

Inland AIS devices and electronic chart display systems on the Rhine

CCNR

**Conclusions and recommendations in the context of evaluating the
implementation of the mandatory installation**

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Introduction

On 1 December 2014 the CCNR introduced the obligation of equipment with Inland AIS devices and Inland ECDIS devices or comparable electronic chart display devices to enhance safe navigation of the Rhine and provide better information to skippers.

Almost two years after implementing this resolution, the CCNR decided to conduct an online survey in 2016 to gather information about stakeholders' experiences, gain a better understanding of the possibilities and problems users have encountered and to offer the parties concerned an opportunity to contribute proposals for improving the legal requirements.

During the two-month survey period, the CCNR received approximately 1000 fully completed questionnaires and more than 400 partially completed, but still useful, questionnaires. More than 90 % of the responses were from skippers. But installation firms, waterway authorities and police authorities also took part in the survey.

Based on all of the feedback, these findings were analysed in the document "Analysis of the online survey conducted in the context of evaluating the implementation of the mandatory installation". This document contains the evaluation and summary of the survey findings and offers a wealth of information based on more than 100 questions and answers in three languages. This document was approved and accepted in the Central Commission for the Navigation of the Rhine's plenary meeting on 6 December 2017.

Conclusions and recommendations were made on the basis of the survey findings and are contained in this document. They will underpin the CCNR's future activities, both as concerns RIS and beyond.

At the same time, in a broader context, the CCNR will bring these conclusions to the attention of other international organisations, the inland navigation sector, application developers and equipment manufacturers.

The CCNR would also like European RIS expert groups to benefit from these conclusions and recommendations. The CCNR also hopes that the European Commission will benefit from using this document in its work on enhancing RIS – in the knowledge that those who took part in the survey question represent a large proportion of the European inland navigation industry.

1. Summary

The competent CCNR bodies arrived at the conclusions and recommendations contained in this document having regard to the document CCNR “Analysis of the online survey conducted in the context of evaluating the implementation of the mandatory installation”¹ already accepted by the. In the interests of clarity the conclusions and recommendations were organised into three chapters, each with its own focus.

Chapter 3 “Safety and reliability” takes a particular look at the various stakeholders’ experiences, the use of the Inland AIS device and electronic chart display system on board, and skippers’ behaviour.

Chapter 4 “Technical issues” is primarily to do with the installation of the equipment on board and instructions in its use, while also addressing numerous technical problems and the time spent making necessary repairs.

Chapter 5 “Miscellaneous other aspects” deals with privacy issues, monitoring and enforcement and the CCNR’s means of communication. It also discusses the blue sign.

The basic conclusion is that Inland AIS is widely accepted and its benefits recognised. Despite that, however, there are critical comments about the use of the system and its (technical) problems.

It is correctly pointed out that Inland AIS is not a navigation system, but an aid to navigation. One also needs to be aware that the system is certainly not 100 % reliable.

A total of around 60 recommendations were generated from the analysis of the survey results. A next step is to turn these into a work programme with priorities and a timetable.

Some of the survey results need to be addressed promptly to ensure continued acceptance of the mandatory installation of Inland AIS.

As concerns “safety and reliability” there are three aspects requiring prompt attention.

- **Setting the navigation status**

It appears that changing the navigation status is not self-evident. More than half of the skippers never do it. They think it is unnecessary since you can see on the screen whether other vessels are navigating or not. Skippers frequently consider changing the navigation status to be awkward and it diverts attention from the actual navigation.

¹ For reasons of clarity the term “electronic chart display system” will be used instead of the term “an Inland ECDIS device in the information mode and comparable chart display systems”.

The following recommendations were made to address this aspect:

1. *Together with the European RIS expert group VTT, it is recommended to examine whether using and setting the navigation status can be simplified and/or restricted.*
2. *It is recommended to examine in future whether it is technically possible to set the navigation status automatically*

- **Knowing whether ones' own Inland AIS device is transmitting a signal**

Is a problem for many skippers that they cannot see for themselves whether their own Inland AIS signal is actually being transmitted.

The following recommendation was made to address this aspect:

It is recommended to investigate possible ways of informing skippers whether their vessel's Inland AIS signal is being transmitted or not. This could be done via an alarm signal or an app. In addition, the possibility of using the shore-based AIS infrastructure along the Rhine to check on correct transmission could be investigated.

- **Skippers' behaviour**

It appears that there are skippers who rely too heavily on their Inland AIS and electronic chart display systems, using it almost as their primary navigation system, without being aware that sometimes vessels are not visible.

A lot of skippers feel that younger skippers rely too much on the electronic charts, and that the local knowledge of the waterways is decreasing.

Many skippers report making less use of radiocommunication.

The following recommendation was made to address this aspect:

It is also recommended that EDINNA¹'s involvement be enlisted to talk to the relevant training and educational institutes and ask them to emphasise in the training courses the fact that Inland AIS is simply an aid, intended to provide navigation information about other vessels, and to highlight the importance of communicating by radiocommunication. Training courses should also point to the importance of local sector knowledge.

As concerns "technical issues" there are three aspects requiring prompt attention.

¹ EDINNA (Education in Inland Navigation) is the training network of the inland navigation sailors' schools and training institutions in 13 European countries.

- **On-board installation and instruction**

It would appear that there are a number of installation firms¹ that are not complying with CCNR requirements and not issuing skippers with an installation certificate. An even larger number of installation firms does not leave any user instructions.

The following recommendation was made to address this aspect:

It is recommended that the CCNR propose to the national authorities an instruction informing the installation firms of their obligation to provide the skipper with an installation certificate and operation manual in accordance with CCNR regulations. Failure to meet their obligations could result in the withdrawal of their approval by the national authorities.

There is no official obligation to provide explanations on the Inland AIS device, but it should really be self-evident, as it is for other types of equipment. However it would appear to be a frequent occurrence that no explanations of installed devices or systems are provided.

The following recommendation was made to address this aspect:

It is recommended to investigate whether explanations by the installation is, at least on the use and the settings of the Inland AIS device, possibly in conjunction with the electronic charts display system, should be made mandatory. This could then be noted on the installation report.

- **Technical problems**

Many skippers have encountered technical problems with both the Inland AIS device and the electronic chart display system. This gives cause for concern. Simple solutions, such as switching the equipment off and back on, are adequate for around half of the problems. But approximately one quarter of skippers say that they require an installation firm to assist with the repair and that these firms are even required several times.

The following recommendation was made to address this aspect:

It is recommended for experts to investigate the causes of these problems (incorrect installation, system errors in the device, incorrect configuration, incorrect connection, outdated software or hardware, unstable power supply etc.)

- **The time needed for repair of defective devices and systems**

The time limit to repair defective devices provoked a lot of reactions. A large number of skippers considered the deadline of 48 hours extremely short, and particularly difficult during weekends when, commonly, there are no technicians available to carry out repairs.

¹ Approved specialist firms for installing or replacing Inland AIS devices.

The long repair times may adversely affect the skipper's contractual obligation, e.g. to reach the terminal at a given date and time. A sizeable group of skippers is willing to get their device repaired, however there are numerous external factors, as mentioned above, that affect the situation.

It was stated by the waterway authorities and enforcement and police authorities alike that the 48-hour limit is sometimes a problem.

The following recommendation was made to address this aspect:

It is recommended to bring together a number of experts, representatives of branch organisations and installation firms to investigate solutions (technical, business, regulatory and organisational).

As concerns "miscellaneous other aspects" there are four such aspects requiring prompt attention.

- **Privacy and data protection**

When Inland AIS was introduced, the governmental authorities gave the assurance that privacy would be protected and guaranteed. However, there are numerous indications of dissatisfaction in this regard. These range from the use of AIS information by various authorities and business partners for unrelated purposes in the Member States to websites such as Marine Traffic if they infringe European or national privacy provisions. It needs to be borne in mind here that the CCNR has no powers in this field. They are the preserve of the Member States.

The following recommendations were made to address this aspect:

1. *It is recommended that the CCNR calls upon its Member States to ensure that the national authorities in the course of their duties, handle Inland AIS information correctly. This Inland AIS data may only be used for the purposes for which it is gathered, such as the safety and ease of navigational traffic, and environmental protection.*
2. *It is recommended that the CCNR informs its Member States that in such cases the commercial parties are violating the privacy of the skippers involved and that proceedings may be started if a skipper files a complaint.*

- **Surveillance and enforcement**

Many skippers believe that the authorities are too strict in the way they enforce compliance with the regulations. They believe that disproportionate fines are imposed for certain violations and that some fines are not in accordance with the regulations.

The following recommendations were made to address this aspect:

1. *It is recommended that the authorities be made aware of what information is mandatory, and what is not.*
2. *It is recommended to examine if the CCNR catalogue of fines can be used.*

- **Communication with the stakeholders**

It can be concluded that the various players involved are not sufficiently familiar with the CCNR's information material and that some amendments and updates are required. To this end there are now various proposals and suggestions for amending the information material.

There is a general recommendation here:

It is recommended that the CCNR and its Member States make the parties concerned more aware of the information material, using social media as much as possible in the process.

- **The blue sign on the Inland AIS device**

There is no clear overall picture. A trade-off has to be made between the technical reliability of the connection of the blue sign, and the possibility for a skipper to respond earlier to a potential encounter, which could lead to a safer navigation.

The 2018-2019 work programme of the CCNR Police Committee includes¹ a follow-up study to the previous Dutch study examining the possibility of making it mandatory to connect the blue sign to the Inland AIS device.

It is recommended to carry out a preliminary short exploratory study of all the arguments raised in the evaluation, and on the basis of the results to consider how to deal with the issue of connecting the blue sign to the Inland AIS device.

¹ The study was originally scheduled for 2016-2017 but owing to exceptional circumstances it could not be carried out and was postponed to the next period.

2. Evaluation objective and context

As a result of resolution 2013-II-16, the "Mandatory introduction of the Inland AIS and Inland ECDIS or comparable display systems (Articles 1.10, 4.07 and Annex 11)" entered into force on 1.12.2014. The regulations are set out in Article 4.07 of the Rhine Police Regulations (RPR).

Later, resolution 2014-I-12 set out the "Minimum requirements and recommendations for Inland ECDIS equipment in the information mode and comparable display systems for the use of Inland AIS data on board vessels (Article 4.07(3))".

Resolutions 2014-I-13 and 2015-I-16 set out a number of adjustments and additions to the decision of 2013.

Together with the resolution to introduce Inland AIS and Inland ECDIS or comparable chart display devices it was decided to evaluate these measures after two years.

This was included in the 2016-2017 work plan of the Police Regulations Committee of the CCNR. It was then developed into a plan of action that was put to the Police Regulations Committee in April 2016 for approval.

In accordance with the task included in the work programme, the evaluation focuses initially on the use of AIS and a system for electronic chart display in practice, as set out in Article 4.07 of the RPR and the above-mentioned minimum requirements.

The aim of the evaluation is to examine the experiences of the various target groups involved as to whether Inland AIS and a system for electronic chart display contribute to a better and safer use of the fairway, as well as to determine whether the regulations and supporting communication documents need to be amended.

With a view to the introduction and use of Inland AIS and an electronic chart display system, four different target groups need to be differentiated, all of which are affected differently. These groups are the skippers, the installation firms, the waterway authorities and the enforcement and police authorities.

As these four target groups are pursuing different interests on particular aspects, they also merit individual consideration in the evaluation. The eventual decision was for a digital survey in which the target groups were presented with different questionnaires.

The survey itself was conducted in autumn 2016. More than 1000 responses were received, which all had to be processed. As many of the survey participants took the opportunity to make additional comments and use free text fields to ask questions, evaluating the survey results was very time-consuming.

Although initially only one document was to be submitted, it was decided early on when evaluating the results, and also because of the numerous responses, to create two documents.

The first document “Analysis of the online survey conducted in the context of evaluating the implementation of mandatory installation” contains the survey findings. The CCNR noted this document at its plenary meeting on 6 December 2017 with resolution 2017-II-18.

The second document contains the conclusions and recommendations written based on the findings in the first document.

3. Safety and reliability

3.1 Devices installed on board

3.1.1 Inland AIS devices

The vast majority of the skippers (95,3 %) have an Inland AIS device on board.

Those without such an Inland AIS device on board gave a variety of plausible reasons for not doing so (e.g. no obligation), meaning that there are only a very few skippers who refuses to install the mandatory device.

A limited number of vessels (3,6 %) already have a second Inland AIS device installed. The installation firms have indicated that this number is likely to increase rapidly. At present the regulations have not yet been amended to include this.

The regulations need to be amended on the basis of the existing proposals for amending the CCNR regulations to include a second on-board Inland AIS device¹.

3.1.2 Electronic chart display systems

The vast majority of the skippers (94,7 %) have an electronic chart display system on board, of which 84,3 % are Inland ECDIS devices and 15,7 % are other systems. Those who do not gave a variety of plausible reasons for not doing so, (e.g. that they are not covered by the obligation), meaning that there are only very few skippers who refuse to install the mandatory device.

3.2 Experiences

3.2.1 Skippers with Inland AIS

Most skippers appear to have accepted Inland AIS and appreciate the advantages it offers. However, this general acceptance of Inland AIS does not mean an absence of critical comments.

It was pointed out quite correctly that it is not a navigation system; rather it is an aid intended to provide navigation information about other vessels.

It should be taken into account that the system is by no means 100 % reliable.

- 1. The revised information brochure² should state clearly that Inland AIS is not a navigation system, but rather an aid intended to provide navigation information about other vessels.*

¹ A proposal to this effect has already been drawn up.

² Clarifications concerning the obligation of equipment with Inland AIS devices and Inland ECDIS devices or comparable electronic chart display devices.

2. *It is also recommended that, in cooperation with EDINNA¹'s involvement be enlisted to talk to the relevant training and educational institutes and ask them to emphasise in the training courses the fact that Inland AIS is simply an aid, intended to provide navigation information about other vessels. Training courses should also point to the importance of local sector knowledge.*

A sizeable group of skippers believe that the system makes a valuable contribution to safety by providing the position, name and speed of other vessels.

A sizeable group of skippers believe that the use of Inland AIS is an excellent navigational aid as it enables a skipper to see further away, for example round a bend or behind an obstacle.

3.2.2 Skippers' experiences with the electronic chart display systems

The majority of the skippers are satisfied with the reliability of both the information on the chart and the position information.

Although not being of immediate concern, it is recommended that the question of the reliability of the electronic charts is kept in mind, in particular the need to update them regularly.

3.2.3 General experiences of the various parties

- The majority of the skippers, waterway authorities as well as enforcement and police authorities feel that the introduction of Inland AIS with an electronic chart display system has contributed to safer and faster navigation. However, this does not mean that there were no critical remarks.
- The majority of the waterway authorities and enforcement and police authorities agree that the combination of Inland AIS and an electronic chart display system contributes to better traffic management.
- The majority of the waterway authorities and enforcement and police authorities agree that the combination of Inland AIS and an electronic chart display system contributes to improved relations between skippers.
- The waterway authorities as well as enforcement and police authorities also agree that the combination of Inland AIS and an electronic chart display system contributes to a better understanding of the information provided by the traffic control centres².
- The waterway authorities and enforcement and police authorities agree that the combination of Inland AIS and an electronic chart display system is a necessary combination.

¹ EDINNA (Education in Inland Navigation) is the training network of the inland navigation sailors' schools and training institutions in 13 European countries.

² Traffic control centres are only to be found in the Netherlands.

3.3 Use of the various systems on board

3.3.1 Use of Inland AIS

3.3.1.1. Setting the navigation status

It appears that changing the navigation status¹ is not self-evident. More than half of the skippers never do it. They think it is unnecessary since you can see on the screen whether other vessels are navigating or not. Skippers frequently consider changing the navigation status to be awkward and it diverts attention from the actual navigation.

1. *Together with the European RIS expert group VTT, it is recommended to examine whether using and setting the navigation status can be simplified and/or restricted.*
2. *The revised brochure² should state clearly why it is so important for the navigation status to be set correctly.*
3. *It is recommended to examine whether it is technically possible to set the navigation status automatically*

Remark: It seems that on many chart systems the navigation status can be changed very easily (e.g. with a switch), without complicated procedures.

3.3.1.2. Switching off the Inland AIS device

For 71,4 % of the skippers it is no problem having the Inland AIS device permanently switched on.

70,6 % indicate that they have no problem with the Inland AIS device constantly transmitting a signal, even when the vessel is moored.

The issues raised by the skippers having an objection against the Inland AIS device constantly transmitting a signal, relate primarily to privacy, energy consumption³, avoiding a dense and confused picture in harbours and interference with on-board TV, not only on their own vessels but also on nearby vessels.

There were good reasons behind the decision to keep the Inland AIS device permanently switched on. It is possible to see not only which vessels are navigating, but also which vessels are moored along the banks of the Rhine. This makes a significant contribution to safety.

It is recommended to examine whether, there are other locations along the Rhine which are covered by RPR, Article 4.07 where it would be possible to consider switching off the Inland AIS device, as has been done in the Netherlands.

¹ At the Telematica Day in Nimwegen on 29 December 2017 most skippers present described this point as the biggest problem.

² Clarifications concerning the obligation of equipment with Inland AIS devices and Inland ECDIS devices or comparable electronic chart display devices.

³ The Inland AIS device consumes more power in the “underway” state than when the vessel is “at anchor”. Concerning the power saving, it is not a big problem to switch the state to “stationary” if the vessel is not under way.

3.3.1.3. Information to be transmitted via the Inland AIS device

It seems that most of the skippers do not have a problem with transmitting information compliant to the terms of RPR, Article 4.07. A limited number of skippers are concerned about the possibility of a cluttered screen, particularly in areas where it is very busy and where a lot of vessels are moored.

The most important information is considered to be speed, position, course and dimensions.

Many skippers are also transmitting information that is not mandatory, such as the displaying of the blue sign, the carrying of blue cones and destination.

The conclusion, therefore, is that there is currently no need to amend or expand the number and type of mandatory information to be transmitted in accordance with RPR, Article 4.07.

3.3.1.4. Checking whether data is being correctly transmitted

Only a small group of skippers (3,7 %) regularly check whether their Inland AIS device is transmitting the correct information, and a quarter of all skippers never check. A common way of checking is to interrogate fellow skippers. It is surprising that skippers responded that they do use their own on-board systems or websites such as Marine Traffic.

The revised brochure¹ should state more clearly that it is important to check regularly whether the correct information, as set out in RPR, Article 4.07, is being transmitted.

3.3.1.5. Incorrectly configured Inland AIS device

During on-board checks some vessels are found to have an incorrectly configured Inland AIS device. This can cause problems for other users of the waterway as it can result in an incorrect traffic image.

Apart from incorrect dimensions, the static information is most commonly found to be incorrect.

1. *It is recommended that the installation firms enter the static information when installing the device, rather than leaving it up to the skippers.*
2. *It is recommended that the revised information brochure¹ make it unambiguously clear which static information is to be configured by the installation firms during installation and what information requires updating by the skipper.*

3.3.1.6. Checking whether the Inland AIS device is transmitting a signal

Skippers have indicated that some vessels do not appear on the screen. Sometimes a vessel can be seen by one skipper, but not by another, or not by the traffic control centre. Occasionally a signal disappears and reappears within a distance of a few 100 metres.

¹ Clarifications concerning the obligation of equipment with Inland AIS devices and Inland ECDIS devices or comparable electronic chart display devices,

Almost all the skippers indicated that from time to time they encounter vessels that are not transmitting an Inland AIS signal.

Skippers find it annoying that it is not possible to see whether their own vessel is transmitting an Inland AIS signal.

Almost half the skippers (47,1 %) have occasionally been alerted to the fact that their Inland AIS signal is not being received by other vessels or traffic centres.

Half of the skippers alert others if their vessel is not transmitting an Inland AIS signal. The other half never or rarely do this. The main reason for this is that it creates a lot of radiotelephony communication, and often results in an unpleasant reaction. In addition, a limited number came across cases where the enforcement and police authorities had been listening and took an enforcement action.

1. *It is recommended to investigate the either permanent or temporary disappearance of the Inland AIS signal in addition to the recommendations in paragraph 5.2. The European RIS expert group VTT may be of assistance here.*
2. *It is recommended to investigate possible ways of informing skippers whether their vessel's Inland AIS signal is being transmitted or not. This could be done via an alarm signal or an app. In addition, the possibility of using the shore-based AIS infrastructure along the Rhine to check on correct transmission could be investigated.*

3.3.2 Use of electronic chart display systems

There are no complaints about the use of various kinds of electronic chart display systems.

Most skippers use their electronic chart display systems in the information mode in conjunction with the radar. Using it in navigation mode is limited¹.

Three quarters of the skippers keep their charts up-to-date through a contract with the supplier. However the rest never update them, or only rarely.

It is recommended that the revised brochure² clearly state the importance of regularly updating the charts and chart display system.

3.3.2.1. Complaints about the quality of the charts

There were complaints about the quality of the charts themselves, related to both the waterway authorities, (responsible for providing the basic information), as well as the suppliers of the ENCs. The skippers indicated that many charts were out-of-date, some very severely and that the charts should be renewed more often. There should also be more frequent interim updates available.

¹ One of the reasons for this is that too much information is displayed on the screen if both the chart system and radar are being displayed simultaneously. Also, radar has only a limited range whereas the range of Inland AIS is considerably greater. In combined use it is the radar setting that prevails.

² Clarifications concerning the obligation of equipment with Inland AIS devices and Inland ECDIS devices or comparable electronic chart display devices,

The charts also contain a lot of errors, and certain information is missing, such as the depth or the demarcation of the navigation channel.

It is recommended that the CCNR encourage the waterway authorities and the suppliers to improve the quality and increase the update frequency of the charts (ENCs).

3.3.2.2. Uniformity of chart symbols

Skippers would like to have a higher degree of uniformity in the display of symbols and, in particular, of types of vessels. There should also be a clear distinction between commercial vessels and recreational crafts.

- 1. It is recommended to request the European expert groups for Vessel Tracking and Tracing (VTT) and Inland ECDIS to examine the possibilities for uniformity in the display of symbols with also a clear distinction between commercial vessels and recreational crafts.*
- 2. It is recommended that the suppliers of comparable chart display devices also follow this recommendation.*

3.4 Navigation practices

3.4.1 Navigation using Inland AIS

It appears that there are skippers who rely too heavily on their Inland AIS and electronic chart display systems, using it almost as their primary navigation system, without being aware that sometimes vessels are not visible.

A lot of skippers feel that younger skippers rely too much on the electronic charts, and that the local knowledge of the waterways is decreasing.

- 1. It is recommended that the CCNR should emphasise in the revised brochure¹ the fact that Inland AIS in combination with an electronic chart display system is a navigational aid only, and that the skipper still should use radar and radiocommunication, as well as look through the wheelhouse window. (These are the primary navigation tools.)*
- 2. It is also recommended that, in cooperation with EDINNA²'s involvement be enlisted to talk to the relevant training and educational institutes and ask them to emphasise in the training courses the fact that Inland AIS is simply an aid, intended to provide navigation information about other vessels. Training courses should also point to the importance of local sector knowledge.*

3.4.2 Communication via radiocommunication

Many skippers have indicated less using radiocommunication and many also assume that all vessels can see each other using Inland AIS. However, this is not always the case.

¹ Clarifications concerning the obligation of equipment with Inland AIS devices and Inland ECDIS devices or comparable electronic chart display devices.

² This recommendation is consistent with the recommendation in 3.2.1.

The responses from the waterway authorities as well as the enforcement and police authorities lead to the conclusions that the combination of Inland AIS and electronic chart display systems is partly responsible for

- the reduction in the use of radiocommunication,
- and a more efficient use of radiocommunication.

1. *It is recommended that the CCNR should emphasise in the revised brochure¹ the fact that although Inland AIS in combination with an electronic chart display system makes it possible to see the vessels in the surrounding area, it is still essential for individual skippers to communicate via radiocommunication.*
2. *It is recommended that, in cooperation with the relevant training and educational institutes emphasise the need to communicate via radiocommunication.*

¹ Clarifications concerning the obligation of equipment with Inland AIS devices and Inland ECDIS devices or comparable electronic chart display devices.

4. Technical matters

4.1 On-board installation and instruction

4.1.1 Experiences with the installation of Inland AIS devices on board

4.1.1.1. Introduction

Article 7.06 and Annex N, Part I, of the Rhine Vessel Inspection Regulations (RVIR)¹ set out "The requirements for Inland AIS equipment and regulations for installation and performance tests for on-board Inland AIS equipment". These regulations are included in Annex D to this document.

4.1.1.2. Skippers' experiences during installation of Inland AIS on board

Most skippers indicated that they noticed that everything went well during installation of Inland AIS devices on board.

The same applies to the electronic chart display systems.

4.1.1.3. Installation firms' experiences of installing Inland AIS on board

In the period 2014-2016, 6 % of the installation firms did not install any Inland AIS devices on board vessels, whereas about 50 % installed between 10 and 50 Inland AIS devices.

The responses to the questionnaire indicate that installing Inland AIS devices on board caused almost no problems. In older vessels there were some practical problems, such as pulling the cables or where to fit the device in the wheelhouse.

The same conclusions apply to the electronic chart display systems.

A sizeable number of installation firms encountered problems in configuring the devices on board. However, most of these problems were common when installing computers and the corresponding software. There were a number of comments related to outdated computers or software on board, however there were also some problems with Windows 10.

It is recommended, when providing an Inland AIS device and/or an electronic chart display system, to inform the customer about the possible problems with firmware and software, and to take these into account during installation and configuration.

4.1.2 Installation certificate and operating instructions

As stipulated in Article 7.06 and Annex N, Part I, of the RVIR¹ should be completed once the Inland AIS device has been installed and checked for correct operation, the installation certificate about the compliance of the installation and operation of the Inland AIS device with Annex N, Part II, of the RVIR² and also kept on board of the vessel.

¹ W.e.f 7.10.2018, Article 7.06 and Annex 5, Section IV ES-TRIN

² W.e.f.10.2018, Annex 5, Section VI ES-TRIN

In addition, an operation manual should be provided to the skipper, and this should be mentioned in the installation certificate.

4,1 % of the skippers stated that they had never received an installation report, and 9,1 % could not remember if they received one.

12,5 % of the skippers said that they had never been given any operation manual.

It is recommended that the CCNR propose to the national authorities an instruction informing the installation firms of their obligation to provide the skipper with an installation certificate and operation manual in accordance with CCNR regulations. Failure to meet their obligations could result in the withdrawal of their approval by the national authorities.

4.1.3 Using the Guidelines on the Installation of the Inland Automatic Identification System (Inland AIS installation guidelines)

The use of these "Guidelines on the installation of the Inland Automatic Identification System (Inland AIS installation guidelines)" is not obligatory. 78 % of the firms indicated that they use these guidelines. Most also felt that these Inland AIS installation guidelines were sufficient¹.

Only 68 % of the firms use the checklist in the Inland AIS Guidelines, completely or partially, to check the installation. Although it is recommended that the checklist stays on board, 42 % of the firms do not do this, for various reasons.

It is recommended to investigate whether a checklist should;

- *be mandatory,*
- *contain important issues met during the installation,*
- *be signed by the skipper,*
- *be appended as part of the installation certificate kept on board.*

4.1.4 Explanations in the use and settings of Inland AIS devices after installation

Legally there is no obligation to provide explanations² on the Inland AIS device or provide instruction in its use, but it should really be self-evident, as it is for other types of equipment.

However, only 62,5 % of skippers received explanations in the use of the Inland AIS device.

62,8 % of skippers received explanations in how to adjust the settings of the Inland AIS device.

45,4 % of skippers received explanations in the use of the electronic chart display system.

On the other hand 8 % of the installation firms stated that they never provide explanations.

¹ A limited number of installation firms proposed tougher installation guidelines. This is discussed in detail in 6.4.2.

² During the funding programme for the acquisition of an Inland AIS device, instructing skippers in its use was mandatory, at least in the Netherlands.

On the other hand, the installation firms also mentioned the fact that by no means all skippers are interested in receiving explanations and/or follow the explanations given.

1. *It is recommended to investigate whether explanations, at least the use and the settings of the Inland AIS device, possibly in conjunction with the electronic charts display system, should be made mandatory. This could then be noted on the installation report.*
2. *It is also recommended that, in cooperation with EDINNA the relevant training and educational institutes emphasise the basic principles and settings of the Inland AIS device in conjunction with the electronic charts display system.*

A variety of explanation methods are used, including the document "Operational Use of Inland AIS", firms' own instruction materials and oral explanations and instructions.

It is recommended to ensure that all essential points are included in the explanations and to examine the possibility of creating a checklist to be signed by the skipper once the explanations have been given, and appended to the installation report.

4.1.5 Installation of electronic chart display systems

86 % of the installation firms indicated that they also install electronic chart display systems on board.

66 % of the installation firms install Inland ECDIS devices in the information mode. In the period 2014-2016, only a few firms have installed over 50 devices each.

66 % of the installation firms install Inland ECDIS devices in the navigation mode. In the period 2014-2016, only a few firms have installed over 50 devices each.

62 % of the firms install comparable display devices. However, in the period 2014-2016, only a few firms have installed over 50 systems each.

80 % of the firms indicated that, where necessary, they also install the ENC's (Electronic Navigational Charts) on the various display systems.

4.2 Technical problems in operational service

4.2.1 Skippers' experiences

Many skippers have encountered technical problems with both the Inland AIS device and the electronic chart display system. This gives cause for concern.

4.2.1.1. Technical problems with the on-board Inland AIS device

54,2 % of the skippers reported having had frequent technical problems or temporary breakdowns of their Inland AIS devices¹. This is particularly awkward when navigating and is definitely not good in terms of reliability and confidence in the equipment. It is not known whether this applies only to the initial period after 1.12.2014² or whether this is still the case.

The recurrent problems mean that the Inland AIS device frequently needs to be switched off and back on. If the device fails while navigating it is difficult to perform the switching off and back on, meaning that the skipper's attention is diverted from navigating the vessel. A medium size group of skippers therefore take pre-emptive measures and regularly reset the equipment. This ranges from every day before starting the voyage to once a month.

Half of the skippers who reported having had problems with their Inland AIS device, reported that the problems were so severe that repairs had to be carried out by the installation firm.

This means that over a quarter of the skippers had to call the installation firm for at least one repair.

A large group reported they had to call the installation firm between two and five times.

A small group indicated they had to do this more than five times.

It can therefore be concluded that there is a high number of faulty Inland AIS devices.

1. *It is recommended for experts to investigate the causes of these problems (incorrect installation, system errors in the device, incorrect configuration, incorrect connection, outdated software or hardware, unstable power supply etc.)*
2. *The revised brochure³ should include a recommendation to switch the Inland AIS device off and back on regularly as a preventive measure.*

¹ In 2011, Rijkswaterstaat conducted an investigation into the technical problems and it transpired that the problems are seldom if ever to do with the AIS device but were almost invariably caused by the connection with the chart display system, ill-functioning PCs or defective or out of date software.

² At the Telematica Day in Nimwegen on 29 December 2017 enquiries were made about this and the skippers who were there said that the aforementioned technical problems had declined.

³ *Clarifications concerning the obligation of equipment with Inland AIS devices and Inland ECDIS devices or comparable electronic chart display devices.

4.2.1.2. Problems with the antennas

There were many reports of problems with antennas. The antennas seem to be a particularly vulnerable element of the Inland AIS device¹. In addition, they are easily damaged when not folded down before passing bridges.

When the antenna is folded down, there is a strong influence on the operation and thus the range of the Inland AIS device.

1. *It is recommended that the revised brochure¹ emphasise that antennas are only fully effective in their correct (upright) position and that the range is reduced if antennas are folded down or retracted.*
2. *It is recommended, in consultation with the European RIS expert group VTT, to examine the possibility of comparable (e.g. steel) antennas that are more robust.*

4.2.1.3. Technical problems with the on-board electronic chart display system

34 % of the skippers reported having had technical problems with their electronic chart display systems.

Two thirds of the skippers who reported having had problems with their electronic chart display system, reported that the problems were so severe that repairs had to be carried out by the installation firm.

This means that over 20 % of the skippers had to call the installation firm for at least one repair.

A large group reported they had to call the installation firm between two and five times.

A large group indicated they had to do this more than five times.

It can therefore be concluded that there is a large number of faulty electronic chart display systems.

1. *It is recommended for experts to investigate the causes of these problems (incorrect installation, system errors in the device, incorrect configuration, incorrect connection, outdated software or hardware, unstable power supply etc.)*
2. *The revised brochure² should include a recommendation to switch the electronic chart display system off and back on regularly as a preventive measure, etc.)*

¹ The problem is not confined to the Inland AIS device antenna but affects all antennas on board.

² Clarifications concerning the obligation of equipment with Inland AIS devices and Inland ECDIS devices or comparable electronic chart display devices.

4.2.2 Involvement of installation firms

A majority of installation firms provided an overview of the number of devices repaired or replaced.

The average total of repairs or replacements was 12 devices per installation firm.

4.3 Time needed to repair

4.3.1 Repair of Inland AIS device

4.3.1.1. Skippers' experiences

The time limit to repair defective devices provoked a lot of reactions. A large number of skippers considered the deadline of 48 hours extremely short, and particularly difficult during weekends when, commonly, there are no technicians available to carry out repairs.

A few skippers reported waiting times for a week or more. In addition the technicians frequently have to travel considerable distances to reach the vessels. All in all, this can lead to very high repair costs.

The extended repair delay can have a negative effect on the contractual obligations of the skipper, e.g. arriving at the terminal at a particular date and time. When the water level drops during this repair time it may cause an extra delay.

A sizeable group of skippers is willing to get their device repaired, however there are numerous external factors, as mentioned above, that affect the situation.

For 48 % of the skippers who needed to call the installation firm, the problem was resolved within 48 hours,

For 33,3 % of the skippers, it took over 96 hours to solve the problem.

4.3.1.2. Installation firms' experiences

The installation firms cannot always guarantee to reach a vessel within 48 hours.

42 % of the installation firms stated that it is not always possible to meet the stipulated deadline of 48 hours for a repair.

A number of installation firms indicated a maximum time for repair, which sometimes raised above 100 hours.

4.3.1.3. Waterway authorities' experiences

Half of the waterway authorities are not concerned by this topic.

Of those who are concerned a third consider 48 hours as a problem and they indicated a number of reasons why the deadline can cause difficulties for skippers (as for example the availability of the repair firm, contractual obligations towards the skipper/terminal, etc.).

4.3.1.4. Enforcement and police authorities' experiences

Half of the enforcement and police authorities are not concerned by this topic or did not answer.

10 % of those who are concerned considered 48 hours as a problem and they indicated a number of reasons why the deadline can cause difficulties for skippers (as for example the availability of the repair firm, contractual obligations towards the shipper/terminal, etc.)

4.3.1.5. Summary

Based on all the responses from the stakeholders involved, the conclusion is that the 48 hour deadline is not always sufficient.

It is recommended to bring together a number of experts, representatives of branch organisations and installation firms to investigate solutions (technical, business, regulatory and organisational¹).

4.3.2 Repairs to electronic chart display systems

4.3.2.1. Stakeholders' experiences

The experience for repairing a faulty electronic chart display system is the same as for Inland AIS devices.

4.3.2.2. Summary

Based on all the responses from the stakeholders involved, one can conclude that the 48 hour deadline is not always sufficient.

It is recommended to bring together a number of experts, representatives of branch organisations and installation firms to investigate solutions (technical, business, regulatory and organisational¹).

¹ The installation firms should be capable of working better together across geographical areas.

5. Other aspects

5.1 Privacy and data protection

5.1.1 Introduction

When Inland AIS was introduced, the governmental authorities gave the assurance¹ that privacy would be protected and guaranteed. However there were many comments indicating that there is dissatisfaction in this regard. The complaints were assigned to the various categories below."

5.1.2 References to about Marine Traffic, Shipfinder and other websites²

There were very many reactions relating to websites, such as Marine Traffic, where sensitive information is publicly available.

It is recommended that the CCNR remind its Member States that individuals or firms who contravene European law by receiving, processing and transmitting any information emanating from Inland AIS devices on board vessels to third parties³ may be subject to criminal proceedings⁴.

5.1.3 Comments on authorities

Many of the comments related to waterway authorities, harbour authorities as well as enforcement and police authorities who use Inland AIS information for purposes for which it is not intended (harbour dues, fines, resting times, etc.).

It is recommended that the CCNR calls upon its Member States to ensure that the national authorities in the course of their duties, handle Inland AIS information correctly. This Inland AIS data may only be used for the purposes for which it is gathered, such as the safety and ease of navigational traffic, and environmental protection.

5.1.4 Comments on commercial partners

Shippers, freight firms, terminals, agents and inland navigation firms use Inland AIS information, as well as information from websites such as Marine Traffic, to monitor skippers (mooring location, route, rest periods, etc.) and for reasons of competition.

It is recommended that the CCNR informs its Member States that in such cases the commercial parties are violating the privacy of the skippers involved and that proceedings may be started if a skipper files a complaint.

¹ Article 19 of the European RIS directive contains such a requirement.

² Requires legal analysis in the RP/G working group and, if so required, in the DF Committee.

³ Moreover, websites are committing an offence in accepting data if they know that it was acquired illegally.

⁴ To what extent legal action is taken against the illegal use of Inland AIS data by CCNR Member States depends on various factors, such as the priority given to this issue. The CCNR has no authority to take legal action against such violations.

5.2 Surveillance and enforcement

5.2.1 Surveillance

5.2.1.1. Observations by the waterway authorities

In the period from 1 January 2015 to mid-November 2016, waterway authorities observed vessels on which the Inland AIS device was

- not operating¹,
- incorrectly configured,
- faulty.

There is no record of whether the problems only occurred during the initial phase.

There was no indication of correlation between the flag state and the type of the vessel.

5.2.1.2. Observations by enforcement and police authorities

In the period from 1 January 2015 to mid-November 2016, various enforcement and police authorities observed vessels on which:

- no Inland AIS device was on board,
- the Inland AIS device was switched off,
- the Inland AIS device was incorrectly configured,
- the Inland AIS device was faulty.

In the period from 1 January 2015 to mid-November 2016, various enforcement and police authorities observed vessels on which:

- the Inland AIS device had not been installed by an approved installation firm,
- there was no electronic chart display system,
- the electronic chart display system was faulty.

There is no record of whether the problems only occurred during the initial phase.

There was no indication of correlation between the flag state and the type of the vessel.

5.2.1.3. Summary

It can be concluded that there is no cause for concern and no additional measures are required. However, it would be useful to investigate the current and future situations.

It is recommended that the current and future situations are investigated, to see whether the situations improve or deteriorate.

¹ It was not possible to determine whether there was no device on-board or whether an existing device was not switched on.

5.2.2 Enforcement

5.2.2.1. Observations by the skippers

Many skippers believe that the authorities are too strict in the way they enforce compliance with the regulations. They believe that disproportionate fines are imposed for certain violations and that some fines are not in accordance with the regulations.

1. *It is recommended that the authorities be made aware of what information is mandatory, and what is not¹.*
2. *It is recommended to examine if the CCNR catalogue of fines can be used.*

The skippers are not satisfied with on-the-spot fines for not transmitting an Inland AIS signal, or if a signal is not visible to the enforcement and police authorities.

1. *It is recommended that the skipper switches the device off and back on, to see whether this solves the problem, as he does not always know whether the Inland AIS signal is being transmitted.*
2. *It is recommended that the enforcement and police authorities ask other vessels or traffic centres² if they can see this vessel. Indeed the problem may also come from the Inland AIS device of the enforcement or police vessel.*

From the responses, it appears that vessels are sometimes obliged to moor because the Inland AIS is not working, without taking in account the 48 hour period.

It is recommended that the authorities are reminded of the 48 hour period. During that period a vessel with a non-functioning system may continue the voyage.

The skippers have problems with the fact that many police vessels do not have their Inland AIS switched on, despite it being intended to ensure safe navigation.

It is recommended that this issue is addressed to the police authorities through Aquapol and the Member States. It should be pointed out that the primary purpose of Inland AIS is to ensure safe navigation. The police should be aware of the consequences of switching off the Inland AIS on their vessels.

¹ Even if non-mandatory, voluntary data is transmitted, the data must be guaranteed correct. The transmission of incorrect data constitutes an infringement.

² Traffic control centres are only to be found in the Netherlands.

5.2.2.2. Observations by the installation firms

Some firms pointed out that on-board controls by the authorities do not check the quality of the installation and whether the installation regulations were followed.

It is recommended that, in view of the frequent technical problems with Inland AIS devices, greater attention be paid to installation quality. Authorities who carry out the checks should be aware of what to look for.

5.2.3 Warnings and fines

5.2.3.1. Waterway authorities' warnings and fines

Not all waterway authorities answered the questions on this topic.

Even though waterway authorities have issued many warnings concerning vessels navigating with the Inland AIS device switched off, a limited number of fines have been given.

Waterway authorities have issued warnings for incorrectly configured Inland AIS devices, but only one fine has been given.

Even though waterway authorities have issued many warnings for faulty Inland AIS devices, only one authority has given fines.

A limited number of waterway authorities request evidence, such as a certificate from the repair firm, to prove that the repairs were carried out within the stipulated delay.

5.2.3.2. Warnings and fines by the enforcement and police authorities

Many authorities chose not to answer the questions related to monitoring, warnings and fines.

Even though enforcement and police authorities have issued many warnings for vessels having no Inland AIS device installed, a limited number of fines have been given.

Two enforcement and police authorities have issued warnings for an Inland AIS device that had not been installed by an approved installation firm.

Even though enforcement and police authorities have issued many warnings for vessels navigating with the Inland AIS device switched off, a limited number of fines have been given.

Enforcement and police authorities have issued many warnings for incorrectly configured Inland AIS devices. In addition a limited number of fines have been given.

Even though enforcement and police authorities have issued many warnings for defective Inland AIS devices a limited number of fines have been given.

A limited number of enforcement and police authorities mentioned requesting evidence, to prove that the repairs were carried out within the stipulated delay. This evidence can be a repair certificate or statement that a further check will be carried out. Sometimes the traffic control centre is asked to check this.

5.2.3.3. Summary

It can be concluded that there is no cause for concern and no additional measures are required.

It is recommended to investigate whether there is a simple way of finding out whether a defective Inland AIS device has been repaired within the stipulated time.

5.3 Communication with the stakeholders

5.3.1 General brochure

The latest brochure¹ is not very well known among the skippers. However, the majority of the installation firms are aware of it.

Based on the results of the questionnaire and the conclusions and recommendations that can be drawn from them, a number of suggestions have been made for amendments to the latest brochure. These are set out in Annex A.

It is recommended that the CCNR do more advertising on the (what will then be the new) brochure¹ within the inland navigation sector, including making the greatest possible use of social media.

5.3.2 Documentation for the installation firms

Although the installation firms are familiar with the 'Inland AIS installation guidelines', it still seems that almost a quarter of the installation firms is not aware of this essential document. The same applies to the document 'Operational use of Inland AIS'.

Based on among other things the conclusion and recommendations it will be necessary to update the Inland AIS installation guidelines'.

1. *It is recommended to improve awareness of*
 - *the new brochure¹,*
 - *the Inland AIS installation guidelines and*
 - *the "Operational use of Inland AIS" leaflet**by sending all these documents to approved installation firms in the CCNR's jurisdiction. Any installation firms that are newly recognised in future within the CCNR's jurisdiction will also receive these documents.*

¹ Clarifications concerning the obligation of equipment with Inland AIS devices and Inland ECDIS devices or comparable electronic chart display devices.

2. *It is recommended that whenever the Inland AIS installation guidelines are revised, the new version be sent to all approved installation firms registered within the CCNR's jurisdiction.*
3. *It is recommended that the European RIS Expert Group VTT be asked to update the Inland AIS installation guidelines taking account the of the results of the questionnaire and the conclusions and recommendations that can be drawn from them, as well as any amendments to the international legislation from the ITU.*

5.4 Other matters

5.4.1 The blue sign

5.4.1.1. Comments from the skippers

38,8 % of the skippers have connected the blue sign to the Inland AIS device.

A small group of skippers indicated that they are in favour of connecting the blue sign to the Inland AIS device. They believe that this will help improving safety and early recognition. However, it would be necessary that every skipper connects his blue sign to the Inland AIS.

A limited group of skippers is opposed to a mandatory connection of the blue sign to the Inland AIS device, for a variety of reasons. In practice, it often does not work properly; that means there are technical problems.

5.4.1.2. Comments from the waterway authorities

41,5 % of the waterway authorities believe that connecting the blue sign to the Inland AIS device is necessary to improve safety in inland navigation, as it allows the skipper to respond better and earlier to encounters.

58,5 % do not believe that connecting the two devices will lead to safer navigation.

Their main concern is that the skipper might focus more on the screen of the electronic chart display system and of the radar equipment, and thus will look less frequently through the window. In addition there are concerns about the technical reliability of the connection¹.

5.4.1.3. Comments from the enforcement and police authorities

68,4 % of the enforcement and police authorities believe that connecting the blue sign to the Inland AIS device is necessary to further improve safety in inland navigation. It would allow the skipper to respond better and earlier to encounters.

Concern was expressed that the skipper might focus more on the screen of the electronic chart display system and of the radar, and thus will look less frequently through the window.

¹ There appear to be frequent problems concerning the technical aspects of connecting the blues signed to the Inland AIS device.

5.4.1.4. Overall picture

There is no clear overall picture. A trade-off has to be made between the technical reliability of the connection of the blue sign on the one hand, and the possibility for a skipper to respond earlier to a potential encounter on the other hand, which could lead to a safer navigation.

The 2018-2019 work programme of the CCNR Police Committee includes¹ a follow-up study to the previous Dutch study examining the possibility of making it mandatory to connect the blue sign to the Inland AIS device.

It is recommended to carry out a preliminary short exploratory study of all the arguments raised in the evaluation, and on the basis of the results to consider how to deal with the issue of connecting the blue sign to the Inland AIS device.

5.4.2 Additional regulations

The questionnaire asked all parties whether there were any problems with current regulations, and whether there was any need for additional regulations.

5.4.2.1. Reactions of the installation firms

A limited number of firms indicated that the rules for installation should be stricter and more oriented towards their implementation in practice. In their present form, the rules are such that each firm can install and connect the system in a different and personal way. In addition, no account is taken of the system, even though this may be affected by the Inland AIS device.

It is recommended that these reactions are taken into account in a possible survey on the technical issues.

5.4.2.2. Reactions of the waterway authorities

About half the waterway authorities believe that the obligation contained in RPR, Article 4.07 should be extended to include all vessels.

About half the waterway authorities believe that the information to be transmitted should be extended to include the destination, draught, number of blue cones and blue sign.

5.4.2.3. Reactions of the enforcement and police authorities

Two services would like to abolish the obligation for police vessels to be fitted with Inland AIS. It is not compatible with their permanent monitoring tasks.

About three quarters of the enforcement and police authorities believe that the information to be transmitted should be extended to include the number of blue cones and blue sign.

¹ The study was originally scheduled for 2016-2017 but owing to exceptional circumstances it could not be carried out and was postponed to the next period.

A third believe that destination and draught should also be transmitted.

5.4.2.4. Summary

The different parties involved have expressed a number of proposals with regard to amending the regulations.

It is recommended that these proposals be carefully weighed in terms of the need for them, their benefits and aim against the intention behind the introduction of mandatory Inland AIS in 2014, as well as any potential negative consequences.

5.4.3 AIS signal reception in shore-based infrastructure

Both the skippers and those working at the working shore-based infrastructure such as locks and traffic centres report that sometimes no signals are received from passing vessels, although the vessels do receive each other's signals.

It is recommended that the waterway authorities concerned take appropriate measures to identify and solve this problem.

5.4.4 Special target groups

5.4.4.1. Working crafts

Skippers of small tugboats or utility vessels which operate in a restricted area and which continually change their composition, wondered whether they have to change the status every time, which can be up to 10 or 15 times a day.

In addition, they want to know what are the procedures if a particular object or special transport needs to be moved with a tug.

It is recommended to first investigate where the problem occurs and, if it is on the waterways covered by the RPNR, then investigate how significant the problem is.

5.4.4.2. Recreational crafts

A limited number of skippers expressed their opinion or concern as to whether it is wise to let recreational craft use Inland AIS, either voluntarily or on a mandatory basis. This sometimes leads to a very confused traffic image.

It also appears that many recreational craft keep their Inland AIS device switched on even when moored in a marina, which can cause problems.

It is recommended to first investigate where the problem occurs and, if it is on the waterways covered by the RPNR, then investigate how significant the problem is.

Annex A Packages of similar recommendations

A.1 Aspects to be included in the new brochure¹ are

In light of the survey findings, the following aspects are to be included, or better described, in the updated brochure:

It should be made clear that it is not a navigation system; rather it is an aid intended to provide navigation information about other vessels.

It should state clearly why it is so important for the navigation status to be set correctly.

It should be stated more clearly that it is important to check regularly whether the Inland AIS device is transmitting the correct information, as set out in RPR, Article 4.07.

It should be clearly described which static information is configured by the installation firms during installation and what information requires updating by the skipper.

The importance of regularly updating the charts and the electronic chart space system should be more clearly pointed out.

Particular attention should be paid to the fact that Inland AIS in combination with an electronic chart display system is a navigational aid only, and that the skipper still should use radar and radiocommunication, as well as look through the wheelhouse window. (These are the primary navigation tools.)

Greater attention should be paid to the fact that although Inland AIS in combination with an electronic chart display system makes it possible to see the vessels in the surrounding area, it is still essential for individual skippers to communicate via radiocommunication.

The recommendation that it is a reasonable preventive measure regularly to switch the Inland AIS device and the electronic chart display system off and back on should be adopted.

Particular attention should be paid to the fact that antennas are only fully effective in their correct (upright) position and that the range is reduced if antennas are folded down or retracted.

It should be pointed out that seagoing vessels entering the waters within the jurisdiction of the Mannheim Act are obliged to be equipped with an Inland AIS device and an electronic chart display system as set out in RPR, Article 4.07. The IMO Class A device is not adequate.

¹ Clarifications concerning the obligation of equipment with Inland AIS devices and Inland ECDIS devices or comparable electronic chart display devices.

A.2 Recommendations for the attention of EDINNA

With EDINNA's involvement, the relevant training and educational institutes it should be contacted and requested to take account of the fact in the training courses that Inland AIS is simply an aid, intended to provide navigation information about other vessels. Training courses should also point to the importance of local sector knowledge.

With the involvement of EDINNA, the relevant educational institutes should be approached and asked to take account of communication by radiocommunication in their training courses.

With the involvement of EDINNA, the relevant educational institutes should be approached and asked to take account of the essential features and settings of the Inland AIS device in conjunction with the electronic display system in their training courses.

A.3 Recommendations for the attention of the European RIS expert group VTT

Together with the European RIS expert group VTT, it should be examined whether using and setting the navigation status can be simplified and/or restricted

It is recommended to investigate the either permanent or temporary disappearance of the Inland AIS signal in addition to the recommendations in paragraph 5.2. The European RIS expert group VTT may possibly be of assistance here.

The European RIS VTT and Inland ECDIS expert groups should be requested to pay attention to the possible uniformity of all displayed symbols, in particular the display of vessel type, and clearly distinguish between commercial vessels and recreational crafts.

It is recommended, in consultation with the European RIS expert group VTT, to examine the possibility of comparable (e.g. steel) antennas that are more robust.

The European RIS Expert Group VTT should be asked to update the Inland AIS installation guidelines taking account the results of the questionnaire and the conclusions and recommendations that can be drawn from them, as well as the international legislation from the ITU.

Annex B Relevant regulations

B.1 Article 4.07¹ RPR, Inland AIS and Inland ECDIS

1.² Les bâtiments doivent être équipés d'un appareil AIS Intérieur conforme à l'article 7.06, chiffre 3 du Règlement de visite des bateaux du Rhin. L'appareil AIS Intérieur doit être en bon état de fonctionnement.

La 1^{ère} phrase ci-dessus ne s'applique pas aux bâtiments suivants :

- a) bâtiments de convois poussés et de formations à couple, à l'exception du bâtiment qui assure la propulsion principale,
- b) menues embarcations, à l'exception :
 - des bâtiments de police équipés d'un appareil radar, et
 - des bâtiments possédant un certificat de visite conformément au Règlement de visite des bateaux du Rhin ou un certificat réputé équivalent conformément à ce règlement,
- c) barges de poussage sans système de propulsion propre,
- d) engins flottants sans système de propulsion propre.

2. L'appareil AIS Intérieur doit fonctionner en permanence et les données saisies doivent correspondre à tout moment aux données effectives du bâtiment ou du convoi.

La 1^{ère} phrase ci-dessus ne s'applique pas,

- a) si les bâtiments se trouvent dans un port de stationnement nocturne visé à l'article 14.11, chiffre 1,
- b) si l'autorité compétente a accordé une dérogation pour les plans d'eau séparés du chenal navigable par une infrastructure,
- c) aux bâtiments de police, si la transmission de données AIS est susceptible de compromettre la réalisation de tâches de police.

Les bâtiments visés au chiffre 1, 3^{ème} phrase, lettre a), doivent éteindre les appareils AIS Intérieur présents à bord tant que ces bâtiments font partie du convoi.

3.³ Les bâtiments qui doivent être équipés d'un appareil AIS Intérieur, à l'exception des bacs, doivent en outre être équipés d'un appareil ECDIS Intérieur en mode information ou d'un appareil comparable pour la visualisation de cartes, qui doit être relié à l'appareil AIS Intérieur, et ils doivent l'utiliser conjointement avec une carte électronique de navigation intérieure à jour.

L'appareil ECDIS en mode information, l'appareil comparable pour la visualisation de cartes et la carte électronique de navigation intérieure doivent être conformes aux Exigences minimales pour les appareils ECDIS en mode information et les appareils comparables pour la visualisation de cartes pour l'utilisation de données AIS Intérieur à bord des bâtiments (Résolution 2014-I-12).⁴

¹ Le titre de l'article 4.07, exceptés le chiffre 3, alinéa 2, le chiffre 4, lettre c) et le chiffre 5, lettre c), ont été adoptés définitivement (Résolution 2013-II-16).

² Le chiffre 1 a été modifié définitivement (Résolution 2014-I-13).

³ Le chiffre 3, 1^{ère} phrase, a été modifié définitivement (Résolution 2014-I-11).

⁴ Le chiffre 3, 2^{ème} phrase, est en vigueur du 1.12.2017 au 30.11.2020 (Résolution 2017-I-9).

4. Au moins les données suivantes doivent être transmises conformément au chapitre 2 du Standard suivi et repérage des bateaux en navigation intérieure :
 - a) Identifiant utilisateur (Maritime Mobile Service Identity, MMSI) ;
 - b) Nom du bateau ;
 - c)¹ Type de bâtiment ou de convoi conformément au Standard pour le suivi et le repérage des bateaux en navigation intérieure ;
 - d) Numéro européen unique d'identification des bateaux (ENI) ou, pour les navires de mer auxquels n'a pas été attribué d'ENI, le numéro OMI ;
 - e) Longueur hors tout du bâtiment ou du convoi avec une précision de 0,1 m ;
 - f) Largeur hors tout du bâtiment ou du convoi avec une précision de 0,1 m ;
 - g) Position (WGS 84) ;
 - h) Vitesse sur route ;
 - i) Route ;
 - j) Heure de l'appareil électronique de localisation ;
 - k) Statut navigationnel conformément à l'annexe 11 ;
 - l) Point d'acquisition de l'information relative à la position à bord du bâtiment avec une précision de 1 m, conformément à l'annexe 11.
5. Le conducteur doit immédiatement actualiser les données suivantes après tout changement :
 - a) Longueur hors tout avec une précision de 0,1 m, conformément à l'annexe 11 ;
 - b) Largeur hors tout avec une précision de 0,1 m, conformément à l'annexe 11 ;
 - c) Type de bâtiment ou de convoi conformément au Standard pour le suivi et le repérage des bateaux en navigation intérieure ;
 - d) Statut navigationnel, conformément à l'annexe 11 ;
 - e) Point d'acquisition de l'information relative à la position à bord du bâtiment avec une précision de 1 m, conformément à l'annexe 11.
6. Les menues embarcations qui utilisent l'AIS ne peuvent utiliser qu'un appareil AIS Intérieur conforme à l'article 7.06, chiffre 3, du Règlement de visite des bateaux du Rhin, un appareil AIS de classe A possédant une réception par type conformément aux prescriptions de l'OMI, ou un appareil AIS de classe B. Les appareils AIS de classe B doivent être conformes aux exigences correspondantes de la Recommandation UIT-R.M 1371, de la directive 1999/5/CE (RTTE), et de la norme internationale CEI 62287-1 ou 2 (y compris la gestion des canaux DSC). L'appareil AIS doit être en bon état de fonctionnement et les données saisies dans l'appareil AIS doivent correspondre en permanence aux données effectives du bateau ou du convoi.
7. Les menues embarcations auxquelles n'a pas été attribué un numéro européen unique d'identification des bateaux (ENI) ne sont pas tenues de transmettre les données visées au chiffre 4, lettre d) ci-dessus.
8. Les menues embarcations qui utilisent l'AIS doivent en outre posséder une installation de radiotéléphonie en bon état de fonctionnement et commutée sur écoute pour le réseau bateau-bateau.

¹ Le chiffre 4, lettre c) et le chiffre 5, lettre c), sont en vigueur du 1.12.2015 au 30.11.2018 (Résolution 2015-I-16).

Annex C Minimum requirements for Inland ECDIS devices and comparable chart display devices

FOREWORD

CCNR passed resolution 2013-II-16 making it compulsory to possess and use the Inland AIS with effect from 1st December 2014.

The introduction of Inland AIS will be accompanied simultaneously by the obligation to use ECDIS devices in information mode or a comparable chart display device¹. The Inland AIS device must be connected to the ECDIS device in information mode² or to the comparable chart display device and an up-to-date electronic chart for inland navigation must be used.

This document lays down the minimum requirements regarding electronic chart display systems with a view to using Inland AIS data on board vessels. It also makes recommendations helping to improve the accuracy and clarity and thus reliability with which Inland AIS data are displayed. By their very nature, these recommendations are not mandatory, but the CCNR does nonetheless recommend that they be adhered to in the same way as the mandatory minimum requirements.

For the purpose of identifying minimum requirements and fundamental recommendations, the following on-board equipment is considered in the sections below:

- a) electronic charts for inland navigation,
- b) devices for displaying electronic charts for inland navigation,
- c) the software for displaying electronic charts inland navigation.

It should be noted that, if appropriate, the competent authorities may lay down additional requirements beyond the minimum requirements for *special functions*.

Comment:

When this document uses the expression "electronic chart display system" it is referring either to:

- an "Inland ECDIS device in information mode"
- or a comparable device for displaying electronic charts.

1. Minimum requirements and recommendations for electronic charts for inland navigation in use

Minimum requirements:

- Electronic charts for inland navigation must accurately replicate the contours of the river and the navigable channel and must be based on the official inland navigation electronic charts.
- Electronic charts for inland navigation must be saved in the display system on board the vessel.

¹ Except for ferries.

² The Inland ECDIS standard differentiates between information mode and navigation mode. Information mode means the use of the Inland ECDIS for information purposes only, without overlaid radar image. Navigation mode means the use of the Inland ECDIS for conning the vessel, with overlaid radar image.

Recommendation:

- It is recommended that the most recent ENC¹ be used.

2. Minimum requirements and recommendations for devices displaying electronic charts for inland navigation

Minimum requirements:

- Electronic chart display devices must be connected to the Inland AIS device by a reliable cable connection.
- When the vessel is underway, devices must be exclusively dedicated to displaying electronic inland navigation charts.
- The information displayed must be readily visible from the conning position.

Recommendations:

- The electronic chart display system should comply with the requirements of the Inland ECDIS system for navigation mode.
- If the vessel is equipped with an Inland ECDIS device in navigation mode it is recommended that an additional and separate electronic chart display system be used for information mode.

3. Minimum requirements and recommendations for electronic chart display software for inland navigation

Minimum requirements:

- The software must display the vessel's current and correct position on the electronic chart for inland navigation.
- The software must display on the electronic chart for inland navigation the other vessel's current and correct position.
- For a given vessel, the software must display the detailed list of AIS information in accordance with article 4.07(4) of the Police Regulations for the Navigation of the Rhine.

Recommendations:

- The electronic chart display software for inland navigation should comply with current Inland ECDIS navigation mode requirements.
- The electronic chart display software for inland navigation should orientate the chart such that the vessel follows the axis of the waterway.

¹ ENC: Electronic Navigational Chart

Annex D Rhine Vessel Inspection Regulations¹

D.1 Article 7.06: Appareils de navigation et d'information²

1. Les appareils radar et les indicateurs de vitesse de giration doivent être conformes aux exigences de l'annexe M, partie I et partie II. L'observation des exigences est attestée par un agrément de type délivré par l'autorité compétente. Les agréments de type délivrés sur la base des exigences de la directive 2006/87/CE du Parlement européen et du Conseil, du 12 décembre 2006, établissant les exigences techniques pour les bateaux de la navigation intérieure et abrogeant la directive 82/714/CEE du Conseil sont réputés équivalents.

Les appareils ECDIS Intérieur qui peuvent être utilisés en mode navigation sont considérés comme étant des appareils radar. Ils doivent satisfaire en outre aux exigences du standard ECDIS Intérieur dans la teneur de l'édition en vigueur le jour de la délivrance de l'agrément de type.

Les prescriptions de l'annexe M, partie III, relatives à l'installation et au contrôle de fonctionnement d'appareils radar de navigation et d'indicateurs de vitesse de giration pour la navigation rhénane doivent être observées.

L'indicateur de vitesse de giration doit être placé devant l'homme de barre dans son champ de vision.

Les listes des appareils radar et indicateurs de vitesse de giration agréés conformément à l'annexe M ou sur la base d'agréments de type dont l'équivalence est reconnue sont publiées par la Commission Centrale.

2. Dans le cas de postes de gouverne aménagés pour la conduite au radar par une seule personne,
 - a) l'emplacement de l'écran-radar ne doit pas s'écarter sensiblement de l'axe de vision de l'homme de barre en position normale ;
 - b) l'image radar doit rester parfaitement visible, sans masque ou écran, quelles que soient les conditions d'éclairage régnant à l'extérieur de la timonerie ;
 - c) l'indicateur de vitesse de giration doit être installé directement au-dessus ou au-dessous de l'image radar ou intégré à celle-ci.

- 3.² Les appareils AIS Intérieur doivent être d'un type agréé par l'autorité compétente d'un Etat Riverain du Rhin ou de la Belgique sur la base du Standard d'essai (résolution 2007-I-15), édition 2.0.

Les prescriptions de l'annexe N, partie I, relatives au montage et au contrôle de fonctionnement d'appareils AIS Intérieur doivent être observées.

Le Standard d'essai ainsi que les listes des appareils AIS agréés conformément à l'annexe N ou sur la base d'agréments de type dont l'équivalence est reconnue sont publiées par la Commission Centrale.

¹ A partir du 7.10.2018, Article 7.06 et Annexe 5, Sections IV et VI de l'ES-TRIN

² Le titre et le chiffre 3 ont été adoptés définitivement (Résolution 2013-II-19, II).

D.2 Annexe N, partie I¹

Exigences à remplir par les Appareils AIS Intérieur et prescriptions relatives à l'installation et au contrôle de fonctionnement d'appareils AIS Intérieur à bord

A. Exigences à remplir par les appareils AIS Intérieur

Les appareils AIS Intérieur doivent être conformes aux exigences du Standard d'essai, édition 2.0, figurant dans la résolution 2007-I-15. La conformité est attestée par un examen de réception par type d'une autorité compétente.

B. Contrôle de montage et de fonctionnement d'appareils AIS Intérieur à bord

Lors de l'installation d'appareils AIS Intérieur à bord, les conditions suivantes doivent être remplies :

1. L'installation d'appareils AIS Intérieur à bord ne peut être effectuée que par des sociétés spécialisées agréées par l'autorité compétente.
2. L'appareil AIS Intérieur doit être installé dans la timonerie ou à un autre endroit bien accessible.
3. La fonctionnalité d'un MKD (Unité intégrée de Saisie et d'Affichage) interne ou externe doit être accessible au conducteur. Les informations d'alerte et de statut de l'appareil AIS Intérieur doivent être situées dans le champ de vision direct de l'homme de barre. D'autres appareils utilisés pour la navigation peuvent toutefois être prioritaires en ce qui concerne leur visibilité directe. Tous les voyants d'alerte doivent demeurer visibles après le montage.
4. Il doit être possible de reconnaître visuellement si l'appareil est en service. L'appareil doit être alimenté en permanence en énergie électrique au moyen d'un circuit électrique protégé contre des coupures, pourvu d'une propre protection par fusibles et connecté directement à la source d'énergie.
5. Les antennes des appareils AIS Intérieur doivent être installées et connectées aux appareils de manière à assurer un fonctionnement sûr de ces appareils dans toutes les conditions normales d'utilisation. D'autres appareils ne peuvent être connectés que si les interfaces des deux appareils sont compatibles.
6. Ne peuvent être connectés à l'appareil AIS Intérieur que des capteurs externes possédant une réception par type. Les capteurs externes connectés à l'appareil AIS Intérieur doivent posséder une réception par type conformément aux standards maritimes correspondants ci-après :

Sensor	Minimum Performance Standard (IMO)	ISO/IEC Standard
GPS	MSC.112(73)	IEC 61108-1 : 2003
DGPS/DGLONASS	MSC.114(73)	IEC 61108-4 : 2004
Galileo	MSC.233(82)	IEC 61108-3 : 2010
Heading/GPS Compass	MSC.116(73)	ISO 22090-3 : 2004 Part 3 : GNSS principes

¹ L'annexe N a été adoptée définitivement (Résolution 2013-II-19, II).

7. Avant la première mise en service consécutive au montage, en cas de renouvellement ou de prolongation du certificat de visite (à l'exception des cas visés à l'article 2.09, chiffre 2, du Règlement de visite des bateaux du Rhin) ainsi qu'après toute transformation du bateau susceptible d'affecter les conditions de fonctionnement de ces appareils, une autorité compétente ou une société spécialisée agréée doit procéder à un contrôle de montage et un essai de fonctionnement.
8. La société spécialisée agréée qui a effectué l'installation et l'essai de fonctionnement délivre une attestation conformément à l'annexe N, partie II, relative aux caractéristiques particulières et au fonctionnement correct de l'appareil AIS Intérieur.
9. L'attestation doit être conservée à bord en permanence.
10. Une notice d'emploi doit être remise pour être conservée à bord. Ceci doit être mentionné sur l'attestation relative à l'installation à bord.

C. Information de la Commission Centrale pour la Navigation du Rhin

Les Etats riverains du Rhin et la Belgique communiquent sans délai les informations suivantes à la Commission Centrale pour la Navigation du Rhin:

- a) toute désignation d'une autorité compétente,
- b) toute délivrance ou tout retrait d'un agrément de type pour des appareils AIS Intérieur,
- c) tout agrément d'une société spécialisée dans le montage d'appareils AIS Intérieur ou tout retrait d'un tel agrément.

D.3 Annexe N, partie II (modèle)

Attestation relative au montage et au fonctionnement d'appareils AIS Intérieur

Catégorie/nom du bateau :

Numéro européen unique d'identification des bateaux ou numéro officiel :

Propriétaire du bateau

Nom :

Adresse :

Téléphone :

Appareil AIS Intérieur

Type	Fabricant	Numéro d'agrément	numéro de série

Par la présente, il est attesté que l'appareil AIS Intérieur susmentionné du bateau satisfait aux prescriptions de l'annexe N, partie I, au Règlement de Visite des Bateaux du Rhin - Exigences applicables aux appareils AIS Intérieur et prescriptions relatives au montage et au contrôle de fonctionnement des appareils AIS Intérieur – et qu'une notice d'utilisation à conserver à bord du bâtiment a été remise.

Société spécialisée agréée

Nom :

Adresse :

Téléphone :

Cachet
Signature

Lieu Date

Autorité compétente pour l'agrément de la société spécialisée

Nom :

Adresse :

Téléphone :
