is thus a loading velocity which is safe. Even during closed loading, if the vapour return piping would be suddenly completely cut-off, the loading is safe.

4. Loading with a higher velocity than the calculation during the middle loading stage would result in a gradual build-up of pressure in the tanks, which would eventually lead to the opening of the pressure relief valve. It was agreed that during normal loading operations the opening of a safety device such as the pressure relief valve should be avoided. However, the representatives present pointed out that the cut-off of the vapour return piping is very rare in practice, and that in such an event the build-up of the pressure in the tanks should normally be noticed well before the opening of the pressure relief valve.

5. The representatives of FuelsEurope and Cefic indicated their doubts to the added value of the calculation, including the vapour density data, for each and every loading operation. Especially since, for mixtures, the vapour density data is not always known.

6. Besides the reduced maximum speed during the loading, ADN covers three of other measures to prevent the build-up of pressure (during loading):

(a) ADN requires each tank to be equipped with an instrument for measuring the pressure of the vapour phase inside the cargo tank (9.3.2.21.1 (e)/9.3.3.21.1 (e)), which is readable from a location from which loading or unloading operations may be interrupted (9.3.2.21.3/9.3.3.21.3);

(b) The instrument gives off an alarm if an overpressure of 1.15 times the opening pressure of the pressure relief valve is reached. This alarm is visible and audible in the wheelhouse and on deck, and immediately initiates the interruption of the loading or unloading operation (9.3.2.21.7 (a)/ 9.3.3.21.7 (a));

(c) For certain substances it is prescribed in Table C that the instrument for measuring the overpressure of the vapour phase in the cargo tank actuates an alarm during the voyage at 40 kPa (i.e. 10 kPa before the opening of the pressure relief valve) visible and audible in the wheelhouse and on deck, which is relayed to the accommodation if it is not switched off, and which indicates to activate the water-spray system until the pressure in the cargo tanks drops to 30 kPa.

7. Considering the relative long period of time that it would take for the pressure to build up to the point that the pressure relieve valve would open, several participants were of the opinion that the crew would notice this long before the pressure relieve valve would open. Others noted that for the carriage of toxic substances the "40 kPa" alarm was also used during loading, to alert the crew in the event that a pressure build-up occurs and the crew would not notice in time. It was speculated that requiring an alarm that would alert the crew before the over pressure valve would open, could lead to an increase in safety.

8. The participants concluded that the ADN contains multiple safety requirements to prevent a build-up of pressure during the middle phase of loading. The use of the calculation in 9.3.2.25.9 and 9.3.3.25.9 to determine the maximum middle phase loading velocity leads to a decreased maximum loading speed, while other safety measures are in place. The group would like to request the ADN Safety Committee to consider to separate the calculation from the instruction. In the opinion of the group, the calculation could still indicate worthwhile information for the design of the ship, and could be part of the "ship-based-information" document. However, for the purpose of drawing up the loading and unloading instructions, the group prefers to follow the International Safety Guide for Inland Navigation Tank-barges (ISGINTT) (1 m/s for the initial phase loading velocity and 7 m/s for the middle phase loading velocity).

9. Whether ADN currently requires sufficient safety measures to prevent the opening of the pressure relieve valve during loading, or whether the "40 kPa" alarm should be required for all loading operations was not concluded by the group.

10. On the initial loading velocity, some members of the group mentioned that the ISGINTT only suggests a maximum loading flow of 1 m/s for substances with a potential for electrostatic charging; a combination of poor conductivity and a low flashpoint. For substances which completely lack this danger, higher initial loading velocities could be approved. The group briefly discussed the difficulty of introducing the concept of electrostatic charging in the ADN, and for now, would like to focus on developing the loading and unloading instructions.

II. Certificate of approval

11. The group discussed whether the maximum loading and unloading rate should be part of the Certificate of approval. Currently the Certificate of approval contains either a single number (m³/h), or the reference to the loading and unloading instructions. Since the group recognized that different initial loading rates and middle loading rates should be used; that these rates could differ if one or multiple tanks are being loaded at the same time; and that currently the maximum loading rate is (currently) dependent on the (vapour pressure of the) substance to be loaded, the group could not find any other vessels for which a single number could be relevant than N-open vessels, bilge- and oil-separator vessels.

12. Since the Certificate of approval is being issued by the Competent authorities, or by recognized classification societies on behalf of those Competent authorities, the group deems that no amendment of the current model of the Certificate is necessary.

III. Consideration on the content of the loading and unloading instructions

13. It was noted that a harmonized format for the loading and unloading instructions could help masters and persons responsible for the loading and unloading on agreeing on safe actual loading and unloading velocities. Such a format would lead to easier acceptance of lower

actual loading velocities to ensure a safe process. As representatives have requested that such a, preferably internationally, harmonized format be described by the ADN.

14. Two options of such a description were mentioned. Either the model for the loading and unloading instructions could be added to the list of models described in Chapter 8.6, or, similarly to the standardized model checklists 1.8.1.2.1, the model for the loading and unloading instructions could be adopted by the Administrative Committee and presented on the UNECE website.

15. As to the content of the harmonized format, it should contain information which helps in determining the maximum safe loading and unloading flow rates, during multiple stages of the process. As such it should at least include an initial phase table, which specifies for different number of tanks the quantity in m³/h that corresponds to a loading flow of 1 m/s, the quantity necessary to load with the reduced speed, the time it would take to finish this phase and the height in cm (per tank) required to finish this phase. It should also include a middle phase table, which specifies for different number of tanks the quantity in m³/h that corresponds to a loading flow of 7 m/s.

16. The group did not reach consensus whether the loading and unloading instructions should be "as simple as possible" and only contain these two tables, or whether some explanatory remarks on electrostatic charging should be added.

17. The group would like to request the ADN Safety Committee to consider which of the two options, or possibly a third option, not discussed by the group, would be preferable for the ADN Safety Committee to harmonize the format for the loading and unloading instructions internationally.

18. During the next meeting, the group would like to continue its work. The group would like to develop amendments for the ADN to reflect the outcomes of the discussion during the first two meetings and the guidance of the ADN Safety Committee.

IV. Action to be taken

19. The ADN Safety Committee is requested to consider the report of the informal working group, in particular paragraphs 8 and 17, and to take action as it deems appropriate.
