

RUSSIAN MARITIME REGISTER OF SHIPPING

RULES

**FOR TECHNICAL SUPERVISION
DURING CONSTRUCTION OF SHIPS
AND MANUFACTURE OF MATERIALS
AND PRODUCTS FOR SHIPS**

**Part II
TECHNICAL DOCUMENTATION**

ND No. 2-020101-118-E



**Saint-Petersburg
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Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships have been approved in accordance with the established approval procedure and come into force on 1 July 2019.

The present edition of the Rules is based on the 2018 edition taking into account the amendments developed immediately before publication.

The Rules are published in the following parts:

Part I "General Regulations for Technical Supervision";

Part II "Technical Documentation";

Part III "Technical Supervision during Manufacture of Material";

Part IV "Technical Supervision during Manufacture of Products".

The Rules are published in electronic format in Russian and English.

As compared to the 2018 edition, the present edition of the Rules contains the following amendments.

PART II. TECHNICAL DOCUMENTATION

- 1.** Section 3: paras 3.7 and 3.12 have been amended.
- 2.** Section 4 has been supplemented by a new para 4.6.
- 3.** Section 6: para 6.1 has been amended.
- 4.** Section 7: paras 7.1 — 7.3 have been replaced by para 7.1;
existing paras 7.4 — 7.6 have been renumbered 7.2 — 7.4 accordingly.
- 5.** Section 8: para 8.3.2 has been amended.
- 6.** Section 9: para 9.3 has been amended.
- 7.** Section 11 has been replaced by new Section 11 "GRANTING THE SHIP UNDER CONSTRUCTION WITH AN EXEMPTION (WAIVER) FROM COMPLIANCE WITH THE REQUIREMENTS OF INTERNATIONAL CONVENTIONS".
- 8.** Section 12 has been completely amended.
- 9.** Appendix has been deleted.
- 10.** Editorial amendments have been made.

PART II. TECHNICAL DOCUMENTATION

1 APPLICATION

1.1 The provisions of the present Part are applied in review of the technical documentation on construction of ships and manufacture of materials and products for ships subject to the Register technical supervision in compliance with the General Regulations for the Classification and Other Activity.

1.2 These provisions are also applied in review of the technical documentation on conversion, modernization, restoration and repair of the items of technical supervision as far as it is practicable and reasonable.

2 DEFINITIONS AND EXPLANATIONS

2.1 Definitions and explanations related to the general terminology of the RS rules are given in 1.1, Part I "Classification" of the Rules for the Classification and Construction of Sea-Going Ships.

Terms and definitions used in the present Part and related to the technical documentation are given in Section 1, Part I "General Regulations for Technical Supervision" of the present Rules.

3 GENERAL

3.1 Construction of ships and manufacture of materials and products for ships shall be in compliance with the technical documentation approved (agreed) by the Register.

3.2 Review (expertise) of the technical documentation aims at verification of the compliance of the items of technical supervision with the RS requirements.

3.3 Technical documentation on items of technical supervision shall be submitted to the Register for review and approval (agreement) prior to the commencement of construction (manufacture) of the items. Documents shall be in the Russian or English language.

Documents shall be submitted in electronic form in PDF format (on CD, by e-mail, via FTP-server or in a different way agreed with the Register).

3.4 Technical documentation submitted to the Register for review shall be prepared in such a way or supplied with such additional information that enables to make sure that the appropriate provisions of the RS rules and international conventions and agreements are fulfilled.

3.5 For class assignment to a ship under construction the plan approval documentation, as stated in 3.1.2, Part I "Classification" of the Rules for the Classification and Construction of Sea-Going Ships, in 3.1.2, Part I "Survey Regulations" of the Rules for the Equipment of Sea-Going Ships, and in other rules for the classification and construction of specialized types of ships and fixed offshore platforms (refer to 1.3 of General Regulations for the Classification and Other Activity) shall be submitted to the Register for approval.

The scope of technical documentation for ships and products of special design and purpose is subject to agreement with the Register in each particular case.

Standards on individual materials and products agreed with the Register may substitute the relevant part of the documentation or documentation as a whole.

3.6 Where novel engineering solutions are used, and for the purpose of feasibility studies, tendering process, etc., the performance specification, draft proposal, tender documentation, conceptual design, engineering analysis procedure as well as experimental design and research developments (Front End

Engineering Design, etc.) and other documentation of high degree of novelty may be submitted to the Register for review. Such documents are not subject to approval, and on the results of their review a written conclusion (expert opinion) of the Register is compiled (refer to 8.5).

On the customer's request, the Register may review the above technical documentation as part of "Approval in Principle" (AIP) service. With regard to this service, the written conclusion (expert opinion) contains the additional information including, but not limited to, the following:

- list of actions with respect to the project aimed at obtaining the RS approval;

- information on new RS requirements to be implemented at subsequent stage of the documentation review;

- list of restrictions and conditions of use for the proposed new engineering solutions based on their engineering evaluation and research results.

Due to the novelty of the proposed engineering solutions, the scope of technical documentation submitted to the Register, and the actions required for rendering AIP service are subject to agreement between the customer and the Register in each particular case.

Technical documentation shall contain general information on the item, drawings, specifications, engineering analysis results, test reports, etc., where applicable.

3.7 The Register reviews and agrees the national or international standards as well as standards of firms (organizations) containing norms and requirements for items of the Register technical supervision, on requests of state bodies and Administrations, firms and organizations. In case standards are submitted together with the technical documentation on items of the Register technical supervision, they are reviewed as part of that documentation, and a possibility of their application in each case is confirmed by the approval of the technical documentation without agreement of the standards themselves. The main provisions concerning agreement of standards and other normative documents are stated in Section 7.

3.8 Calculations necessary for determination of parameters and values regulated by the RS rules shall be made in compliance with the provisions of these Rules or according to the standards, methods and other normative documents agreed by the Register.

The procedures and methods of calculations used shall provide an adequate accuracy of the problem solution.

Calculations shall be made in accordance with the programs having type approval of the Register.

The Register does not check the correctness of computing operations in calculations, including those made according to the programs having type approval of the Register but examines only the final results of the calculations. In separate cases, the Register may conduct additional expertise of the accuracy of the final results.

The main provisions concerning approval of calculation programs and agreement of calculation procedures are stated in Section 12.

3.9 Amendments made in the technical documentation approved (agreed) by the Register and dealt with the fulfillment of the RS requirements shall be submitted to the Register for review prior to their implementation (refer to Section 10).

3.10 In case the submitted technical documentation shows full (or recognized by the Register as adequate) compliance of the items of supervision with the RS requirements, this documentation is approved (agreed).

The documentation, which does not meet the RS requirements, is returned to the design office for further work and/or updating.

3.11 The fact that the documentation is approved (agreed) is acknowledged by putting on it the appropriate stamps of the Register (refer to 8.3).

Approval (agreement) relates only to the technical documentation covered by the RS requirements.

3.12 Equivalences, deviations from the RS classification requirements, alternative design and arrangements.

3.12.1 Where technical documentation contains technical solutions that differ from those regulated by the requirements of international conventions (equivalences — refer to 1.1 of the General Regulations for the Classification and Other Activity), every such solution shall be agreed upon by the Administration in

accordance with the instructions contained in the conventions. Each equivalence shall be agreed upon by the Administration on a case by case basis.

3.12.2 Where technical documentation contains technical solutions that differ from those regulated by the RS classification requirements (deviations — refer to 1.1 and 1.3.4 of the General Regulations for the Classification and Other Activity), the designer shall submit to the Register the appropriate technical justification for such solutions. The deviations agreed upon by the Register shall be included in the List of Deviations from the RS Rules.

3.12.3 Where technical documentation contains alternative design and arrangements, they shall be agreed according to the procedure prescribed in 3.1.7, Part I "Classification" of the Rules for the Classification and Construction of Sea-Going Ships. Information on the agreed alternative design and arrangements shall not be included in the List of Deviations from the RS Rules, if any.

3.13 Approval of the technical documentation by any RS Branch Office is valid for all other RS Branch Offices. Such approval may be (in case of proper reasons) cancelled or altered only by the RS Branch Offices, which approved the documentation, as well as a higher RS Branch Office up to RHO.

The technical documentation approved by one of the Register Branch Offices is accepted by other RS Branch Offices for carrying out technical supervision without additional approval of the documentation concerned, provided no updating is required by the production conditions of the particular firm (manufacturer).

3.14 The differences of principle on the technical documentation shall be finally resolved by:

.1 RHO in relation of technical designs, plan approval documentation, specifications and normative documents;

.2 the RS Branch Offices in relation to detailed design documentation.

3.15 The Register charges fees for review of the technical documentation in accordance with its current tariffs (irrespective of the results of review).

3.16 All the documentation submitted to the Register for review is confidential and may be handed over to a third party only upon the written consent of its legal owner.

4 TECHNICAL DOCUMENTATION ON SHIPS

4.1 Plan approval documentation, technical designs, projects involving major conversions of ships, passage of ships, as well as the documentation stated in 3.6 and 3.7 are subject to review and approval by RHO or by the RS Branch Office when duly authorized by RHO.

Detailed design documentation for a ship under construction, the projects involving minor conversion (outfitting, modernization) as well as technical documentation on ships of less than 100 gross tonnage (excluding high-speed craft, passenger ships, tankers, tugs, ships designed for carriage of dangerous goods, pleasure craft with passenger capacity more than 12) shall be reviewed by the RS Branch Offices without the RHO authorization.

4.2 Requests for review of technical documentation shall be sent to the relevant RS Branch Office depending on the type of the documentation according to 4.1.

A request shall contain the following information:

project number;

ship type;

ship purpose;

ship main particulars;

date of contract for construction of the ship or series of sister ships, as well as hull numbers (i. e. order numbers) of all ships included in the contract, with indication of optional ships;

confirmation that the organization has been familiarized with the General Conditions for Rendering Services by Russian Maritime Register of Shipping;

guarantee of payment for the RS services.

4.3 Plan approval documentation, technical designs, as well as the documentation stated in 3.6 submitted for the Register approval shall be reviewed by the Register for compliance with the RS requirements in effect on the date of contract for construction of a ship (series of ships).

In the absence of the contract for construction the documentation shall be reviewed for compliance with the RS requirements in effect on one of the following dates, as applicable:

.1 keel laying date or the date on which the ship was at a similar stage of construction;

.2 the date of the customer's request for documentation review by the Register (if the terms of construction of the ship (series of ships) are not known yet).

In case of 4.3.2, and if new RS requirements came into force on the date of contract for construction of the ship (series of ships), or on the keel laying date, or on the date on which the ship was at a similar stage of construction (in the absence of the contract for construction), the documentation shall be amended in compliance with these new requirements.

4.4 Technical documentation shall be submitted in electronic form according to 3.3.

Documentation shall be submitted with a covering letter with a list of documents to be submitted for review attached.

On the Register request, the designer shall submit additional documents to support and explain the solutions adopted in the design.

Submission of the documentation by separate parts (on hull, machinery, systems, electrical equipment, etc.) may be allowed on agreement with the Register. In so doing, specification and general arrangement plans shall be submitted together with the first portion of the documentation, as well as the complete list of documents to be submitted for review.

4.5 In general, the Register review of the documentation set stated in 4.1 takes 30 working days.

In case the documentation is submitted by parts, its review takes 30 working days from the date of receiving the last portion.

Duration of the documentation review may be reduced upon agreement with the Register in each particular case.

The procedure, place, terms and other conditions of detailed design documentation review by the Register shall be determined upon agreement with the RS Branch Office responsible for review of detailed design documentation.

4.6 Documents developed as a part of the plan approval documentation by the equipment suppliers and/or subcontractors shall be submitted for approval by the general designer under its covering letter, or a letter of the general designer shall be enclosed with the documentation to confirm its approval.

5 TECHNICAL DOCUMENTATION ON PRODUCTS

5.1 RHO or the RS Branch Offices, if duly authorized by RHO, review and approve the technical documentation on the products against which description symbols "CTO*", "C*", or "C3*" are indicated in columns 4 and 5 of the RS Nomenclature (refer to Appendix 1, Part I "General Regulations for Technical Supervision"), as well as on new products, which are not regulated by the RS rules and have not been used before in shipbuilding and ship machine building.

The technical documentation on the items shown under other letters in the RS Nomenclature may be reviewed and approved by the RS Branch Offices without the RHO authorization.

5.2 Technical documentation on products shall be submitted for review in electronic form according to 3.3.

5.3 In case products or their parts or assemblies indicated in the RS Nomenclature are produced in compliance with standards, the standards shall be agreed upon with the Register in accordance with Section 7.

5.4 The technical documentation on the products of assembly unit types or on sets of products, etc., which include the component parts indicated in the RS Nomenclature and supplied by subcontractors (generators, reduction gears, prime movers of generators, compressors, pumps, deck machinery,

automation systems, etc.) is approved after approval by the Register of the technical documentation on the component parts.

In particular cases, the Register may approve the technical documentation on assembly units, the technical documentation of which component parts does not have the Register approval, provided satisfactory results of testing component parts together with assembly units show their suitability for on board operation (mechanical and climatic tests) and their electromagnetic compatibility (for electrical and electronic equipment).

5.5 Where the products are designed not as type products but for a particular ship, the technical documentation on such products is generally reviewed by the Register within the ship technical documentation.

5.6 Where use is made of type products manufactured in accordance with the technical documentation approved by the Register, the latter reserves the right for additional review of their possible use within the particular ship project.

5.7 In case the technical documentation for the products is presented for review and approval complete with the ship design (upon the agreement with the firm (manufacturer)), the results of its review are communicated to the designer by a separate letter.

5.8 The products referred to in the RS Nomenclature and intended for repairs and supply of the ships with spare parts shall be manufactured according to the technical documentation approved by the Register.

5.9 In case the technical documentation on spare parts for products in service is developed anew, the developer of the documentation shall present it to the RS Branch Office, in which area the documentation developer is located, for review and approval together with the information, which confirms the compliance of the design and materials of spare parts to the specifications of these products.

Technical documentation submitted to the Register for approval shall be reviewed for compliance with the requirements of the RS rules being in force on the date of contract for manufacture of the products.

5.10 Duration of the technical documentation review shall comply with that stated in 4.5.

5.11 Additional requirements for submitting the ICE documentation to the Register for review and approval are given in Appendices 2 and 3 to Section 5 "Machinery" of Part IV "Technical Supervision during Manufacture of Products".

6 TECHNICAL DOCUMENTATION ON MATERIALS

6.1 Technical documentation on materials shall be submitted for review and approval to RHO or the RS Branch Office in electronic form in PDF format. Provisions of 5.1 concerning the RHO authorizations for review of technical documentation on products are also applicable to materials.

6.2 Documentation shall be submitted as standards, specifications and similar documents containing necessary information on the production procedure, chemical composition, mechanical and technological properties, scope of tests and testing procedures, drawing-up of the test results and marking procedure.

6.3 Where materials are manufactured in accordance with the standards, the latter shall be reviewed and agreed upon in compliance with Section 7.

6.4 Provisions of 5.5 — 5.9 concerning the products are also applicable to materials as far as it is practicable and reasonable.

7 NORMATIVE DOCUMENTS

7.1 National standards and guidelines, as well as international standards (refer to 3.7) shall be submitted for review to RHO or the RS Branch Office, if duly authorized by RHO; standards of firms (organizations) and other normative documents — to the appropriate RS Branch Offices in the area of their activity.

7.2 Where drawings have been produced, calculations made and other documents compiled as well as various tests carried out for the purpose of development or revision of the normative document, the Register may require these documentation and test results to be submitted for review.

7.3 Where it is found in the course of the normative document review that the content of the documentation is not in full compliance with the RS requirements, the Register may require the additional documentation to be submitted for review or additional tests to be carried out.

7.4 When the normative documents are reviewed and agreed upon, one shall be guided by the following:

.1 newly developed documents for the items subject to the Register technical supervision during manufacture are agreed upon by the Register, provided their requirements are at least as stringent as those of the RS requirements;

.2 where the requirements of the previously published documents do not meet the RS requirements, their application is subject to special consideration of the Register. In the subsequent revision of these documents, their requirements shall be brought in compliance with the RS requirements.

8 PREPARATION OF RESULTS OF TECHNICAL DOCUMENTATION REVIEW

8.1 Upon results of the technical documentation review, the Register puts the appropriate stamps on the documents and/or compiles a conclusion letter.

When reviewing the technical documentation in electronic form, stamping is carried out by software tools and is certified by digital signature of the Register authorized specialist.

8.2 The Register applies the following stamps (refer to Figs. 8.2-1 — 8.2-6).

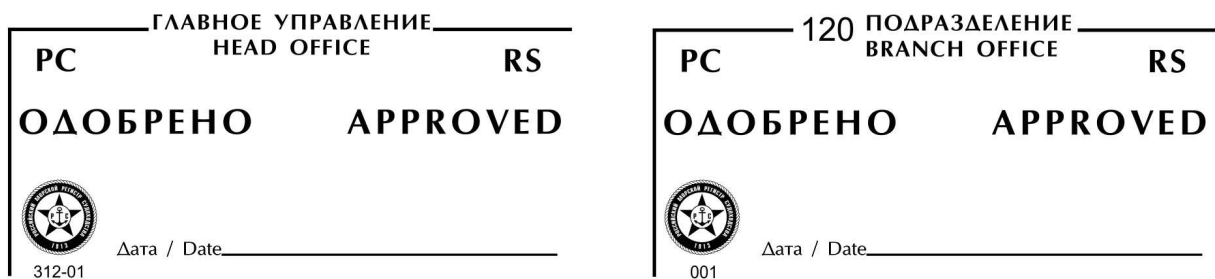


Fig. 8.2-1

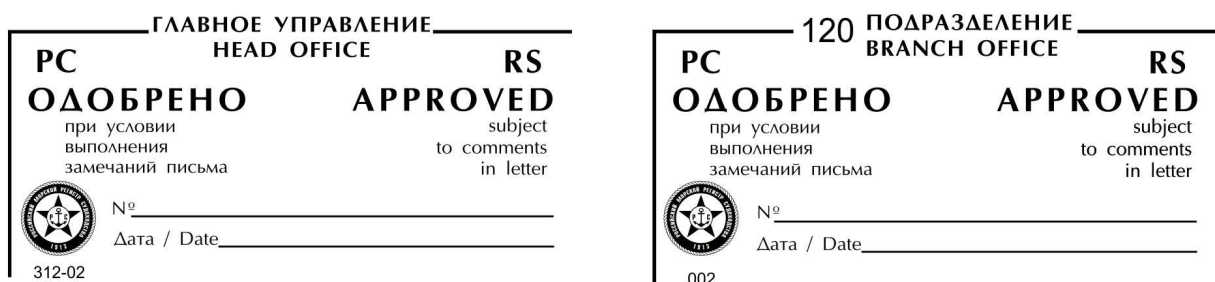



Fig. 8.2-2

ГЛАВНОЕ УПРАВЛЕНИЕ HEAD OFFICE	
PC	RS
СОГЛАСОВАНО AGREED	
	Дата / Date _____
312-03	



120 ПОДРАЗДЕЛЕНИЕ BRANCH OFFICE	
PC	RS
СОГЛАСОВАНО AGREED	
	Дата / Date _____
003	

Fig. 8.2-3

ГЛАВНОЕ УПРАВЛЕНИЕ HEAD OFFICE	
PC	RS
СОГЛАСОВАНО AGREED	
при условии выполнения замечаний письма	subject to comments in letter
	№ _____ Дата / Date _____
312-04	



120 ПОДРАЗДЕЛЕНИЕ BRANCH OFFICE	
PC	RS
СОГЛАСОВАНО AGREED	
при условии выполнения замечаний письма	subject to comments in letter
	№ _____ Дата / Date _____
004	

Fig. 8.2-4

ГЛАВНОЕ УПРАВЛЕНИЕ HEAD OFFICE	
PC	RS
ОДОБРЕНО APPROVED	
Российским морским реестром судоходства по поручению Морской администрации	Approved by the Russian Maritime Register of Shipping under the authority of Maritime Administration of
	_____
312-05	Дата / Date _____

120 ПОДРАЗДЕЛЕНИЕ BRANCH OFFICE	
PC	RS
ОДОБРЕНО APPROVED	
Российским морским реестром судоходства по поручению Морской администрации	Approved by the Russian Maritime Register of Shipping under the authority of Maritime Administration of
	_____
005	Дата / Date _____

Fig. 8.2-5

ГЛАВНОЕ УПРАВЛЕНИЕ HEAD OFFICE	
PC	RS
ДЛЯ ИНФОРМАЦИИ FOR INFORMATION	
	Дата / Date _____
312-06	

120 ПОДРАЗДЕЛЕНИЕ BRANCH OFFICE	
PC	RS
ДЛЯ ИНФОРМАЦИИ FOR INFORMATION	
	Дата / Date _____
006	

Fig. 8.2-6

8.3 The stamp to be applied is determined by the Register depending on a document type and result of its review.

Upon approval (agreement) of the technical documentation, the Register puts the appropriate stamps, namely:

.1 stamps shown in Figs. 8.2-1 and 8.2-2 are put on the structural drawings, (basic and functional) circuits, test programs, other similar documents;

.2 stamps shown in Figs. 8.2-3 and 8.2-4 are put on the List of Deviations from the RS Rules, various calculations, descriptions, technical backgrounds, general view drawings without indication of structural dimensions, lists of products and materials, lists of spare parts, research reports and test results, etc., as well as on the normative documents (standards, including the shipyard and firm (manufacturer) standards, technical specifications, regulations, etc.);

.3 stamps shown in Fig. 8.2-5 are put on the documents approved on behalf of Administrations.

The various information documents not subject to review for compliance with the RS requirements are stamped as shown in Fig. 8.2-6.

8.4 Each sheet of the structural drawing shall be stamped. Paper-bound documents comprising several sheets with the same registration number, such as specifications, descriptions, calculations, instructions, lists, test programs, etc., shall be stamped only on the document title page.

Stamp on the title page of electronic document certified by digital signature may apply to all pages of the document.

8.5 Based on the results of review of the technical documentation referred to in 3.6 and 3.7, the Register compiles a conclusion letter without stamping or signing the documents.

8.6 In case of negative results of review, the RS requirements are communicated in the conclusion letter. No Register stamps are put on the documents.

8.7 In case of a single approval of the technical documentation on materials and products (refer to Section 1, Part I "General Regulations for Technical Supervision"), an entry on limitation of the material or product application (e.g., "for Project 15010", etc.) shall be made in the approval stamp or under the stamp and this shall be also indicated in the conclusion letter.

8.8 The requirements laid down by the Register in the course of approval of the design documentation of a ship under construction shall be taken into account by appropriate updating of the documentation bearing stamps shown in Figs. 8.2-2 and 8.2-4 to the satisfaction of the RS Branch Office in charge of technical supervision during construction of a ship.

The RS Branch Offices shall communicate information on cancelling the remarks to the Register Branch Office, which has approved the design documentation of a ship under construction as a whole, not later than one month before the delivery.

8.9 The detailed design documentation shall be approved without any remarks. The approval is issued only upon canceling all the remarks by the designer.

8.10 Copies of the documents bearing the original stamps of the Register are control copies.

8.11 One set of the approved technical documentation on ships, materials and products together with the conclusion letter are sent to the designer and the RS Branch Office, which will be in charge of review of the detailed design documentation or technical supervision during construction (manufacture) of the item. The third set of the approved documentation is kept in the RS Branch Office that has reviewed the documentation.

Documentation approved in electronic form is sub-mitted to the designer and to the RS Branch Office by e-mail, via FTP-server or in a different way mutually agreed.

Upon approval of the detailed design documentation, one set is returned to the designer, the other is kept by the RS Branch Office, which has reviewed the documentation. If specially agreed upon with the RS Branch Office, another procedure for keeping approved detailed design documentation (e.g., at the designer or firm (manufacturer) where technical supervision will be effected, on conditions agreed upon with the RS Branch Office) may be adopted.

Where ship's construction is supervised by another RS Branch Office, one set of the detailed design documentation together with the conclusion letter shall be sent to this RS Branch Office.

8.12 Upon review and agreement of the final wording of the normative document, the Register sends to the organization, which submitted the document, an appropriate written confirmation on agreement of the document; the document itself with the Register stamp is kept in the RS Branch Office files as the control copy.

8.13 RHO carries out, where necessary, the control check of the technical documentation on ships, materials and products reviewed and approved by the RS Branch Offices upon the RHO authorization.

The order of review of the technical documentation in RHO and in the RS Branch Office is established by the appropriate RS internal normative documents (procedures, instructions).

9 DURATION OF VALIDITY OF TECHNICAL DOCUMENTATION APPROVAL (AGREEMENT)

9.1 The period of validity of the Register approval for plan approval documentation as well as technical design is limited by the period of validity of the contract for construction of the ship or series of sister ships.

In this case, it is mandatory to meet the requirements of international conventions and RS circulars with due regard for the dates set for their implementation during construction of ships according to the Register-approved technical documentation (refer to 9.5), and the RS Branch Office in charge of technical supervision during construction of the ship checks the implementation.

9.2 The validity of the Register approval of the technical documentation on materials and products in case of a single approval (refer to Section 1, Part I "General Regulations for Technical Supervision") is limited by the time of delivery of the materials and products or construction of ships, for which the materials and products are intended.

9.3 The Register approval of the technical documentation on materials and products in case of type approval and/or recognition of a manufacturer (refer to Section 1, Part I "General Regulations for Technical Supervision"), including technical specifications, is valid for a period of six years.

Approval of the technical documentation for the products specified in 5.8 has no duration of validity.

9.4 Standards and other normative documents on materials and products shall be agreed for the period of their validity.

When revising the standards and normative documents they shall be checked to take account of the current RS rules.

9.5 Irrespective of the approval validity, the technical documentation on ships, materials and products, as well as agreed standards and other normative documents are subject to mandatory updating with regard to adopted requirements of international conventions and agreements that have come into force after approval (agreement) of the documentation. All approved and agreed documentation is also subject to updating, having regard to the requirements of the RS circular letters that require their mandatory fulfillment.

9.6 The requirements of the RS rules as well as of international conventions and agreements that are in effect on the date of submission of the documents shall be taken into consideration in the technical documentation submitted for re-approval (re-agreement) upon expiry of validity of its previous approval.

9.7 The Register approval (agreement) of the technical documentation loses its validity:

- .1** upon expiry of approval validity (where the term is indicated);
- .2** upon expiry of the documentation validity (where the term is indicated);
- .3** in case amendments were introduced without consent of the Register into the approved (agreed) documentation dealing with the issues, which are within the Register terms of reference.

9.8 The Register may cancel its approval (agreement) of the technical documentation or change the terms of approval (agreement) in the following cases:

- .1** if the documentation has not been timely brought in line with the provisions of international conventions and agreements, as well as with the requirements of the RS circular letters as set forth under 10.1;
- .2** if the quality and reliability of materials and items are regularly low and do not meet the RS requirements.

10 INTRODUCTION OF AMENDMENTS INTO APPROVED (AGREED) TECHNICAL DOCUMENTATION

10.1 Any amendments to the technical documentation approved (agreed) by the Register that may relate to the requirements regulated by the RS rules or international conventions shall be approved (agreed) by the Register based on the results of review of the appropriate notifications on the amendments or of the reissued amended documents.

The amendments shall be detailed or specified in the amended documents, plans.

10.2 Review and approval of amendments to the design documentation shall be carried out by the RS Branch Office, which has approved this documentation.

10.3 Any amendments to the detailed design documentation made during the construction of the ship or the manufacture of the product that might affect solutions adopted in the design documentation shall be reviewed and approved by the RS Branch Office, which has approved the design documentation.

Amendments to the detailed design documentation that do not affect the solutions adopted in the design documentation shall be reviewed and approved by the RS Branch Office in charge of technical supervision of the development of the detailed design documentation or the construction of the ship or the manufacture of the product.

10.4 Any amendments to the normative documents agreed by the Register shall be reviewed and agreed by the RS Branch Office, which has agreed these documents.

10.5 Any amendments to the specifications for the materials and products approved by the Register shall be reviewed and approved by the Register Branch Office, which has approved these specifications.

10.6 The procedure for review and approval (agreement) of amendments to the technical documentation referred to in 10.1 — 10.5 above may be altered or updated when necessary at the discretion of RHO in each particular case.

10.7 The RS Branch Office that is in charge of approval of the amendments made in the technical documentation approved earlier shall timely inform to that effect the RS Branch Office, which carries out technical supervision during construction of ship or manufacture of materials and products, respectively.

11 GRANTING THE SHIP UNDER CONSTRUCTION WITH AN EXEMPTION (WAIVER) FROM COMPLIANCE WITH THE REQUIREMENTS OF INTERNATIONAL CONVENTIONS

11.1 GENERAL

11.1.1 Review to confirm the possibility of granting the ship under construction with an exemption (waiver) from compliance with the requirements of international conventions and specifying the conditions thereof is entirely an exclusive right of the Administration.

11.1.2 If necessary, the Register shall provide the Administration with the conclusion on the conditions for granting an exemption (waiver) to a ship under construction from compliance with the requirements of the international conventions. The procedure for the Register in this case, for ships flying the flag of the Russian Federation (RF) shall be defined in 11.2 and for ships flying the flag other than the RF flag — in 11.3.

**11.2 GRANTING THE SHIP UNDER CONSTRUCTION FOR THE RF FLAG
WITH AN EXEMPTION (WAIVER) FROM COMPLIANCE
WITH THE REQUIREMENTS OF INTERNATIONAL CONVENTIONS**

11.2.1 Granting the ship under construction for RF flag with an exemption (waiver) from compliance of the requirements of international conventions shall be performed compliant to the appropriate documents¹ of the Maritime Administration of the Russian Federation (RF MA).

11.2.2 The prospective shipowner or its legal representative (designer or shipyard) (hereinafter referred to as "the applicant") shall send an application for granting an exemption (waiver) to the RF MA² and a copy to RHO.

11.2.3 Within three working days from receipt of the copy of the application, RHO shall send it to the RS Branch Office for supervision during design to get a conclusion on the possibility of granting an exemption (waiver) indicating the conditions under which it may be granted. The preparation of such conclusion takes three working days.

11.2.4 The RS conclusion on the possibility of granting an exemption (waiver) indicating the conditions under which it may be granted, approved by the RS Director General, shall be sent to the RF MA².

11.2.5 Within three working days from receipt of the relevant decision of the RF MA², RHO shall inform about it the RS Branch Office for supervision during design, which shall immediately bring the decision of the RF MA² to the notice of the applicant and the RS Branch Office for supervision under construction.

11.2.6 The decision of the RF MA² shall be included by the RS Branch Office for supervision under construction in the ship's file.

11.2.7 The decision of the RF MA² on granting an exemption (waiver) shall be issued in compliance with 4.3.4 of Part III "Survey of Ships in Compliance with International Conventions, Codes, Resolutions and Rules for the Equipment of Sea Going Ships" of the Guidelines on Technical Supervision of Ships in Service.

**11.3 GRANTING THE SHIP UNDER CONSTRUCTION FOR THE FLAG OTHER THAN THE RF FLAG
WITH AN EXEMPTION (WAIVER) FROM COMPLIANCE WITH THE REQUIREMENTS
OF INTERNATIONAL CONVENTIONS**

11.3.1 The prospective shipowner or his legal representative (designer or shipyard) (hereinafter referred to as "the applicant") shall send an application on granting an exemption (waiver) to the Administration and, at the applicant's discretion, a copy to the RS Branch Office for supervision during design. In this regard, the additional instructions of the Administration (if any) concerning the application form shall be taken into account.

11.3.2 When the Administration requests the RS opinion regarding the conditions of granting an exemption (waiver), the preparation of response shall not exceed 5 working days, and the review of such a request and sending the RS opinion regarding the conditions of granting an exemption (waiver) are the RHO responsibility.

¹RF Government Regulation No. 1012 of December 24, 2008 "On granting the ship flying the RF flag with an exemption (waiver) from compliance with the requirements of the International Convention on Load Lines 1966, Convention on the International Regulations for Preventing Collisions at Sea, 1972, International Convention for the Prevention of Pollution from Ships, 1973 (as amended by Protocol of 1978 thereto) and the International Convention for the Safety of Life at Sea, 1974";

"Administration regulations of the Federal Agency for Maritime and River Transport on granting the ship with an exemption (waiver) from compliance with the requirements of the International Convention on Load Lines 1966, Convention on the International Regulations for Preventing Collisions at Sea, 1972, International Convention for the Prevention of Pollution from Ships 1973 (as amended by Protocol of 1978 thereto) and the International Convention for the Safety of Life at Sea, 1974" approved by Order of the Ministry of Transport of the Russian Federation No. 239 of July 17, 2012;

²The Federal Agency for Maritime and River Transport (Rosmorrechflot), and in addition, regarding the fishing vessels — the Federal Agency for Fishery (Rosrybolovstvo).

11.3.3 When the decision of the Administration is sent to RS only, RHO within three working days shall inform about it the RS Branch Office for supervision during design, which shall immediately bring the decision of the Administration to the notice of the applicant and the RS Branch Office for supervision under construction.

11.3.4 When the decision of the Administration is sent to the applicant only, the latter shall inform the Register of such a decision. In this regard, the RS Branch Office/RHO Location on receipt of such information shall bring it to the notice of other interested RS Branch Offices/RHO Locations performing technical supervision during design and construction of the ship.

11.3.5 The decision of the Administration shall be included by the RS Branch Office for supervision under construction in the ship's file.

11.3.6 The decision of the Administration on granting an exemption (waiver) shall be issued in compliance with 4.3.4 of Part III "Survey of Ships in Compliance with International Conventions, Codes, Resolutions and Rules for the Equipment of Sea Going Ships" of the Guidelines on Technical Supervision of Ships in Service.

12 SOFTWARE

12.1 TYPE APPROVAL OF SOFTWARE

12.1.1 Software which is capable of performing calculations which results are part of technical documentation to be submitted to the Register for approval according to 3.9, shall be approved by the Register.

12.1.2 The software used for counting assistance, which comes down to performance of a number of separate calculations for determination of auxiliary values, shall be brought to the notice of the Register.

12.1.3 The software which shall be approved, is submitted to the Register for review before its application.

In separate cases, the software may be submitted to the Register together with the technical documentation on the ship.

12.1.4 The software is approved by RHO.

12.1.5 The Type Approval Certificate for Software (CTOII) (form 6.8.5) is issued for the software reviewed and verified in accordance with the requirements of these Rules, for the period not exceeding 5 years.

Upon expiry of the validity period the Type Approval Certificate for Software(CTOII) is renewed on request of the software designer. Renewal shall be done within the period limited by thirty (30) days from the date of CTOII expiry. Upon expiry of this period, CTOII becomes invalid.

Validity of CTOII may be suspended for a period agreed upon with the software designer but not more than ninety (90) days in case the Register has not received a request before the CTOII expiry date.

12.1.6 Type approval of the software for ship theory shall be carried out according to 12.2.2.

12.1.7 When submitting to the Register the calculations which are performed using the software being type approved by RS, a reference to the number of the Type Approval Certificate for Software (CTOII) (form 6.8.5) issued by the Register shall be made in these calculations.

12.1.8 The Type Approval Certificate for Software (CTOII) issued by the Register for a software loses its validity if changes affecting the subject agreed have been done in the software.

12.2 APPROVAL OF ONBOARD SOFTWARE FOR STABILITY CALCULATIONS

12.2.1 Definitions.

Onboard software for stability calculations (stability software) is a software which calculates the stability for actual loading condition and which is installed onboard of a ship and a floating unit.

Active software is a software that uses, data from sensors automatically reading the contents of tanks and other ship loading parameters as input information.

Passive software is a software that requires manual entry of input data for calculation.

12.2.2 General.

12.2.2.1 In order to obtain the Type Approval Certificate for Software (CTOII) (form 6.8.5), the software designer shall apply to the Register with a request. The request shall be submitted with technical documentation containing the following data:

name of the software;

hardware/operation system requirements;

User Manual;

results of test calculations;

input data for test calculations (ship's hull form data, compartmentation data, lines plan, offset tables, hydrostatic tables, capacity tables, etc.).

12.2.2.2 Test calculations may be performed on the basis of input data provided by the Register or selected by the software designer and agreed upon with the Register.

Test calculations shall be carried out for two types of ships for which approval is requested. Where approval is requested for only one type of ship, a minimum of two data sets for different hull forms of that type of ship are required to be tested.

For approval of software which is based on a hull form model, test calculations shall be carried out for three types of ships, or of three data sets for different hull forms, if approval is requested for only one type of ship.

12.2.2.3 For renewal of the Type Approval Certificate for Software (CTOII), the results of test calculations confirming that calculation procedure has not been changed since CTOII issue shall be submitted to the Register. Calculations approved by the Register and carried out during the period of validity of CTOII using the software, may be submitted for confirmation.

12.2.3 Onboard software approval for a specific ship.

12.2.3.1 For review of the onboard software, documentation specified in 12.2.2.1 and approved documentation on stability shall be submitted to the Register.

12.2.3.2 The approval procedure includes:

.1 verification of the availability of CTOII:

software name including version number;

.2 verification that the input data is consistent with the approved documentation:

main dimensions, hydrostatic particulars and, if applicable, the ship profile;

the position of the forward and after perpendiculars, and if appropriate, the calculation method to derive the forward and after draughts at the actual position of the ship's draught marks;

ship lightweight and centre of gravity derived from the most recently approved inclining test or light-weight check;

lines plan, offset tables or other suitable presentation of hull form data;

compartment definitions, including frame spacing, and centres of volume, together with capacity tables (sounding/ullage tables), free surface corrections, if appropriate;

.3 verification of the test conditions;

cargo and consumables distribution for each loading;

output data specified in 12.2.7.2.8 taking into account the acceptable tolerances stated in 12.2.8;

.4 verification that the software type is appropriate for the type of ship and stability calculations required;

.5 verification of functional requirements under 12.2.4.

12.2.3.3 The test loading conditions normally shall cover the range of load draughts from the deepest envisaged loaded condition to the light ballast condition and shall include at least one departure and one arrival condition. Calculations shall be provided for at least four loading conditions, taken from the ship's approved documentation on stability. For tankers and ships carrying grain in bulk at least one of the conditions shall include partially filled cargo spaces. Within the selected loading conditions each cargo hold shall be loaded at least once.

For Type 4 stability software (refer to 12.2.6.6), at least three damage cases shall be selected, each of them associated with at least three test loading conditions taken from the ship's approved Stability Booklet.

12.2.3.4 In case of satisfactory verifications results the Report (form 6.3.29) is issued, the test loading conditions are approved.

The satisfactory operation of the software with the onboard computer(s) for stability calculations shall be verified by testing upon installation. The software operation shall be verified in the presence of the RS surveyor in accordance with 12.2.10. The approved test loading conditions, the User Manual and the Report (form 6.3.29) shall be available on board.

12.2.3.5 Approval by the Register does not absolve the software designer and shipowner of responsibility for ensuring that the information programmed into the onboard computer software is consistent with the current condition of the ship.

12.2.4 Approval of the ship computer model used in shore-based emergency response service.

12.2.4.1 For review of the ship computer model used by shore-based emergency response service, the test loading conditions complying with the requirements of 12.2.3.3 as well as approved documentation on stability and strength shall be submitted to the Register.

12.2.4.2 The procedure for review of the ship computer model includes verifications specified in 12.2.3.2.1 — 12.2.3.2.3.

12.2.4.3 In case of satisfactory verifications results, the Report (form 6.3.29) is drawn up, the test loading conditions are approved.

12.2.4.4 After drawing up the Report (6.3.29), the prompt access to shore-based emergency response service shall be verified in the presence of the RS surveyor in accordance with 12.2.10. Agreement with a shore-based emergency response service undertaking damage stability and residual structural strength calculations, user manual for a system of prompt access to shore-based emergency response service and the Report (form 6.3.29) shall be available on board.

12.2.5 General requirements for onboard stability software.

12.2.5.1 The scope of a stability calculation software shall be in accordance with the approved Stability Booklet and shall at least include all information and perform all calculations or checks which are necessary to ensure compliance with the applicable stability requirements.

12.2.5.2 Approved stability software is not a substitute for the approved Stability Booklet, and is used as a supplement to the approved Stability Booklet to facilitate stability calculations.

12.2.5.3 Content and format of the input/output information shall be easily comparable with the approved Stability Booklet.

12.2.5.4 The User Manual shall be provided for the onboard computer stability software, the language in which the User Manual is written shall be the same as used in the approved Stability Booklet.

12.2.5.5 The language of displayed and printed out information shall be the same as used in the approved Stability Booklet.

12.2.5.6 The onboard computer software for stability calculations shall be ship specific and the results of the calculations shall be only applicable to the ship for which it has been approved.

12.2.5.7 In case of modifications implying changes in the main data or internal arrangement of the ship as well as in the Stability Booklet, the approval of stability software is not valid. The software shall be modified accordingly and reapproved.

12.2.6 Types of onboard stability software.

12.2.6.1 These requirements apply only to passive software and to the off-line operation mode of active software.

12.2.6.2 Four types of stability software are acceptable depending upon a ship's stability requirements.

12.2.6.3 Type 1. Software calculating intact stability only.

12.2.6.4 Type 2. Software calculating intact stability and checking damage stability on basis of a limit curve or checking all the stability requirements (intact and damage stability) on the basis of a limit curve.

12.2.6.5 Type 3. Software calculating intact stability and damage stability by direct application of preprogrammed damage cases based on the applicable requirements.

12.2.6.6 Type 4. Software calculating damage stability associated with an actual loading condition and actual flooding case, using direct application of user defined damage, for the purpose of providing operational information for safe return to port (SRtP).

12.2.6.7 Damage stability of both Type 3 and Type 4 stability software shall be based on a hull form model, that is, directly calculated from a full three-dimensional geometric model.

12.2.7 Functional requirements for onboard stability software.

12.2.7.1 General requirements for any type of stability software.

12.2.7.1.1 The stability software shall present relevant parameters of each loading condition. The following parameters shall be presented for a given loading condition:

deadweight data;

light-ship data;

trim;

draught at the draught marks and perpendiculars;

summary of loading condition displacement, vertical centre of gravity, longitudinal centre of gravity and, if applicable, transverse centre of gravity;

downflooding angle and corresponding downflooding opening (not applicable for Type 2 software which uses limit curve for checking all the stability requirements);

compliance with stability criteria: Listing of all calculated stability criteria, the limit values, the obtained values and the conclusions (criteria fulfilled or not fulfilled) (not applicable for Type 2 software which uses limit curve for checking all the stability requirements).

12.2.7.1.2 A clear warning shall be given on screen and in hard copy printout if any of the loading limitations are not complied with.

Loading limitations shall include, but may not be limited to:

trim, draught, liquid densities, tank filling levels, initial heel;

limiting value of vertical centre of gravity/metacentric height in conjunction with above for Type 2;

restrictions to the stowage height for timber.

12.2.7.1.3 Type 3 software shall include pre-defined relevant damage cases based on the applicable requirements for location and extent of damages, intended for automatic check of a given loading condition.

12.2.7.1.4 The date and time of a saved calculation shall be part of the screen display and hard copy printout.

12.2.7.1.5 Each hard copy printout shall contain identification of the calculation program including version number.

12.2.7.1.6 Units of measurement shall be clearly identified and used consistently within a loading condition.

12.2.7.1.7 For Type 3 and Type 4 software, the system shall be pre-loaded with a detailed computer model of the complete hull, including appendages, all compartments, tanks and the relevant parts of the superstructure considered in the damage stability calculation, wind profile, down-flooding and up-flooding openings, cross-flooding arrangements, internal compartment connections and escape routes, as applicable and according to the type of stability software.

12.2.7.1.8 For Type 1 and Type 2 software, in case a full three dimensional model is used for stability calculations, the requirements of the computer model shall be as per 12.2.4.1.7 above to the extent as applicable and according to the type of stability software.

12.2.7.2 Additional requirements for Type 4 stability software.

12.2.7.2.1 Where the normal (Type 1, 2 or 3) and SRtP (Type 4) software are not totally separated: the function of switching between normal software and Type 4 software shall be provided; the actual intact loading condition shall be the same for both functions (normal operation and SRtP); and the SRtP module needs only to be activated in case of an incident.

Approval of Type 4 (SRtP) software is for stability only.

12.2.7.2.2 In passenger ships which are subject to SRtP and have an onboard stability computer and prompt access to shore-based emergency response service, such software need not be identical.

12.2.7.2.3 Each internal space shall be assigned its permeability as shown in Table 12.2.7.2.3 below, unless a more accurate permeability has been reflected in the approved Stability Booklet.

Table 12.2.7.2.3

Spaces	Permeability			
	Default	Full	Partially filled	Empty
container spaces	0,95	0,70	0,80	0,95
dry cargo spaces	0,95	0,70	0,80	0,95
ro-ro spaces	0,95	0,90	0,90	0,95
cargo liquids	0,95	0,70	0,80	0,95
intended for consumable liquids	0,95	0,95	0,70	0,80
stores	0,95	0,60	0,60	0,95
occupied by machinery	0,85			
void spaces	0,95			
occupied by accommodation	0,95			

12.2.7.2.4 The stability software shall be capable of accounting for applied moments such as wind, lifeboat launching, cargo shifts and passenger relocation.

12.2.7.2.5 The stability software shall account for the effect of wind by using the method in 2.5.4.1.2, Part V "Subdivision" of the Rules for the Classification and Construction of Sea-Going Ships as the default, but allow for manual input of the wind speed/pressure.

12.2.7.2.6 The stability software shall be capable of assessing the impact of open main watertight doors on stability.

12.2.7.2.7 The stability software shall utilize the latest light-ship parameters stated in the approved Stability Booklet.

12.2.7.2.8 The output of the software shall be such that it provides the sufficient clear unambiguous information to enable quick and accurate assessment of the stability of the ship for any actual damage, the impact of flooding on the means of escape and the controls of devices necessary for managing and/or controlling the stability of the ship.

When the actual loading condition is input in the Type 4 software, the following output (intact stability) shall be available:

deadweight data;

light-ship data;

trim;

heel;

draught at the draught marks and perpendiculars;

summary of loading condition displacement, vertical centre of gravity, longitudinal centre of gravity

and, if applicable, transverse centre of gravity;

downflooding angle and corresponding downflooding opening;

free surfaces;

metacentric height;

righting lever corrected for free surfaces values relevant to an adequate range of heeling (not less than 60°)

available indicatively at the following intervals: 0°, 5°, 10°, 15°, 20°, 25°, 30°, 40°, 50°, 60°;

compliance with relevant intact stability criteria: listing of all calculated intact stability criteria, the limiting values, the obtained values and the conclusions (criteria fulfilled or not fulfilled);
stability limiting curve.

When the actual loading condition is associated to the actual damage case(s), the following output (damage stability) shall be available:

- trim;
- heel;
- draught at the draught marks and perpendiculars;
- progressive flooding angle and corresponding progressive flooding openings;
- metacentric height;
- righting levers relevant to an adequate range of heeling (not less than 60°) available indicatively at the following intervals: 0°, 5°, 10°, 15°, 20°, 25°, 30°, 40°, 50°, 60°;
- compliance with stability criteria: listing of all calculated stability criteria, the limit values, the obtained values and the conclusions (criteria fulfilled or not fulfilled);
- the survivability criteria (if required by the Administration);
- relevant flooding points (unprotected or weathertight) with the distance from the damage waterline to each point;
- list of all flooded compartments with the permeability considered;
- amount of water in each flooded compartment;
- escape route immersion angles;
- a profile view, deck views and cross-sections of the ship indicating the flooded waterplane and the damaged compartments.

12.2.7.2.9 For ro-ro passenger ships there shall be algorithms in the software for estimating the effect of water accumulation on deck (WOD)¹.

In addition to the predefined significant wave height taken from the approved Stability Booklet, there shall be possibility for the crew to input manually the significant wave height of the ship navigation area in the stability software.

In addition to the predefined significant wave height taken from the approved Stability Booklet, calculations with two additional significant wave heights shall be submitted.

12.2.8 Acceptable tolerances.

12.2.8.1 Depending on the type of program and scope of calculations, the acceptable tolerances shall be determined according to 12.2.8.2 or 12.2.8.3.

Examples of pre-programmed input data include the following:

hydrostatic data: displacement, longitudinal center of flotation, longitudinal center of buoyancy and vertical center of buoyancy, transverse metacentric height and moment to change trim 1 cm versus draught;

stability data: cross curves of stability at appropriate heel/trim angles, stability limits versus displacement;

compartment data: volume, longitudinal centre of gravity, vertical centre of gravity, transverse centre of gravity and free surface moment/grain heeling moments versus level of the compartment's contents.

Examples of output data include the following:

hydrostatic data: displacement, longitudinal centre of flotation, longitudinal centre of buoyancy and vertical centre of buoyancy, transverse metacentric height, moment to change trim 1 cm versus draught as well as actual draughts and trim;

stability data: free surface correction, righting levers, vertical centre of gravity, metacentric height, metacentric height/vertical centre of gravity limiting values, allowable grain heeling moments, derived stability criteria;

compartment data: calculated volume, vertical centre of gravity, transverse centre of gravity, longitudinal centre of gravity and free surface moment/grain heeling moments versus level of the compartment's contents.

¹These requirements apply to ro-ro passenger ships subject to the Stockholm Agreement (IMO circular letter No. 1891).

The computational accuracy of the calculation program results shall be within the acceptable tolerances, specified in 12.2.8.2 or 12.2.8.3, of the results using an independent program or the approved Stability Booklet with identical input.

12.2.8.2 Programs which use only pre-programmed data from the approved Stability Booklet as the basis for stability calculations, shall have zero tolerances for the printouts of input data.

Output data tolerances shall be close to zero, however, small differences associated with calculation rounding or abridged input data are acceptable.

Additionally differences associated with the use of hydrostatic and stability data for trims that differ from those in the approved Stability Booklet, are acceptable subject technical background for obtained data.

12.2.8.3 Programs which use hull form models as their basis for stability calculations, shall have tolerances for the printouts of basic calculated data established against either data from the approved Stability Booklet in accordance with Table 12.2.8.3.

Table 12.2.8.3

Parameter	Acceptable tolerances
Hull form dependent	
Displacement	± 2 %
Longitudinal center of buoyancy, from AP (after perpendicular)	± 1 % / 50 cm
Vertical center of buoyancy	± 1 % / 5 cm
Transverse center of buoyancy	± 0,5 % of B (breadth) / 5 cm
Longitudinal center of flotation, from AP	± 1 % / 50 cm
Moment to trim 1 cm	± 2 %
Transverse metacentric height	± 1 % / 5 cm
Longitudinal metacentric height	± 1 % / 50 cm
Cross curves of stability	± 5 cm
Compartment dependent	
Volume or deadweight	± 2 %
Longitudinal center of gravity, from AP	± 1 % / 50 cm
Vertical centre of gravity	± 1 % / 5 cm
Transverse center of gravity	± 0,5 % of B / 5 cm
Free surface moment	± 2 %
Shifting moment	± 5 %
Level of contents	± 2 %
Trim and stability	
Draughts (forward, aft, mean)	± 1 % / 5 cm
Transverse metacentric height (both initial and corrected)	± 1 % / 5 cm
GRighting levers	± 0,5 % of B / 5 cm
Downflooding angle	± 2°
Equilibrium angles	± 1°
Distance from WL (waterline) to unpro-ected and weathertight openings, or other relevant point, if applicable	± 5 % / 5 cm
Areas under righting arm curve	± 5 % / 0,0012 mrad
<p>Notes: 1. Deviation in % = {(base value-applicant's value) / base value} × 100. Where the "base value" may be from the approved Stability Booklet or control calculation. 2. When applying the tolerances in Table 12.2.8.3 having two values, the allowable tolerance is the greater of the two values. 3. Where differences in calculation methodology exist between the software used in the comparison, this may be a basis for accepting deviations greater than those specified in Table 12.2.8.3 provided a software examination is carried out in sufficient detail to clearly document that such differences are technically justifiable. 4. Deviation from these tolerances shall not be accepted unless the Register considers that there is a technical background (satisfactory explanation) for the difference and that it is clearly evident that the deviation does not impact compliance with the applicable stability criteria.</p>	

12.2.9 User manual.

12.2.9.1 The User Manual shall contain the following information:

- instructions for installation of software on the computer;
- description of the main functions;
- a sample of each displayed screen with explanatory text;
- input and output data;
- required minimum hardware to operate the software;
- description of use of the test loading conditions;
- example of the calculation accompanied by explanations;
- list of warnings.

12.2.10 Onboard verification.

12.2.10.1 Acceptance tests of the software shall be conducted on board the ship in the presence of the RS surveyor with drawing up the Report on Survey of the Ship (form 6.3.10) or with the relevant entries made in the Survey Checklist (form 6.1.01), as applicable. From the approved test loading conditions at least one load case (other than light-ship) shall be calculated. Actual loading condition results are not suitable for checking the correct working of the computer.

12.2.10.2 Steps to be performed:

.1 retrieve the test loading condition and start a calculation run. Compare the calculation results with the approved test loading conditions;

.2 change several items of deadweight (tank weights and the cargo weight) sufficiently to change the draught or displacement by at least 10 %. The results shall be reviewed to ensure that they differ in a logical way from those of the approved test condition;

.3 revise the above modified loading condition to restore the initial test loading condition and compare the results. Confirm that the relevant input and output data of the approved test loading condition have been replicated;

.4 alternatively, one or more test loading conditions shall be selected and the test calculation performed by entering all deadweight data for each selected test loading condition into the program. The results shall be verified as identical to the results in the approved test loading conditions.

12.2.10.3 The software shall be installed on the onboard computer of a type approved by the Register or on two unapproved computers.

12.2.11 Onboard verification of prompt access to shore-based emergency response service.

12.2.11.1 Prompt access to shore-based emergency response service shall be verified on board the ship in the presence of the RS surveyor with drawing up the Report on Survey of the Ship (form 6.3.10) or with the relevant entries made in the Survey Checklist (form 6.1.01), as applicable.

12.2.11.2 Onboard verification of prompt access to shore-based emergency response service shall include:

.1 verification of availability of an agreement with a shore-based emergency response service undertaking calculations;

.2 verification of availability of user manual for a system of prompt access to shore-based emergency response service;

.3 verification of presence of information relating to a shore-based emergency response service recorded in the Shipboard Oil Pollution Emergency Plan (SOPEP)/Shipboard Marine Pollution Emergency Plan for Noxious Liquid Substances (SMPEP);

.4 verification of availability of Report (form 6.3.29) on ship computer model used by shore-based emergency response service with approved test loading conditions;

.5 verification Stability Booklet, Damage Stability Booklet and Loading Manual, which are stated in the Report (form 6.3.29) have not been updated since the date of issuance of the above Report;

.6 verification that the prompt access to shore-based emergency response service may be provided at any time;

.7 verification that results of test calculations, received from the shore-based emergency response service, comply with test loading conditions attached to the Report (form 6.3.29).

12.2.12 Periodical verifications.

12.2.12.1 At annual, intermediate and renewal survey, the software installed onboard shall be verified in the presence of the RS surveyor.

12.2.12.2 The verification shall be carried out in accordance with 12.2.10.

12.2.12.3 At annual, intermediate and renewal survey, the prompt access to shore-based emergency response service shall be verified in the presence of the RS surveyor. The verification shall include:

.1 verification that the Stability Booklet, Damage Stability Booklet and Loading Manual, which are stated in the Report (form 6.3.29) on ship computer model used by shore-based emergency response service, have not been updated since the date of issuance of the above Report;

.2 verification that the prompt access to shore-based emergency response service is / may be provided at any time.

12.2.13 Other requirements.

12.2.13.1 Protection against unintentional or unauthorised modification of the software and pre-programmed data shall be provided.

12.2.13.2 The software shall warn the user of any input errors (with regard to limitations such as filling a compartment beyond capacity, or exceeding the assigned load line, etc.) and in cases where the calculation results do not comply with the applicable criteria, as well as in case of a wrong use of the very program.

12.2.13.3 The program and any data stored in the system shall be protected from corruption by loss of power.

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