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INLAND TRANSPORT COMMITTEE

Working Party on Inland Water Transport

Working Party on the Standardization
of Technical and Safety Requirements
in Inland Navigation

(Twenty-first session, 14-16 March 2001,
agenda item 8)

CONSIDERATION OF MEASURES AIMED AT PREVENTION OF AIR POLLUTION
FROM INLAND NAVIGATION VESSELS

Transmitted by the Central Commission for the Navigation of the Rhine (CCNR)

Note: The Working Party at its nineteenth session requested Governments and river commissions to submit their proposals on problems concerning air pollution caused by inland navigation vessels (TRANS/SC.3/WP.3/39, paras. 23 and 24).

The secretariat reproduces below the communication received from the Central Commission for the Navigation of the Rhine in this regard, in the form of a CCNR resolution concerning limitations on exhaust and air-pollutant particle emissions from diesel engines used in inland navigation and the text of the new Chapter 8 bis of the Rhine Vessel Inspection Regulations (RVBR) on the same subject annexed to the resolution. As the text of annex J to the RVBR is very voluminous, only the table of contents is reproduced here.

**Provisions of RVBR concerning limitations on exhaust and
air-pollutant particle emissions from diesel engines used in
inland navigation (1999-II-16)**

Resolution

The Central Commission,

Considering that limitations on exhaust emissions from diesel engines newly installed on vessels used in Rhine navigation and the control of such emissions will contribute to improving the quality of the environment,

Aware that the extension of the provisions and procedures already in service on board inland navigation vessels requires additional studies the results of which will only be available at a later date,

Bearing in mind the efforts made by other transport modes to reduce exhaust emissions from diesel engines as their technological development progresses,

At the proposal of the Chairman of the Vessel Inspection Committee,

I.

Adopts the new chapter 8 bis, the amendments to article 24.02, paragraph 2, and the new annex J to the Rhine Vessel Inspection Regulations contained in annexes 1 to 3 to the present resolution in French, Dutch and German;

These provisions shall enter into force on 1 January 2002.

II.

Gives the Vessel Inspection Committee the responsibility of drafting by 2003 and submitting for adoption, on the basis of resolution 1999-III-18 and the results of the round table and after consultation with representatives of the profession in Rhine navigation and other experts on exhaust emissions, a proposal for a procedure for monitoring engines mounted on inland navigation vessels and the necessary additional provisions of the Rhine Vessel Inspection Regulations. The procedure adopted for handling this requirement and for carrying out the necessary work should be established by spring 2001 in the form of a structured programme of work.

III.

Gives the Vessel Inspection Committee the responsibility of drafting by spring 2001 and submitting for adoption, on the basis of resolution 1999-II-16 and the results of the round table and after consultation with representatives of the profession in Rhine navigation and other experts on exhaust gases, a proposal in the context of a stage II for an adaptation to the state of the art of the permissible rates of exhaust and particle emissions and the necessary additional provisions of the Rhine Vessel Inspection Regulations.

Annex 1

CHAPTER 8 bis

Exhaust and pollutant particle emissions from diesel engines

Article 8 bis.01

Definitions

For the purposes of this chapter:

1. “Engine” means an engine operating according to the compression ignition principle (diesel engine);
2. “Type approval” means the decision whereby the competent authority certifies that an engine type, family or group meets the technical requirements of this chapter in respect of emissions of engine exhaust and air-pollutant particles;
3. “Installation check” means the procedure whereby the competent authority ascertains that an engine installed on a vessel meets the technical requirements of this chapter as regards exhaust and air-pollutant emissions, including those occurring after any modifications and adjustments which may have taken place after type approval;
4. “Interim check” means the procedure whereby the competent authority ascertains that an engine installed on a vessel meets the technical requirements of this chapter as regards exhaust and air-pollutant emissions, including those occurring after any modifications and/or adjustments which may have taken place after the mounting check;
5. “Special check” means the procedure whereby the competent authority ascertains that an engine used on board a vessel still meets the technical requirements of this chapter as regards exhaust and air-pollutant emissions after each major modification;
6. “Engine type” means a batch of engines which are identical in terms of the essential features of the engine as set out in annex J, part II, appendix 1; at least one unit of the engine type must be constructed;
7. “Engine family” means a grouping of engines by the constructor, approved by the competent authority, which as a result of their design must all have similar features as regards the level of exhaust and air-pollutant particle emissions and meet the requirements of this chapter;

8. “Engine group” means a group of engines selected by the constructor, approved by the competent authority, which as a result of their design must all have similar features as regards the level of exhaust and air-pollutant particle emissions and meet the requirements of this chapter, the adjustment or modification of individual engines being permissible after the type approval within fixed limits;
9. “Representative engine” means an engine selected within an engine family or engine group such as meets the requirements of annex J, part I, section 5;
10. “Rated power” means the net power of the engine at rated speed and at full load;
11. “Constructor” means the physical person or the agency responsible to the competent authority for all aspects of the type approval and conformity of production process. This person or agency is not required to participate directly in all the stages of engine construction. If, after initial manufacture, the engine undergoes adaptations and improvements for use on board a vessel within the meaning of this chapter, the constructor is in principle the physical person or agency executing the adaptations or improvements;
12. “Data sheet” means the document referred to in annex J, part II containing the data to be furnished by the applicant;
13. “Constructor’s documents” means the full set of data, designs, photographs and other documents furnished by the applicant to the Technical Service or to the competent authority in accordance with the particulars of the data sheet;
14. “Approval documents” means the constructor’s documents accompanied by test reports or other documents which the Technical Service or the competent authority have added in the execution of their tasks;
15. “Type approval certificate” means the document referred to in annex J, part III, by which the competent authority certifies the type approval;
16. “Collection of engine parameters” means the document referred to in annex J, part VIII containing all the parameters, including the parts (components) and adjustments of the engine, which have an impact on exhaust and air-pollutant particle emissions and their modifications.

Article 8 bis.02

Fundamental principles

1. This chapter applies to all engines of a rated power (P_N) equal to or greater than 37 kW installed on board vessels or machines on board vessels where they are not already covered by the EU directives concerning exhaust and air-pollutant particle emissions.

2. Carbon monoxide (CO), hydrocarbon (HC), nitrogen oxide (NO_x) and particle (PT) emissions from these engines must not exceed the following values, in terms of the rated speed n:

P _N [kW]	CO [g/k/Wh]	HC [g/k/Wh]	NO _x [g/k/Wh]	PT [g/k/Wh]
$37 \leq P_N < 75$	6.5	1.3	9.2	0.85
$75 \leq P_N < 130$	5.0	1.3	9.2	0.70
$P_N \geq 130$	5.0	1.3	$N \geq 2\ 800 \text{ rev/min} = 9.2$ $500 \leq 2\ 800 \text{ rev/min} = 45 \cdot n^{(-0.2)}$	0.54

3. Compliance with the requirements of paragraph 2 by an engine type, group or family can be observed by means of a type inspection. The type inspection is certified by a type approval certificate. The owner or his representative is required to attach a copy of the type approval certificate to the request for inspection referred to in article 2.02. A copy of the type approval certificate and the collection of engine parameters shall also be on board.
4. After the installation of the engine on board, but before it is brought into service, an installation check is made. This check, which is part of the first inspection of the vessel or of a special inspection justified by the installation of the engine in question, leads either to the registration of the engine in the first inspection certificate drawn up or to an amendment to the existing inspection certificate.
5. Interim engine checks shall be effected as part of an additional inspection in accordance with article 2.09.
6. A special check shall be made after each major modification to the engine with an impact on exhaust and air-pollutant particle emission.
7. The type approval and identification numbers of all the engines referred to in this chapter installed on board a vessel shall be registered in No. 52 of the inspection certificate by the inspection commission.
8. The competent authority may have recourse to a Technical Service in order to effect the tasks referred to in this chapter.

Article 8 bis.03

Application for type approval

1. Any application for type approval by engine type, family or group is submitted by the constructor to one of the competent approval authorities. It shall be accompanied by the constructor's documents and a draft of the collection of engine parameters. For the approval tests, the constructor shall submit an engine with the basic features set out in annex J, part II, appendix 1.

2. Where an application concerns the type approval of an engine family or engine group, if the competent authority considers that, as regards the representative engine selected, the application does not correspond to the engine family or engine group described in annex J, part II, appendix 2, a replacement representative engine and, if necessary, an additional representative engine selected by it, shall be supplied for the purposes of the approval referred to in paragraph 1.
3. An application for approval of an engine type, an engine family or an engine group may only be submitted to a single authority. A separate application shall be submitted for each engine type or engine family or engine group to be approved.

Article 8 bis.04

Type approval procedure

1. The competent authority receiving the application shall grant type approval to all engine types or families or groups in conformity with the information contained in the constructor's documents and meeting the requirements of this chapter.
2. The competent authority shall complete all the relevant entries in the type approval certificate, a model of which can be found in annex J, part III, for each engine type or family it approves and shall draw up or check the contents of the index of the approval documents. The approval certificates shall be numbered using the method described in annex J, part IV. The completed type approval certificate and its annexes shall be sent to the applicant.
3. Where the engine to be approved does not fulfil its function or presents certain features only in connection with other elements of the vessel in which it is to be installed, such that conformity with one or more requirements can be certified only when the engine to be approved functions in connection with other elements of the vessel, whether real or simulated, the scope of the engine approval type shall be restricted in consequence. The type approval certificate of the engine or of the engine family or engine group shall then include any restrictions on use and conditions for installation.
4. The competent authority:
 - (a) Shall, at each modification, send the other competent authorities a list (containing the information specified in annex J, part V) of type approvals of engines, engine families or engine groups that it has granted, refused or withdrawn during the period in question;

- (b) At the request of another competent authority, the competent authority shall send:
 - (aa) a copy of the type approval certificate of the engine, the engine family or the engine group concerned, with or without the approval documents for each type of engine or engine family or engine group to which its acceptance, refusal or withdrawal of approval has applied and, where applicable,
 - (bb) the list referred to in article 8 bis.06, paragraph 3, of engines produced in accordance with the type approvals granted, with the information referred to in annex J, part VI.
- 5. Each year, and every time it is requested to do so, each competent approval authority shall send the secretariat of the Central Commission for the Navigation of the Rhine a copy of the data sheet referred to in annex J, part VII, concerning the engine types, families and groups approved since the last notification.

Article 8 bis.05

Modification of approvals

1. The competent authority which has processed a type approval shall take the necessary steps to ensure that it is informed of any modification of the data contained in the approval documents.
2. The application for modification or extension of a type approval shall be submitted exclusively to the competent authority which processed the original approval.
3. If particulars contained in the approval documents have been modified, the competent authority:
 - (a) shall, if required, prepare one or more revised pages of the approval documents, indicating clearly on each revised page the nature of the modification and the date of the new version. Each time revised pages are published, the summary of the approval documents (annexed to the type approval certificate) shall be updated;
 - (b) shall prepare a revised type approval certificate (with an extension number) if one of the particulars it contains (except for its annexes) has been modified or if the standards of the present chapter have been modified since the initial date of approval affixed to it. The revised certificate shall indicate clearly the reason for the revision and the date on which the new version was prepared.

If the competent authority which issued the type approval certificate considers that a modification of the approval documents justifies further tests or checks, it shall so inform the constructor and shall prepare the aforementioned documents only after making further satisfactory tests or checks.

Article 8 bis.06*Conformity*

1. The constructor shall affix to each unit manufactured in accordance with the approved type the markings defined in annex J, part I, section 1, including the type approval number.
2. If the type approval certificate makes provision for restrictions on use, in accordance with article 8 bis.04, paragraph 3, the constructor shall furnish details of such restrictions for each unit manufactured and attach the conditions for installation.
3. On request, the constructor shall send the authority which issued the type approval certificate, within 45 days of the end of each calendar year and immediately following any other date which the authority may decide, a list with the series of identification numbers (serial numbers) of each engine type produced in accordance with the requirements of the present chapter since the last date of notification or since the first date on which these provisions were implemented. This list shall indicate the relations between the identification numbers and the corresponding engine types, families or groups and the type approval numbers if the engine coding system does not make these relations explicit. It shall furthermore include details where the constructor has ceased to produce an approved engine type, engine family or engine group. Where the competent authority does not request that this list should be regularly communicated to it, the constructor shall keep these data for 40 years at least.

Article 8 bis.07*Acceptance of other equivalent standards*

The Central Commission for the Navigation of the Rhine may acknowledge the equivalence between corresponding standards contained in international regulations, the requirements of a riparian State of the Rhine or Belgium or a third country as regards the approval of engines and the conditions and provisions established in this chapter.

Article 8 bis.08*Control of identification numbers*

1. The competent authority which issued the type approval certificate shall take all necessary measures to record and check, if necessary in cooperation with the other competent authorities, the identification numbers of engines produced in accordance with the requirements of this chapter.

2. An additional check of identification numbers may take place when conformity of production is certified as stated in article 8 bis.09.
3. As regards the check of identification numbers, the constructor or his agents established in riparian States of the Rhine or in Belgium shall transmit without delay to the competent authority which so requests all necessary information on their customers and the identification numbers of engines declared to have been manufactured in accordance with article 8 bis.06, paragraph 3.
4. If, at the request of the competent authority, the constructor is not in a position to check the requirements referred to in article 8 bis.06, type approval of the engine, the engine family or the engine group concerned may be withdrawn. The information procedure described in article 8 bis.10, paragraph 4, shall then be initiated.

Article 8 bis.09

Conformity of production

1. The competent authority which carries out a type approval shall ensure first of all that the necessary steps have been taken to guarantee the effective certification of conformity of production, in respect of the requirements defined in annex J, part I, section 4, if necessary in cooperation with the competent authorities.
2. The competent authority which has carried out a type approval shall ensure that, as regards the provisions defined in annex J, part I, section 4, where necessary in cooperation with the competent authorities, the measures referred to in paragraph 1 are always adequate and that each engine produced bearing a type approval number in accordance with the requirements of the present chapter conforms to the description contained in the type approval certificate of the approved engine, the engine family or the engine group and its annexes.

Article 8 bis.10

Non-conformity with the approved engine type, family or group

1. Non-conformity with the approved engine type, family or group exists when, in relation to the information furnished in the type approval certificate and/or in the approval documents, divergences are observed which have not been authorized, under article 8 bis.05, paragraph 3, by the competent authority which carried out the type approval.

2. If the competent authority which carried out the type approval notes that engines accompanied by a certificate of conformity or carrying an approval mark do not conform to the type, family or group which it has approved, it shall take the necessary measures for the re-establishment of the conformity of engines in the process of production to the approved type, family or group. The competent authority which carried out the type approval shall notify the other competent authorities of the measures taken which, as applicable, may include withdrawal of the type approval.
3. If a competent authority establishes that engines bearing a type approval number do not conform to the approved type, family or group, it may request the competent authority which carried out the type approval to check the conformity of engines under construction with the approved type, family or group. The required measures should be taken in the six months following the date of the request.
4. The competent authorities shall inform each other and also the secretariat of the Central Commission for the Navigation of the Rhine, within one month, of the withdrawal of a type approval and the reasons justifying that measure.

Article 8 bis.11

Installation check, interim check and special check

1. When the installation check referred to in article 8 bis.02, paragraph 4, the interim check referred to in article 8 bis.02, paragraph 5 and the special check referred to in article 8 bis.02, paragraph 6, are made, the competent authority shall check the current state of the engine with reference to its components and to the calibration and regulation of its parameters as specified in the descriptive documents.

If a competent authority observes that the engine does not conform to the approved engine type, family or group, it may request that the conformity of the engine should be re-established, that the type approval referred to in article 8 bis.05 should be modified accordingly or that measurements should be made of the actual emissions.

If the conformity of the engine is not re-established or if the type approval is not modified or if the measurements made show that emissions do not conform to the permitted rates referred to in chapter 8 bis.02, paragraph 2, the competent authority shall refuse to issue an inspection certificate and shall withdraw any inspection certificate previously drawn up.

2. Engines fitted with an exhaust after-treatment system shall be checked for the correct functioning of this system in the context of the installation, interim and special checks.

Article 8 bis.12

Competent authorities and Technical Services

1. The riparian States of the Rhine and Belgium shall notify the Central Commission for the Navigation of the Rhine of the names and address of the competent authorities and Technical Services responsible for questions relating to this chapter. The services notified shall comply with the standards for testing laboratories (EN 45001) and meet the following requirements:
 - (a) Engine constructors may not be recognized as Technical Services;
 - (b) For the purposes of this chapter, a Technical Service may, with the approval of the competent authority, use monitoring facilities other than its own.
2. Technical Services other than those of a State member of the Central Commission for the Navigation of the Rhine may only be recognized on the recommendation of the Central Commission for the Navigation of the Rhine.

Annex 2

Article 24.02, paragraph 2, add the following:

CHAPTER 8 bis:

The requirements do not apply to engines installed on board prior to 1 January 2002 nor to replacement engines* installed prior to 31 December 2011, including engines installed on board vessels in service at 1 January 2002.

* A replacement engine is a revised second-hand engine, similar to the engine replaced in terms of power, rating and conditions of installation.

Annex 3

Annex J to the Rhine Vessel Inspection Regulations

Exhaust and air-pollutant particle emissions

- Additional provisions and model certificates -

Summary

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1. Marking of engines
2. General requirements concerning engine construction and maintenance
3. Checks
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5. Engine families and groups

Part II

Data sheet (model)

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Appendix 2 - Determining features of the engine family/engine group (model)

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Part III

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Part IV

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Part V

List of type approvals for engine types, families and groups

Part VI

List of engines manufactured (model)

Part VII

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Part VIII

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