16-720

GUIDANCE FOR THE APPROVAL AND TYPE APPROVAL OF MATERIALS AND EQUIPMENT FOR MARINE USE

Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use 2016 AMENDMENT NO.1

Notice No.44 30th June 2016

Resolved by Technical Committee on 28th July 2015 / 5th February 2016

ClassNK
NIPPON KAIJI KYOKAI

Notice No.44 30th June 2016
AMENDMENT TO THE GUIDANCE FOR THE APPROVAL AND TYPE APPROVAL OF MATERIALS AND EQUIPMENT FOR MARINE USE

"Guidance for the approval and type approval of materials and equipment for marine use" has been partly amended as follows:

Amendment 1-1

Part 1 METALLIC MATERIALS

Chapter 1 APPROVAL OF MANUFACTURING PROCESS OF ROLLED STEELS

1.2 Approval Application

Paragraph 1.2.1 has been amended as follows.

1.2.1 Approval Application Form

Manufacturer who applies for the approval of the manufacturing process of rolled steels is to submit a copy of the ~~approval~~ appropriate application form (~~see~~ **Form 1-1**) filled in with required data and information to the Society (branch office concerned). For applications for the approval of the manufacturing process of corrosion resistant steel for cargo oil tanks specified in **3.13, Part K of the Rules for the Survey and Construction of Steel Ships**, the ~~approval~~ appropriate application form (**Form 1-2~~A~~**) is to be used.

1.2.2 Documents to be Submitted

Sub-paragraph -1 has been amended as follows.

1 Three copies each of the documents given in **(1)** and **(2)** are to be submitted together with the ~~approval~~ appropriate application form specified in **1.2.1**.
((1) and (2) are omitted.)

1.4 Approval Test

1.4.3 Details of Test

Sub-paragraph -4 has been amended as follows.

4 In case of following **(1)** through **(43)**, Society considers these content and may omit the part or all of the approval tests.
(1) Changes in the approval contents specified in **1.5.4.**
(2) The manufacturing process and the test result have been approved by the other society and the manufacturer has a data showing actual manufacturing records within the specific period. (chemical composition, mechanical properties and thickness or dimension expressed in the form of histogram or statistics)

~~(3) The rolled steel manufacturer has already been approved for the manufacturing process using other semi-finished products characterized by the same thickness, steel grade, grain refining and micro-alloying elements, steel making and casting process.~~

~~(4) The semi-finished products manufacturer has been approved for the complete manufacturing process with the same conditions (steelmaking, casting, rolling and heat treatment) for the same steel types.~~

(3) Where the rolled steel manufacturer uses slabs from multiple slab manufacturers or changes the slab manufacturer, and the following **(a)** or **(b)** applies.

(a) The rolled steel manufacturer has already been approved for the manufacturing process using other semi-finished products characterized by the same thickness, steel grade, grain refining and micro-alloying elements, steel making and casting process.

(b) The semi-finished product manufacturer has been approved for the complete manufacturing process with the same conditions (steelmaking, casting, rolling and heat treatment) for the same type of steel.

1.5 Approval

1.5.3 Renewal of Approval

Sub-paragraph -1 has been amended as follows.

1 In case of application for renewal of approval, the applicant is to submit a "Certificate of Approval" (copy) (in the case of the corrosion resistant steel for cargo oil tanks specified in **3.13, Part K of the Rules for the Survey and Construction of Steel Ships**, the "Type Approval Certificate" (copy)) and three copies of the data showing actual manufacturing records (for example, chemical composition, mechanical properties and thickness or dimension expressed in the form of histogram or statistics for each heat treatment) of the rolled steels or semi-finished products within the specific period together with the appropriate application form (**Form ~~1-2~~ 1-1**) (in the case of corrosion resistant steel for cargo oil tanks, **Form ~~1-2B~~ 1-2**).

1.5.4 Changes in the Approved Content

Sub-paragraphs -1 and -2 have been amended as follows.

1 In case of changes in the approved content such as those given in the following **(1)** through **(9)** are occurred, in response to the content of changes, three copies of documents corresponding to the requirements in **1.2.2** are to be submitted to the Society, in addition to a copy of the appropriate ~~"A~~application form (**Form 1-1**) ~~for Changes in the Approved Content of Manufacturing Process of Rolled Steels"~~ and a "Certificate of Approval" (copy).

2 For the corrosion resistant steel for cargo oil tanks specified in **3.13, Part K of the Rules for the Survey and Construction of Steel Ships**, in case of changes in the approved content such as those given in the above **-1(1)** through **(9)** and following **(1)** and **(2)** are occurred, in response to the content of changes, three copies each of documents corresponding to the requirements in **1.2.2** are to be submitted to the Society, in addition to a copy of the appropriate ~~"A~~application form (**Form 1-2**) for Changes in the Approved Content of Manufacturing Process of Corrosion Resistant Steel for Cargo Oil Tanks" and the "Type Approval Certificate" (copy).

(1) Changes in the chemical composition range of elements to be added for improving the corrosion resistance

(2) Changes in the applicable welding consumables

Form 1-1 has been deleted.

~~Form 1-1~~
(Form 1-1 is omitted.)

Form 1-2 has been deleted.

~~Form 1-2~~
(Form 1-2 is omitted.)

Form 1-2A has been deleted.

~~Form 1-2A~~
(Form 1-2A is omitted.)

Form 1-2B has been deleted.

~~Form 1-2B~~
(Form 1-2B is omitted.)

Chapter 1A WELDABILITY CONFIRMATION OF ROLLED STEELS FOR HULL

1A.2 Application of the Weldability Confirmation

Paragraph 1A.2.1 has been amended as follows.

1A.2.1 Application Form

Manufacturer who applies for the weldability confirmation of the rolled steels is to submit a copy of the appropriate application form (~~see~~ **Form 1-3**) filled in with required data and information to the Society (branch office concerned).

Form 1-3 has been deleted.

~~Form 1-3~~
(Form 1-3 is omitted.)

Chapter 1B APPROVAL OF MANUFACTURING PROCESS OF SEMI-FINISHED PRODUCTS

1B.2 Approval Application

Paragraph 1B.2.1 has been amended as follows.

1B.2.1 Approval Application Form

Manufacturer who applies for the approval of the manufacturing process of semi-finished products is to submit a copy of the ~~approval~~ appropriate application form (~~see~~ **Form ~~1B-1~~ 1-4**) filled in with required data and information to the Society (branch office concerned).

Paragraph 1B.2.2 has been amended as follows.

1B.2.2 Documents to be Submitted

1 Three copies each of the documents given in **(1)** and **(2)** are to be submitted together with the ~~approval~~ appropriate application form specified in **1B.2.1**.
((1) and (2) are omitted.)

1B.5 Approval

1B.5.3 Renewal of Approval

Sub-paragraph -1 has been amended as follows.

1 In case of application for renewal of approval, the applicant is to submit a "Certificate of Approval" (copy) and three copies of the data showing actual manufacturing records (for example, chemical composition, mechanical properties and thickness or dimension expressed in the form of histogram or statistics) of the semi-finished products within the specific period together with the appropriate application form (**Form ~~1B-2~~ 1-4**).

1B.5.4 Changes in the Approved Content

Sub-paragraph -1 has been amended as follows.

1 In case of changes in the approved content such as those given in the following **(1)** through **(5)** are occurred, in response to the content of changes, three copies of documents corresponding to the requirements in **1B.2.2** are to be submitted to the Society, in addition to a copy of the appropriate ~~"A~~application form (**Form 1-4**) ~~for Changes in the Approved Content of Manufacturing Process of Semi-Finished Products"~~ and a "Certificate of Approval" (copy).
((1) and (5) are omitted.)

Form 1B-1 has been deleted.

~~Form 1B-1~~
(Form 1B-1 is omitted.)

Form 1B-2 has been deleted.

~~Form 1B-2~~
(Form 1B-2 is omitted.)

Chapter 2 APPROVAL OF MANUFACTURING PROCESS OF STEEL PIPES

2.2 Approval Application

Paragraph 2.2.1 has been amended as follows.

2.2.1 Approval Application Form

Manufacturers who applies for approval of the manufacturing process of steel pipes are to submit a single copy of the ~~Approval~~ appropriate ~~A~~application ~~F~~form (~~*see*~~ **Form ~~1-4~~ 1-5**) filled in with required data and information to the Society.

2.2.2 Data to be Submitted

Sub-paragraph -1 has been amended as follows.

1 Three copies each of the drawings and documents given in **(1)** through **(8)** are to be submitted together with the ~~Approval~~ appropriate ~~A~~application ~~F~~form specified in **2.2.1**.
((1) to (8) are omitted.)

2.5 Approval

2.5.3 Renewal of Approval

Sub-paragraph -1 has been amended as follows.

1 In case of application for renewal of approval, the applicant is to submit a "Certificate of Approval" (copy) and three copies of the data showing actual manufacturing records (for example, chemical composition, mechanical properties, outer diameter and thickness expressed in the form of histogram or statistics) of the steel pipes within the specific period together with ~~an~~ the appropriate application from (**Form 1-5**).

2.5.4 Changes in the Approved Content

Sub-paragraph -1 has been amended as follows.

1 In case of changes in the approved content such as those given in the following **(1)** through **(9)** are occurred, in response to the content of changes, three copies of documents corresponding to the requirements in **2.2.2** are to be submitted to the Society, in addition to one copy of the appropriate ~~"A~~application form (**Form 1-5**) ~~for Changes in the Approved Content of Manufacturing Process of Steel Pipes"~~ and a "Certificate of Approval" (copy).
((1) to (9) are omitted.)

Form 1-4 has been deleted.

~~Form 1-4~~
(Form 1-4 is omitted.)

Form 1-5 has been deleted.

~~Form 1-5~~
(Form 1-5 is omitted.)

Chapter 3 APPROVAL OF MANUFACTURING PROCESS OF STEEL CASTINGS AND STEEL FORGINGS

3.2 Application Procedure

Paragraph 3.2.1 has been amended as follows.

3.2.1 Application

Manufacturer who applies for the approval is to submit a single copy of the appropriate application form (**Form 1-6**) filled in with the required items to the Society (branch office concerned).

3.5 Approval

3.5.3 Renewal of Approval and Changes in the Approved Content

Sub-paragraph -1 has been amended as follows.

1 In case of application for renewal of approval or for changes in the approved content of "Certificate of Approval" specified in **3.5.1-1** is occurred, the applicant is to apply in accordance with the requirements of **3.2**. In this case, "Certificate of Approval" (copy) and the documents specified in **3.2.2** are to submit together with the appropriate application form (**Form ~~1-7~~ 1-6**). However, the data to be submitted may be limited for reference data on the changes.

Form 1-6 has been deleted.

~~Form 1-6~~
(Form 1-6 is omitted.)

Form 1-7 has been deleted.

~~Form 1-7~~
(Form 1-7 is omitted.)

Chapter 5 APPROVAL OF MANUFACTURING PROCESS OF ALUMINIUM ALLOYS

5.2 Approval Application

Paragraph 5.2.1 has been amended as follows.

5.2.1 Approval Application Form

Manufactures who applies for approval of the manufacturing process of aluminium alloys are to submit a single copy of the ~~Approval~~ appropriate ~~A~~application ~~F~~form (~~Specimen~~ **Form ~~1-1~~ 1-7**) filled in with required data and information to the Society.

5.2.2 Data to be submitted

Sub-paragraph -1 has been amended as follows.

1 Three copies each of the drawings and documents given in **(1)** through **(8)** are to be submitted together with the ~~Approval~~ appropriate ~~A~~application ~~F~~form specified in **1.2.1**.
((1) to (8) are omitted.)

5.5 Approval

5.5.3 Renewal of Approval

Sub-paragraph -1 has been amended as follows.

1 In case of application for renewal of approval, the applicant is to submit a "Certificate of Approval" (copy) and three copies of the data showing actual manufacturing records (for example, chemical composition, mechanical properties for each grade and thickness expressed in the form of histogram or statistics) of the aluminium alloys within the specific period together with the appropriate application form (**Form ~~1-2~~ 1-7**).

5.5.4 Changes in the Approved Content

Sub-paragraph -1 has been amended as follows.

1 In case of changes in the approved content such as those given in the following **(1)** through **(9)** is occurred, in response to the content of changes, three copies of documents corresponding to the requirements in **5.2.2** are to be submitted to the Society, in addition to one copy of the appropriate ~~"A~~application form (**Form 1-7**) ~~for Changes in the Approved Content of Manufacturing Process of Aluminium Alloys"~~ and a "Certificate of Approval" (copy).
((1) to (9) are omitted.)

Chapter 6 APPROVAL OF MANUFACTURING PROCESS OF PROPELLER CASTINGS

6.2 Application Procedures

Paragraph 6.2.1 has been amended as follows.

6.2.1 Application Form

Manufacturer who applies for the approval of the manufacturing process of propeller casting in accordance with this chapter is to submit ~~an approval~~ the appropriate application form **(Form 1-8)** filled in with material grade, type of propeller and maximum diameter of manufacturing propeller to the Society (branch office concerned).

6.2.2 Data to be Submitted

Sub-paragraph -1 has been amended as follows.

1 Three copies each of the documents given in **(1)** through **(6)** are to be submitted together with the ~~approval~~ appropriate application form specified in **6.2.1**.
((1) to (8) are omitted.)

Part 2 EQUIPMENT

Chapter 1 APPROVAL OF MANUFACTURING PROCESS OF ANCHORS

1.2 Approval Application

1.2.1 Approval Application Forms

Sub-paragraph -1 has been amended as follows.

1 Manufacturers who apply for the approval of the manufacturing process of anchor are to submit a copy of the ~~approval~~ appropriate application form (~~See~~ **Form 2-1**) filled in with the required data and information to the Society (branch office concerned).

Paragraph 1.2.2 has been amended as follows.

1.2.2 Documents to be Submitted

Three copies each of the documents listed below are to be submitted together with the ~~approval~~ appropriate application form specified in **1.2.1**.

1.5 Approval

1.5.3 Renewal of Approval and Changes in the Approved Content

Sub-paragraph -1 has been amended as follows.

1 In cases where changes have been made to the approved content of the "Certificate of Approval" specified in **1.5.1**, the applicant is to apply for renewal of approval in accordance with the requirements in **1.2**. In such cases, a copy of the "Certificate of Approval" and the documents specified in **1.2.2** are to be submitted together with the appropriate application form (**Form 2-1**). However, the data to be submitted may be limited to reference data on the changes.

1.6 Approval of Manufacturing Process of High Holding Power Anchors

Paragraph 1.6.1 has been amended as follows.

1.6.1 High Holding Power Anchors

The approval procedure for manufacturing of high holding power anchor (the anchor specified in **2.1.4-2, Part L of the Rules**, having the holding power two times or more of that of ordinary anchor, and if it is used without subjected to the reduction as specified in **27.1.3-3, Part C of the Rules**, such anchor may not be dealt with as a high holding power anchor), is to be as follows in addition to the requirements specified in **1.2** through **1.5** of this chapter.

(1) Application for approval

~~An application for approval (sample of the application form is given in **Form 2-1**) stating the following items is to be submitted to the Society.~~ Manufacturers who apply for the approval of the manufacturing processes of anchors are to submit a copy of the appropriate application

form (**Form 2-1**) filled in with required data and information to the Society (branch office concerned)

~~(a) Kind and type of the anchor~~

~~(b) Maximum mass of the anchor~~

((2) and (3) are omitted.)

1.8 Approval of Manufacturing Process of Anchors Used for Positioning Systems

1.8.2 Approval Application Forms

Sub-paragraph -1 has been amended as follows.

1 Manufacturers who apply for the approval of the manufacturing process of anchor are to submit a copy of the ~~approval~~ appropriate application form (~~See~~ **Form 2-1**) filled in with the required data and information to the Society (branch office concerned).

Form 2-1 has been deleted.

~~Form 2-1~~

(Form 2-1 is omitted.)

Chapter 1A APPROVAL OF ANCHORS INTENDED FOR USE ON VESSELS OR FLOATING OFFSHORE FACILITIES FIXED OR POSITIONED AT SPECIFIC SEA AREAS FOR LONG PERIODS OF TIME

1A.2 Approval Application

Paragraph 1A2.1 has been amended as follows.

1A.2.1 Approval Application Form

Manufacturers who apply for the approval of anchor are to submit a copy of the ~~approval~~ appropriate application form (~~See~~ **Form 2-1A**) filled in with the required data and information to the Society (branch office concerned).

Paragraph 1A2.2 has been amended as follows.

1A.2.2 Documents to be Submitted

Three copies each of the documents given in below are to be submitted together with the ~~approval~~ appropriate application form specified in **1A.2.1**.
((1) to (4) are omitted.)

Form 2-1A has been deleted.

~~Form 2-1A~~
(Form 2-1A is omitted.)

Chapter 2 APPROVAL OF MANUFACTURING PROCESS OF CHAINS

2.2 Application Procedures

Paragraph 2.2.1 has been amended as follows.

2.2.1 Application Procedures and Application Form

The approval application procedures are to be in accordance with the following requirements:

(1) The manufacturer who intends to newly manufacture chains is to submit a single copy of the appropriate application form (~~see~~ **Form ~~2-2~~2-2A**) filled with the information on the type of chains accompanied by the reference data, each in triplicate, stated in **2.2.2** to the Society.

(2) The Society, upon examining the application for approval and the attached reference data stated in the above, is to give approval of the test procedure for approval and return them to the applicant.

2.2.2 Reference Data to be Submitted

Sub-paragraph -1 has been amended as follows.

1 The reference data to be attached to the appropriate application ~~for approval~~ form and to test procedure for the approval of the manufacturing process are to cover the items shown below:
((1) and (2) are omitted.)

2.6 Approval

2.6.3 Renewal of Approval and Changes in the Approved Content

Sub-paragraph -1 has been amended as follows.

1 In cases where changes have been made to the approved content of the "Certificate of Approval" specified in **2.6.1**, the applicant is to apply for renewal of approval in accordance with the requirements of **2.2**. In such cases, a copy of the "Certificate of Approval" and the documents specified in **2.2.2** are to be submitted together with the appropriate application form (**Form ~~2-2~~ 2-2A**). However, the data to be submitted may be limited to reference data on the changes.

Form 2-2 has been deleted.

~~Form 2-2~~
(Form 2-2 is omitted.)

Chapter 3 APPROVAL OF MANUFACTURING PROCESS OF CHAIN ACCESSORIES

3.2 Approval Application Procedures

Paragraph 3.2.1 has been amended as follows.

3.2.1 Approval Application Procedures

Manufacturers are to submit a copy of the appropriate application form (**Form 2-2B**) and are to follow the application process specified in ~~T~~the provisions of ~~in~~ **2.2.1** ~~are to apply to the approval application procedures~~.

3.2.2 Reference Data to be Submitted

Sub-paragraph -1 has been amended as follows.

1 The reference data to be attached to the appropriate application form and the test procedures for the approval of the manufacturing process are to be as follows:
((1) and (2) are omitted.)

3.6 Approval

3.6.3 Renewal of Approval and Changes in the Approved Content

Sub-paragraph -1 has been amended as follows.

1 In cases where changes have been made to the approved content of the "Certificate of Approval" specified in **3.6.1**, the applicant is to apply for renewal of approval in accordance with the requirements of **3.2**. In such cases, a copy of the "Certificate of Approval" and the documents specified in **3.2.2** are to be submitted together with the appropriate application form (**Form ~~2-2~~ 2-2B**). However, the data to be submitted may be limited to reference data on the changes.

Chapter 4 APPROVAL OF RAW TEXTILES FOR SYNTHETIC FIBRE ROPES

4.2 Application Procedures

Paragraph 4.2.1 has been amended as follows.

4.2.1 Application Procedures

The manufacturer of raw textiles who intends to obtain approval of the manufacturing process of raw textiles is to submit his application for approval a single copy of the appropriate application form (**Form 2-3**) filled with the following reference data each in triplicate, stated in **(1)** to **(4)** below to the Society.

In cases where reference data compatible with those to be newly submitted were previously submitted to the Society, submission of such reference data may be omitted by giving notification to the Society to that extent.

((1) to (4) are omitted.)

4.5 Approval

4.5.3 Renewal of Approval and Changes in the Approved Content

Sub-paragraph -1 has been amended as follows.

1 In cases where changes have been made to the approved content of the "Certificate of Approval" specified in **4.5.1**, the applicant is to apply for renewal of approval in accordance with the requirements of **4.2**. In such cases, a copy of "Certificate of Approval" and the documents specified in **4.2.1** are to be submitted together with the appropriate application form (**Form 2-3**). However, the data to be submitted may be limited to reference data on the changes.

Form 2-3 has been deleted.

~~Form 2-3~~

(Form 2-3 is omitted.)

Chapter 5 APPROVAL OF MANUFACTURING PROCESS OF SYNTHETIC FIBRE ROPES

Section 5.2 has been amended as follows.

5.2 Application Procedures

5.2.1 Application Procedures

Manufacturer who ~~intends to obtain~~applies for the approval of manufacturing process of synthetic fibre ropes is to submit for approval a single copy of the appropriate application form (**Form 2-4**) with plans for the approval test as well as the following items attached, each in triplicate, to the Society:

((1) to (4) are omitted.)

In cases where reference data compatible with those to be newly submitted were previously submitted to the Society, submission of such reference data may be omitted by giving notification to the Society to that extent.

Section 5.5 has been amended as follows.

5.5 Approval

~~**5.5.1 Notification of Approval**~~

~~The Society, when it considers the results of confirmation and approval tests of manufacturing process appropriate, is to give approval of the manufacturing process of the ropes to the manufacturer, send a notification of approval.~~

~~**5.5.2 Revocation of Approval**~~

~~The approval may be revoked in either of the following circumstances:~~

~~(1) When question arises on product quality.~~
~~(2) When question arises on the product quality control activities.~~
~~(3) When the approval has become no longer applicable due to amendment of the rules.~~
~~(4) When the manufacture has been terminated.~~
~~(5) When revocation of the approval is applied by the manufacturer.~~

5.5.1 Notification and Announcement of Approval

1 The Society grants approval to the manufacturing process of synthetic fibre ropes which have been deemed appropriate upon the basis of surveyor reports and documents submitted in accordance with requirements in **5.2** through **5.4**. In such cases, a "Certificate of Approval", which includes the name of the manufacturer, the approval date, etc., is issued and the details of the approval, etc. are described in the "Particulars of Approval Conditions".

2 In accordance with the requirements in **5.2.1** and **5.4.2**, the Society will stamp submitted data it deems necessary with a seal of approval and return such data to the applicant.

3 The Society announces synthetic fibre ropes which have been granted approval in the form of a table.

5.5.2 Validity of Approval

The term of validity of the "Certificate of Approval" specified in **5.5.1-1** will be 5 *years* from the date of approval. In cases where the renewal of approval is carried out in accordance with the requirements in **5.5.3**, the term of validity will be 5 *years* from the day following the expiry date of the previous validity.

5.5.3 Renewal of Approval

1 In the case of application for renewal of approval, the applicant is to submit the appropriate application form (**Form 2-4**) along with a copy of the "Certificate of Approval" and three copies of a list of the products for which approval is desired to be continued or revoked. In such cases, the aforementioned list is to include information such as the product name, manufacturer and kind of filaments used, whether an inspection has been carried out by the Society during the previous 5 *years*, the production output during the previous year, whether the approval is to be continued not, etc. Approval is to be revoked, however, in cases where the filaments used in the rope are no longer being manufactured.

2 The Society will conduct an on-site factory inspection if needed

3 In addition to the factory inspection specified in **-2**, the breaking test specified in **5.1.7, Part L of the Rules for the Survey and Construction of Steel Ships** is to be carried out according to the categories specified in **Table 2.5-3**. One specimen each is to be taken from three different coils of rope which are larger than 40 *mm* or the largest size manufactured in diameter for each category. Each specimen is to satisfy the provisions in **5.1.7(5), Part L of the Rules for the Survey and Construction of Steel Ships**. However, in cases where product inspections (appearance and dimension) for each category have been carried out by the Society during the previous 5 *years*, breaking tests for the products in this category may be dispensed with.

4 Notwithstanding the requirements in the **-3**, the breaking test specified in **5.1.7, Part L of the Rules for the Survey and Construction of Steel Ships** may be exempted, provided that synthetic fibre ropes are made of raw textiles approved by the Society.

5 In cases where synthetic fibre ropes are made of raw textiles which have not been approved or whose approval is invalid, the tests specified in **4.4 of Part 2** are to be carried out for the raw textile in addition to the breaking test specified in the preceding **-3** in accordance with the requirements in **L5.1.3, Part L of the Guidance for the Survey and Construction of Steel Ships**. This requirement, however, may be dispensed with when the Society deems a rope to be appropriate in consideration of the performance records of the same rope produced during the previous 5 *years*.

6 The factory inspection specified in **-2** and the tests specified in **-3** and **-5** are, in principle, to be completed within the term of validity of the "Certificate of Approval". Under certain conditions and subject to Society approval, however, said factory inspection may be completed within a period of 3 *months* after the term of validity expires.

7 The Society is to examine the submitted data specified in **-1**, the reports of factory inspections specified in **-2** as well as the results of the tests specified in **-3** and **-5**, and renew the approval when deemed appropriate.

8 Manufacturers whose renewal is approved are to return the old "Certificate of Approval" to the Society as soon as possible after receiving the new certificate and the term of validity of the old certificate expires.

5.5.4 Changes in Approved Content

1 In cases where changes have been made to the approved content of the "Certificate of Approval" or the "Particulars of Approval Conditions" specified in **5.5.1-1**, the applicant is to apply for approval in accordance with the requirements of **5.2**. In such cases, a copy of the "Certificate of Approval" and the documents specified in **5.2.1** are to be submitted together with the appropriate

application form (**Form 2-4**). However, the data to be submitted may be limited to that related to the changes.

2 Upon studying the changes made to the items of approved content specified in **-1**, the Society may request the factory inspections and manufacturing process approval tests specified in **5.4** when deeemd necessary.

3 The Society is to examine the submitted data specified in **-1**, reports of the factory inspections specified in **-2** and the results of manufacturing process approval tests, and approve the changes to the approved content when deemed appropriate. In such cases, the term of validity of the "Certificate of Approval" specified in **-1** is, as a rule, not changed.

4 Manufacturers whose request for changes in approved content are accepted are to return the old "Certificate of Approval" and the relevant "Particulars of Approval Conditions" to the Society as soon as possible upon receiving the new certificates.

5.5.5 Revocation of Approval

If any of the following **(1)** through **(5)** apply, the Society may, based upon the requirements in this chapter, revoke the approval of a manufacturing process and give notice of this revocation to the manufacturer. Manufacturers who receive a notice of revocation are required to return the "Certificate of Approval" and the "Particulars of Approval Conditions" in question to the Society.

(1) When the manufacturer does not pay the approval fees.

(2) When synthetic fibre ropes whose manufacturing processes have previously been granted approval no longer conform to the given requirements due to the amendment or implementation of any conventions, laws, rules or regulations.

(3) In cases where any of the following **(a)** through **(d)** apply and the manufacturer fails to take proper action despite Society requests for investigation, improvements, etc.
   (a) When any harmful defects in the product are detected after product shipment.
   (b) When any damage to a product is recognized to have occurred during operation is detected.
   (c) When any shortcomings in the quality control system or manufacturing control system are detected.
   (d) When the approved content described in the "Particulars of Approval Conditions" specified in **5.5.1-1** has been changed without Society permission.

(4) When the manufacturer has not carried out the renewal of approval according to the requirements in **5.5.3**.

(5) When a request for revocation is made by the manufacturer.

Section 5.6 has been deleted.

~~**5.6 Periodical Inspection**~~

~~**1** General~~

~~The manufacturer is to be subjected to periodical inspection for the facilities and process of manufacturing for approved synthetic fibre ropes in a period not exceeding 5 *years*.~~

~~**2** Application for Inspection~~

~~The manufacturer is to submit to the Society a single copy of application form (see **Form 2-4**) and three copies of the list of the products of which approval are intended to be continued or revoked. In this case, this list is to be filled in with product name, manufacturer and kind of filaments, whether the inspection has been carried out by the Society or not during the last 5 *years*, production output in the last *year*, whether the approval is to be continued or not, etc. The approval is to be revoked in case filaments of the rope which have not been manufactured any longer.~~

~~**3 Details of Inspection**~~

~~(1) The confirmation survey is to be carried out in accordance with the provisions in **5.3**.~~

~~(2) In the inspections, breaking test specified in **5.1.7, Part L of the Rules for the Survey and Construction of Steel Ships** is to be carried out according to the category specified in **Table 2.5.3**. In each category, one specimen each is to be taken from three different coils of rope which are larger than 40*mm* or the largest size manufactured in diameter. Each specimen is to satisfy the provisions in **5.1.7(5), Part L of the Rules for the Survey and Construction of Steel Ships**. However, in cases where, during the last 5 *years*, product inspections (appearance and dimension) in each category have been carried out by the Society, breaking tests for the products in this category may be dispensed with.~~

~~(3) Notwithstanding the requirements in the **(2)**, the breaking test specified in **5.1.7, Part L of the Rules for the Survey and Construction of Steel Ships** may be exempted, provided that synthetic fibre ropes are made of raw textiles approved by the Society.~~

~~(4) In cases where synthetic fibre ropes are made of raw textiles which have not been approved or whose approval is invalid, the tests specified in **4.4 of Part 2** are to be carried out for raw textile in addition to the breaking test specified in the preceding **(2)**. However, this requirement may be dispensed with provided that the Society deems such ropes appropriate in consideration of the records of the same ropes produced during the previous 5 *years*.~~

Form 2-4 has been deleted.

~~Form 2-4~~

(Form 2-4 is omitted.)

Chapter 6 EMERGENCY TOWING ARRANGEMENTS

6.2 Application Procedures

Sub-paragraph -1 has been amended as follows.

1 Manufacturer who intends to obtain approval of prototype of ETA is to submit the appropriate application form (~~*See*~~ **Form 2-5**) accompanied by three sets of the following data.

(1) Outline of manufacturing plant (brochure showing the outline of manufacturing plant.)
(2) Outline of manufacturing process (manufacturing process for each component of ETA respectively.)
(3) Description of quality control systems and quality control standards
(4) Specification of ETA
(5) Description of type and specification of each component of ETA
(6) General arrangement of ETA and construction profile of each component in detail (indicate materials used clearly)
(7) Operation Manuals for ETA
(8) Description of name and address of all factories, where each component of ETA is manufactured by different factories.
(9) Kinds, mechanical properties and chemical composition of materials of each component
(10) Description of heat treatment process (including kind of method, temperature, time of heat treatment and kind of cooling method and so on) and their control standards, if the materials used require the heat treatment.
(11) Inspection and testing facility including non-destructive testing method and list of certified personnel in charge of non-destructive testing.
(12) Copy of Certification issued by other Classification Society or other organizations considered appropriately by the Society, if the manufacture has already obtained approval of manufacturing process.
(13) Copy of Certification issued by the Society or other recognized organizations based on the **Rules for Approval of Manufacturers** or *ISO* 9000 series, if the manufacture has already obtained approval of its quality system.
(14) Approval test plan of ETA including testing method

6.6 Approval

6.6.3 Renewal of Approval and Changes in the Approved Content

Sub-paragraph -1 has been amended as follows.

1 In cases where changes have been made to the approved content of the "Certificate of Approval" specified in **6.6.1**, the applicant is to apply for renewal of approval in accordance with the requirements of **6.2**. In such cases, a copy of the "Certificate of Approval" and the documents specified in **6.2.1** are to be submitted together with the appropriate application form (**Form 2-5**). However, the data to be submitted may be limited to reference data on the changes.

Form 2-5 has been deleted.

~~Form 2-5~~
(Form 2-5 is omitted.)

Chapter 7 LIFE-SAVING APPLIANCES

7.2 Type Approval

Paragraph 7.2.1 has been amended as follows.

7.2.1 Procedures for Application

1 An applicant for type approval is to submit the appropriate ~~an "A~~application form ~~for Type Approval (Initial)"~~ (**Form 2-6**) and the following drawings and documents for examination, each in triplicate:

(1) Drawings and documents for type approval;
(2) Prototype test procedures for type approval;
(3) Outline of the manufacturer's production site including:
    (a) their location, history, capital stock, organizational structure, number of employees, main products and standard production capability thereof;
(4) Manufacturing facilities including:
    (a) lists of main production facilities and test/inspection facilities;
    (b) outline of each shop site and storage facilities for materials and parts;
    3 lists of subcontracted manufacturers and parts.
(5) Documents related to quality control including:
    (a) organizational structure related to quality control;
    (b) document control;
    (c) in-house test and inspection procedures;
    (d) management of inspection, measurement and test facilities;
    (e) management of nonconformities;
    (f) management of quality records.

2 Irrespective of the above **-1**, the applicant may submit the appropriate ~~an "A~~application form ~~for Omission of Drawings and Documents"~~ (**Form 2-8**) only, in triplicate, instead of submitting the relevant drawings and documents, if they are identical to drawings and documents already submitted to the Society in relation to appliances or equipment previously type approved by the Society.

7.2.5 Renewal of Validity of Certificate of Type Approval

Sub-paragraph -1 has been amended as follows.

1 When a firm that has been issued with a Certificate of Type Approval for a given appliance or item of equipment wishes to renew the Certificate, the firm is to submit the appropriate ~~an "A~~application ~~for Approval (Renewal)"~~ form (**Form 2-6**) with a list of the appliances or equipment manufactured in the past in triplicate to the Society within the validity of the Certificate.

Paragraph 7.2.6 has been amended as follows.

7.2.6 Modification in Approval Conditions

When modifications are planned by a firm that has obtained type approval for a given appliance or item of equipment with regard to approval contents with respect to the particulars, materials used, structures, scantlings and manufacturing processes of the main parts, or the quality control system used, the firm is to submit the appropriate ~~an "A~~application ~~for Approval (Modification)"~~ form (**Form 2-6**) with an explanatory note describing the modifications in contents and related

drawings/documents in triplicate to the Society. The Society is to examine the proposed modifications, and may require tests and/or inspections, as deemed necessary.

7.3 Production Tests

Paragraph 7.3.2 has been amended as follows.

7.3.2 Procedures for Application

An applicant applying for a production test is to submit the appropriate ~~an "A~~application ~~for Tests (Production Tests)"~~ form (**Form 2-7**) to the nearest branch or office of the Society.

Form 2-6 has been deleted.

~~Form 2-6~~
(Form 2-6 is omitted.)

Form 2-7 has been deleted.

~~Form 2-7~~
(Form 2-7 is omitted.)

Form 2-8 has been deleted.

~~Form 2-8~~
(Form 2-8 is omitted.)

Chapter 8 SEWAGE TREATMENT PLANT AND SEWAGE COMMINUTING AND DISINFECTING SYSTEM

8.2 Application

Paragraph 8.2.1 has been amended as follows.

8.2.1 Application Form

The manufacturer, who intends to obtain the approval of use, is to submit the appropriate ~~an~~ application form (~~Specimen~~ **Form 2-9**) filled in with necessary data and information to the Society (Head Office).

Form 2-9 has been deleted.

~~Form 2-9~~
(Form 2-9 is omitted.)

Chapter 9 APPROVAL OF USE OF FIBER REINFORCED PLASTIC (FRP)

9.2 Application Procedure

Paragraph 9.2.1 has been amended as follows.

9.2.1 Approval Application

Manufacturers who wish to obtain approval to use FRP products are to submit the appropriate ~~an~~ application form (**Form 2-10**) and, as shown in **9.2.3**, three copies of any drawings and documents as well as three copies of the test plan to either the Society's main office or a branch office.

Paragraph 9.2.3 has been amended as follows.

9.2.3 Documents to be attached

Documents to be attached to the appropriate ~~approval~~ application form specified in **9.2.1** are to contain the following items:
((1) to (13) are omitted.)

9.5 Notice of Approval

9.5.3 Renewal of Approval

Sub-paragraph -1 has been amended as follows.

1 In case of application for renewal of approval, the applicant is to submit a copy of "Certificate of Approval" and three copies of data showing actual manufacturing records of the FRP within the specific period of time together with the appropriate ~~an~~ application from **(Form 2-10)**.

9.5.4 Changes in Approval Content

Sub-paragraph -1 has been amended as follows.

1 In case of changes to an approved FRP, the applicant is to submit a copy of the "Certificate of Approval" and three copies of the documents specified in **9.2.3** together with the appropriate ~~an~~ application form **(Form 2-10)**.

Form 2-10 has been deleted.

~~Form 2-10~~
(Form 2-10 is omitted.)

Chapter 10 SHIPBOARD INCINERATOR

10.2 Application Procedure

Paragraph 10.2.1 has been amended as follows.

10.2.1 Application Form

Those desiring approval for a shipboard incinerator are requested to submit the appropriate ~~an~~ application form (~~Specimen~~ **Form 2-11**) filled in with necessary data and information to the Society (Head Office).

Form 2-11 has been deleted.

~~Form 2-11~~
(Form 2-11 is omitted.)

Part 3 WELDING CONSUMABLES

Chapter 1 APPROVAL OF WELDING CONSUMABLES

1.2 Approval Application

Paragraph 1.2.1 has been amended as follows.

1.2.1 Approval Application Form

Manufacturers wishing to obtain approval are to submit to the Society (Branch Office) a single copy of the ~~Approval~~ appropriate ~~A~~application ~~F~~form (~~Specimen~~ **Form 3-1**), which includes for each manufacturing plant the brands of the welding consumables (for submerged arc welding consumables, each brand of core wire and combination flux), kind, symbol, purpose, maximum core wire diameter produced and the maximum quantity hydrogen (this is limited to non-low-hydrogen electrodes for high tensile sheets), together with two copies each of documents and data specified in **1.2.3**.

1.2.3 Data to be Submitted

Sub-paragraph -1 has been amended as follows.

1 Data to be submitted together with the appropriate ~~Approval~~ ~~A~~application ~~F~~form are as follows:
((1) to (11) are omitted.)

1.6 Annual Inspection

Paragraph 1.6.1 has been amended as follows.

1.6.1 Application for Annual Inspection

The each manufacturing plant who requests annual inspection is to be submitted ~~an~~ the appropriate application form ~~for annual inspection for approved welding consumables~~ (**Form 3-2**~~, any convenient form, however, may be accepted for the annual inspection of multiple brands of welding consumables~~) to the Society (Branch Office) within the term of validity of the certificate.

1.7 Change in the Approval Content

1.7.1 Application for Change

Sub-paragraph -1 has been amended as follows.

1 In case when the particulars of the welding consumables which being mentioned in the certificate of approval, such as grade, welding position, maximum diameter of electrodes or shield gas, is changed, the manufacturer is to submit a single copy of the appropriate application form (**Form 3-1**) for change together with two copies of necessary data to the Society (Branch Office), and necessary additional approval tests are to be carried out accordingly.

1.10 Reduction of Approval Test for the Same Brand of Approved Consumables

Paragraph 1.10.1 has been amended as follows.

1.10.1

In case when the manufacturer request reduction of part of approval test under the provisions of **6.1.3-4** and **-5, Part M of the Rules**, the manufacturer is to submit ~~an~~ the appropriate application form (~~specimen~~ **Form 3-1**) with descriptions for this reduction and three copies of the following data to the Society (Head office).

1.11 Approval Test and Annual Inspection for Welding Consumables which are not Specified in the Rules

Paragraph 1.11.1 has been amended as follows.

1.11.1 Approval Test

1 The manufacturer, who wishes the approval of welding consumables to which the provisions in **6.1.3-3, Part M of the Rules** has been applied, is to submit ~~an~~ the appropriate application form (~~*see*~~ **Form 3-1**) and three copies of the following data to the Society (Head office).

Form 3-1 has been deleted.

~~Form 3-1~~

(Form 3-1 is omitted.)

Form 3-2 has been deleted.

~~Form 3-2~~

(Form 3-2 is omitted.)

Part 4 NON-METALLIC MATERIALS AND COATING MATERIALS FOR HULL

Chapter 1 APPROVAL OF FIRE PROTECTION MATERIALS

1.4 Application Procedure for Approval

Paragraph 1.4.1 has been amended as follows.

1.4.1 Application Form for Approval

1 When obtaining the approval of fire protection materials except fire retardant coatings, the appropriate ~~an~~ application ~~for approval~~ form (~~Specimen~~ **Form 4-1**) accompanied by the documents specified in **1.4.3-1** (one for each item) is submitted to the Society (Head Office).

2 When obtaining the approval for fire retardant coatings, the appropriate ~~an~~ application ~~for approval~~ form (~~Specimen~~ **Form ~~4-2~~ 4-2_5**) accompanied by the documents specified in **1.4.3-2** (one for each item) is submitted to the Society (Head Office).

1.4.3 Submission of Attached Documents to the Application

Sub-paragraph -2 has been amended as follows.

2 When obtaining the approval of fire retardant coatings, the documents including the following data are submitted to the Society together with the appropriate application form specified in **1.4.1**:

(1) Historical record of the company
(2) Outline of the facilities of works
(3) If applicable, the documents (a copy of the certificate or the document of compliance) on quality control system of the companies (both of the applicant and the manufacturer)
(4) Kinds of materials (names and trade names of the materials specified in **1.1** and **1.2**)
(5) List of coating system (~~Specimen~~ **Form ~~4-5~~ 4-2_5**)
(6) Table of chemical composition
(7) Test report of the required fire tests specified in **1.3.9** (including actual coating condition and dry film thickness of the test specimen)
(8) Records of service
(9) Marking (label, etc.)
(10) Other items which the Society considers necessary

1.5 Confirmation of Manufacturing and Quality Control Procedure

1.5.1 Confirmation of Manufacturing and Quality Control Procedure

Sub-paragraph -3 has been amended as follows.

3 The confirmatory survey may be omitted if the materials are being manufactured in the same facilities and in the process considered almost the same as those on the materials approved in the past or if the Society considers it unnecessary. When the applicant desires omission of confirmatory survey, an application stating the reasons thereof is submitted with the appropriate application ~~for~~

~~approval~~ form.

1.10 Periodical Test

1.10.2 Periodical Tests for Approved Materials Other Than Fire Retardant Coatings

Sub-paragraph -1 has been amended as follows.

1 The appropriate ~~An~~ application form ~~for periodical test~~ (~~Specimen~~ **Form 4-3**) accompanied with necessary copies of the records of manufacture and the specifications of the products specified in **1.4.3-1(6)** is submitted to the Society (Head Office).

Sub-paragraphs -3 and -4 have been amended as follows.

3 After the appropriate application form ~~for the periodical test~~ and necessary data have been received, the Society's surveyor carries out the confirmatory survey of manufacturer for verifying that the materials are manufactured in accordance with the same process of manufacture employed when the materials were previously approved. The survey may, however, be omitted when the Society considers unnecessary.

4 After the appropriate application form ~~for the periodical test~~ and necessary data have been received, the tests specified in **-2** above are carried out under the direction of the Society (Head Office) and the test report is submitted to the Society (Head Office). The test report is of an original or a duplicate copy issued by a testing laboratory specified in **1.6.1-1**.

1.10.3 Periodical Test for Fire Retardant Coatings

Sub-paragraph -1 has been amended as follows.

1 The appropriate ~~An~~ application form ~~for periodical test~~ (~~Specimen~~ **Form 4-4**) accompanied by necessary copies of the records of manufacture and the list of coating system and the table of chemical composition specified in **1.4.3-2(5)** and **(6)** respectively is submitted to the Society (Head Office).

Sub-paragraphs -3 and -4 have been amended as follows.

3 After the appropriate application form ~~for the periodical test~~ and necessary data have been received, the Society's surveyor carries out the confirmatory survey of manufacturer for verifying that the materials are manufactured in accordance with the same process of manufacture employed when the materials were previously approved. The survey may, however, be omitted when the Society considers unnecessary.

4 After the appropriate application form ~~for the periodical test~~ and necessary data have been received, the tests specified in **-2** above are carried out under the direction of the Society (Head Office) and the test report is submitted to the Society (Head Office). The test report is of an original or a duplicate copy issued by a testing laboratory specified in **1.6.1-1**.

Form 4-1 has been deleted.

~~Form 4-1~~
(Form 4-1 is omitted.)

Form 4-2 has been deleted.

~~Form 4-2~~
(Form 4-2 is omitted.)

Form 4-3 has been deleted.

~~Form 4-3~~
(Form 4-3 is omitted.)

Form 4-4 has been deleted.

~~Form 4-4~~
(Form 4-4 is omitted.)

Form 4-5 has been deleted.

~~Form 4-5~~
(Form 4-5 is omitted.)

Table 4.1-1 has been deleted.

~~Table 4.1-1 Entry instructions for Specimen Form 4-1 to 4-5~~

Name of fire protection material	Kinds	Applications
Non-combustible materials	No entry required	No entry required
"***A***" class divisions	***A*-60**, ***A*-30**, ***A*-15**, ***A*-0**	Bulkheads, decks, fire-retardant doors, windows, fire dampers, pipe and duct penetrations or cable penetrations
"***B***" class divisions	***B*-15**, ***B*-0**	Bulkheads, decks, fire-retardant doors, linings, ceilings, windows, fire dampers, pipe and duct penetrations or cable penetrations
Continuous "***B***" class divisions	***B*-15**, ***B*-0**	Continuous linings or continuous ceilings
Fire retardant base materials	No entry required	Fire retardant base materials used for ceilings, linings, draft stops or grounds
Fire retardant veneers	No entry required	Fire retardant veneers used for both non-combustible base materials and fire retardant base materials, only for non-combustible base materials or only for fire retardant base materials
Fire retardant surface floorings	No entry required	No entry required
Primary deck coverings	No entry required	No entry required

Chapter 3 APPROVAL OF RAW MATERIALS FOR HULL OF SHIPS OF FIBREGLASS REINFORCED PLASTICS

3.2 Approval Application Procedures

Paragraph 3.2.1 has been amended as follows.

3.2.1 Application for Approval

Manufacturer who intends to obtain approval is to submit the appropriate application form in duplicate, stating the brand name and type of raw materials (~~Specimen~~ **Form 4-6**) accompanied by the reference materials and data, each in duplicate, as shown in **3.2.3** to the Society (Head Office).

3.2.3 Reference Materials and Data to be Attached to the Application for Approval

Sub-paragraphs -1 and -2 have been amended as follows.

1 The following reference materials and data are to be attached to the appropriate application form ~~for approval~~:
((1) to (10) are omitted.)
2 Notwithstanding the preceding requirements, either part or all of the reference materials and data may be omitted in case where any of the following items is pertinent. In this case, note to be made to this extent in the ~~approval~~ appropriate application form.
((1) and (2) are omitted.)

3.6 Periodical Tests

Paragraph 3.6.2 has been amended as follows.

3.6.2 Application for Periodical Test

The manufacturer is to submit the appropriate application form ~~for periodical test~~ (~~Specimen~~ **Form 4-7**), in duplicate, to the Society (Branch Office) before the date of periodical test.

Form 4-6 has been deleted.

~~Form 4-6~~
(Form 4-6 is omitted.)

Form 4-7 has been deleted.

~~Form 4-7~~
(Form 4-7 is omitted.)

Chapter 4 APPROVAL OF COATING SYSTEM

4.2 Application Procedures

Paragraph 4.2.1 has been amended as follows.

4.2.1 Application for Approval

Manufacturer who intends to obtain approval is to submit the appropriate application form stating the type and uses of the coating system (**Form ~~4-8~~ 4-14**), three copies of the documents specified in **4.2.2** and three copies of the test plan to the Society (one of its branches).

Paragraph 4.2.2 has been amended as follows.

4.2.2 Reference Materials and Data to be Attached to the Application for Approval

The following reference materials and data are to be attached to the appropriate application form ~~for approval~~.
((1) to (10) are omitted.)

4.5 Notice of Approval

4.5.3 Renewal of Approval

Sub-paragraph -1 has been amended as follows.

1 In case of application for renewal of approval, the applicant is to submit a "Certificate of Approval" (copy) and three copies of the data showing actual manufacturing records of the coating constituted coating system within the specific period together with ~~an~~ the appropriate application from (**Form 4-14**).

4.5.4 Changes in Approval Content

Sub-paragraph -1 has been amended as follows.

1 In case of changes to an approved system, the applicant is to submit the "Certificate of Approval" (copy) and three copies of the documents specified in **4.2.2** together with the appropriate application form (**Form 4-14**).

Form 4-8 has been deleted.

~~Form 4-8~~
(Form 4-8 is omitted.)

Chapter 5 APPROVAL OF MANUFACTURING PROCESS OF NON-METALLIC BEARING MATERIAL FOR RUDDERS

5.2 Approval Application

Paragraph 5.2.1 has been amended as follows.

5.2.1 Approval Application Form

Manufacturers wishing to obtain the approval of manufacturing process of non-metallic bearing material for rudders are to submit a single copy of the ~~Approval~~ appropriate ~~A~~application ~~F~~form (~~Specimen~~ **Form 4-9**).

5.2.2 Data to be submitted

Sub-paragraph -1 has been amended as follows.

1 Three copies each of the drawings and documents given as follows to be submitted together with the ~~Approval~~ appropriate ~~A~~application ~~F~~form specified in **5.2.1**.
((1) to (8) are omitted.)

Form 4-9 has been deleted.

~~Form 4-9~~
(Form 4-9 is omitted.)

Chapter 6 APPROVAL OF AIRBORNE SOUND INSULATION PROPERTIES OF MATERIALS USED FOR BULKHEADS AND DECKS

6.2 Application Procedures

Paragraph 6.2.1 has been amended as follows.

6.2.1 Procedures

The appropriate ~~An~~ application form ~~for approval~~ (**Form ~~4-10~~ 4-12**) accompanied by 3 copies each of the documents specified in **6.2.3** is to be submitted to the Society (Head Office).

Paragraph 6.2.3 has been amended as follows.

6.2.3 Submission of Attached Documents to the Application

The following data are to be attached to the appropriate application form ~~for approval~~:
((1) to (9) are omitted.)

6.3 Confirmation of Manufacturing and Quality Control Procedures

6.3.1 Confirmation of Manufacturing and Quality Control Procedures

Sub-paragraph -3 has been amended as follows.

3 Confirmatory surveys may be exempted if the relevant materials are being manufactured in the same facilities and using a process considered to be almost the same as those for materials approved in the past or if the Society considers it unnecessary. When the applicant desires an exemption from confirmatory surveys, a request stating the reasons thereof is to be submitted together with the appropriate application form ~~for approval~~.

6.7 Periodical Examinations

6.7.1 Application for Periodical Examinations

Sub-paragraph -2 has been amended as follows.

2 The appropriate ~~An~~ application form (**Form ~~4-11~~ 4-13**) for a periodical examination is to be made to the Society accompanied by a document describing the Society's approval number, date of issue of the Certificate and items altered from the original approved conditions, if any.

Form 4-10 has been deleted.

~~Form 4-10~~
(Form 4-10 is omitted.)

Form 4-11 has been deleted.

~~Form 4-11~~
(Form 4-11 is omitted.)

Part 6 MACHINERY

Chapter 1 APPROVAL OF STANDARDIZED DESIGN FOR MACHINERY AND EQUIPMENT

1.2 Application

Paragraph 1.2.1 has been amended as follows.

1.2.1 Application Form

The manufacturer, who intends to obtain the approval of standardized design, is to submit ~~an~~the appropriate application form (~~Specimen~~ **Form 6-1~~(1)~~**) filled in with necessary data and information to the Society (Head Office).

1.4 Handling after Approval

Paragraph 1.4.1 has been amended as follows.

1.4.1 Allocation of Machinery and Equipment to Ships

In case where the machinery and equipment for which the standardized design have been approved are allocated to *NK*-classed ships, the appropriate application form (~~Specimen~~ **Form 6-1-2~~(2)~~**) ~~for manufacturing of the machinery and equipment~~ is to be submitted to the Society (Head Office), in triplicate, in place of the drawings and documents required by the rules.

Form 6-1(1) has been deleted.

~~Form 6-1(1)~~
(Form 6-1(1) is omitted.)

Form 6-1(2) has been deleted.

~~Form 6-1(2)~~
(Form 6-1(2) is omitted.)

Chapter 2 TYPE APPROVAL OF USE OF MACHINERY AND EQUIPMENT

2.2 Application

Paragraph 2.2.1 has been amended as follows.

2.2.1 Application Form

The manufacturer, who intends to obtain the type approval of machinery and equipment, is to submit ~~an~~the appropriate application form (~~Specimen~~ **Form 6-2**) filled in with necessary data and information to the Society (Head Office).

Form 6-2 has been deleted.

~~Form 6-2~~
(Form 6-2 is omitted.)

Chapter 3 APPROVAL OF COEFFICIENT FOR DISCHARGE OF SAFETY VALVES, ETC.

3.2 Application

Paragraph 3.2.1 has been amended as follows.

3.2.1 Application Form

The manufacturer, who intends to obtain the approval of coefficient for discharge of safety valves of boilers, or pressure relief valves of the cargo containment system, process pressure vessels, cargo piping and process piping for ships carrying liquefied gas in bulk (hereinafter referred to as "safety valves, etc."), is to submit ~~an~~the appropriate application form (~~Specimen~~ **Form 6-3**) filled with necessary data and information to the Society (Head Office).

Form 6-3 has been deleted.

~~Form 6-3~~
(Form 6-3 is omitted.)

Chapter 5 APPROVAL OF MANUFACTURING BOILERS AND GROUP 1 PRESSURE VESSELS

5.2 Approval

Paragraph 5.2.1 has been amended as follows.

5.2.1 Approval

The manufacturer intending to obtain the approval of the manufacturing boilers or Group 1 pressure vessels is to submit the appropriate application form (**Form 6-11**) together with following documents to the Society:
((1) to (5) are omitted.)

5.4 Validity of Approval

5.4.1 Validity of Approval

Sub-paragraph -2 has been amended as follows.

2 In case where renewal of validity is intended, ~~an~~ the appropriate application form (**Form 6-11**) for stating changes in the manufacturing procedure, etc., if any, is to be submitted to the Society (Survey Office) together with a copy of the existing certificate.

Chapter 6 APPROVAL OF USE OF PLASTIC PIPES

6.2 Approval Application Procedures

Paragraph 6.2.1 has been amended as follows.

6.2.1 Approval Application

Applicant, in case wherever approval, is to submit to the Society (Head Office) together with the appropriate application form ~~for approval of non-metal pipes~~ (**Form 6-4**) and the documents specified in **6.2.3**.

Paragraph 6.2.3 has been amended as follows.

6.2.3 Documents to be attached

The documents to be attached to the appropriate ~~approval~~ application form specified in the preceding **6.2.1** are to contain the following items:

6.8 Continuance or Retraction of Approval

Paragraph 6.8.1 has been amended as follows.

6.8.1 Procedures for Continuance of Approval

The applicant, when he intends to continue the approval of plastic pipes, is to submit ~~an~~ the appropriate ~~A~~application form ~~for Approval of Non-metal Pipes~~ (~~Specimen~~ **Form 6-5**) (in case where omission of periodical test is desired, the Application for Omission of Periodical Test describing the reasons) to the Society (Head Office). In either case, these documents are to be accompanied by the past records on the product and records of shop tests, each in duplicate (one each for the Head Office and Survey Office, however, if manufacturing plants are located in two or more Survey Offices, additional copies for such extra offices are to be provided).

Form 6-4 has been deleted.

~~Form 6-4~~
(Form 6-4 is omitted.)

Form 6-5 has been deleted.

~~Form 6-5~~
(Form 6-5 is omitted.)

Chapter 7 APPROVAL OF VENTING SYSTEMS AND RELATED EQUIPMENT FOR OIL TANKERS

7.2 Application Procedure

Paragraph 7.2.1 has been amended as follows.

7.2.1 Application Form for Approval

Those desiring approval for venting systems and related equipment for oil tankers are requested to submit a single copy of the appropriate ~~A~~application form (~~Specimen~~ **Form 6-6**) filled in with necessary data and information to the Society.

7.5 Approval

7.5.3 Changes in the Contents of Approval

Sub-paragraph -1 has been amended as follows.

1 Manufacturers desiring continued application of the requirements in this chapter against equipment which have exceeded the period of validity or have undergone changes in the content of approval are to submit a copy of the ~~Approval Continuation~~ appropriate ~~A~~application ~~F~~form (~~Specimen~~ **Form 6-7**) and are to proceed with the application process by the following requirements in **7.2**.

Form 6-6 has been deleted.

~~Form 6-6~~
(Form 6-6 is omitted.)

Form 6-7 has been deleted.

~~Form 6-7~~
(Form 6-7 is omitted.)

Chapter 8 APPROVAL OF USE OF DIESEL ENGINES

8.2 Application

Paragraph 8.2.1 has been amended as follows.

8.2.1 Application Form

The manufacturer who intends to obtain the approval is to submit ~~an~~the appropriate application form **(Form 6-8)** filled with necessary data and information to the Society (Head Office).

Chapter 9 APPROVAL OF USE OF MECHANICAL JOINTS

9.2 Application

Paragraph 9.2.1 has been amended as follows.

9.2.1 Application Form

The manufacturer, who intends to obtain the approval of use, is to submit ~~an~~the appropriate application form (~~Specimen~~ **Form 6-9**) filled in with necessary data and information to the Society (Head Office).

Form 6-9 has been deleted.

~~Form 6-9~~
(Form 6-9 is omitted.)

Chapter 10 APPROVAL OF USE OF CRANKCASE EXPLOSION RELIEF VALVES

10.2 Application

Paragraph 10.2.1 has been amended as follows.

10.2.1 Application Form

The manufacturer, who intends to obtain the approval of use, is to submit ~~an~~the appropriate application form (~~Specimen~~ **Form 6-10**) filled in with necessary data and information to the Society (Head office).

Form 6-10 has been deleted.

~~Form 6-10~~
(Form 6-10 is omitted.)

Part 7 CONTROL AND INSTRUMENTATION EQUIPMENT AND ELECTRICAL INSTALLATIONS

Chapter 1 APPROVAL OF USE OF AUTOMATIC DEVICES AND EQUIPMENT

1.2 Application Procedures

Paragraph 1.2.1 has been amended as follows.

1.2.1 Application Procedures

The manufacturer (applicant) of the equipment intended to be applied the requirements in this chapter is to submit ~~an~~ the appropriate application form (**Form 7-1**) accompanied with three copies each of the following drawings and documents to the Society.

1.4 Approval Procedures

Paragraph 1.4.4 has been amended as follows.

1.4.4 Renewal of Validity

For renewal the validity, manufacturer is to submit to the Society ~~an~~ the appropriate application form (**Form 7-1**~~, attached~~) accompanied with a copy of the certificate previously issued. The change of the specification, if any, is to be described in the application. When the specifications of the approved equipment remain unchanged, the certificate will be issued with another 5 *years* valid term by the Society. In this case, the existing certificate is to be returned to the Society as soon as possible after receiving the new certificate.

1.5 Changes in Particulars, Material, Construction, etc. of Approved Equipment

1.5.1 Changes in Particulars, Material, Construction, etc. of Approved Equipment

Sub-paragraph -1 has been amended as follows.

1 In case where the particulars, materials, construction, dimensions, etc. of major components of the approved equipment are intended to be changed, the manufacturer is to submit to the Society each three copies of the appropriate application form for changes (**Form 7-1**~~, attached~~), explanatory notes for changes and necessary drawings, accompanied with a copy of the certificate previously issued.

Sub-paragraph -4 has been amended as follows.

4 As a result of the examination of the appropriate application form and confirmation test records, the Society, when deemed them appropriate, reissues the certificate with contents duly revised.In this case, the existing certificate is to be returned to the Society as soon as possible after receiving the new certificate.

Form 7-1 has been deleted.

~~Form 7-1~~
(Form 7-1 is omitted.)

Chapter 2 APPROVAL OF USE OF LOADING COMPUTER

Section 2.2 has been amended as follows.

2.2 Application Procedure

Any manufacturer (applicant) of the loading computers and stability computers, intended to be applied the requirements in this chapter, is to submit ~~an~~ the appropriate application form (~~Specimen~~ **Form7-2**) accompanied with three copies each of the following drawings and documents to the Society:
((1) to (6) are omitted.)

2.4 Tests and Inspection

Paragraph 2.4.4 has been amended as follows.

2.4.4 Renewal of Validity

For renewal of validity, the manufacturer is to submit to the Society ~~an~~ the appropriate application form (Specimen **Form 7-2**~~, attached~~) accompanied with a copy of the certificate previously issued. The change of the specification, if any, is to be described in the application. Where the specifications of the approved equipment remain unchanged, the certificate will be issued with another 5 *years* valid term by the Society. Manufacturers whose renewal is approved are to return the existing certificate to the Society as soon as possible after receiving the new certificate and the term of validity of the existing certificate expires.

2.5 Changes in Particulars, Material, Construction, etc. of Approved Equipment

2.5.1 Changes in Particulars, Material, Construction, etc. of Approved Equipment

Sub-paragraph -1 has been amended as follows.

1 In case where the particulars, materials, construction, dimensions, etc. of major components of the approved equipment are intended to be changed, the manufacturer is to be submit to the Society each three copies of the appropriate application form for changes (**Form 7-2**~~, attached~~), explanatory notes for changes and necessary drawings, accompanied with a copy of the certificate previously issued.

Form 7-2 has been deleted.

~~Form 7-2~~
(Form 7-2 is omitted.)

Chapter 3 APPROVAL OF CABLE LAYING

3.2 Application Procedures

Paragraph 3.2.1 has been amended as follows.

3.2.1 Application

The manufacturer or constructor intended to obtain the approval in accordance with the requirements in this chapter is to submit the appropriate application form (**Form 7-3**) to the Society (Head Office).

Paragraph 3.2.2 has been amended as follows.

3.2.2 Documents for Submission

The manufacturer or constructor intended to obtain the approval of the fire stop methods is to submit three copies each of drawings and documents specified in **(1)** for the approval of the fire stop methods, and similarly those specified in **(2)** for the approval of non-metallic cable supports, together with the appropriate application form specified in **3.2.1**.
((1) and (2) are omitted.)

Form 7-3 has been deleted.

~~Form 7-3~~
(Form 7-3 is omitted.)

Chapter 4 APPROVAL OF USE OF LEVEL INDICATORS

4.2 Application

Paragraph 4.2.1 has been amended as follows.

4.2.1 Application Form

The company, who intends to obtain approval for the use of level indicators are to submit ~~an~~ the appropriate application form (~~Specimen~~ **Form 7-4**) filled in with necessary data and information to the Society (Head Office).

4.5 Approval

4.5.3 Renewal of Approval

Sub-paragraph -1 has been amended as follows.

1 The manufacturer, who intends to have a continuation of the approval already expired or to make partial technical modifications of the level indicator, is to submit ~~an~~ the appropriate application form (~~*see* **Form 7-5**~~**7-4E**) in accordance with the requirements of **4.2** newly. In this case, the data required per **4.2.3** may be limited to the portion subjected to modification only.

Form 7-4 has been deleted.

~~Form 7-4~~
(Form 7-4 is omitted.)

Form 7-5 has been deleted.

~~Form 7-5~~
(Form 7-5 is omitted.)

Chapter 5 APPROVAL OF USE OF WATER LEVEL DETECTION AND ALARM SYSTEMS

5.2 Application

Paragraph 5.2.1 has been amended as follows.

5.2.1 Application Form

The company, who intends to obtain the approval of use of water level detection and alarm systems are to submit ~~an~~ the appropriate application form (~~Specimen~~ **Form ~~7-6~~7-5**) filled in with necessary data and information to the Society (Head Office).

5.5 Approval

5.5.3 Renewal of Approval

Sub-paragraph -1 has been amended as follows.

1 The manufacturer, who intends to have a continuation of the approval to be expired or to make partial technical modifications of the system, is to submit ~~an~~ the appropriate application form (~~*see*~~ **Form ~~7-7~~7-5E**) in accordance with the requirements of **5.2** newly. In this case, the data required per **5.2.3** may be limited to the portion subjected to modification only.

Form 7-6 has been deleted.

~~Form 7-6~~
(Form 7-6 is omitted.)

Form 7-7 has been deleted.

~~Form 7-7~~
(Form 7-7 is omitted.)

Chapter 6 APPROVAL OF USE OF CRANKCASE OIL MIST DETECTION ARRANGEMENTS

6.2 Application

Paragraph 6.2.1 has been amended as follows.

6.2.1 Application Form

The manufacturer, who intends to obtain the approval of use, is to submit ~~an~~ the appropriate application form (~~Specimen~~ **Form ~~7-8~~7-6**) filled in with necessary data and information to the Society (Head office).

Form 7-8 has been deleted.

~~Form 7-8~~
(Form 7-8 is omitted.)

Chapter 7 APPROVAL OF USE OF GAS DETECTION EQUIPMENT

7.2 Application

Paragraph 7.2.1 has been amended as follows.

7.2.1 Application Form

The manufacturer, who intends to obtain the approval of use, is to submit ~~an~~ the appropriate application form (~~Specimen~~ **Form 7-9**) filled in with necessary data and information to the Society (Head office).

Form 7-9 has been deleted.

~~Form 7-9~~
(Form 7-9 is omitted.)

Part 8 TYPE TESTS OF ELECTRICAL EQUIPMENT AND CABLES

Chapter 1 GENERAL

Section 1.2 has been amended as follows.

1.2 Application Procedures

The application procedures are to be as follows:

(1) The manufacturer who intends to obtain the type tests by the Society is to submit ~~an~~ the appropriate application form (~~*see*~~ **Form 8-1**) stating names, types, ratings, specifications, service applications, applicable standards, etc. of the products concerned together with three copies each of drawings and documents necessary for examinations and three copies of test plans. In case where items of the type tests are intended to be partially of fully omitted appropriate certificate or technical records concerned are to be submitted to the Society as well. In addition, the application is, in principle, to be prepared for each type.

((2) is omitted.)

1.4 Certificate

1.4.4 Renewal of Validity

Sub-paragraphs -1 and -2 have been amended as follows.

1 Where the validity of the certificate is intended to be renewed, the manufacturer is to undergo the periodical investigation (*see* **1.5**) after submitting ~~an~~ the appropriate application form (~~*see*~~ **Form 8-1**) to the Society (Branch Office).

2 Where the periodical investigation is postponed due to unavoidable reasons, the manufacturer is to submit the appropriate application form (**Form 8-1P**) to the Society and is to take the steps required by the Society.

1.6 Change of Materials and Constructions, etc.

Paragraph 1.6.1 has been amended as follows.

1.6.1 Application for Change

Where the particulars, materials of essential parts, construction, dimensions, etc. of the type tested products are intended to change, the manufacturer is to submit ~~an~~ the appropriate application form for the change (~~*see*~~ **Form 8-1**) and three copies each of explanatory notes of the change (writing in contrasted form of new and old ones as far as possible) and necessary drawings to the Society. Verification tests may be carried out where deemed necessary in connection with the changes.

Form 8-1 has been deleted.

~~Form 8-1~~
(Form 8-1 is omitted.)

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 30 June 2016.

Amendment 1-2

Part I GENERAL

Chapter 1 GENERAL

1.1 Application

Sub-paragraph -1 has been amended as follows.

1 This guidance applies to tests and inspection of materials and equipment for marine use for which advance approval or type approval by the NIPPON KAIJI KYOKAI (hereinafter referred to as "the Society") are required by the relevant requirements in **Rules for the Survey and Construction of Steel Ships**, **Rules for Cargo Handling Appliances**, **Rules for Cargo Refrigerating Installations**, **Rules for Diving Systems, Rules for Marine Pollution Prevention Systems**, **Rules for Safety Equipment**, **Rules for the Survey and Construction of Passenger Ships**, **Rules for High Speed Craft**, **Rules for the Survey and Construction of Inland Waterway Ship**, **Rules for the Survey and Construction of Ships of Fibreglass Reinforced Plastics** and **Rules for Floating Docks**, and their Guidance~~s~~ (hereinafter referred to as "Rules etc.").

Part 6 MACHINERY

Chapter 1 APPROVAL OF STANDARDIZED DESIGN FOR MACHINERY AND EQUIPMENT

1.1 General

Paragraph 1.1.1 has been amended as follows.

1.1.1 Scope

The requirements of this chapter deal with the approval of the drawings and documents which are submitted in advance to the Society as the standardized design designating the construction, dimensions, materials, specifications, etc. on machinery and equipment required to obtain approval by submitting drawings to the Society in accordance with the requirements of **2.1.2, Part B of the Rules for the Survey and Construction of Steel Ships** ~~and~~, **2.1.2, Part 9 of the Rules for High Speed Craft**, **2.1.2, Part 7 of the Rules for the Survey and Construction of Inland Waterway Ship**, **2.3.1-2 of the Rules for Cargo Handling Appliances** and **2.1.1 of the Rules for Cargo Refrigerating Installations**.

Chapter 8 APPROVAL OF USE OF DIESEL ENGINES

8.1 General

Title of Paragraph 8.1.1 has been amended as follows.

8.1.1 ~~Scope~~General

Sub-paragraph -1 has been amended as follows.

1 The requirements in this chapter apply to ~~tests and inspection for~~ the approval of use of ~~new type~~ diesel engines ~~intended for the installation at first on board ships which are classed or to be classed with the Society on the basis of the requirements in~~required by **2.1.1-3** and **2.6.1-6, Part D of the Rules for the Survey and Construction of Steel Ships**, **2.1.1-2, Part 7 of the Rules for High Speed Craft** as well as **2.1.1-2, Part 9 of the Rules for the Survey and Construction of Inland Waterway Ships**.

Sub-paragraphs -6 and -7 have been added as follows.

6 For diesel engines, testing is to be carried out in accordance with this Chapter and is to be witnessed by the Surveyor.
7 In applying the procedures for approval of use specified in this Chapter, reference is to be made to **Fig. 6.8-2**.

Paragraph 8.1.2 has been added as follows.

8.1.2 Terminology

The terminology used in the application of **-6** and **-7** of **8.1.1**, **8.2.2**, **8.2.3**, **8.5.3**, **8.5.4** and **8.5.5(6)** is as specified in the **2.1.2, Part D of the Rules for the Survey and Construction of Steel Ships**, **2.1.2, Part 9 of the Rules for High Speed Craft** or **2.1.2, Part 7 of the Rules for the Survey and Construction of Inland Waterway Ships**.

Section 8.2 has been amended as follows.

8.2 Application and Approval of Submitted Documents

8.2.1 Application Form

The manufacturer who intends to obtain the approval is to submit an application form filled with necessary data and information together with the drawings and documents specified in **8.2.2** to the Society (Head Office).

8.2.2 Drawings and Data

1 Drawings and data to be submitted are as specified in the following **(1)** and **(2)**, as appropriate for the type of the diesel engine. Upon review and approval of the submitted drawings and data, they are returned to the licensor.
(1) Drawings and data to be submitted for information on an overview of the engine's design,

engine characteristics and performance

(a) A list containing all drawings and data submitted (including relevant drawing numbers and revision status)

(b) Engine particulars to be in the form designated by the Society (e.g. Data sheet with general engine information, Project Guide, Marine Installation Manual)

(c) Engine cross section

(d) Engine longitudinal section

(e) Bedplate and crankcase of cast design

(f) Thrust bearing assembly (if integral with engine and not integrated in the bedplate)

(g) Frame/framebox/gearbox of cast design (only for one cylinder or one cylinder configuration)

(h) Tie rod

(i) Connecting rod

(j) Connecting rod, assembly (including identification (e.g. drawing number) of components)

(k) Crosshead, assembly (including identification (e.g. drawing number) of components)

(l) Piston rod, assembly (including identification (e.g. drawing number) of components)

(m) Piston, assembly (including identification (e.g. drawing number) of components)

(n) Cylinder jacket/ block of cast design (only for one cylinder or one cylinder configuration)

(o) Cylinder cover, assembly (including identification (e.g. drawing number) of components)

(p) Cylinder liner

(q) Counterweights (if not integral with crankshaft), including fastening

(r) Camshaft drive, assembly (including identification (e.g. drawing number) of components)

(s) Flywheel

(t) Fuel oil injection pump

(u) Shielding and insulation of exhaust pipes and other parts of high temperature which may be impinged as a result of a fuel system failure, assembly

(v) For electronically controlled engines, construction and arrangement of the following **i)** to **iii)**:

i) Control valves

ii) High-pressure pumps

iii) Drive for high pressure pumps

(w) Operation and service manuals

Operation and service manuals are to contain maintenance requirements (servicing and repair) including details of any special tools and gauges that are to be used with their fitting/settings together with any test requirements on completion of maintenance.

(x) FMEA (for engine control system)

Where engines rely on hydraulic, pneumatic or electronic control of fuel injection and/or valves, a failure mode and effects analysis (FMEA) is to be submitted to demonstrate that failure of the control system will not result in the operation of the engine being degraded beyond acceptable performance criteria for the engine. The FMEA reports required will not be explicitly approved by the Society.

(y) Production specifications for castings and welding (sequence)

(z) Evidence of quality control system for engine design and in service maintenance

(aa) Quality requirements for engine production

(ab) Type approval certification for environmental tests, control components. Tests are to demonstrate the ability of the control, protection and safety equipment to function as intended under the specified testing conditions specified in **Chapter 1, Part 7**.

(ac) Information on installation arrangements of auxiliary systems of the diesel engine and the

list of capacities, technical specifications and requirements, along with information needed for maintenance and operation of the diesel engine

(ad) Other drawings and data deemed necessary by the Society

(2) Drawings and data to be submitted for information for approval

(a) Bedplate and crankcase of welded design, with welding details and welding instructions for approval of materials and weld procedure specifications (for each cylinder for which dimensions and details differ). The weld procedure specification is to include details of pre and post weld heat treatment, weld consumables and fit-up conditions.

(b) Thrust bearing bedplate of welded design, with welding details and welding instructions for approval of materials and weld procedure specifications. The weld procedure specification is to include details of pre and post weld heat treatment, weld consumables and fit-up conditions.

(c) Bedplate/oil sump welding drawings for approval of materials and weld procedure specifications. The weld procedure specification is to include details of pre and post weld heat treatment, weld consumables and fit-up conditions.

(d) Frame/framebox/gearbox of welded design, with welding details and instructions for approval of materials and weld procedure specifications (for each cylinder for which dimensions and details differ.). The weld procedure specification is to include details of pre and post weld heat treatment, weld consumables and fit-up conditions.

(e) Engine frames, welding drawings for approval of materials and weld procedure specifications (for each cylinder for which dimensions and details differ.). The weld procedure specification is to include details of pre and post weld heat treatment, weld consumables and fit-up conditions.

(f) Crankshaft, details, each cylinder No.

(g) Crankshaft, assembly, each cylinder No.

(h) Crankshaft calculations (for each cylinder configuration) to be in the form designated by the Society required by **2.3.1, Part D of the Rules for the Survey and Construction of Steel Ships**

(i) Thrust shaft or intermediate shaft (if integral with engine)

(j) Shaft coupling bolts

(k) Material specifications of main parts with information on non-destructive material tests and pressure tests with information on non-destructive testing and pressure testing as applicable to the material

(l) Schematic layout or other equivalent drawings and data on the engine of the following **i)** to **vii)**:

i) Starting air system
ii) Fuel oil system
iii) Lubricating oil system
iv) Cooling water system
v) Hydraulic system
vi) Hydraulic system (for valve lift)
vii) Engine control and safety system

(m) Shielding of high pressure fuel pipes, assembly
(All engines.)

(n) Construction of accumulators (common rail) (for electronically controlled engine)

(o) Construction of common accumulators (common rail) (for electronically controlled engine)

(p) Arrangement and details of the crankcase explosion relief valve (only for engines of a cylinder diameter of 200 *mm* or more or a crankcase volume of 0.6 m^3 or more)

(q) Calculation results for crankcase explosion relief valves
(r) Details of the testing programme for the approval of use
(s) High pressure parts for fuel oil injection system
The documentation to contain specifications for pressures, pipe dimensions and materials.
(t) Oil mist detection and/or alternative alarm arrangements
(u) Details of mechanical joints of piping systems
(v) Documentation verifying compliance with inclination limits specified in **1.3.1**, **Part D of the Rules for the Survey and Construction of Steel Ships**
(w) The documents required by **18.1.3(6)**, **Part D of the Rules for the Survey and Construction of Steel Ships**

2 Notwithstanding **-1** above, after the Society has approved the diesel engine type for the first time, only those drawings and data as listed in **-1** above, which have undergone substantive changes, will have to be resubmitted to the Society.

3 In addition to the drawings and data required by **-1**, where considered necessary, the Society may request further drawings and data to be submitted. This may include details or evidence of existing approval of use or proposals for a testing programme carried out in accordance with this Chapter.

4 In addition to those required by **-1** to **-3** above, those listed in the following **(1)** to **(6)** below, each in triplicate, are to be submitted for the purpose of assessing the manufacturing facility of the engine presented in accordance with **Chapter 11** of this Part.

(1) Outline of the manufacturing plant
(2) Information on the manufacturing facility and the manufacture and quality control of the diesel engine
(3) Records of manufacture and delivery of the diesel engine
(4) Approval test plan (the place and scheduled date of the test are to be included)
(5) Test records (when a preliminary test is carried out)
(6) Other data considered necessary by the Society

5 Design approvals are valid as long as no substantive modifications have been implemented. Where substantial modifications have been made the validity of the design approvals may be renewed based on evidence that the design is in conformance with all current Rules and statutory regulations (See **-2** above).

8.2.3 Test reports

The manufacturer who intends to obtain an approval of use is to submit for approval the test report of testing carried out in accordance with this Chapter to the Society (Head Office)) shortly after the conclusion of the testing.

Section 8.4 has been amended as follows.

8.45 Handling after Approval

8.45.1 Notification and Announcement of Approval

After the requirements in the preceding sections have been satisfactorily completed, ~~T~~the Society will issue a certificate of approval specifying the approval number, date and conditions, etc. upon examination of the submitted documents and surveyor's reports and make announcement the approval per the list published annually.

8.5.2 Term of Validity

The term of validity of the approval will be five *years* from the date of approval.

8.~~4.2~~5.3 Modification of Approval Conditions

In cases where an approval in advance is granted by the Society in accordance with **8.5.5(5)**, ~~W~~when partial technical modifications which will affect the function and safety of an engine already approved, the Society may require tests and inspection concerned to the modifications.

8.5.4 Renewal of Approval

1 The manufacturer, who intends to have a continuation of the approval already expired or to make partial technical modifications of the engine, is to submit an application in accordance with the requirements of **8.2.1** newly. In this case, in lieu of the data required by **8.2.2**, the drawings and data for reference specified in the following **(1)** or **(2)** are to be submitted.

(1) The submission of modified documents or new documents with substantive modifications replacing former documents compared to the previous submission(s) for design approval; or

(2) A declaration that no substantive modifications have been applied since the last design approval issued.

2 Where approval is given for the partial modifications in the contents of approval, expiration date will not be renewed, in principle.

8.~~4.3~~5.5 Revocation of Approval

In case where either of the following **(1)** to **~~(3)~~(5)** applies, the Society will revoke the approval and give notice to the manufacturer.

(1) Where the tests required in **8.~~4.2~~5.3** is not conducted without any reasonable cause.

(2) Where the result of the tests required in **8.~~4.2~~5.3** is found inappropriate to continue the approval.

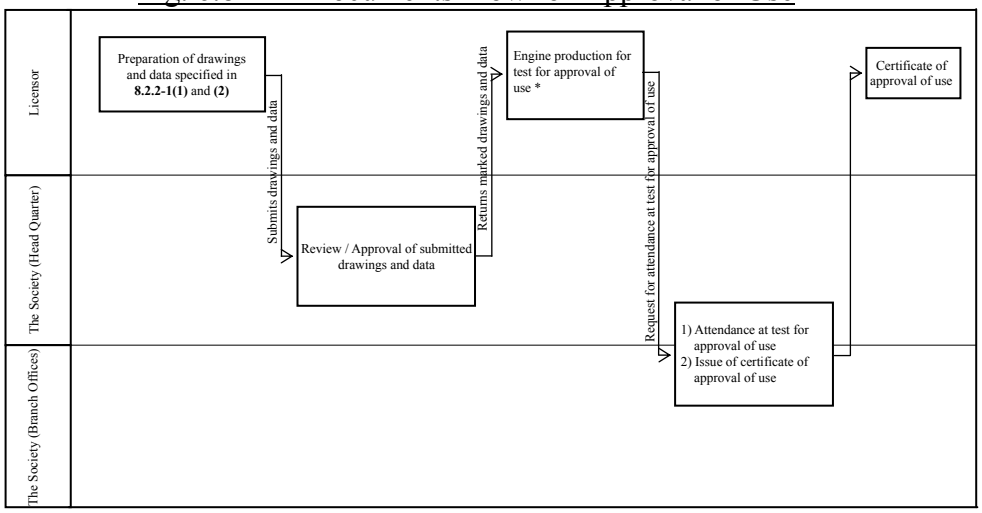
(3) Where an applicant for revocation is made by the manufacturer.

(4) Where the Society considers that the continuation of the approval is inappropriate.

(5) Where there are substantive modifications in the design, in the manufacturing or control processes or in the characteristics of the materials of diesel engines unless approved in advance by the Society.

Fig. 6.8-2 has been added as follows.

Fig. 6.8-2 Documents Flow for Approval of Use



EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 1 July 2016.

2. Notwithstanding the amendments to the Guidance, the current requirements may apply to diesel engines whose type is the same type of those for which the application for approval is submitted to the Society before the effective date.

Amendment 1-3

Part 4 NON-METALLIC MATERIALS AND COATING MATERIALS FOR HULL

Chapter 5 APPROVAL OF MANUFACTURING PROCESS OF NON-METALLIC BEARING MATERIAL FOR RUDDERS

5.1 General

Paragraph 5.1.1 has been amended as follows.

5.1.1 Scope

This chapter applies to the testing and inspection for the approval of manufacturing process of non-metallic bearing material for rudders specified in the requirements of **3.~~9~~10, Part C of the Rules for the Survey and Construction of Steel Ships.**

5.6 Dealing after Approval

Paragraph 5.6.1 has been amended as follows.

5.6.1 General

Bearing materials which conform to the requirements of this chapter may be dealt with as "the type as deemed appropriate by the Society" in the requirements in **Table C3.~~2~~3, Part C of the Rules**, unless the Society gives additional instructions.

EFFECTIVE DATE AND APPLICATION (Amendment 1-3)

1. The effective date of the amendments is 1 July 2016.

2. Notwithstanding the amendments to the Guidance, the current requirements may apply to ships for which the date of contract for construction* is before the effective date.

* "contract for construction" is defined in the latest version of IACS Procedural Requirement (PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.

For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

(1) such alterations do not affect matters related to classification, or

(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.

The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:
This Procedural Requirement applies from 1 July 2009.

Amendment 1-4

Part 6 MACHINERY

Chapter 6 APPROVAL OF USE OF PLASTIC PIPES

6.2 Approval Application Procedures

6.2.3 Documents to be attached

The documents to be attached to the approval application specified in the preceding **6.2.1** are to contain the following items:

Sub-paragraph (1) has been amended as follows.

(1) General information:
- (a) Pipe and fitting dimensions
- (b) Design pressure (Maximum internal and external working pressure)
- (c) Design temperature (Working temperature range)
- (d) Intended services and installation locations
- (e) The level of fire endurance
- (f) Smoke generation and toxicity
- (~~f~~g) Electrically conductive
- (~~g~~h) Intended fluids
- (~~h~~i) Limits on flow rates
- (~~i~~j) Serviceable life
- (~~j~~k) Installation instructions (including precautions at work site, repair procedures and criteria for determining whether repairs are necessary or not)
- (~~k~~l) Details of marking

((2) to (12) are omitted.)

Section 6.4 has been amended as follows.

6.4 Approval Tests for Process of Manufacture

The approval tests for process of manufacture are to be carried out in the presence of the Society's surveyor by the method under the testing standard specified in 6.9 or the method considered to be equivalent by the Society. However, when tests are carried out by the authorized organization or any organization considered appropriate by the Society, those on testing items other than strength test, electric conductivity test, heat dependence test of material, flame spread test and surface flammability test ~~as well as~~ and fire endurance test as well as smoke generation and toxicity test may be carried out in the absence of the Society's surveyor.

6.6 Announcement of Approval

6.6.1 Announcement of Approval

The plastic pipes approved by the Society are to be marked with the following.

(1) Type of product or trade name

(2) Mark to prove that the product is approved by the Society. It may be marked simply by *NK*.

Sub-paragraph (3) has been amended as follows.

(3) Nominal pressure, [G] for these complying with low flame spread ~~characteristics~~ test and surface flammability test, [D] for those with electric conductivity, [S] for those complying with smoke generation and toxicity tests, material of which pipe or fitting is made

(4) Fire endurance level for those with fire endurance

6.9 Testing Procedures and Criteria

Paragraph 6.9.1 has been amended as follows.

6.9.1 Criteria for Approval Test for Process of Manufacture

The requirements and the criteria for the approval tests are, in principle, referred to **Table 6.6**. For application of the tables, see below:

(1) Those asterisked in the column of criteria represent the items where acceptance criteria do not apply. These data are for reference only for shop test, piping design, etc.

(2) Flame spread and surface flammability, fire endurance, ~~and~~ durability against chemicals, smoke generation and toxicity test in **Table 6.6** are to be carried out, where they are required in the **Annex D12.1.6-2, Part D of the Guidance for the Survey and Construction of Steel Ships**.

(3) Where testing method other than those given in **Table 6.6** is employed, it may be judged as deemed appropriate by the Society in consideration of the equivalency.

(4) Judgements for acceptance are to be made in accordance with the following procedures and criteria:

(a) For fire endurance, at least largest and smallest diameter or wall thickness are to be tested for approval.

(~~a~~b) For flame spread, smoke generation and toxicity, at least largest and smallest wall thicknesses are to be tested for approval. ~~judgement is to be made on each of the three test specimens.~~

(~~b~~c) For heat dependence of material and electric conductivity, the acceptance criteria are to be satisfied by the mean value of the three specimens or at least that of two test specimens.

(~~c~~d) For other test items, the number of specimen and the way for judgment are to be in accordance with each testing standard.

Table 6.6 has been amended as follows.

Table 6.6 Requirements and Criteria of Approval Test for Process of Manufacture of Plastic pipes

Test item	Testing method	Criteria
(Omitted)		
Flame spread and surface flammability	*IMO Res. A.*753(18) *Appendix* 3 (including any amendments due to *IMO Res. MSC.*313(88) and *IMO Res. MSC.*399(95))	Comply with the criteria stipulated by *IMO Res. A.*753(18) *Appendix* 3 (including any amendments due to *IMO Res. MSC.*313(88) and *IMO Res. MSC.*399(95)) ~~Not to exceed the average values listed in the *FTP Code*, *Annex* 1 *Part* 5.~~
	ASTM D 635	HB
Fire endurance	*IMO Res. A.*753(18) Appendix 1, 2 (including any amendments due to *IMO Res. MSC.*313(88) and *IMO Res. MSC.*399(95))	L1: Pipes without leakage during pressure tests as a result of fire endurance tests (for more than one hour) and pressure tests (for more than 15 minutes) in dry conditions L1W: Pipes with negligible leakage, i.e. not exceeding 5% flow loss, during pressure tests as a result of fire endurance tests (for more than one hour) and pressure tests (for more than 15 minutes) in dry conditions L2: Pipes without leakage during pressure tests as a result of fire endurance tests (for more than 30 minutes) and pressure tests (for more than 15 minutes) in dry conditions L2W: Pipes with negligible leakage, i.e. not exceeding 5% flow loss, during pressure tests as a result of fire endurance tests (for more than 30 minutes) and pressure tests (for more than 15 minutes) in dry conditions L3: Pipes without significant leakage, i.e. not exceeding 0.2 *l*/*min*., during pressure tests as a result of fire endurance tests (for more than 30 minutes) and pressure tests (for more than 15 minutes) in wet conditions
Smoke generation and toxicity	*IMO Res. A.*753(18) *Appendix* 3 (including any amendments due to *IMO Res. MSC.*313(88) and *IMO Res. MSC.*399(95))	Comply with the criteria stipulated by *IMO Res. A.*753(18) *Appendix* 3 (including any amendments due to *IMO Res. MSC.*313(88) and *IMO Res. MSC.*399(95))
(Omitted)		

~~Note:~~

~~"*FTP* Code" means as defined in **3.2.23, Part R of the Rules for the Survey and Construction of Steel Ships.**~~

Part 7 CONTROL AND INSTRUMENTATION EQUIPMENT AND ELECTRICAL INSTALLATIONS

Chapter 7 APPROVAL OF USE OF GAS DETECTION EQUIPMENT

7.1 General

7.1.1 Scope

Sub-paragraph -1 has been amended as follows.

1 The requirements in this Chapter apply to the flammable or toxic gas detection equipment of fixed type and portable type provided for gas detection in accordance with the requirements in **4.5.7** and **4.5.10 Part R**, ~~**13.1.4** and **13.6.1 Part N**~~, **13.2.1 Part S** of the Rules for the Survey and Construction of Steel Ships. However, where the tests are conducted for individual fixed type gas detection equipment, no approval may be required for its use.

EFFECTIVE DATE AND APPLICATION (Amendment 1-4)

1. The effective date of the amendments is 1 July 2016.

2. Notwithstanding the amendments to the Guidance, the current requirements may apply to ships the keels of which were laid or which were at *a similar stage of construction* before the effective date.
(Note) The term "*a similar stage of construction*" means the stage at which the construction identifiable with a specific ship begins and the assembly of that ship has commenced comprising at least 50 *tonnes* or 1%* of the estimated mass of all structural material, whichever is the less.
* For high speed craft, "1%" is to be read as "3%".

Amendment 1-5

Part 6 MACHINERY

Chapter 8 APPROVAL OF USE OF DIESEL ENGINES

8.1 General

Paragraph 8.1.1 has been amended as follows.

8.1.1 Scope

1 The requirements in this chapter apply to tests and inspection for the approval of use of new type diesel engines intended for the installation at first on board ships which are classed or to be classed with the Society on the basis of the requirements in **2.6.1-~~6~~3, Part D of the Rules for the Survey and Construction of Steel Ships** and **2.6.1-3, Part 7 of the Rules for the Survey and Construction of Inland Waterway Ships**.

2 Notwithstanding **-1** above, a part or whole of the tests and inspection specified in this chapter may be dispensed with when the engine type has a long history of service or is a well-known type and when deemed appropriate by the Society ~~in consideration of the service experience of similar type engines, etc~~.

3 An approval for a particular type of engine of which tests and inspection carried out at any place at any manufacturer will be accepted for all engines of the same type having different number of cylinders built by licensees and licensers.

4 The requirements in this chapter apply, in general, to each engine type of which either of the following is different to that of an approved engine type.

(1) Bore
(2) Stroke
(3) Method of injection (direct or indirect injection)
(4) Kind of fuel (liquid, dual-fuel, gaseous)
(5) Working cycle (2-stroke, 4-stroke)
~~(6) Gas exchange (naturally aspirated or super-charged)~~
(~~7~~6) Cylinder power, speed and cylinder pressures (if increased)~~Maximum continuous power per cylinder at maximum continuous speed and/or maximum continuous brake mean effective pressure (If an approved engine which has proven reliability in service is increased in output by not more than 10% a new approval is not necessary). The agreement for granting an increased output will be subject to prior plan approval.~~
(~~8~~7) Method of pressure charging (pulsating system, constant pressure system)
(~~9~~8) Charging of cooling system (e.g. with or without intercooler~~, number of stages~~)
(~~10~~9) Cylinder arrangement (in-line, ~~vee~~*V*)

One type test will be considered adequate to cover a range of different numbers of cylinders. However, a type test of an in-line engine may not always cover the *V*-version. Separate type tests may be required for the *V*-version where deemed necessary by the Society. On the other hand, a type test of a *V*-engine covers in-line engines, unless the brake mean effective pressure is higher. Items such as axial crankshaft vibration, torsional vibration in camshaft drives, and crankshafts, etc. may vary considerably with the number of cylinders and may influence the choice of engine to be selected for type testing.

(1~~1~~0) Control method of fuel injection and exhaust valve drive (electronically-controlled, camshaft

driven)

5 Notwithstanding **-4(6)**, the following **(1)** to **(3)** engines may be regarded as being of the same type:

(1) Engines for which an increase of the following **(a)** to **(c)** may be permitted by the design (only crankshaft calculations and crankshaft drawings, if modified) and within 5%. In such case, documentation showing a successful history of service with a classified rating of 100% is to be submitted.
   (a) Maximum combustion pressure
   (b) Mean effective pressure, or
   (c) Speed (*rpm*)

(2) Engines for which an increase of maximum approved power is within 10% and an increase of **(1)(a)** to **(c)** above is within 10%. In such cases, engineering analysis and evidence of a successful history of service or documentation of internal testing are to be submitted.

(3) Engines which are manufactured according to approved drawings and documents, and internal testing per Stage *A* are documented to have a rating higher than the approved power, mean effective pressure or speed and the increase is within such ratings. In such cases, the tests given in the following **(a)** and **(b)** are to be documented at the increased power, mean effective pressure or speed.
   (a) The overspeed test specified in **8.4.2-2(1)** (only if nominal speed has increased)
   (b) The operation at the load points given in **8.4.2-2(2)(a)** to **(c)**

Paragraph 8.1.2 has been added as follows.

8.1.2 Terminology

1 "Low-speed engines" are diesel engines having a rated speed of less than 300 *rpm*.

2 "Medium-speed engines" are diesel engines having a rated speed of 300 *rpm* and above, but less than 1400 *rpm*.

3 "High-speed engines" are diesel engines having a rated speed of 1400 *rpm* or above.

Sections 8.3 and 8.4 have been renumbered to Sections 8.4 and 8.5, and Section 8.3 has been added as follows.

8.3 Preparation for Surveys

1 All relevant equipment for the safety of attending personnel is to be made available by the manufacturer or shipyard and is to be operational, and its correct functioning is to be verified before any test run is carried out.

2 **-1** above applies especially to crankcase explosive condition protection, but also to overspeed protection and any other shut down function.

3 Inspections for jacketing of high-pressure fuel oil lines and proper screening of pipe connections are also to be carried out before the test runs.

4 Interlock tests for turning gear are to be performed when such gear is installed.

Section 8.4 has been amended as follows.

8.~~3~~4 Approval Tests

8.~~3~~4.1 Test Stages

1 The approval tests are subdivided into three stages below.

(1) Stage *A*

Testing done during engine development (including endurance tests and operation at the load points important for the engine designer) as well as f~~F~~unctional tests and collection of operating values including test hours during the internal tests, the relevant results (including photographs which show the conditions of each component after the internal tests) of which are to be presented to the Society during the stage *B*. Testing hours of components which are inspected according to **8.3.2-3** are to be stated.

(2) Stage *B*

Operation test in the presence of the Society's surveyor.

(3) Stage *C*

~~Component~~ Opening up for inspections by the surveyor after completion of the test programme. ~~The engine manufacturer will have to compile all results and measurements for the engine tested during the approval tests a report, which will have to be handed over to the surveyor.~~

2 Approval tests are to be arranged to represent typical foreseen service load profiles, as specified by the engine builder, as well as to confirm required safety margins for fatigue scatter and reasonably foreseen in-service deterioration. This requirement applies to the following **(1)** to **(3)**. Special testing such as low cycle fatigue testing and endurance testing will normally be conducted during stage *A*.

(1) Parts subjected to high cycle fatigue such as connecting rods, cams, rollers and spring tuned dampers where higher stresses may occur due to elevated injection pressures, cylinder maximum pressures, etc.

(2) Parts subjected to low cycle fatigue such as "hot" parts when load profiles such as idle - full load - idle (with steep ramps) are frequently used.

(3) Operation of the engine at the limits defined by its specified alarm system, such as running at maximum permissible power with the lowest permissible oil pressure or highest permissible oil inlet temperature.

3 Upon completion of the approval tests given in **-1**, a test report containing the following **(1)** to **(3)** is to be submitted to the Society for review.

(1) Overall description of tests performed during stage *A*.

Records are to be kept according to the manufacturer's quality assurance management procedures for presentation to the Society.

(2) Detailed descriptions of the load and functional tests conducted during stage *B*.

(3) Inspection results from stage *C*.

4 During all approval tests, ambient conditions (i.e., air temperature, air pressure and humidity) are to be recorded. At a minimum, the engine data as listed in the following **(1)** to **(8)** are to be measured and recorded. Calibration records for the instrumentation used to collect data listed below are to be presented to the attending surveyor for review. Additional measurements may be required in connection with the design assessment as deemed necessary by the Society.

(1) Speed (*rpm*)

(2) Torque

(3) Maximum combustion pressure and mean indicated pressure for each cylinder

For engines where the standard production cylinder heads are not designed for such

measurements, a special cylinder head made for this purpose may be used. In such cases, the measurements may be carried out as part of stage *A* and are to be properly documented. Where deemed necessary (e.g., for dual fuel engines), the measurement of maximum combustion pressure and mean indicated pressure may be carried out by indirect means, provided the reliability of the method is documented.

(4) Charging air pressure and temperature

(5) Exhaust gas temperature

(6) Fuel rack position or similar parameter related to engine load

(7) Turbocharger speed

(8) All engine parameters that are required for control and monitoring for the intended use (propulsion, auxiliary, emergency).

5 An integration test demonstrating the response of the complete mechanical, hydraulic and electronic system may be required for acceptance of any sub-systems (turbocharger, engine control system, dual fuel, exhaust gas treatment, etc.) separately approved. The scope of these tests are to be determined by the Society on a cases-by-case basis in consideration of the test items proposed by the designer (licensor) taking the impact on engine into account.

8.~~3~~4.2 Details of Tests

1 During the stage *A*, the following items of tests are to be included:

(1) Operation at load points 25%, 50%, 75%, 100% and 110% of the maximum rated power for continuous operation and other load points considered important, at the following engine speeds:

(a) along the nominal (theoretical) propeller curve and at constant speed for propulsion engines (if applicable mode of operation, i.e., driving controllable pitch propellers)

(b) at constant speed for engines intended for generating sets or auxiliary machinery (including a test at no load and rated speed)

(2) Operation at the limit points of the permissible operating range. These limit points are to be defined by the engine manufacturer.

~~(3) For turbocharged engines the achievable continuous output is to be determined in the case of turbocharger damage as follows:~~

~~(a) engines with one turbocharger, when rotor is blocked or removed~~

~~(b) engines with two or more turbochargers, when damaged turbocharger is shut off.~~

~~(4) If an engine can be satisfactorily operated at all load points without using mechanically driven cylinder lubricators this is to be verified.~~

~~(5) For engines which may operate on heavy fuel oil suitability for this will have to be proved in an appropriate form. This test is to be carried out at Manufacturer's shop in general, but where not practicable, it is acceptable to test on board for the first engine of each series to be put into service.~~

(3) For high-speed engines, a 100-hour full load test.

(4) For engines which are classified as high-speed engines and used as propulsion engines for ships subject to the **Rules for High Speed Craft**, the low cycle fatigue test.
In this case, load changes are to be the steepest load ramp that the control system (or operation manual if not automatically controlled) permits and are normally to be repeated at least 500 cycles (idle - full load - idle). The duration at each end is to be sufficient for reaching stable temperatures of the hot parts.

(5) Specific tests of parts of the engine stipulated by the designer.

(6) For electronically-controlled diesel engines, continuous operation tests for the following components are to be carried out to confirm the durability within the period prescribed by the manufacturer.

(a) Control valves
(b) Accumulator diaphragms

(7) For electronically-controlled diesel engines, the functions included in the software of the control system are to be confirmed.

(8) For electronically-controlled diesel engines, an operation test is to be carried out under one cylinder cut-off condition.

(9) Other items deemed to be verified by the Society.

2 During the stage *B*, the following items of tests are to be included. Deviations from the items, if any, are to be agreed with the Society.

(1) Overspeed test

It is to demonstrate that the engine is not damaged by an actual engine overspeed within the overspeed shutdown system set-point. The manufacturer may decide whether the test is to be carried out with or without load during the speed overshoot.

(~~1~~2) Operation at each load point below (an operating time of two *hours* is to be required at the load point in **(a)** and two sets of readings are to be taken at a minimum interval of one *hour*~~.~~. A~~a~~n operating time per each load point other than **(a)** depends upon the engine size (achievement of steady state condition) and on the time for collection of the operating values, but ~~of~~ 0.5 *hour* can be normally assumed~~ per each load point other than (a)~~. However, sufficient time is to be allowed for visual inspection by the surveyor.)

The data to be measured and recorded when testing the engine at each load point have to include all engine parameters listed in **8.4.1-4**. During all these load points, engine parameters are to be within the specified and approved values. If operation of the engine at the limits defined by its specified alarm system (e.g., at alarm levels of lubrication oil pressure and inlet temperature) is required, the test is to be made at the load point in **(a)**.

(a) Rated power, *i.e*. 100% output at 100% torque and 100% speed (corresponding to load point 1 in **Fig. 6.8-1**)

(b) 100% power at maximum permissible speed (corresponding to load point 2 in **Fig. 6.8-1**)

(c) Maximum permissible torque (at least and normally 110%) at 100% speed (corresponding to load point 3 in **Fig. 6.8-1**) or maximum permissible power (at least and normally 110%) and at 103.2% speed according to nominal propeller curve (corresponding to load point 3a in **Fig. 6.8-1**). Load point 3a applies to engines only driving fixed pitch propellers or waterjet propulsion systems. Load point 3 applies to all other purposes.

In the case of engines for which intermittent overload is approved, the following is to be applied.

i) Where the intermittent overload rating is more than 110% of *MCR*:
Load point 3 (or 3a as applicable) is to be replaced with a load that corresponds to the specified overload and duration approved for intermittent use.

ii) Where the intermittent overload rating is less than 110% of *MCR*:
Overload rating is to replace the load point 1 (100% of *MCR*). In such cases, it is necessary to operate at load point 3 (or 3a as applicable).

(d) Minimum permissible speed at 100% torque (corresponding to load point 4 in **Fig. 6.8-1**)

(e) For propulsion engines, m~~M~~inimum permissible speed at 90% torque (corresponding to load point 5 in **Fig. 6.8-1**)

(f) Part loads, *e.g*. 25%, 50%, and 75% of rated power and speed according to nominal propeller curve (corresponding to load points 6, 7 and 8 in **Fig. 6.8-1**) for propulsion engines

(g) Part loads, *e.g*. 25%, 50%, and 75% of rated power and rated speed with constant governor setting (corresponding to load points 9,10 and 11 in **Fig. 6.8-1**) for engines intended for generator sets or auxiliary machinery

(h) Crosshead engines not restricted for use with controllable pitch propellers are to be tested with no load at the associated maximum permissible engine speed.

~~(2) Maximum achievable power when operating along the nominal propeller curve in the case specified in **8.3.2-2(3)** for propulsion engine~~

~~(3) Maximum achievable power when operating with constant governor setting for rated speed in the case specified in **8.3.2-1(3)** for engines intended for generator sets or auxiliary machinery~~

(3) For 2-stroke propulsion engines, the achievable continuous output is to be determined in the case of turbocharger damage. Engines intended for single propulsion with a fixed pitch propeller are to be able to run continuously at a speed (*rpm*) of 40% of full speed along the theoretical propeller curve when one turbocharger is out of operation. The test can be performed by either by-passing the turbocharger, fixing the turbocharger rotor shaft or removing the rotor.

(4) Verification of the l~~L~~owest specified propulsion engine speed according to nominal propeller curve ~~for propulsion engines~~ as specified by the engine designer. During this operation, no alarm is to occur.

(5) Starting tests, for non-reversible engines and/or ~~and~~ starting and reversing tests, for reversible engines, for the purpose of determining the minimum air pressure and the consumption for a start.

(6) Governor test

~~(7) Testing the safety system, particularly for overspeed and low lubricating oil pressure~~

~~(8) Supplementary tests when required for engines intended for emergency services~~

(7) For electronically-controlled diesel engines, integration tests are to verify that the response of the complete mechanical, hydraulic and electronic system is as predicted for all intended operational modes.

The scope of these tests is to be agreed upon with the Society for selected cases based upon the FMEA required in **Annex D2.1.1, Part D of the Guidance for the Survey and Construction of Steel Ships**.

(8) Inspections for jacketing of high-pressure fuel oil lines, including systems for the detection of leakage

(9) Inspections for proper screening of pipe connections in piping containing flammable liquids.

(10) Verification of proper insulation of hot surfaces

Readings of surface temperatures are to be done while running the engine at 100% load required in **(2)**, alternatively at the overload approved for intermittent use, by use of infrared thermoscanning equipment. Equivalent measurement equipment may be used when approved by the Society. Readings obtained are to be randomly verified through the use of contact thermometers.

(~~9~~11) Other test items deemed necessary by the Society

3 During stage *C*, the following items are to be included. ~~immediately after the testrun the components of one cylinder for in-line engines and two cylinders for *V*-engines are presented for inspections. The following components concerned:~~

(1) Measurement of crankshaft deflections

To be measured according to specified (by designer) conditions (except for engines where no specification exists).

(2) Upon completion of the test run, the components of one cylinder for in-line engines and two cylinders for *V*-engines are to be presented for inspection as follows.

For *V*-engines, the cylinder units are to be selected from both cylinder banks and different crank throws. For high-speed engines, two cylinders are normally to be stripped down for a complete inspection after the type test.

(~~1~~a) Piston removed and dismantled

(~~2~~b) Crosshead bearing, dismantled
(c) Guide planes, dismantled
(d) Connecting rod bearings (big and small end) dismantled
Special attention is to be paid to serrations and fretting on contact surfaces with the bearing backsides
(~~3~~e) ~~Crank bearing and m~~Main bearing, dismantled
(~~4~~f) Cylinder liner in the installed condition
(~~5~~g) Cylinder head, valves disassembled
(~~6~~h) ~~Control gear~~ Cam drive gear or chain, camshaft and crankcase with opened covers
The engine is to be turnable by turning gear for this inspection.
(~~7~~i) Further components deemed necessary by the Society

Section 8.5 has been amended as follows.

8.4~~5~~ Handling after Approval

8.4.~~1~~5.1 Notification and Announcement of Approval
The Society will issue a certificate of approval specifying the approval number, date and conditions, etc. upon examination of the submitted documents and surveyor's reports and make announcement the approval per the list published annually.

8.5.2 Term of Validity
The term of validity of the approval will be five *years* from the date of approval.

8.4.~~2~~5.3 Modification of Approval Conditions
When partial technical modifications which will affect the function and safety of an engine already approved, the Society may require tests and inspection concerned to the modifications.

8.4.~~3~~5.4 Revocation of Approval
In case where either of the following **(1)** to **(~~3~~4)** applies, the Society will revoke the approval and give notice to the manufacturer.
(1) Where the tests required in **8.4.~~2~~5.3** is not conducted without any reasonable cause.
(2) Where the result of the tests required in **8.4.~~2~~5.3** is found inappropriate to continue the approval.
(3) Where an applicant for revocation is made by the manufacturer.
(4) Where the Society considers that the continuation of the approval is inappropriate.

EFFECTIVE DATE AND APPLICATION (Amendment 1-5)

1. The effective date of the amendments is 1 July 2016.
2. Notwithstanding the amendments to the Guidance, the current requirements may apply to diesel engines for which the date of application for approval is before the effective date.

Amendment 1-6

Part 6 MACHINERY

Chapter 11 has been added as follows.

Chapter 11 APPROVAL OF USE FOR EXHAUST DRIVEN TURBOCHARGERS

11.1 General

11.1.1 Scope

1 The requirements in this chapter apply to tests and inspection for the approval of use for new type exhaust driven turbochargers (hereinafter referred to as "turbochargers") intended for installation for the first time on board ships which are classed or to be classed with the Society and which the engine power at maximum continuous rating (*MCR*) supplied by a group of cylinders served by the turbocharger is not less than 1000 *kW*, on the basis of the requirements in **2.6.1-6, Part D of the Rules for the Survey and Construction of Steel Ships** and **2.6.1-6, Part 7 of the Rules for the Survey and Construction of Inland Waterway Ships**.

2 Approval according to this chapter applies to all configurations of the turbocharger for which tests and inspections are carried out.

3 In addition to the requirement in **-2**, approval according to this chapter also applies to a series of turbocharger which is of the same design, but scaled to the approved type and which are deemed appropriate by the Society.

4 The requirements in this chapter apply, in principle, to engine driven turbochargers.

11.2 Application

11.2.1 Application Form

Manufacturers who intend to obtain approval are to submit a completed application form (i.e., filled in with the necessary data and information) to the Society (Head Office).

11.2.2 Documents

The drawings and data required by **2.1.3-1(1) and (2), Part D of the Rules for the Survey and Construction of Steel Ships** applicable to the turbocharger which is intended for approval as well as the data listed in **(1)** through **(6)** below, each in triplicate, are to be submitted together with the application form specified in **11.2.1**.

(1) Outline of the manufacturing plant
(2) Information on the manufacture and quality control of the turbocharger
(3) Records of manufacture and delivery of the turbocharger
(4) Approval test plan (the place and scheduled date of the test are to be included)
(5) Test records (when a preliminary test is carried out)
(6) Other documents considered necessary by the Society

11.3 Preliminary Examination

11.3.1 Approval of Test Plan

The Society will examine the approval test plan submitted under the requirements of **11.2.2**, approve it when considered acceptable, and return it back to the applicant.

11.3.2 Confirmation of Manufacturing and Quality Control Procedure

On the basis of the data submitted in accordance with **11.2.2(1)**, **(2)** and **(3)**, the Society may carry out an inspection of the conditions of the manufacturing plant when deemed necessary.

11.4 Approval Tests

11.4.1 General

1 Turbochargers are to be tested in accordance with **11.4.2**.

2 Approval tests are, in principle, to be carried out with the configuration of turbocharger for the engine which has largest rated power among the engines intended to be fitted the turbocharger.

3 Approval tests may be carried out either on an engine for which the turbocharger is intended for use or in a test rig.

11.4.2 Details of Tests

1 Turbochargers are to be subjected to at least 500 load cycles (idle - full load - idle) at the limits of their operation. The duration at each end is to be sufficient for reaching stable temperatures of the hot parts. However, this test may be waived if the turbocharger together with the engine is subjected to this kind of low cycle testing under the approval of use of diesel engines in **Chapter 8, Part 6**. The suitability of the turbocharger for such kind of operation is to be stated in advance by the manufacturer.

2 The rotor vibration characteristics are to be measured and recorded in order to identify possible sub-synchronous vibrations and resonances.

3 After the tests in **-1** and **-2** above are completed, a hot running test is to be carried out at maximum permissible speed combined with maximum permissible temperature for at least one hour.

4 After the test in **-3** above is completed, the turbocharger is to be opened for examination, with focus on possible rubbing and the bearing conditions.

5 After the test in **-4** above is completed, a containment test is to be carried out to confirm that the turbocharger fulfils containment in the event of a rotor burst. Testing method is to be in accordance with the following **(1)** to **(4)**. However, this test may be waived for a generic range of turbochargers which are of a design similar to the tested unit, if documents which confirm their containment ability based upon the testing of one turbocharger are submitted. Therefore, it is recommended that tests be carried out on the turbocharger with most severe construction from the viewpoint of containment.

(1) The test is to be carried out at working temperature.

(2) The test speeds are not to be less than the following:

  (a) For the compressor, 120% of the maximum permissible operating speed.

  (b) For the turbine, 140% of the maximum permissible operating speed or the natural burst speed, whichever is lower.

(3) Notwithstanding **(1)** and **(2)** above, a numerical analysis of sufficient containment integrity of the casing based upon calculations by means of a simulation model may be accepted in lieu of

the practical containment test. In such cases, the following **(a)** to **(d)** apply:

(a) The numerical simulation model has been tested and its suitability and accuracy has been proven by direct comparison between calculation results and the practical containment test for a reference application (reference containment test). This test is to be performed at least once by the manufacturer for acceptance of the numerical simulation method in lieu of the practical test.

(b) The corresponding numerical simulation for the containment is performed for the same speeds specified in **(2)**.

(c) Material properties for high-speed deformations are to be applied to the numeric simulation. The correlation between normal properties and the properties at the pertinent deformation speed are to be substantiated.

(d) The design of the turbocharger regarding geometry and kinematics is similar to the turbocharger that was used for the reference containment test in **(a)**. In general, totally new designs will call for a new reference containment test.

(4) The manufacturer will have to compile all results in a report or calculation sheet, which will have to be handed over to the surveyor. It is to be documented through calculations, etc. that the selected test unit really is representative for the whole generic range.

11.4.3 Witness to Tests

When the approval test is carried out, they are, in principle, to be carried out in the presence of a Society surveyor.

11.4.4 Test Records

The manufacturer is to prepare records of the approval test after completion of the test, to obtain the verification of the attending Society surveyor and then submit them to the Society (Head Office).

11.5 Approval

11.5.1 Notification and Announcement of Approval

1 The Society, when satisfied upon examination of the submitted documents as required per **11.2** to **11.4** and the attending surveyor's report, will issue a certificate of approval specifying the approval number, approval date, approval items, approval conditions etc., put approval stamps on those documents deemed necessary by the Society out of all submitted in accordance with **11.2.2** and **11.4.4**, and return them back to the applicant.

2 The Society will announcement the approval of turbochargers in a list published annually.

11.5.2 Term of Validity

The term of validity of the approval will be five *years* from the date of approval.

11.5.3 Modification of Approval Conditions

When partial technical modifications which affect the function and safety are made to an already approved turbocharger, the Society may require tests and inspections regarding the modifications.

11.5.4 Renewal of Approval

1 Manufacturers, who intend to have a continuation of an approval already expired or to make partial technical modifications to a turbocharger, are to submit an application in accordance with the requirements of **11.2**. In such cases, the data required per **11.2.2** may be limited to the portion

subjected to modification only.

2 When approval has been granted to an application with partial changes in the content of approval, the Society may require additional tests for approval.

3 Where approval is given for the partial modifications in the contents of approval, the expiration date is not, in principle, renewed.

11.5.5 Revocation of Approval

In cases where either of the following **(1)** to **(4)** applies, the Society is to revoke the approval and give notice of such to the manufacturer.

(1) Where the tests required in **11.5.3** are not conducted without an appropriate reason.

(2) Where the results of the tests required in **11.5.3** are found inappropriate to continue the approval.

(3) Where an applicant for revocation is made by the manufacturer.

(4) Where the Society considers that the continuation of the approval is inappropriate.

EFFECTIVE DATE AND APPLICATION (Amendment 1-6)

1. The effective date of the amendments is 1 July 2016.

2. Notwithstanding the amendments to the Guidance, the current requirements may apply to exhaust driven turbochargers for which the date of application for approval is before the effective date.

Amendment 1-7

Part 7 CONTROL AND INSTRUMENTATION EQUIPMENT AND ELECTRICAL INSTALLATIONS

Chapter 6 APPROVAL OF USE OF CRANKCASE OIL MIST DETECTION ARRANGEMENTS

6.3 Approval Tests

6.3.1 General

Sub-paragraph -3(3) has added as follows

3 Test facilities are to comply with the followings:
(3) The test facilities are to consider the possible hazards associated with the generation of the oil mist required for the test and are to take sufficient precautions.

Paragraph 6.3.3 has been amended as follows.

6.3.3 Functional Test

(-1 is omitted.)
2 Functional test is to be carried out by the following procedures.
((1) and (2) are omitted.)
(3) It is to be verified that the oil mist detection arrangements are capable of detecting oil mist in air concentrations ~~of~~ between
  (a) 0 and 10% of the lower explosive limit (LEL corresponds to an oil mist concentration of 50 *mg/l*); or
  (b) ~~more than 2 times of alarm set point.~~0 and a percentage of weight of oil in air, as determined by the manufacturer, based upon a sensor measurement method (e.g., obscuration or light scattering) that is acceptable to the Society taking into account the alarm level specified in **(4)**.
(4) The operation of the alarm indicators for oil mist concentration in air is to be verified and is to provide an alarm at a maximum level corresponding to not more than 5% of the LEL ~~or approximately~~ (Oil mist concentration: 2.5 *mg/l*). Where alarm set points can be altered, the means of adjustment and indication of set points are to be verified against the equipment manufacturer's instructions.
(5) The performance of the oil mist detector in *mg/l* is to be demonstrated. This is to include the following:
  (a) range
  (b) resolution (Smallest change in a quantity being measured that causes a perceptible change in the corresponding indication.)
  (c) sensitivity (Quotient of the change in an indication of a measuring system and the corresponding change in a value of a quantity being measured.)
(~~5~~6) Where oil mist is drawn into a detector via piping arrangements, the time delay between the sample leaving the crankcase and operation of the alarm is to be determined for the longest and

shortest lengths of pipes recommended by the manufacturer. The pipe arrangements are to be in accordance with the manufacturer's instructions. Piping is to be arranged to prevent pooling of oil condensate which may cause a blockage of the sampling pipe over time.

3 The way to generate oil mist and the way to verify concentration of the oil mist are to comply with following.

(1) The ambient temperature in and around the test chamber is to be at the standard atmospheric conditions defined in **1.3.1(4)**, **Chapter 1** before any test run is started.

(~~1~~2) Oil mist is to be generated with suitable equipment using an SAE ~~80~~40 monograde mineral oil or equivalent and supplied to a test chamber. The selection of the oil to be used is to take into consideration any risks to health and safety, and the appropriate controls implemented. The Society may accept the use of low toxicity, low hazard oils as used in other applications, provided it is demonstrated to have similar properties to the SAE 40 monograde mineral oil specified. The oil mist produced is to have an average (or arithmetic mean) droplet size not exceeding 5 μm. The oil droplet size is to be checked using the sedimentation method or an equivalent method to a relevant international or national standard. If the sedimentation method is chosen, the test chamber is to have a minimum height of 1 m and a ~~having~~ volume of not less than 1 m^3. ~~It is to be checked that the oil mist produced has a maximum droplet size of 5 μm. The oil mist chamber is to be fitted with a recirculating fan.~~ The calculated oil droplet size obtained using the sedimentation method represents the average droplet size.

(~~2~~3) The oil mist concentrations are to be ascertained by the gravimetric deterministic method or equivalent. Where an alternative technique is used, its equivalence is to be demonstrated. The gravimetric deterministic method is a laboratory process where the difference in weight of milipore (pore size: typically 0.8 μm) filter is ascertained from weighing the filter before and after drawing 1 l of oil mist through the filter. The filters are to be weighed to a precision of 0.1 mg and the volume of the oil mist sampled to 10 ml. The oil mist detector is to be located adjacent to where the oil mist samples are drawn off. The results of a gravimetric analysis are considered invalid and are to be rejected in case of the following situations.

(a) In case where the resultant calibration curve has an increasing gradient with respect to the oil mist detection reading. (This situation occurs when insufficient time has been allowed for the oil mist to become homogeneous.)

(b) In case where single results of a gravimetric analysis are more than 10% below the calibration curve. (This situation occurs when the integrity of the filter unit has been compromised and not all of the oil is collected on the filter paper.)

4 ~~Detector equipment that is in contact with the crankcase atmosphere and may be exposed to oil splash and spray from engine lubricating oil is to be demonstrated as being such, that openings do not occlude or become blocked under continuous oil splash and spray conditions. Testing is to be in accordance with arrangements proposed by the manufacturer and agreed by the Society.~~ It is to be demonstrated that the openings of detector equipment do not become occluded or blocked under the continuous splash and spray of engine lubricating oil, as may occur in the crankcase atmosphere. Testing is to be in accordance with arrangements proposed by the manufacturer and agreed to by the Society. The temperature, quantity and angle of impact of the oil to be used is to be stated and their selection justified by the manufacturer.

(-5 is omitted.)

6 The indication function required by **2.4.5-2.(2), Part D of the Rules for the Survey and Construction of Steel Ships** is to be demonstrated.

~~6~~7 The details of detection/monitoring devices to be tested are to be recorded. This is to include manufacturer, type designation, oil mist concentration assessment capability ~~and~~, alarm settings and the maximum percentage level of lens obscuration used in **6.3.3-1**.

~~7~~8 After completing the tests, the detection/monitoring devices are to be examined and the

condition of all components ascertained and documented. Photographic records of the monitoring devices condition are to be taken and included in the report.

Paragraph 6.3.5 has been amended as follows.

6.3.5 Test Records

The manufacturer is to prepare records of the approval test including the following information and documents after completion of the test, to obtain verification by the Society's attending surveyor and to submit them, in triplicate, to the Society.

(1) Test specification
(2) Details of devices tested
(3) Results of tests in **6.3.2** and **6.3.3** above are to include information provided by the manufacturer of the oil mist detector regarding each of the following:
   (a) Performance in *mg/L*
   (b) Accuracy of oil mist concentration in air
   (c) Precision of oil mist concentration in air
   (d) Range of oil mist detector
   (e) Resolution of oil mist detector
   (f) Response time of oil mist detector
   (g) Sensitivity of oil mist detector
   (h) Obscuration of sensor detection stated as a percentage of obscuration, where 0% means totally clean and 100% means totally obscured
   (i) Detector failure alarm

EFFECTIVE DATE AND APPLICATION (Amendment 1-7)

1. The effective date of the amendments is 1 July 2016.

2. Notwithstanding the amendments to the Guidance, the current requirements may apply to oil mist detection arrangements other than those for which the application for approval is submitted to the Society on and after the effective date.

Amendment 1-8

Part 6 MACHINERY

Chapter 4 has been added as follows.

Chapter 4 APPROVAL OF USE OF WELDED TYPE PIPE JOINTS

4.1 General

4.1.1 Scope

In accordance with the requirements in **D12.6.1(1)(e)ii), Part D of the Guidance for the Survey and Construction of Steel Ships**, the requirements of this chapter apply to tests and inspections for the approval of the omission of surveyor attendance at tests for pipe joints of a butt welded type and pipe joints of a slip-on sleeve welded type (such as elbows, reducers, tees, bends and sockets, etc.) regardless of the requirements of **12.6.1-1, Part D of the Rules for the Survey and Construction of Steel Ships** (hereinafter referred to as "the Rules").

4.2 Application Procedures

Manufacturers who intend to obtain approval of use for welded type pipe joints are to submit an application to the Society (branch office concerned) accompanied by three sets of the following data.

(1) Manufacturing facilities and manufacturing processes
  (a) Company outline
  (b) Company organization chart
  (c) Major manufacturing facilities
  (d) Testing and inspection facilities
  (e) Quality control system
  (f) Company regulations chart
  (g) Major product and manufacturing process outline
  (h) Material source information

(2) The test plans for manufacturing process approval specified in **4.3.2**

4.3 Approval Tests

4.3.1 Confirmation of Manufacturing and Quality Control Procedures

Confirmation surveys for manufacturing and quality control procedure is to be carried out, on the basis of the data specified in **4.2**, to verify the manufacturer has the capability (facilities, manufacturing techniques, product quality, etc.) to manufacture pipe joints with a stable quality.

4.3.2 Manufacturing Process Approval Tests

Pipe joints made out of low-alloy steel (*KSTB*12, *KSTB*22, *KSTB*23, *KSTB*24, *KSTPA*12, *KSTPA*22, *KSTPA*23 or *KSTPA*24) used for the steel tubes for boilers and heat exchangers, or steel pipes for pressure piping as well as pipe joints made out of stainless steel, steels for low temperature service or other special steels are to be subjected to the tests specified in **(1)** through **(3)**

below. The method and acceptance criteria for each test are specified in **Table 6.4**.

(1) Mechanical test

(2) Micro test (in cases where hot forming or heat treatment is carried out during manufacturing process)

(3) Welding test (in cases where welding is carried out during the manufacturing process)

Table 6.4 Approval Test Methods and Acceptance Criteria

Approval test	Test method	Acceptance criteria
Mechanical test	Material tests are to be carried out in accordance with **Part K of the Rules**.(1)	In accordance with **Part K of the Rules**.
Micro test	Microsopic photographs (approx. 100x) are to be taken.	To be as deemed appropriate by the Society.
Welding test	Welding tests are to be carried out in accordance with **Chapter 11, Part D of the Rules**.	In accordance with **Chapter 11, Part D of the Rules**.

Note:

(1) When it is difficult to take required test specimens from products, the dimensions of test specimens and the test method used are to be determined based upon consultation with the manufacturer.

4.4 Test Records

In cases where the approval tests specified in preceding **4.3** are carried out, the manufacturer is to prepare records of the approval test upon completion of the test, obtain verification by the Society's attending surveyor and submit them, in triplicate, to the Society (branch office concerned).

4.5 Notification of Approval and Terms of Validity

4.5.1 Notification of Approval and Terms of Validity

1 The Society (branch office concerned) is to grant manufacturers permission to carry out tests for pipe joints of a butt welded type and pipe joints of a slip-on sleeve welded type without a Society surveyor being present in cases where it considers the results of confirmation and approval tests appropriate, and to send the manufacturer the corresponding certificate of approval.

2 The valid term of approval in the preceding **-1** is 5 *years*.

3 In cases where the renewal of validity is intended, an application stating changes in the manufacturing procedure, etc., if any, is to be submitted to the Society (branch office concerned) together with a copy of the existing certificate.

4 Manufacturers whose renewal is approved are to return the old "Certificate of Approval" to the Society as soon as possible after receiving the new certificate and the term of validity of the old certificate expires.

4.6 Revocation of Approval

4.6.1 Revocation of Approval

Where either of the following **(1)** or **(2)** is relevant, the Society may revoke the approval and notify the manufacturer accordingly

(1) In cases where the valid term of approval expires and no application for the renewal of the approval is submitted.

(2) In cases where doubts arise regarding the service records of products manufactured by the approved manufacturing process.

Chapter 12 has been added as follows.

Chapter 12 APPROVAL OF USE OF WELDED TYPE PIPE JOINTS UNDER SPECIAL REQUIREMENTS

12.1 General

12.1.1 Scope

In accordance with the requirements in **D12.6.1-1(1)(a), Part D of the Guidance for the Survey and Construction of Steel Ships**, the requirements of this chapter apply to the tests and inspections, etc. for the approval of use for pipe joints of a butt welded type and pipe joints of a slip-on sleeve welded type (hereinafter referred to as "pipe joints") made of materials complying with national standards such as *JIS*.

12.2 Approval Application

12.2.1 Approval Application Form

Manufacturers who apply for approval are to submit a single copy of an application form filled in with the required items to the Society (Head Office).

12.2.2 Data to be Submitted

1 The reference data listed in **(1)** through **(9)** below, three copies each, are to be submitted together with the application form specified in **12.2.1**.

(1) Approval test plan
(2) Company outline
(3) Company organization chart
(4) Major manufacturing facilities
(5) Testing and inspection facilities
(6) Quality control system
(7) Company regulations chart
(8) Outline of major products and manufacturing processes (dimension tables for outer diameters and nominal thickness, etc. of the pipe joints for which approval is desired are to be included)
(9) Primary material supplier outline (in cases where primary materials manufactured by other manufacturers are used.)

2 Where part of the manufacturing process is shared by other companies or other manufacturing plants, documents related to the manufacturing process showing the names and addresses of the other companies and plants as well as the organization and method of inspection for purchasing semi-final products are to be included.

12.3 Preliminary Examination

12.3.1 Test Plan Approval

The Society is to examine test plans submitted for approval in accordance with the requirements in **12.2.2-1**, and where deemed appropriate, approve such plans and return them to the applicants.

12.3.2 Confirmation of Manufacturing and Quality Control Procedures

Confirmation surveys for manufacturing and quality control procedures are to be carried out, on the basis of the data specified in **12.2,** to verify the manufacturer has the capability (facilities, manufacturing techniques, product quality, etc.) to manufacture pipe joints of a steady quality.

12.4 Approval Tests

12.4.1 Extent of Approval Tests

The extent of approval for any pipe joint is limited to the approval for pipe joints of the same materials, manufacturing process and heat treatment as used for approval test.

12.4.2 Selection of Test Samples

1 The test samples used in approval tests are to be selected from the pipe joints manufactured using the same materials, manufacturing process and heat treatment as being used for the pipe joints for which approval is desired.

2 The dimensions of test samples and the number of test pieces is to be decided each time through consultation with the Society.

12.4.3 Test Details

Pipe joints are to be subjected to the following tests after manufacturing. The method and acceptance criteria for each test are specified in **Table 6.12**.

(1) Mechanical test
(2) Micro test (in cases where hot forming or heat treatment is carried out during the manufacturing process)
(3) Welding test (in cases where welding is carried out during the manufacturing process)
(4) Visual and dimension inspections

12.4.4 Attendance of Society Surveyor at Test

A Society surveyor is, in principle, to be present when test samples for approval tests are being identified and when approval tests are being carried out.

12.4.5 Test Reports

1 Manufacturers are to prepare test reports upon completion of tests, obtain the surveyor's signature thereon, and submit them, in triplicate, to the Society (Head Office).

2 Documents concerning the following items are to be submitted with the reports referred to in **-1** above.

(1) Work records for the production process and heat treatment process of test samples
(2) The result of material tests of primary materials (mill sheets)

Table 6.12 Approval Test Method and Acceptance Criteria

Approval test	Test method	Acceptance criteria
Mechanical test	Material tests are to be carried out in accordance with **Part K of the Rules**.	In accordance with **Part K of the Rules**.
Micro test	Microscopic photographs (approx. 100x) are to be taken.	To be as deemed appropriate by the Society.
Welding test	Welding tests are to be carried out in accordance with **Chapter 11, Part D of the Rules**.	In accordance with **Chapter 11, Part D of the Rules**.
Visual and dimension inspections	Visual and dimension inspections are to be carried out based upon dimension tables for the pipe joints for which approval is desired.	To be as deemed appropriate by the Society.

12.5 Approval Tests

12.5.1 Notification and Announcement of Approval

1 The Society (Head Office) is to approve the use of pipe joints made of materials complying with national standards such as JIS in cases where it considers the results of confirmation and approval tests appropriate, and to issue a "Certificate of Approval", which includes the name of the manufacturer, kind of pipe joint, processing method, heat treatment method, name of the manufacturer of the primary material, primary material grade mark, the valid period of approval etc. In addition, the Society is to stamp all data, which it deems necessary, submitted in accordance with the requirements in **12.2.2** and **12.4.4** with its seal of approval and return such data to the applicant.

2 Once a year, the Society publically releases a list of pipe joints which have been granted approval.

12.5.2 Validity of Approval

The term of validity of the "Certificate of Approval" specified in **12.5.1-1** is 5 *years* from the date of approval. In cases where the renewal of approval is carried out in accordance with the requirements in **12.5.3**, the term of validity is 5 *years* from the next day after the expiry date of the previous term of validity (hereinafter referred to as "date of renewal").

12.5.3 Renewal of Approval

1 In the case of an application for renewal of approval, the applicant is to submit an application form as well as a copy of the "Certificate of Approval" and three copies of actual manufacturing record data (for example, chemical composition, mechanical properties and outer diameter and thickness expressed in the form of histograms or statistics for each heat treatment) for the pipe joint within a specific period of time.

2 The Society is to conduct an onsite factory inspection.

3 The factory inspection specified in **-2** is, in principle, to be completed within the term of validity for the "Certificate of Approval". However, the factory inspection may be completed within a period of 3 *months* after the term of validity in the case of unavoidable circumstances when Society approval is obtained.

4 The Society is to examine the actual manufacturing records specified in **-1** and the result of the factory inspection specified in **-2**. The Society considers is to approve the renewal of validity incases where it deems such records and result to be appropriate.

5 In cases where no actual manufacturing records for pipe joints from the previous date of renewal (date of approval in the case of the first renewal) or the Society deems it necessary, the Society may renew the approval in consideration of the following **(1)** or **(2)** in addition to the results of the factory inspection specified in **-2**.

(1) Data for a similar grade of products

(2) Results of new approval tests carried out in accordance mutatis mutandis with the requirements in **12.2** through **12.4**

6 Manufacturers whose approval is renewed are to return the old "Certificate of Approval" to the Society as soon as possible after receiving the new certificate and the term of validity of the old certificate expires.

12.5.4 Changes in Approved Content

1 In cases where any of the changes in approved content given in the following **(1)** through **(5)** occur, three copies of documents corresponding to the requirements in **12.2.2** are to be submitted to the Society (Head Office), in addition to a copy of the "Certificate of Approval". However, the

data to be submitted may be limited to reference data for the changes made.

(1) In cases where materials different from materials originally approved for the pipe joints are used.

(2) Addition to or changes in the manufacturing process

(3) Addition to or changes in the heat treatment process

(4) In cases where a part of the manufacturing process (heat treatment, etc.) is assigned to another manufacturer

(5) Addition to or changes in manufacturer of primary materials of the pipe joints

2 Upon studying the changes in approved content specified in **-1**, the Society may request a factory inspection and approval test in accordance with the requirements in **12.4** as necessary.

3 The Society is to examine the submitted data specified in **-1** and the reports of factory inspections and approval tests specified in **-2**, and approve the changes in the approved content in cases it deems to be appropriate. In such cases, the term of validity for the "Certificate of Approval" specified in **-1** is, in principle, not changed.

4 Manufacturers whose requests for changes in approved content are accepted are to return the old "Certificate of Approval" to the Society as soon as possible after receiving the new certificate.

12.5.5 Revocation of Approval

Where either of the following **(1)** through **(4)** is relevant, the Society may revoke approval and notify the applicant accordingly.

(1) In cases where the term of validity for the approval expires and no application for the renewal of the approval is submitted.

(2) In case where doubts arise regarding the service records of the manufactured products.

(3) In association with the implementation or revision of international conventions, laws and regulations, the pipe joints for which the approval was previously granted no longer satisfy relevant requirements.

(4) When an application for revocation is made by the manufacturer.

EFFECTIVE DATE AND APPLICATION (Amendment 1-8)

1. The effective date of the amendments is 30 December 2016.