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Inland Transport Committee

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Working Party on the Transport of Dangerous Goods

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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)

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Item 4 (c) of the provisional agenda

Implementation of the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN): interpretation of the Regulations annexed to ADN

Use of remote control technology on inland vessels transporting ADN goods

Submitted by the European Barge Union and the European Skippers Organization (EBU/ESO)

Introduction

1. The shipping company HGK Shipping has submitted applications to the German General Directorate for Waterways and Shipping (in German: Generaldirektion Wasserstraßen und Schifffahrt) to use Seafar NV's remote control technology on inland vessels which also transport ADN goods. Ships are then to be controlled from a remote operation control centre (ROC).
2. The CCNR is already processing applications for the use of the technology on board of inland vessels on the Rhine and is currently in the final authorisation phase.
3. HGK Shipping assumes that the project (remote control of the barge) basically does not affect the scope of the ADN or at least does not deviate from the regulations of the ADN.
4. In parallel, the ADN Safety Committee could form an opinion on how the requirements of the ADN could be implemented in the future - prospectively from 2025 - with a reduced crew and possibly in the further future also without a master on board.

I. Project outline

5. The "Remote-controlled inland waterway vessels" project is being implemented in phases. Phases 0 and 1 (preparation and installation) have already been successfully completed, so that the focus is currently on phase 2 and, in perspective, on phase 3.
6. In accordance with the ADN and taking into account the possible use cases, however, phase 3 should be further subdivided:
 - **3a**: change of operating mode with the same crew - main responsible master remains on board
 - **3b**: reduced crew - no more master on board, only deck crew.
7. The phases are explained in more detail below for the purposes of categorisation and better understanding:

Phase 0: Preparation and information gathering phase

8. The vessel is operated in accordance with the certified operating mode and crew specifications. Technical specifications of the vessel are assessed and taken into account in order to be able to install the remote control technology.

Phase 1: Installation/monitoring/function test

9. Installation of the remote control technology/system and verification of the reliability and operational safety of installed components. Instruction and training of the crew in the use of the system.

Phase 2: Remote control of the ship

10. Operational test phase of the remote control technology with constant operating mode and crew in accordance with the German *Rheinschiffspersonalverordnung* and *Binnenschiffspersonalverordnung*. Demonstration of the function and operational safety of the remote control technology and corresponding processes with the master present in the wheelhouse.

Phase 3: Remote control with deviation from existing regulations

11. Utilisation of operational reliability (already confirmed in phase 2) and generation of economic added value by a) changing the operating mode (A1/A2 → B) or b) reducing the crew. In terms of the ADN, this should be considered as follows:

- **3a:** master remains on board
- **3b:** only deck crew on board, no master

II. Questions of interpretation

Phase 2 and Phase 3a:

12. The ADN Safety Committee could discuss whether there are any deviations from the ADN for the described phases 2 and 3a.

13. Requirements and additional information from the project description have been compiled below as a basis for discussion:

Chapter	Requirements	Additional Information from project description	Deviation from ADN?
1.3	Persons involved in the transport of dangerous goods must be instructed.	The master with main responsibility according to the ADN remains on board. The master can instruct the crew, for example according to 1.3.2.2.5 (written instructions). Masters in the ROC are instructed according to ADN as persons involved in the transport of dangerous goods as required.	No

<i>Chapter</i>	<i>Requirements</i>	<i>Additional Information from project description</i>	<i>Deviation from ADN?</i>
1.4	General safety obligations of the participants according to 1.4.1	The operator of the ROC prepares a risk assessment for each remote-controlled ship. In the case of ships carrying ADN goods, the special dangers arising from the cargo are also taken into account.	No
1.8	A safety adviser shall be appointed according to 1.8.3.	The operator of the ROC appoints a safety adviser.	No
1.10	General provisions	The access to the ROC is limited and only possible by using an electronic access card.	No
	1.10.2 Instruction in the area of safety	All employees in the ROC are instructed in the area of safety according to 1.10.2.	No
	1.10.1.4 For each crew member of the vessel carrying dangerous goods, means of identification, which includes a photograph, shall be on board during carriage.	1.10.1.4: The master in the ROC is not a crew member on board. All persons must also carry a photo ID.	No
	1.10.3.2 Security plans	1.10.3.2 If goods with a high danger potential are being transported, a safety plan for the ROC and the connection to the remote-controlled ship will be available.	No
1.16	Issue of the certificate of approval	Official inspections are carried out both on board and in the ROC as part of the traffic authorisation process. The remote control equipment on board is also approved and tested by the respective classification society.	If applicable, within the framework of traffic law authorisation
3.3.1	Various obligations for the crew on board, for example regular measurements by an expert, inspection of rooms	The master with main responsibility remains on board. The obligations from special provisions can be fulfilled by the crew on board.	No
7.1 7.2	Requirements concerning loading, carriage, unloading, and handling of cargo	Partial remote control during the journey has no influence on the requirements in Chapter 7. The crew remains on board / the main	No

<i>Chapter</i>	<i>Requirements</i>	<i>Additional Information from project description</i>	<i>Deviation from ADN?</i>
		responsible master is on board.	
8.2	Requirements concerning training	The master with main responsibility remains on board and must have an ADN certificate of special knowledge. In addition to the instruction in accordance with 1.3, the master in the ROC has a basic ADN certificate of	No
8.3	Various obligations which have to be followed by the crew.	The master with main responsibility remains on board. The obligations of 8.3 can be fulfilled by the crew on board.	No
9.1 9.3	Construction provisions	The additional devices and equipment to be installed on board for remote control comply fully with the ADN construction regulations. The devices and equipment are approved by the classification society and documented accordingly. In particular, the requirements for the surface temperatures (9.3.x.51) and the type and installation location of the electrical systems and equipment (9.3.x.52 and .53) are fulfilled, for example in the E-plan according to Electrical devices	No

14. There are no deviations from the ADN for phases 2 and 3a. The master with main responsibility is on board.

15. The safety of the ship is ensured by a crew number that essentially fulfils the total number of persons according to crew form "A1".

Phase 3b:

16. The following general changes to the ADN could be considered for a possible phase 3b:

17. 7.x.3.15 states that the master must have proof of ADN expertise. If not all masters have the relevant certificate, a master with main responsibility must be appointed.

18. For pushed barges, the ADN stipulates that a "crew member on board" can also be responsible during loading and unloading if this crew member has an ADN certificate of special knowledge in accordance with 8.2.1.2.

19. This existing regulation for the loading and unloading of pushed barges could also be applied to the loading and unloading of remote-controlled inland waterway vessels without a master on board.
20. According to the ADN, the master has no duties directly related to the navigation of the vessel during the voyage. Therefore, another crew member on board can also be designated as responsible for this phase.
21. Instead of the master, a responsible person on board is appointed who is an ADN expert.
22. The ADN is amended accordingly:
- All references to the word "master" are changed. This results in changes to 66 references in the (German-language) ADN, or
 - The definition of the word "master" in 1.2.1 could be adapted once:
23. Master: "A person as defined in §1.02 of the European Inland Waterways Code (CEVNI) or the responsible person on board. "
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