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ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

Working Party on Inland Water Transport
(Forty-seventh session, 7-9 October 2003,
agenda item 7 (b))

**UPDATING THE EUROPEAN CODE FOR
INLAND WATERWAYS (CEVNI)**

Note by the secretariat

The Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation at its twenty-sixth session, bearing in mind the text of draft article 4.05 “Radar” provisionally approved at that session (see TRANS/SC.3/WP.3/2004/2), requested that the secretariat should prepare, for the forty-seventh session of SC.3, a draft Annex 10 to CEVNI containing the general technical specifications applicable to radar equipment contained in paragraphs 10B-4.9 to 10B-4.10 of draft chapter 10B as set out in document TRANS/SC.3/WP.3/2003/3. It also requested SC.3 to decide whether the SC.3/WP.3 Working Party should continue its work on the question in the context of the amendment of CEVNI or whether it should follow other directions (TRANS/SC.3/WP.3/52, para.20).

Draft Annex 10 to CEVNI, prepared in accordance with the above-mentioned instructions of the SC.3/WP.3 Working Party, can be found below.

Annex 10

**GENERAL TECHNICAL SPECIFICATIONS
APPLICABLE TO RADAR EQUIPMENT**

1.1 The technical parameters of radar installations must satisfy the following requirements:

Minimum range of detection	15 m
Maximum ¹ range of detection of shore 60 m high (at height of installation 10 m) ²	– 37,000 m (for cm-band radar) – 14,000 m (for mm-band radar)
Distance resolution	15 m at scales 0.5-1.6 km; ³ 1% of the scale value at other scales
Angular resolution ⁴ On vessels of less than 1,600 register tons	1° Not more than 3°
Accuracy of measurement: range	1% of variable range circles 10 m fixed range circles at scales 0.5-2.0 km ⁵ 0.8% of the value of the selected scale

¹ Note by the secretariat: In document TRANS/SC.3/WP.3/2000/11, Germany points out that the proposed maximum range is not required in inland navigation since it would be contrary to the objective that the transmission power should be as low as possible. This requirement is only useful for sea radar equipment for coastal shipping.

² Note by the secretariat: In document TRANS/SC.3/WP.3/2002/12, Ukraine proposes: “**7 m above water level**” instead of “10 m”.

³ Note by the secretariat: In document TRANS/SC.3/WP.3/2002/12, Ukraine proposes the modification of the lowest value of the scale to read: “**0.4-1.6 km**”.

⁴ Note by the secretariat: In document TRANS/SC.3/WP.3/2000/11, Germany points out that in inland navigation different requirements for small and large vessels with regard to the angular resolution are not necessary, and that the German and CCNR regulations provide for an angular resolution of 1.2° or less, irrespective of the vessel’s tonnage.

⁵ Note by the secretariat: In document TRANS/SC.3/WP.3/2002/12, Ukraine proposes the modification of this distance as follows: “**0.4-2.0 km**”.

Accuracy of measurement: bearings	$\pm 1^{\circ 6}$
Heading line:	
– Width	0.5°
– Deviation	0.5°
Effective diameter of screen indicator	180 mm for vessels from 500 to 1,600 register tons 270 mm for vessels of more than 1,600 register tons ⁷
Range scales ⁸	0.5; ⁹ 1; 1.6; 2; 3.2; 4; 8; 16; 32 km: not less than 4 fixed range circles within each scale
Off-centring	1/4-1/3 of the effective diameter of the image
Bearing facilities:	
– Timing	Up to 5 seconds
– Error	± 1

⁶ Note by the secretariat: In document TRANS/SC.3/WP.3/2002/12, Ukraine proposes the replacement of “1°” by “0.5°”.

⁷ Note by the secretariat: In document TRANS/SC.3/WP.3/2002/12, Ukraine proposes: “**at least 180 mm** for vessels from 300 to 1,600 grt” and “**at least 250 mm** for vessels of more than 1,600 grt.” In document TRANS/SC.3/WP.3/2000/11, Germany points out that in inland navigation different requirements for small and large vessels with regard to the diameter of the screen are not necessary and that the German and CCNR regulations provide for a screen diameter of at least **270 mm** irrespective of the ship’s tonnage.

⁸ Note by the secretariat: In document TRANS/SC.3/WP.3/2000/11, Germany points out that non-conforming range scales between the German/CCNR regulations and the Russian proposal are to be found at 0.8, 1.0, 1.2 and 3.2 km. All other range scales correspond to each other. It is, however, not comprehensible that optimum range scales can be different according to the width of the river estuaries navigated. In this case it should be left to the competent authorities to define range scales in a footnote.

⁹ Note by the secretariat: In document TRANS/SC.3/WP.3/2002/12, Ukraine proposes the modification of the lowest value on the scale to read: “0.4-1.6 km.”

Transmission frequency	9 GHz (3.2 cm); 33.2 GHz (9 mm) ¹⁰
Warm-up time	4 minutes
Minimum antenna speed	18 revolutions per minute ¹¹

1.2 Radar equipment may be installed on board vessels only following tests to determine whether they conform to the provisions laid down in these requirements and by national authorities.¹²

¹⁰ Note by the secretariat: In document TRANS/SC.3/WP.3/2000/11, Germany points out that in inland navigation only the frequency range of **9.3 to 9.5 GHz (3.2 cm)** can be permitted. Tests carried out with 30-GHz facilities have shown that these frequency ranges are not suitable since the reflections are too strong in the case of rain or snow, making the radar image unusable. The equipment of the waterways, in particular the radar absorbers for the reduction of multiple reflections at bridges are adapted to frequencies around 9.4 GHz.

¹¹ Note by the secretariat: In document TRANS/SC.3/WP.3/2000/11, Germany points out that the German and CCNR regulations require at least **24 revolutions per minute**. S band antennas (10 cm), which revolve more slowly, are only available on sea-going vessels.

¹² Note by the secretariat: Paragraph 11-3.10 of the Russian proposal (TRANS/SC.3/WP.3/1999/19). In document TRANS/SC.3/WP.3/2002/12, Ukraine considers that the matter in question falls within the competence of the national administrations and therefore should perhaps not be included in these regulations.