16-502

RULES FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS

Rules for the Survey and Construction of Inland Waterway Ships
2016 AMENDMENT NO.2

Guidance for the Survey and Construction of Inland Waterway Ships
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Rule No.89 / Notice No.89 27th December 2016
Resolved by Technical Committee on 27th July 2016
Approved by Board of Directors on 20th September 2016

ClassNK
NIPPON KAIJI KYOKAI

An asterisk (*) after the title of a requirement indicates that there is also relevant information in the corresponding Guidance.

RULES FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS

RULES

2016 AMENDMENT NO.2

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Rule No.89 27th December 2016
AMENDMENT TO THE RULES FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS

"Rules for the survey and construction of inland waterway ships" has been partly amended as follows:

Amendment 2-1

Part 1 GENERAL RULES

Chapter 1 GENERAL

1.1 General

Paragraphs 1.1.8 to 1.1.12 have been renumbered to Paragraphs 1.1.9 to 1.1.13, and Paragraph 1.1.8 has been added as follows.

1.1.8 Ships Using Low-flashpoint Fuels

Ships using low-flashpoint fuels are to comply with **Part GF of the Rules for the Survey and Construction of Steel Ships**.

1.1.~~8~~9 Stability

The requirements in the Rules are framed for ships having appropriate stability in all conceivable conditions. The Society emphasizes that the special attention is to be paid to the stability by the builders in design and construction stage and by the shipowners and ship masters while in service.

1.1.~~9~~10 Means of Access

Peak tanks, deep tanks, cofferdams, cargo tanks, cargo holds and other similar enclosed spaces are to be provided with means of access, *i.e.*, appropriate facilities such as ladders and steps for internal examinations in safety.

1.1.~~10~~11 Gangways

Satisfactory means are to be provided on the weather decks for the protection of the crew in getting to and from their quarters and other parts.

1.1.~~11~~12 Means of Embarkation and Disembarkation

Ships are to be provided with appropriate means of embarkation on and disembarkation from ships for use in port and in port related operations, unless where a ship is engaged in voyages between designated ports where appropriate shore accommodation/embarkation ladders (platforms) are provided.

1.1.~~12~~13 Protection of Openings

Openings, such as doors, ventilators, windows, manholes provided in boundaries to open space are to be commensurate with the strength and stiffness of the surrounding structure and to be of adequate watertightness or weathertightness.

1.2 Class Notations

1.2.3 Hull Construction and Equipment

Sub-paragraph -5 has been added as follows.

5 For ships complying with the requirements of **Part GF of the Rules for the Survey and Construction of Steel Ships** applied in accordance with the requirements of **1.1.8**, the notation of "*Equipped for Use of Low-flashpoint Fuels*" (abbreviated to *EQ U LFF*) is affixed to the Classification Characters. Details of the used fuel are to be entered in the Classification Register as descriptive notes for the ship.

Chapter 2 DEFINITIONS

2.1 Application and Definitions

Paragraphs 2.1.40 to 2.1.43 have been renumbered to Paragraphs 2.1.41 to 2.1.44, and Paragraph 2.1.40 has been added as follows.

2.1.40 Ships Using Low-flashpoint Fuels

Ships using low-flashpoint fuels mean ships which use low-flashpoint fuels as defined in **2.2.1-28, Part GF of the Rules for the Survey and Construction of Steel Ships**.

2.1.4~~0~~1 Watertight

Watertight means having scantlings and arrangements capable of preventing the passage of water in any direction under the head of water that is likely to occur in intact and damaged conditions. In the damaged condition, including intermediate stages of flooding, the head of water is to be considered in the worst situation at equilibrium.

2.1.4~~1~~2 Weathertight

Weathertight means that in any sea conditions water will not penetrate into the ship.

2.1.4~~2~~3 Important System*

The important system of barge is a system necessary for safety of life and barge.

2.1.4~~3~~4 Trusse

Trusse is a structure to connect the bottom and deck members by pillars and diagonals, having ample strength to effectively support deck loads.

Part 2 CLASS SURVEYS

Chapter 1 GENERAL

1.3 Definitions

1.3.1 Terms*

Sub-paragraph (10) has been added as follows.

(10) "Ships using low-flashpoint fuels" means the ships defined in **2.1.40, Part 1**.

Chapter 2 CLASSIFICATION SURVEYS

2.1 Classification Survey during Construction

2.1.2 Submission of Plans and Documents for Approval*

Sub-paragraph -1 has been amended as follows.

1 When it is intended to build a ship for classification by the Society, the following plans and documents are to be submitted for the approval by the Society before the work is commenced. The plans and documents may be submitted for examination by the Society prior to making an application for the classification of the ship as stipulated otherwise by the Society.

(1) Hull
((a) to (x) are omitted.)
(2) Machinery
((a) to (h) are omitted.)
(3) Plans and documents for in-water surveys specified in **6.1.2-2**
(4) For ships using low-flashpoint fuels, the plans and documents specified in **2.1.2-1(5), Part B of the Rules for the Survey and Construction of Steel Ships**
(~~4~~5) Other plans and documents not specified in **(1)** ~~through~~to **(~~3~~4)** which are deemed necessary by the Society

Sub-paragraph -6 has been added as follows.

6 For ships using low-flashpoint fuels, the operational procedures and emergency procedures specified in **-3** and **-4** of **17.2.2, Part GF of the Rules for the Survey and Construction of Steel Ships** are to be submitted for Society approval.

2.1.3 Submission of Other Plans and Documents

1 When it is intended to build a ship to the classification with the Society the following plans and documents are to be submitted, in addition to those required in **2.1.2**:

Sub-paragraphs (7) and (8) have been added as follows.

(1) Specifications for hull and machinery
(2) Calculation sheets for the minimum section modulus of the midship cross section
(3) Where provisions are to be made for exceptional conditions of loading, plans showing the particulars of the cargo intended to be carried and its distribution
(4) For ships that are required to have stability information documents, the following plans and documents:
((a) to (h) are omitted.)
(5) For ships complying with the requirements in **Part 10**, the following plans:
((a) to (g) are omitted.)
(6) Capacity calculation sheet for pressure/vacuum valves and overpressure protective devices of cargo oil tanks, if any
(7) For ships using low-flashpoint fuels, the plans and documents specified in **2.1.3-1(9), Part B of the Rules for the Survey and Construction of Steel Ships**
(8) Other plans and documents deemed necessary by the Society.

2.1.4 Presence of Surveyor*

Sub-paragraphs -4 and -5 have been renumbered to Sub-paragraphs -5 to -6, and Sub-paragraph -4 has been added as follows.

4 For ships using low-flashpoint fuels, the presence of the Surveyor is required for tests specified in **Part GF of the Rules for the Survey and Construction of Steel Ships**, in addition to the tests specified in **-1** and **-2**.

Sub-paragraphs -5 and -6 have been amended as follows.

~~**4**~~**5** The requirements specified in **-1**~~, -2 and -3~~ to **-4** may be modified having regard to the actual status of facilities, technical abilities and quality control at the place of manufacture, except in the case of river trials.
~~**5**~~**6** For the tests specified in **-1**~~, -2 and -3~~ to **-4**, the applicant is to prepare test plans for review by the Society prior to testing. Test records and/or measurement records are to be submitted to the Society, as required.

2.1.6 Documents to be Maintained On Board*

1 At the completion of a classification survey, the Surveyor confirms that the finished versions of the following applicable drawings, plans, manuals, lists, etc., are on board. For barges, these drawings, etc. need not be on board, however, are to be kept appropriately by the owner of barges (or the management company of barges).
(1) Documents approved by the Society or their copies

Sub-paragraphs (d) and (e) have been added as follows.

(a) Loading manuals (**10.2.4, Part 4** or **9.1.3, Part 5**)

(b) Stability information booklets (**1.2.1, Part 6**)
(c) Plans and documents for in-water surveys (**6.1.2-2**)
(d) Operational procedures for ships using low-flashpoint fuels (**17.2.2-3, Part GF of the Rules for the Survey and Construction of Steel Ships**)
(e) Emergency procedures for ships using low-flashpoint fuels (**17.2.2-4, Part GF of the Rules for the Survey and Construction of Steel Ships**)

Sub-paragraph (d) has been added as follows.

(2) Other documents
(a) Operation manuals for the stability computer (**1.2.2, Part 6**)
(b) Fire Control Plans, Fire Safety Operational Booklets (**1.4.1, Part 9**)
(c) Manuals for towing or manuals for pushing
(d) A copy of the *IGF* Code or national regulations incorporating the provisions of the *IGF* Code (**17.2.2-1, Part GF of the Rules for the Survey and Construction of Steel Ships**)

2.2 Classification Survey of Ships Not Built under Survey

2.2.1 General*

Sub-paragraph -4 has been added as follows.

4 For ships using low-flashpoint fuels, the operational procedures and emergency procedures stipulated in **-3** and **-4** of **17.2.2, Part GF of the Rules for the Survey and Construction of Steel Ships** are to be submitted for Society approval.

Chapter 3 ANNUAL SURVEYS

Section 3.4 has been added as follows.

3.4 Special Requirements for Ships Using Low-flashpoint Fuels

3.4.1 Requirements

At Annual Surveys for ships using low-flashpoint fuels, the examinations specified in **3.6**, **Part B of the Rules for the Survey and Construction of Steel Ships** are to be carried out, in addition to the examinations specified in **3.2** and **3.3**.

Chapter 4 INTERMEDIATE SURVEYS

Section 4.4 has been added as follows.

4.4 Special Requirements for Ships Using Low-flashpoint Fuels

4.4.1 Requirements

At Intermediate Surveys for ships using low-flashpoint fuels, the examinations specified in **4.6**, **Part B of the Rules for the Survey and Construction of Steel Ships** are to be carried out, in addition to the examinations specified in **4.2** and **4.3**.

Chapter 5 SPECIAL SURVEYS

Section 5.4 has been added as follows.

5.4 Special Requirements for Ships Using Low-flashpoint Fuels

5.4.1 Requirements

At Special Surveys for ships using low-flashpoint fuels, the examinations specified in **5.6**, **Part B of the Rules for the Survey and Construction of Steel Ships** are to be carried out, in addition to the examinations specified in **5.2** and **5.3**.

Part 7 MACHINERY INSTALLATIONS

Chapter 11 PIPING SYSTEMS

11.14 Feed Water Systems for Boilers

Paragraph 11.14.2 has been added as follows.

11.14.2 Pipes passing through Tanks

Boiler feed water pipes are not to be led through tanks which contain oil or fuel, and oil or fuel pipes are not to be led through boiler feed water tanks.

Chapter 14 AUTOMATIC AND REMOTE CONTROL

14.4 Automatic and Remote Control of Boilers

Paragraph 14.4.1 has been amended as follows.

14.4.1 General

1 Automatic control systems for both combustion and feed water of oil-fired, dual-fuel-fired, gas-fired and multi-fuel-fired boilers are to comply with the requirements in **14.4.2** to **14.4.5** respectively.

2 Automatic control systems for either combustion or feed water of oil-fired, dual-fuel-fired, gas-fired and multi-fuel-fired boilers are to comply with the relevant requirements in **14.4.2** or **14.4.3** as well as the requirements in **14.4.4** and **14.4.5**.

3 Automatic control of boilers other than oil-fired, dual-fuel-fired, gas-fired and multi-fuel-fired boilers or those having special features is to be deemed appropriate by the Society.

4 In cases where boilers are remotely controlled, control devices and monitoring devices necessary for the operation of such boilers are to be provided at all relevant control stations.

5 Remote water level indicators are to comply with the requirements in **9.9.8, Part D of the Rules for the Survey and Construction of Steel Ships**.

14.6 Automatic and Remote Control of Auxiliary Machinery

Paragraph 14.6.8 has been amended as follows.

14.6.8 Fuel ~~Oil~~ Filling Arrangements

In cases where arrangements for filling fuel ~~oil~~ into their respective fuel ~~oil~~ tanks from outside of the ships (hereinafter referred to as "fuel ~~oil~~ filling arrangements" in this Part) are provided with remote control devices, the fuel ~~oil~~ filling arrangements are to be such as not to interfere with the filling of fuel, even in the event of failure of any of the remote control devices.

EFFECTIVE DATE AND APPLICATION (Amendment 2-1)

1. The effective date of the amendments is 1 January 2017.

2. Notwithstanding the amendments to the Rules, the current requirements apply to ships other than ships that fall under the following:

(1) for which the building contract is placed on or after the effective date; or

(2) in the absence of a building contract, the keels of which are laid or which are at *a similar stage of construction* on or after 1 July 2017; or

(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.

(3) the delivery of which is on or after 1 January 2021.

3. Notwithstanding the provision of preceding **2.**, the amendments to the Rules apply to the ships that fall under the following:

(1) which convert to using low-flashpoint fuels on or after the effective date; or

(2) which, on or after the effective date, undertake to use low-flashpoint fuels different from those which it was originally approved to use before the effective date.

Amendment 2-2

Part 2 CLASS SURVEYS

Chapter 3 ANNUAL SURVEYS

3.3 Annual Surveys for Machinery

Paragraph 3.3.1 has been amended as follows.

3.3.1 General Examinations*

At Annual Surveys for Machinery, a general examination of all the machinery in the engine room and the following ~~examinations~~inspections **(1)** ~~through~~to **(45)** are to be carried out:

(1) It is to be ascertained that the main propulsion machinery, power transmission machinery, shafting systems, propellers, prime movers other than main propulsion machinery, boilers, thermal oil heaters, incinerators, pressure vessels, auxiliaries, piping systems, control systems, electrical installations and switchboards are placed in good order.

(2) It is to be ascertained that the engine room, boiler spaces and means of escape are placed in good order with respect to dangers of fire and explosion.

(3) For ships adopting the survey for propeller shafts and stern tube shafts in accordance with the requirements in **1.1.3-1(6)(b)**, the records of periodical analysis for lubricating oil are to be reviewed in order to ascertain that the relevant installations have been well maintained.

(4) For ships adopting the preventive maintenance system in accordance with the requirements in **8.1.3**, the records of the parameters monitored are to be reviewed and a general examination is to be carried out in order to ascertain that the relevant installations have been well maintained.

(5) For ships affixed with the notation "*APSS・O*" or "*APSS・W*" which periodically perform oil analysis or freshwater sample tests, a general examination of the shafting system and a review of all the condition monitoring data available on board the ship are to be carried out in order to ascertain that the system is well maintained.

Chapter 4 INTERMEDIATE SURVEYS

4.3 Intermediate Surveys for Machinery

Paragraph 4.3.1 has been amended as follows.

4.3.1 General Examinations

At Intermediate Surveys for Machinery, in addition to the general examinations and inspections specified in **3.3.1**, the examinations specified in **Table 2.4.6** are to be carried out.

Chapter 5 SPECIAL SURVEYS

5.3 Special Surveys for Machinery

Paragraph 5.3.1 has been amended as follows.

5.3.1 General Examinations

At Special Surveys for Machinery, in addition to the general examinations and inspections specified in **3.3.1**, the surveys specified in **Table 2.5.6** are to be carried out.

Chapter 6 DOCKING SURVEYS

6.1 Docking Surveys

Paragraph 6.1.3 has been amended as follows.

6.1.3 Other Surveys

1 For each ship adopting the preventive maintenance system for propulsion shafting system in accordance with the requirements in **8.1.3**, general examination of the shafting system and review of all condition monitoring data available on board the ship on the system are to be carried out in order to ascertain that the system is well maintained.

2 For ships affixed with the notation "*APSS・O*" or "*APSS・W*" which periodically perform oil analysis or freshwater sample tests, a general examination of the shafting system and a review of all the condition monitoring data available on board the ship are to be carried out in order to ascertain that the system is well maintained.

Chapter 8 PROPELLER SHAFT AND STERN TUBE SHAFT SURVEYS

8.1 Propeller Shaft and Stern Tube Shaft Surveys

8.1.2 Partial Surveys

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

At Partial Surveys for propeller shafts Kind 1 of oil lubricated stern tube bearings, the examinations specified in the following **(1)** to **(3)** are to be carried out.

(1) Visual inspection of all accessible parts of the shafting system

(2) Verification that the main engines have not been operated within the barred speed range for torsional vibration.

(3) Examinations specified in 2, 6, 9, 12 and 13 in **Table 2.8.1** as well as the following **(a)** to **(~~d~~c)**. However, the requirements of 2 and 9 in **Table 2.8.1** may be omitted for shafts having keyless propeller attachments or coupling flanges at their aft end, if general examinations are proved satisfactory.

(a) Checking and recording measurements of the bearing weardown of the propeller shaft or the stern tube shaft at the after bearing of the stern tube

~~(b) Verification that the propeller is free of damages which may cause the propeller to be out of balance~~

(~~c~~b) Seal liner found to be or placed in a satisfactory condition

(~~d~~c) Verification of the satisfactory conditions of inboard and outboard seals

Paragraph 8.1.3 has been amended as follows.

8.1.3 Preventive Maintenance System*

Notwithstanding the requirements in **8.1.1** above, where the ship is equipped with oil lubricated stern tube bearings and appropriate stern tube oil sealing devices as approved by the Society, the survey items of -1, -3, -4, -5, -7 and -8 in **Table 2.8.1** may be replaced with a general examination of the shafting system provided that all condition monitoring data taken according to the approved preventive maintenance system is found to be within permissible limits. For requirements other than -1, -3, -4, -5, -7 and -8 in **Table 2.8.1**, ~~T~~the propeller shaft may be examined in accordance with the requirements for the partial surveys of ~~as a~~ propeller shafts Kind 1*B* ~~for the remaining requirements except -1, -3, -4, -5, -7 and -8 in **Table 2.8.1**~~. The examination required by survey item -9 in **Table 2.8.1** may be partly dispensed with where deemed appropriate by the Society.

(1) Based upon Society approved preventive maintenance systems, at least the following (a) through (d) are to be properly monitored and recorded for diagnosing lubricating conditions of shafting systems and performing preventive system maintenance. Moreover, the notation "Propeller Shaft Condition Monitoring System" (abbreviated as "PSCM") is to be affixed to the classification characters of ships whose preventive maintenance systems are approved by the Society.

(a) Lubricating oil sampling and analysis is to be carried out regularly at intervals not exceeding 6 *months*, with at least the following **i)** through **iv)** being analyzed each time:

i) Water content

ii) ~~Chloride content~~ Salinity (Sodium)

iii) Content of shaft metal and bearing metal particles

iv) Oxidation of oil

(b) Lubricating oil consumption rate

(c) Bearing temperature

(d) Weardown of the propeller shaft or the stern tube shaft at the after bearing of the stern tube ~~The values specified in item -8 of **Table 2.8.1**~~

(2) Based upon Society approved preventive maintenance systems, at least the following **(a)** to **(e)** are to be properly monitored and recorded for diagnosing lubricating conditions of shafting systems and performing preventive system maintenance. Moreover, the notation "*Propeller Shaft Condition Monitoring System・A*" (abbreviated as "*PSCM・A*") is to be affixed to the classification characters of ships whose preventive maintenance systems are approved by the Society.

(a) Lubricating oil sampling and analysis is to be carried out regularly at intervals not exceeding 6 *months*, with at least the following **i)** to **iv)** being analyzed each time:

i) Water content

ii) ~~Chloride content~~ Salinity (Sodium)

iii) Content of shaft metal and bearing metal particles

iv) Oxidation of oil

(b) The monthly onboard checking of lubricating oil water content. Such checking, however, may be omitted when the oil sampling and analysis specified in **(a)** above is carried out regularly at intervals not exceeding 3 *months*.

(c) Lubricating oil consumption rate

(d) Bearing temperature

(e) Weardown of the propeller shaft or the stern tube shaft at the after bearing of the stern tube ~~The values specified in -8 of **Table 2.8.1**~~

EFFECTIVE DATE AND APPLICATION (Amendment 2-2)

1. The effective date of the amendments is 1 January 2017.

2. Notwithstanding the amendments to the Rules, the current requirements apply to ships other than ships the delivery of which is on or after 1 January 2016 until the first propeller shaft and stern tube shaft survey scheduled on or after 1 January 2016.

Amendment 2-3

Part 7 MACHINERY INSTALLATIONS

Chapter 10 PIPES, VALVES, PIPE FITTINGS AND AUXILIARIES

10.3 Construction of Valves and Pipe Fittings

10.3.3 Mechanical Joints*

Sub-paragraph -2 has been amended as follows.

2 Mechanical joints which in the event of damage could cause a fire or flooding are not to be used in piping sections directly connected to ~~sea openings~~ the ship's side below the freeboard deck or tanks containing flammable fluids.

Sub-paragraph -4 has been amended as follows.

4 Slip-on joints are not to be used inside tanks except for those used for pipes for the same medium as in the tank. ~~Unrestrained slip-on joints are to be used only in cases where compensation of lateral pipe deformation is necessary.~~ Usage of ~~these~~ slip type slip-on joints as the main means of pipe connection is not permitted except in cases where compensation of axial pipe deformation is necessary.

Table 7.10.8 has been amended as follows.

Table 7.10.8 Application Classifications of Mechanical Joints[1]

Application Purpose	System	Kind of Connections[2]		
		Pipe Union	Compression Coupling[6]	Slip-on Joint[9]
Flammable fluids[7] (Flash point > 60°*C*)	Fuel oil lines[4][5]	+	+	+[3][4]
	Lubricating oil lines[4][5]	+	+	+[3][4]
	Hydraulic oil[4][5]	+	+	+[3][4]
	Thermal oil[4][5]	+	+	+[3][4]
River water	Bilge lines[3]	+	+	+[2]
	Water filled fire extinguishing systems, e.g. sprinkler systems[5] ~~Fire main and water spray~~	+	+	+[4]
	Non water filled fire extinguishing systems, e.g. foam, drencher systems[5] ~~Foam systems~~	+	+	+[4]
	Fire main[5] ~~Sprinkler systems~~	+	+	+[4]
	Ballast systems[3]	+	+	+[2]
	Cooling water systems[3]	+	+	+[2]
	Tank cleaning services	+	+	+
	Non-essential systems	+	+	+
Fresh water	Cooling water systems[3]	+	+	+[2]
	Condensate returns[3]	+	+	+[2]
	Non-essential systems	+	+	+
Sanitary/ Drains/ Scuppers	Deck drains (internal)[6]	+	+	+[5]
	Sanitary drains	+	+	+
	Scuppers and discharges (overboard)	+	+	-
Sounding/Vents	Sounding/Vents for water tanks/cofferdam	+	+	+
	Sounding/Vents for oil tanks (f.p.> 60 °C)[4][5]	+	+	+[3][4]
Miscellaneous	Starting/Control air[2][3]	+	+	-
	Service air (non-essential)	+	+	+
	Brine	+	+	+
	CO_2 systems[2][3]	+	+	-
	Steam	+	+	-[8]

Notes:

(1) +: Application is allowed; -: Application is not allowed

(2) If mechanical joints include any components which readily deteriorate in case of fire, they are to be of a Society approved fire resistant type under consideration of the following **(3)** to **(5)**:

(~~2~~3) Only Society approved fire resistant types may be used inside machinery spaces of category A.

(~~3~~4) May not be used inside machinery spaces of category A or accommodation spaces. May be used in machinery spaces other than category A ones provided that the joints are located in easily visible and accessible positions.

(~~4~~5) Only Society approved fire resistant types may be used except in cases where such mechanical joints are installed on exposed open decks, as defined in Regulation 9.2.3.3.2.2(10), Chapter II-2, *SOLAS* Convention, except for the cargo areas of tankers, ships carrying liquefied gases in bulk and ships carrying dangerous chemicals in bulk, and are not used for fuel oil lines, fire extinguishing systems and fire main.

(~~5~~6) May only be used above the freeboard deck.

~~(6) If compression couplings include any components which readily deteriorate in case of fire, they are to be of a Society approved fire resistant type as required for slip-on joints.~~

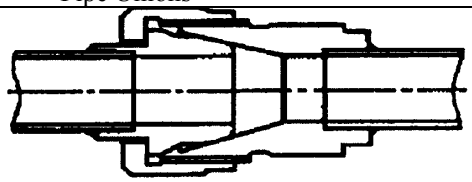
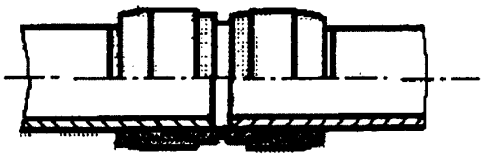
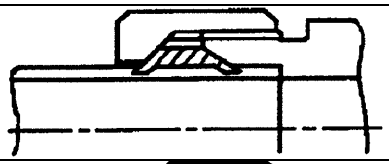
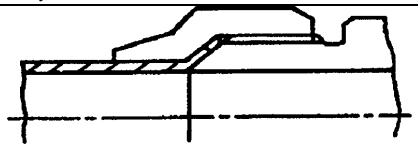
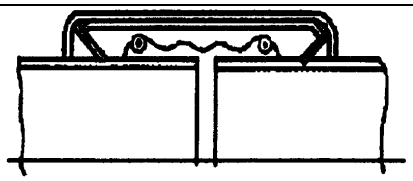
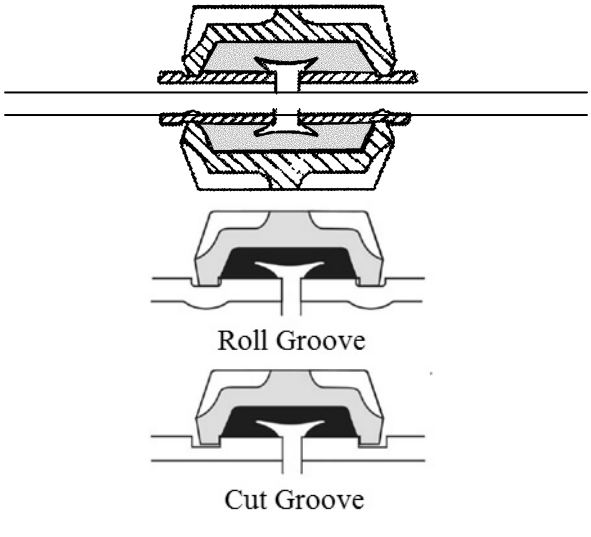
(7) The number of mechanical joints in flammable fluid ~~oil~~ systems is to be kept to a minimum. In general, flanged joints which conform to recognized standards are to be used.

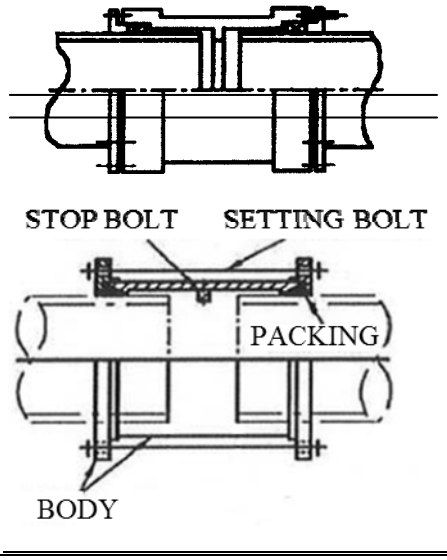
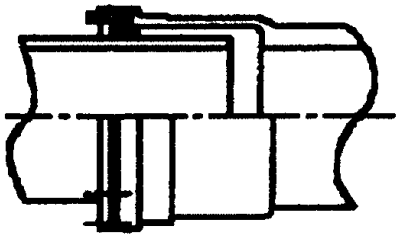
(8) Slip type slip-on joints as shown in **Fig. 7.10.1** may be used for pipes on deck with a design pressure of 1.0 *MPa* or less~~, provided that they are restrained on the pipes~~.

(9) The use of slip joints is to comply with the requirements specified in **11.2.4**.

Fig. 7.10.1 has been amended as follows.

Fig 7.10.1 Examples of Mechanical Joints

Pipe Unions	
Welded and Brazed Types	
Compression Couplings	
Swage Type	
Press Type	
Bite Type	
Flared Type	
Slip-on Joints	
Grip Type	
Machine Grooved Type	

Slip Type		

10.3.4 Flexible Hose Assemblies*

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

3 Installation, design and construction of flexible hose assemblies are to comply with follows.

(3) Construction requirements

Non-metallic flexible hoses are to conform to the following requirements:

（(a) and (b) are omitted.）

(c) Non-metallic flexible hoses used for flammable oil and river water pipes, where failure may result in flooding, are to be of a fire resistant type except in cases where such hoses are installed on exposed open decks as defined in Regulation 9.2.3.3.2.2(10), Chapter II-2, *SOLAS* Convention, except for the cargo areas of tankers, ships carrying liquefied gases in bulk and ships carrying dangerous chemicals in bulk, and are not used for fuel oil lines.

EFFECTIVE DATE AND APPLICATION (Amendment 2-3)

1. The effective date of the amendments is 1 January 2017.

2. Notwithstanding the amendments to the Rules, the current requirements apply to mechanical joints or flexible hose assemblies for which the application for approval is submitted to the Society before the effective date.

Amendment 2-4

Part 9 FIRE PROTECTION, DETECTION AND EXTINCTION

Chapter 3 PROBABILITY OF IGNITION

3.2 Arrangements for Oil Fuel, Lubrication Oil and Other Flammable Oils*

Paragraph 3.2.1 has been amended as follows.

3.2.1 Limitations in the Use of Oils as Fuel*

The following limitations are to apply to the use of oil as fuel:

(1) Except as otherwise permitted by this paragraph, no oil fuel with a flashpoint of less than 60°*C* is to be used;

(2) In emergency generators oil fuel with a flashpoint of not less than 43°*C* may be used;

(3) The use of oil fuel having a flashpoint of less than 60°*C* but not less than 43°*C* may be permitted (*e.g.*, for feeding the emergency fire pump's engines and the auxiliary machines which are not located in the machinery spaces of category *A*) subject to the following:
   (a) fuel oil tanks except those arranged in double bottom compartments are to be located outside of machinery spaces of category *A*;
   (b) provisions for the measurement of oil temperature are to be provided on the suction pipe of the oil fuel pump;
   (c) stop valves and/or cocks are to be provided on the inlet side and outlet side of the oil fuel strainers;
   (d) pipe joints of welded construction or of circular cone type or spherical type union joint are to be applied as much as possible; and
   (e) other requirements when deemed appropriate by the Society.

(4) In ships, to which the requirements of **Part GF of the Rules for the Survey and Construction of Steel Ships** are not applicable, ~~T~~the use of fuel having a lower flashpoint than otherwise specified in ~~this paragraph~~**(1)** above, for example crude oil, may be permitted provided that such fuel is not stored in any machinery space and subject to the approval by the Society of the complete installation.

(5) In ships, to which the requirements of **Part GF of the Rules for the Survey and Construction of Steel Ships** are applicable, the use of oil fuel having a lower flashpoint than otherwise specified in **(1)** above is permitted.

(~~5~~6) Fuel oil is not to be heated to the temperature within 10°*C* below the flash point of the fuel oil in the oil tanks, unless considered appropriate by the Society.

EFFECTIVE DATE AND APPLICATION (Amendment 2-4)

1. The effective date of the amendments is 1 January 2017.

Amendment 2-5

Part 7 MACHINERY INSTALLATIONS

Chapter 11 PIPING SYSTEMS

11.8 Sounding Pipes

Paragraph 11.8.2 has been amended as follows.

11.8.2 Upper Ends of Sounding Pipes

Sounding pipes are to be led to positions above the bulkhead deck which are at all times readily accessible, and are to be provided with an effective closing means at their upper ends. However, sounding pipes may be led to readily accessible positions from the platform of a machinery space provided that the closing means specified in **3.2.2(3)(e)**, **3.2.2(8)** and **3.2.3(2)**, **Part 9** are provided according to the kinds of tanks. Sounding pipes for tanks other than those for flammable oil and cofferdams may be led to readily accessible positions from the platform of a machinery space provided that sluice valves, cocks or screw caps attached to the pipes by chain are provided.

Part 9 FIRE PROTECTION, DETECTION AND EXTINCTION

Chapter 3 PROBABILITY OF IGNITION

3.2 Arrangements for Oil Fuel, Lubrication Oil and Other Flammable Oils*

3.2.2 Arrangements for Oil Fuel*

In a ship in which oil fuel is used, the arrangements for the storage, distribution and utilization of the oil fuel are to be such as to ensure the safety of the ship and persons on board and are to at least comply with the following provisions.

Sub-paragraph (8) has been added as follows.

(8) The upper ends of sounding pipes for fuel overflow tanks which terminate in machinery spaces are to be fitted with self-closing blanking devices and with small-diameter self-closing control cocks located below the blanking devices for the purpose of ascertaining before the blanking devices are opened that oil fuel is not present. Provision is to be made so as to ensure that any spillage of oil fuel through the control cocks involves no ignition hazard.

EFFECTIVE DATE AND APPLICATION (Amendment 2-5)

1. The effective date of the amendments is 27 June 2017.

2. Notwithstanding the amendments to the Rules, the current requirements 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.

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS

GUIDANCE

2016 AMENDMENT NO.2

Notice No.89 27th December 2016
Resolved by Technical Committee on 27th July 2016

Notice No.89 27th December 2016
AMENDMENT TO THE GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS

"Guidance for the survey and construction of inland waterway ships" has been partly amended as follows:

Amendment 2-1

Part 9 FIRE PROTECTION, DETECTION AND EXTINCTION

Chapter 8 FIRE FIGHTING

8.4 Fixed Fire-extinguishing Systems

8.4.3 Storage Rooms of Fire-extinguishing Medium

Sub-paragraph -3 has been amended as follows.

3 With respect to the requirements specified in **8.4.3, Part 9 of the Rules**, where fire-extinguish media protecting the cargo holds is stored in a room located forward the cargo holds, such arrangement is to be in accordance with the provisions of **R25.2.1-~~8~~6, Part R of the Guidance for the Survey and Construction of Steel Ships**.

EFFECTIVE DATE AND APPLICATION (Amendment 2-1)

1. The effective date of the amendments is 27 December 2016.

2. Notwithstanding the amendments to the Guidance, the current requirements 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.

Amendment 2-2

Part 1 GENERAL RULES

Chapter 2 DEFINITIONS

2.1 Application and Definitions

Paragraph 2.1.42 has been amended as follows.

2.1.4~~2~~3 Important System

Systems necessary for safety of life and ship are as follows:

(1) Bilge discharge systems;
(2) Anchoring systems;
(3) Mooring systems;
(4) Ballast systems for tank barge and barge designed to load and unload by submerging or inclining itself;
(5) Lighting Systems (except for unmanned barge); and
(6) Electric power sources supplying electric power to any one of the systems listed above **(1)** to **(5)** or navigation light or signal light.

EFFECTIVE DATE AND APPLICATION (Amendment 2-2)

1. The effective date of the amendments is 1 January 2017.

2. Notwithstanding the amendments to the Guidance, the current requirements apply to ships other than ships that fall under the following:

(1) for which the building contract is placed on or after the effective date; or
(2) in the absence of a building contract, the keels of which are laid or which are at *a similar stage of construction* on or after 1 July 2017; or

(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.

(3) the delivery of which is on or after 1 January 2021.

3. Notwithstanding the provision of preceding **2.**, the amendments to the Guidance apply to the ships that fall under the following:

(1) which convert to using low-flashpoint fuels on or after the effective date; or
(2) which, on or after the effective date, undertake to use low-flashpoint fuels different from those which it was originally approved to use before the effective date.

Amendment 2-3

Part 1 GENERAL RULES

Chapter 2 DEFINITIONS

2.1 Application and Definitions

Paragraph 2.1.30 has been added as follows.

2.1.30 Light Weight

With respect to the provisions of **2.1.30, Part 1 of the Rules**, the weight of mediums on board for the fixed firefighting systems (e.g. freshwater, CO2, dry chemical powder, foam concentrate, etc.) is to be included in the light weight.

Part 2 CLASS SURVEYS

Chapter 2 CLASSIFICATION SURVEYS

2.3 River Trials and Stability Experiments

2.3.1 River Trials

Sub-paragraphs -9 and -10 have been added as follows.

9 In applying **2.3.1-2(1), Part 2 of the Rules**, if the rudder cannot be fully submerged at even keel, the draught that the rudder is fully submerged (at zero speed waterline) in which the vessel is in an acceptable trim condition can be accepted.

10 In applying **2.3.1-2(3), Part 2 of the Rules**, the following **(1)** or **(2)** is to be applied. Alternatively, the designer or builder may use computational fluid dynamic (CFD) studies or experimental investigations to predict the rudder stock moment (torque in the rudder stock) in the full load condition and at the service speed. These calculations or experimental investigations are to be verified by the Society.

(1) The rudder torque in the full load condition and at the speed of ship defined in **2.1.9, Part 1 of the Rules** is to be predicted using the following extrapolation formula. There is, however, no need for extrapolation where A_T is greater than $0.95A_F$.

$$Q_F = Q_T \alpha$$

Q_F: the rudder stock moment (torque in the rudder stock) for the full load condition and the speed of ship defined in **2.1.9, Part 1 of the Rules**

Q_T: the rudder stock moment (torque in the rudder stock) for the trial condition

α: the extrapolation factor in accordance with the following formula:

$$\alpha = 1.25\left(\frac{A_F}{A_T}\right)\left(\frac{V_F}{V_T}\right)^2$$

A_F: the total immersed projected area of the movable part of the rudder in the full load condition

A_T: the total immersed projected area of the movable part of the rudder in the trial condition

V_F: the contractual design speed of the vessel corresponding to the maximum continuous revolutions of the main engine in the full load condition

V_T: the measured speed of the vessel (considering current) in the trial condition

(2) Where the rudder actuator system pressure is shown to have a linear relationship to the rudder stock torque, the above equation can be taken in accordance with the following formula. Where constant volume fixed displacement pumps are utilized, **12.2.2(1)** or **12.2.3(1), Part 7 of the Rules** can be deemed satisfied if the estimated steering actuator hydraulic pressure in the full load condition is less than the specified maximum working pressure of the rudder actuator. Where a variable delivery pump is utilized, pump data are to be supplied and interpreted to estimate the delivered flow rate corresponds to the full load condition in order to calculate the steering time and allow it to be compared to the required time.

$$P_F = P_T \alpha$$

P_F: the estimated steering actuator hydraulic pressure in the full load condition

P_T: the maximum measured actuator hydraulic pressure in the trial condition

Part 9 FIRE PROTECTION, DETECTION AND EXTINCTION

Chapter 2 DEFINITIONS

2.2 Definitions

Paragraph 2.2.11 has been added as follows.

2.2.11 Lightweight

With respect to the provisions of **2.2.11, Part 9 of the Rules**, the weight of mediums on board for the fixed firefighting systems (e.g. freshwater, CO2, dry chemical powder, foam concentrate, etc.) is to be included in the lightweight.

EFFECTIVE DATE AND APPLICATION (Amendment 2-3)

1. The effective date of the amendments is 1 January 2017.

2. Notwithstanding the amendments to the Guidance, the current requirements 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 2-4

Part 2 CLASS SURVEYS

Chapter 1 GENERAL

1.1 Surveys

1.1.2 Class Maintenance Surveys

Sub-paragraph -1 has been amended as follows.

1 Modifications and changes that are subject to Occasional Surveys referred to in **1.1.2-2(3), Part 2 of the Rules** are as specified in **(1)** through **(45)** below:
((1) to (4) are omitted.)
(5) Ships Using Low-flashpoint Fuels
For ships that fall under the following **(a)** or **(b)**, a survey is to be carried out to verify compliance with the requirements of **1.1.8, Part 1 of the Rules** before using low-flashpoint fuels or undertaking to use below specified different low-flashpoint fuels.
(a) Ships which convert to using low-flashpoint fuels on or after 1 January 2017; or
(b) Ships which, on or after 1 January 2017, undertake to use low-flashpoint fuels different from those which it was originally approved to use before 1 January 2017.

EFFECTIVE DATE AND APPLICATION (Amendment 2-4)

1. The effective date of the amendments is 1 January 2017.

Amendment 2-5

Part 2 CLASS SURVEYS

Chapter 1 GENERAL

1.1 Surveys

1.1.3 Intervals of Class Maintenance Surveys

3 The timing (survey due date) of Ordinary Surveys of propeller shafts Kind 1 and stern tube shafts Kind 1 specified in **1.1.3-1(6)(a), Part 2 of the Rules** may be extended subject to the carrying out of Occasional Surveys in accordance with the following **(1)** to **(4)**:

Sub-paragraph (2) has been amended as follows.

(2) For freshwater lubricated bearings, the following **(a)** to **(~~e~~d)** are to apply:

(a) The survey due date may be extended for up to 1 *year* in cases where, after the execution of a survey consisting of the following **i)** to **v)**, examined parts are proven to be in good condition. In this case, only one more "one-year extension" may be granted.

i) The review specified in the preceding **(1)(a)iv)**;

ii) Review of service records, regularly recorded data showing in-service conditions of the shaft(s), which may include water flow, water temperature, salinity, pH, make-up water and water pressure;

iii) Review of test records of freshwater sample tests carried out in accordance with the following **1)** to **4~~)~~5)** to verify that the test results comply with the criteria for parameters determined by the ship's management based upon the reference standards shown in **(d)** below and by taking into account its experience and knowledge. After the review, freshwater sample tests are to be carried out in accordance with the following **~~(b)~~2)** to **~~(d)~~5)** in the presence of a surveyor.

1) Freshwater sample tests are to be carried out at regular intervals, in principle, not exceeding six months.

2) Freshwater sample tests are to include, as parameter, chlorides and sodium content, pH value, and presence of bearing particles or other particles (only for laboratory analysis, not required for tests carried out in presence of the surveyor).

3) Sampling is to be carried out in accordance with the following:

- Samples are to be taken under service conditions (i.e., with a rotating shaft and the system at service temperature) and are to be representative of the water circulating within the stern tube.
- Samples are to be taken from the same pre-determined suitable position (before the filters, if any are fitted) in the system.
- Samples are to be collected under the direct supervision of the Chief Engineer, except when taking in the presence of a Surveyor.

4) Analysis results are to be retained on board and made available to the surveyor.

5) The extent of make-up water in the system is to be checked.

iv) The verifications and examinations, etc. specified in the preceding **(1)(a)i)** to **iii)**,

vii) as well as **viii)**; and

v) Verification of the effectiveness of the inboard seal and outboard seals.

(b) The survey due date may be extended for up to 3 *month* in cases where, after the execution of a survey consisting of the following **i)** and **ii)**, examined parts are proven to be in good condition.

i) The verifications and examinations, etc. specified in the preceding **(a)i)** to **iv)**; and

ii) Verification of the effectiveness of the inboard seal.

(c) The surveys specified in the preceding **(a)** and **(b)** may be carried out sequentially; the survey due date, however, may only be extended for a maximum of 1 *year*.

(d) The reference standards for the criteria of the parameters specified in **(a)iii)** above are as follows:

i) Chloride and sodium content (upper limits)

1) Chloride content: 60 *ppm*

2) Sodium content: 70 *ppm*

ii) PH value

Lower limit values determined based upon characteristics of the corrosion inhibitors used, but not to be less than 11

iii) Bearing particles and other particles

1) Metallic content (upper limits)

Iron (Fe): 25 *ppm*

Chromium (Cr): 5 *ppm*

Nickel (Ni): 5 *ppm*

Copper (Cu): 40 *ppm*

Silicon (Si): 30 *ppm*

2) Bearing particles (non-metallic content)

No polymer resins are to be found by micro-filter and/or microscopic testing.

Sub-paragraph (4) has been amended as follows.

(4) Occasional Surveys are, in principle, to be carried out within 1 *month* of the survey due date ~~(including extended due dates)~~. If the Occasional Survey is carried out more than 1 *month* prior to the survey due date, then the period of extension counts from the date on which the Occasional Survey was completed.

Chapter 3 ANNUAL SURVEYS

3.3 Annual Surveys for Machinery

Paragraph 3.3.1 has been amended as follows.

3.3.1 General Examinations

1 In general examinations specified in **3.3.1-1, Part 2 of the Rules**, where rubber couplings are installed, a visual inspection and measurements of surface hardness or permanent deformation of rubber elements are to be conducted.

2 The phrases "lubricating oil analysis" and "freshwater sample tests" specified in **3.3.1(5), Part 2 of the Rules** refer to the "lubricating oil analysis" and "freshwater sample tests" specified in **2.2.1-2(2)** and **2.3.1-2(2)** of **Annex B1.1.3-7 "Alternative Propeller Shaft Survey Methods", Part B of the Guidance for the Survey and Construction of Steel Ships**, respectively.

Chapter 6 DOCKING SURVEYS

6.1 Docking Surveys

Paragraph 6.1.3 has been added as follows.

6.1.3 Other Surveys

The phrases "lubricating oil analysis" and "freshwater sample tests" specified in **6.1.3-2, Part 2 of the Rules** refer to the "lubricating oil analysis" and "freshwater sample tests" specified in **2.2.1-2(2)** and **2.3.1-2(2)** of **Annex B1.1.3-7 "Alternative Propeller Shaft Survey Methods", Part B of the Guidance for the Survey and Construction of Steel Ships**, respectively.

Chapter 8 PROPELLER SHAFT AND STERN TUBE SHAFT SURVEYS

8.1 Propeller Shaft and Stern Tube Shaft Surveys

Paragraph 8.1.1 has been amended as follows.

8.1.1 Ordinary Surveys

~~**1** "An efficient crack detection method" stipulated in item 1 and 2 of **Table 2.8.1, Part 2 of the Rules** generally refers to the magnetic particle method.~~

2 When the clearance and/or wear down at the aft end of the stern tube or the shaft bracket bearing exceed the value given below, the bearing is to be replaced or repaired.

((1) to (3) are omitted.)

Table 2.8.1.3-1 has been amended as follows.

Table 2.8.1.3-1 Approval Procedure of Preventive Maintenance System for Oil Lubricated Propeller Shafts

(Omitted)	
5. After Approval	(-1 to -3 are omitted.) -4 The ship is to be subject to the applicable survey items specified in **Table 2.8.1**, **Part 2 of the Rules** (excluding survey items 1, 3, 4, 5, 7 and 8 for parts covered by the preventive maintenance system) as well as checking and recording the measurements of bearing weardown of the propeller shaft or the stern tube shaft at the after bearing of the stern tube, visual inspection of all accessible parts of the shafting system, seal liner found to be or placed in a satisfactory condition and verification of the satisfactory condition of inboard and outboard seals at the propeller shaft surveys in accordance with **1.1.3-1(6)(a), Part 2 of the Rules**. However, for propeller shafts with keyless propeller attachments or having coupling flanges at the aft end, survey items 2, 9 and 10 in **Table 2.8.1, Part 2 of the Rules** may be extended[1] until the earlier date of the following **(1)** or **(2)**. In cases where survey items 2, 9 and 10 specified in **Table 2.8.1**, **Part 2 of the Rules** are carried out, verification of the satisfactory re-installation of the propeller including verification of the satisfactory condition of inboard and outboard seals is to be carried out. (1) The date when the propeller shaft is withdrawn for an examination due to some reason such as an abnormality being found by the analysis of monitoring parameters (2) The date 18 *years* after the propeller shaft survey (including survey items 2, 9 and 10 in **Table 2.8.1, Part 2 of the Rules**) was completed except in the case when one extension for no more than three months is granted[2]
(Omitted)	

(Notes)

1 The carrying out of survey items 2, 9 and 10 specified in **Table 2.8.1**, **Part 2 of the Rules** is recommended in cases where the next survey due date will be earlier than 18 *years* after the date of completion of the previous survey which included the survey items 2, 9 and 10 specified in **Table 2.8.1**, **Part 2 of the Rules**.

2 No further extension can be granted.

EFFECTIVE DATE AND APPLICATION (Amendment 2-5)

1. The effective date of the amendments is 1 January 2017.

2. Notwithstanding the amendments to the Guidance, the current requirements apply to ships other than ships the delivery of which is on or after 1 January 2016 until the first propeller shaft and stern tube shaft survey scheduled on or after 1 January 2016.

Amendment 2-6

Part 9 FIRE PROTECTION, DETECTION AND EXTINCTION

Chapter 3 PROBABILITY OF IGNITION

3.2 Arrangements for Oil Fuel, Lubrication Oil and Other Flammable Oils

3.2.1 Limitations in the Use of Oils as Fuel

Sub-paragraph -2 has been amended as follows.

2 The wording "considered appropriate by the Society" in **3.2.1(~~5~~6), Part 9 of the Rules** means that fuel oil service tanks, settling tanks or other tanks provided in fuel oil supply systems which satisfy the following conditions:

(1) The length of the vent pipes from such tanks and/or cooling devices are sufficient for cooling the vapours to below 60°*C*, or the outlet of the vent pipes are located at least 3 *m* away from a source of ignition.
(2) The open-end device of vent pipes are fitted with flame screens.
(3) There are no openings from the vapour space of the fuel oil tanks into machinery spaces (bolted manholes with gaskets are acceptable).
(4) Enclosed spaces are not located right above the fuel oil tanks, except for well-ventilated cofferdams.

EFFECTIVE DATE AND APPLICATION (Amendment 2-6)

1. The effective date of the amendments is 1 January 2017.