

**Application of three-tone signal for vessels navigating by radar in reduced visibility (Article 4.06 paragraph (c), Article 6.32, paragraph 4 and Article 9.07, paragraph 13) and frequencies of sound signals**

**Note by the secretariat**

**I. Background**

At its thirty-first meeting, the CEVNI Expert Group exchanged opinions about the application of the three-tone signal for vessels navigating by radar in reduced visibility and decided to investigate this in detail. The secretariat was asked to collect information from member States.

The three-tone signal is mentioned in the following articles of CEVNI:

- Chapter I, part III
  6. The term “*three-tone signal*”<sup>1</sup> means a signal repeated three times, of three blasts of different pitch with no interval between them lasting about two seconds in all. The frequency of the blasts shall be within the range 165 to 297 Hertz and the difference between the highest and the lowest blasts shall be at least two full notes. Each series of three blasts shall begin with the lowest and end with the highest note;
- Article 4.06, paragraph 1
  - Article 4.06 – Radar
    1. Vessels may not use radar and Inland ECDIS equipment which may be used for conning the vessel with overlaid radar image (Navigation Mode) unless:  
...
      - (c) they are equipped with *a device for emitting the three-tone signal* with the exception of small craft and ferry-boats. However, the competent authorities may not prescribe such a system.
- Article 6.32, paragraph 4
  - Article 6.32 – Navigation by radar
    4. When radiotelephone contact cannot be established with the oncoming vessels, the vessel proceeding downstream shall:

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<sup>1</sup> Here and below: the text in italics is highlighted by the secretariat.

- (a) Give the three-tone signal and repeat it as often as necessary. This provision does not apply to small craft;
- (b) Reduce speed and, if necessary, stop.

A vessel proceeding upstream shall, as soon as it hears *the signals referred to in paragraph 4 (a) above* or observes on the screen vessels whose position or movements might cause a dangerous situation, or when it is approaching a section where there might be vessels not yet visible on the screen:

- (c) Give one long blast and repeat this signal as often as necessary;
- (d) Reduce speed and, if necessary, stop.

- Article 9.07, paragraph 13

#### Article 9.07 – Chapter 6, “RULES OF THE ROAD”

13. With respect to article 6.32, the competent authorities may:

- (a) waive *the provision on giving the three-tone signal or apply it only on certain waterways*;
- (b) Prescribe additional provisions for vessels navigating by radar.

- Annex 6, part III

Sound signals other than the ringing of a bell and *the three-tone signal* shall consist in the emission of one blast or of several successive blasts having the following characteristics:

- (a) Short blast: a blast lasting about one second;
- (b) Long blast: a blast lasting about four seconds.

Furthermore, at its thirty-first meeting, the CEVNI Expert Group took note of the information about the available frequency ranges of equipment for sound signals and decided to continue discussion at its next meeting. Part III of this document contains information on the frequency ranges for sound signals applied by some member States.

## II. Application of three-tone signal and frequencies of sound signals by member States and River Commissions

### A. Bulgaria

Three-tone signal is applied on Bulgarian inland waterways, and vessels must be fitted with this equipment.

### B. Belarus

The Inland Navigation Rules of the Republic of Belarus do not require three-tone signal for vessels navigating by radar in reduced visibility.

The following signals are used for navigation in reduced visibility:

<i>Sound signal</i>	<i>Meaning</i>
1 long blast	“Single vessel under way”
1 long blast followed by 2 short blasts with an interval of at least 2 minutes	“Convoys and rafts under way”

<i>Sound signal</i>	<i>Meaning</i>
1 short blast, 1 long blast, 1 short blast	“Single vessels or convoys anchored or grounded within the fairway limits”
Recurrent sounding of a bell or a metallic object	“Non-motorized vessel with the crew on board anchored or grounded within the fairway limits”

### **C. Croatia**

In general, three-tone signal is not often used on Croatian inland waterways:

- Harbour Master's Office Sisak reported that three-tone signal hasn't been used in their territory for over 10 years.
- Harbour Master's Office Vukovar reported that three-tone signal is seldom used in their territory, but their perspective is that due to increased number of river cruisers, it would be a good thing to leave three-tone signal as a possibility, unless a new solution is to be found.
- Harbour Master's Office Osijek's opinion is that new legislation is in order since modern technologies are being used on vessels and three-tone signal isn't used as much.
- Harbour Master's Office Slavonski Brod reported that three-tone signal has been used for around 100 times over the period of the past 10 years, meaning not often. The times it has been used was mainly by small craft who are not required to install AIS and are rarely equipped with radars making them a hazard on inland waterways.

Croatian perspective is that if there are places where it is necessary to transmit sound and/or other signals more intensely, this can be specially regulated at that very section of the waterway with specific regulations and signs. This way, we believe, an adequate degree of security can be maintained in such sections or areas even if we agree on repealing three-tone signal all together.

Possibly, we can leave the rules for using three-tone signals in cases if/when modern technology fails for any reason to ensure the safety of navigation.

### **D. Czechia**

The three-tone signal is no longer applied in the Czech Republic, and therefore no prescriptions are set for its sound frequencies.

### **E. Netherlands**

The three-tone signal is no longer required by the Dutch legislation. In our opinion, this signal can be deleted from CEVNI.

### **F. Poland**

According to information from Polish Register of Shipping, three-tone signal is applied on Polish inland waterways for vessels navigating in reduced visibility. This requirement is imposed by the Polish administration and included in the national regulations. The characteristics of the signal are identical to those provided in CEVNI, Chapter I, section III.

The Rules of Polish Register of Shipping do not regulate or define the use and characteristics of three-tone signal in relation to inland waterways. The basis for the use and characteristics of sound signals are the national regulations.

#### **G. Russian Federation**

The Inland Navigation Rules of the Russian Federation<sup>2</sup> do not prescribe three-tone signal or any special sound signals for vessels navigating by radar, other than sound signals for navigation in reduced visibility which are given in the table below. Vessels are allowed to navigate in reduced visibility conditions if they use the following equipment during the voyage and it is in a good working order: radar, rate-of-turn indicator or compass, VHF radio station for ship-to-ship communication and ship-to-shore communication and the device for emitting sound signals.

<i>Sound signal</i>	<i>Meaning</i>
1 long blast repeated at intervals of not more than 2 minutes	“Single vessels under way”
1 long blast followed by 2 short blasts with intervals of not more than 2 minutes	“Convoys and rafts under way”
2 long blasts with an interval of not more than 2 minutes	“Vessels and convoys moving on a long stretch of the waterway (applied also to “blind” stretches)”
1 short blast, 1 long blast, 1 short blast with intervals of not more than 2 minutes	“Single vessels or convoys anchored or grounded within the fairway limits”
Recurrent sounding of a bell or a metallic object repeated at intervals of not more than 1 minute	“Non-motorized vessel with the crew on board anchored or grounded within the fairway limits”

#### **H. Serbia**

Three-tone signal for vessels navigating by radar in reduced visibility is still applied in Serbia and is quite often used.

#### **I. Slovakia**

Three-tone signal on inland waterways for vessels navigating by radar in reduced visibility is still applied in the Slovak Republic and is still needed for cases as defined by CEVNI in Chapter 6, Section VI, Article 6.32, paragraph 4:

When radiotelephone contact cannot be established with the oncoming vessels, the vessel proceeding downstream shall:

(a) Give the three-tone signal and repeat it as often as necessary. This provision does not apply to small craft;

(b) Reduce speed and, if necessary, stop.

A vessel proceeding upstream shall, as soon as it hears the signals referred to in paragraph 4 (a) above or observes on the screen vessels whose position or movements might cause a

<sup>2</sup> Adopted by Order of the Ministry of Transport of the Russian Federation No. 19 of 19 January 2018.

dangerous situation, or when it is approaching a section where there might be vessels not yet visible on the screen;

- (c) Give one long blast and repeat this signal as often as necessary;
- (d) Reduce speed and, if necessary, stop.

#### **J. Ukraine**

According to information from Shipping Register of Ukraine, this requirement is applied for inland vessels, as the Ukrainian Rules and regulations are harmonized with UNECE resolutions.

According to the Inland Navigation Rules of Ukraine, vessels are allowed to navigate in reduced visibility conditions (less than 1 km) only if they are using radar, rate-of-turn indicator, VHF radio station for ship-to-ship communication and ship-to-shore communication which are in good working order, as well as the device for emitting sound signals.

A vessel is considered as navigating by radar in reduced visibility, if it is equipped with radar, rate-of-turn indicator, VHF radio station for ship-to-ship communication and ship-to-shore communication, which are in good working order and correspond to technical standards, as well as with a device for emitting three-tone signal.

As soon as a vessel proceeding downstream with the use of radar, observes on the radar screen vessels whose position or course may cause a dangerous situation, or approaches a stretch where other vessels can be not observed on the radar screen, it shall:

- (a) Give the three-tone signal and repeat it as often as necessary. This provision does not apply to small craft;
- (b) Reduce speed and, if necessary, stop.

The Rules for the Classification and Construction of Inland Navigation Vessels by the Shipping Register of Ukraine contain the above requirements in a full scope, and vessels are fitted with mechanical devices for emitting sound signals, including typhoons, steam whistles and devices for emitting three-tone signals.

#### **K. Central Commission for the Navigation of the Rhine**

Article 6.32, paragraph 2(d) of RPNR prescribes the following:

“When radiotelephone contact cannot be established with the vessels coming in the opposite direction, the vessel navigating by radar shall:

- Give one long blast and repeat this signal as often as necessary;
- Reduce speed and, if necessary, stop.

This provision also applies to all vessels navigating by radar in relation to stationary vessels near the fairway, with which radiotelephone contact cannot be established.

RPNR no longer contain the requirement for three-tone signal.

#### **L. Danube Commission**

Three-tone signal is not required on a number of inland waterways of Europe; for example, on the Rhine. In order to navigate on the Danube, these vessels are required to install this equipment on board. Manufacturers of whistles sometimes have difficulties with producing and installing this signal on inland vessels. Furthermore, the requirement of three-tone signal

for vessels navigating by radar in reduced visibility is not contained in all navigation rules applied on European waterways.

Actually, this requirement may be considered as outdated for several reasons: often, it is not used by boatmasters any longer; this signal may affect the work of the crew; there are no detailed prescriptions on particular situations when it is required. It is not clear how this signal can improve navigation safety in conditions of restricted visibility.

This signal has been introduced in CEVNI a long time ago, when navigation by radar was not yet fully developed, and a special sound signal was used by vessels moving in restricted visibility, if they had no other means for safe navigation. Nowadays, in practice all vessels are fitted with radar installations, radio installations and, additionally, AIS/Inland ECDIS equipment and they are able to emit other sound signals, therefore, emitting three-tone signal is no longer necessary. In addition, this signal, particularly at night, has an impact on inhabitants of the settlements located nearby.

It is proposed therefore to consider a possible deletion of this provision from the upcoming sixth revision of CEVNI with a view to improve a positive image of inland shipping, facilitate free navigation and continue the harmonization of the regulatory framework.

### **III. Provisions for frequency ranges of sound signals for inland vessels applied by member States**

#### **A. Serbia**

For the sound frequencies, Serbia applies the CEVNI provisions, however, it is not easy to find a proper equipment. Air horns can reproduce frequencies within the range 165 to 297 Hz, but sometimes they are too loud, especially on lower frequencies, and that could be a noise problem on inland waterway sections within city areas. Electronic horns might be a better solution. On the other hand, the existing range could be changed closer to 230 to 320 Hz.

#### **B. Slovakia**

There are no particular prescriptions for sound frequencies for inland waterway vessels in the Slovak Republic.

#### **C. Ukraine**

Main frequency ranges of sound signals are:

- for motorized vessels other than small craft – 200 Hz  $\pm$  20%
- for non-motorized vessels and small craft more than 350 Hz.

The frequency of the tree-tone signal shall be within the range 165 to 297 Hz and the difference between the highest and the lowest blasts shall be at least two full notes.

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