

Wind Farm Support Vessels

Amended Rules and Guidance

Rules for the Survey and Construction of Steel Ships Part O

Rules for High Speed Craft

Guidance for the Survey and Construction of Steel Ships Part O

Reasons for Amendment

Currently, centering European countries, many countries around the world are aiming to expand their use of renewable energy, and the use of offshore wind turbines is seen as one way of accomplishing the aim. In Japan, the use of offshore wind turbines is expected to only expand in the future, with designated zones being established to promote their installation. In other countries, the long-term maintenance and management of offshore wind turbines already in operation is also a concern, and special vessels have been introduced to support such operations.

Two examples of such vessels developed and introduced in recent years are Service Operation Vessels (SOV) and Crew Transfer Vessels (CTV). SOVs are relatively large vessels not only used to transport materials and personnel needed for the maintenance of wind turbines installed offshore, but also to serve as accommodation facilities for personnel engaged in the maintenance and management of such facilities. CTVs, on the other hand, are relatively small vessels used to transport personnel directly from base ports to wind turbines located near the coast. Since these vessels like SOVs and CTVs are indispensable to the proper maintenance and management of offshore wind turbines, the future demand for them is expected to correspondingly increase as the number of wind turbines entering into service increases.

Accordingly, to prepare for this future expected increase in demand, relevant requirements are amended in order to incorporate new requirements for the above-mentioned vessels.

Outline of Amendment

The main contents of this amendment are as follows:

- (1) Newly specifies relevant requirements for wind farm support vessels as Chapter 12, Part O of the Rules.
- (2) Specifies definitions of wind farm support vessels and corresponding class notation suffixes for classification characters.

“Rules for the survey and construction of steel ships” has been partly amended as follows:

Part O WORK-SHIPS

Chapter 1 GENERAL

1.1 Application and Equivalency

Paragraph 1.1.4 has been added as follows.

1.1.4 National Regulations, Instructions, etc.

With respect to the hull construction, equipment, machinery, etc. of ships, attention is to be paid to compliance with national regulations or instructions, etc. of the flag states or the coastal states in which ships operate in addition to the requirements in this Rules. The Society may make special requirements as instructed by the flag states of ships or the governments of sovereign nations under which such ships operate.

1.3 Definitions

Paragraph 1.3.2 has been amended as follows.

1.3.2 Work-ship*

A “work-ship” is a ship primary engaged in a designated operation such as dredging, lifting of heavy loads, fire fighting, offshore supply, towing, etc. at sea. Work-ships are defined according to their purpose as follows:

((1) to (10) are omitted.)

(11) Wind farm support vessel

A “wind farm support vessel” is a ship primary engaged in the transporting the workers defined in 1.3.5 to the offshore wind turbines or transporting and serving as accommodation facilities for such workers. This, however, does not include non self-propelled ships.

(11) Other ships

“Other ships” are ships other than those specified ~~in (1) to (10)~~ above.

Paragraphs 1.3.5 to 1.3.7 have been added as follows.

1.3.5 Worker

A “worker” is the person on board, who is engaged in operations mainly related to offshore wind turbines.

1.3.6 Personnel Transfer

“Personnel transfer” is mainly the transferring of people between a ship, and ships other than work ships (as defined in 1.3.2) or facilities such as offshore wind turbines at sea, using dedicated equipment. This, however, does not include the embarkation and disembarkation of pilots.

1.3.7 Ships Which Have Large Embarking Capacities.

“Ships which have large embarking capacities” are ships for which the number of workers on board exceeds 12.

Chapter 12 has been added as follows.

Chapter 12 Wind Farm Support Vessels

12.1 General

12.1.1 Application*

1 Wind farm support vessels (hereinafter referred to as “ships” in this chapter) are to be applied to this chapter in addition to other relevant parts of the Society’s Rules.

2 For ships primarily engaged in transporting workers to offshore wind turbines and serving as accommodation facilities for such workers, 12.1 to 12.8 are to be complied with.

3 For ships primarily engaged in transporting workers, 12.9 is to be complied with in addition to 12.1 to 12.7.

4 Notwithstanding this chapter, special consideration is to be given to ships which have large embarking capacities.

12.2 Stability

12.2.1 General*

1 Intact and damage stability are to be according to this 12.2 in addition to Part U and 2.3, Chapter 2, Part 1 of Part C. However, for ships specially approved by the Society, these requirements may be waived.

2 Intact stability is to be in accordance with Part U. In addition, with regard to stability, special consideration is to be given to heeling levers and other related matters during designated operations.

3 For ships carrying cargoes on deck (e.g. open pipes in which water may accumulate), free surface effects are to be considered.

4 In the case of ships for which the full or direct application of -1 above is considered to be insufficient because of some special reason, stability will be determined by the Society on a case-by-case basis.

12.2.2 Stability Calculations

In applying 2.1.2, Part U, heeling levers resulting from designated operations to be considered are the ones most unfavorable with respect to stability.

12.3 Hull Construction

12.3.1 General

1 Hull construction is to be according to this 12.3 in addition to relevant requirements in Part C or Part CS.

2 Supporting structures of equipment and devices used for the maintenance and management of offshore wind turbines are to be such as to ensure sufficient strength.

3 In all operations for which the ship is intended, the effect of all loads due to cargoes on deck and especially heavy equipment are to be taken into account.

4 The construction of parts, such as the bow parts of ships, in cases where ships come into contact with other ships or offshore structures for personnel transfer purposes, is to be such as to ensure sufficient strength.

12.4 Hull Equipment

12.4.1 General

1 Hull equipment of ships is to be according to this **12.4** in addition to relevant requirements in **Part C or Part CS.**

2 In cases where equipment and devices for designated operations are fitted, suitable measures are to be taken so that ship safety is not impaired.

12.4.2 Personnel Transfer Arrangements*

1 Ships are to be provided with designated areas for personnel transfer (hereinafter referred to as “personnel transfer areas”), and such areas are to comply with the following:

- (1)** Such areas are to be located sufficiently away from the propellers, nozzles, etc. of propulsion systems (including side thrusters).
- (2)** Such areas are to be kept free of structures and arrangements that obstruct personnel transfer.
- (3)** Such areas are to be provided with sufficient lightning. In addition, lighting for the personnel transfer arrangements specified in -2 below, the sea surface around such arrangements as well as associated means of passage for such arrangements are to be capable of being supplied by emergency sources of electrical power in the event of main power failure.
- (4)** Surfaces of such areas used as means of passage (e.g. stairways). are to be non-skid surfaces.
- (5)** Regardless of weather conditions, such areas and their associated arrangements are to be clearly visible from navigation bridges.

2 Ships are to be provided with designated arrangements for personnel transfer (hereinafter referred to as “personnel transfer arrangements”). Such arrangements are to comply with the following:

- (1)** The structures of such arrangements are to be such that they will not endanger operators or users during normal operations.
- (2)** The materials used for arrangements are to be as deemed appropriate by the Society.
- (3)** Special consideration is to be given to protect users in the event of main power failure.
- (4)** Support structures underneath decks are to be adequately reinforced in cases where such arrangements are installed on deck.

3 Procedures for personnel transfer and instructions for personnel transfer arrangements are to be indicated in operating manuals, and are to comply with the following:

- (1)** The full sequence of personnel transfer is to take place at locations sufficiently away from the propellers, nozzles, etc. of propulsion systems (including side thrusters).
- (2)** Such procedures and instruction are to include items and methods for checking environmental conditions during ship operations as well as for operational checks of personnel transfer arrangements.
- (3)** Such procedures and instructions are to include information on any limitations placed on the use of personnel transfer arrangements, taking into account environmental conditions when personnel transfers take place.

12.5 Machinery

12.5.1 General

Main propulsion machinery, power transmission systems, shafting systems, propellers, prime movers other than the main propulsion machinery, boilers and related equipment, incinerators, pressure vessels, auxiliaries, piping systems and all of their respective control systems (hereinafter collectively referred to as “machinery installations” in this chapter) of ships are to be according to this **12.5** in addition to **Part D.**

12.5.2 Tests

1 Before installation on board, equipment and components constituting machinery installations are to be tested at manufacturers in accordance with Part D.

2 Notwithstanding -1 above, for machinery installations (other than boilers, pressure vessels belonging to Group I or II and piping systems which contain inflammable or toxic liquids) used solely for operations which is the intended purpose of the ship, tests may be as deemed appropriate by the Society.

3 Systems or equipment essential for ship safety or for ship propulsion are to be subjected to performance tests after installation on board.

12.6 Electrical Installations

12.6.1 General*

Electrical installations of the ship are to be according to this 12.6 in addition to Part H.

12.6.2 Tests

1 Among electrical equipment used for the intended purpose of the ship (such as electrical equipment for personnel transfer arrangements or lighting near personnel transfer arrangements, etc.), associated fuses, circuit breakers, explosion-protected electrical equipment and cables are to be in accordance with 1.2.1-4, Part H. However, electrical installations which do not comply with this requirement may be accepted provided that documents (such as specifications, sectional assembly drawings, test reports, certificates) issued by recognized third-parties are submitted to the Society for review.

2 Electrical equipment used for the intended purpose of the ship and not listed in -1 above are to be in accordance with the standards deemed appropriate by the Society.

3 For electrical installations used for the intended purpose of the ship, the insulation resistance tests specified in 2.18.1, Part H and performance tests for safety devices are to be carried out for generators and transformers after installation on board.

12.7 Fire Protection and Means of Escape

12.7.1 General

Fire protection and means of escape are to be according to relevant requirements in Part R.

12.8 Special Requirements for Ships Engaged in Transporting Workers to Offshore Wind Turbines and Serving as Accommodation Facilities for Such Workers

12.8.1 Stability*

1 For ships equipped with personnel transfer equipment which effect intact stability, the following are to be taken into account.

(1) The overturning moments due to environmental and operational conditions. In order to consider the most critical scenario, the full range of operating configurations (including both stowed and operational modes) is to be taken into account.

(2) The effects of loads due to cargoes on deck for each operating condition.

(3) The estimated weights and heights of the centre of gravity in the most critical scenario if large and heavy equipment or structures are intended to be stowed on deck and are going to be installed on grillages to add extra height.

2 In cases where ships are not to be secured by mooring at jetties, piers, etc. or some other equivalent method and are intended to operate on lifts in the floating condition, intact stability for the

following ships during lifting operations is to be subject to stability requirements separately specified by the Society:

- (1) Ships intended to operate involving the lifting of the ship's own structures or for lifts in which the maximum heeling moment due to the lift is greater than that given in the following. Calculations are to be completed at the most unfavourable loading conditions for which the lifting equipment is to be used.

$$M_L = 0.67 \times \Delta \times G_0 M \times \left(\frac{f}{B} \right)$$

M_L : Threshold value for the heeling moment ($t \cdot m$) induced by the load due to the lifting equipment (hereinafter referred to as "lifting load").

$G_0 M$: Initial metacentric height (m) with free surface correction, including the effects of the lifting load.

f : Minimum freeboard (m) measured from the upper side of the weather deck to the waterline.

B : Moulded breadth of the ship (m), as defined in 2.1.4, Part A

Δ : Displacement of the ship (t), including the lifting load

- (2) Ships which are engaged in lifting operations where no transverse heeling moment is induced and the increase of ship vertical centre of gravity (VCG) due to the lifted weight is greater than 1 %.

12.8.2 Hull Construction*

1 Side construction is to be such as to ensure sufficient strength for impact loads arising from contact.

2 The superstructure end bulkheads and boundary walls of deckhouses are to be such as to ensure sufficient strength for operational loads.

3 If heavy loads are to be carried on deck, the deck is to be adequately reinforced for the maximum anticipated load.

4 In cases where heavy cargoes are carried on deck, effective means such as dunnage are to be provided so that weight is uniformly distributed onto deck structures.

5 Means are to be taken to adequately secure and protect cargoes loaded on deck. In general, bulwarks, rails, containers or racks, etc. are to be arranged and properly secured to reinforced parts of the hull structure.

6 Air pipes, valves, small hatches, etc. are to be effectively protected and reinforced against damage caused by cargo and loading equipment.

7 In principle, hatch covers at flush deck openings above decks on which cargoes are to be loaded are to have the same design loads as adjacent decks.

12.8.3 Hull Equipment*

1 Sufficient fenders are to be fitted on side shells in deck areas where upper decks or forecastles decks are at full breadth.

2 Wooden sheathings and other means are to be provided on cargo decks so as to appropriately protect steel deck plates from mechanical damage or scuffing.

3 In cases where cargo rails are fitted onto cargo decks, cargo rail stanchions are to be attached

12.8.4 Helicopter Facilities*

1 The structures, equipment, etc. of helicopter facilities are to comply with following (1) to (7):

(1) Helicopter loads: 3.2.7, Part P;

(2) Guardrails: 9.3.1-2, Part P;

(3) Isolation of fuel oil arrangements for helicopters: 11.1.4-10, Part P;

(4) Emergency lighting of helicopter decks: 12.2.3-3, Part P;

(5) Fire protection, means of escape and fire extinguishing systems: Chapter 18, Part R and

15.2.15 (10), Part P;

(6) Helicopter facilities: Chapter 17, Part P; and

(7) Provision of operation manuals: 18.8.1, Part R.

2 Regarding details of operation manuals related to helicopter facilities, including the operation manuals referred to in -1(7) above, reference is to be made to Chapter 18, Part P.

12.8.5 Positioning Systems

1 Positioning systems provided for ships are to be in accordance with Chapter 10, Part P.

2 Where dynamic positioning systems (hereinafter referred to as “DPS”) are provided, such are to comply with either the requirements for Class 2 DPS or Class 3 DPS.

3 Where the DPS has interfaces with control devices for personnel transfer arrangements, the effects of the operation of such control devices on dynamic positioning performance are to be identified and addressed through Failure Mode Effect Analysis (FMEA).

12.8.6 Worker Accommodation

Taking into account the maximum number of workers who will be on board, a sufficient number of properly sized sleeping berths is to be provided on board at suitable locations for the purpose of worker accommodation.

12.9 Special Requirements for Ships Primarily Engaged in Transporting Workers

12.9.1 General

Where ships have personnel transfer arrangements or cargo gear which effect stability, and loads heavy cargoes on deck, 12.8 is to be complied with.

12.9.2 Stability

Notwithstanding 12.2.1-1 and -2, ships navigating at maximum speeds equal to or exceeding the values in 2.1.2, Part 1 of the Rules for High Speed Craft are to comply with the Rules for High Speed Craft.

12.9.3 Hull Construction

Notwithstanding 12.3.1-3, ships navigating at maximum speeds equal to or exceeding the values in 2.1.2, Part 1 of the Rules for High Speed Craft are to comply with the Rules for High Speed Craft.

12.9.4 Hull Equipment

1 Notwithstanding 12.4.1-1, ships navigating at maximum speeds equal to or exceeding the values in 2.1.2, Part 1 of the Rules for High Speed Craft are to comply with the Rules for High Speed Craft, 12.4.2 and this 12.9.4.

2 In cases where platforms are installed as personnel transfer arrangements on the bow parts of ships, such platforms are to comply with the following:

- (1) Guardrails are to be provided on both sides of the platform and around the personnel transfer area.**
- (2) Coamings of sufficient height are to be provided for platform steps, such steps are to be provided with non-skid surfaces.**
- (3) The guardrails referred to in (1) above are to comply with 14.8, Chapter 14, Part 1 of Part C.**
- (4) According to 14.8, Chapter 14, Part 1 of Part C, wire ropes or chains are to be provided on the side of the platform where ship embarkation and disembarkation operations take place.**

12.9.5 Machinery

Notwithstanding 12.5.1, ships navigating at maximum speeds equal to or exceeding the values in 2.1.2, Part 1 of the Rules for High Speed Craft are to comply with the Rules for High Speed

Craft.

12.9.6 Electrical Installations

Notwithstanding 12.6.1, ships navigating at maximum speeds equal to or exceeding the values in 2.1.2, Part 1 of the Rules for High Speed Craft are to be comply with the Rules for High Speed Craft.

12.9.7 Fire Protection and Means of Escape

Notwithstanding 12.7.1, ships navigating at maximum speeds equal to or exceeding the values in 2.1.2, Part 1 of the Rules for High Speed Craft are to comply with the Rules for High Speed Craft.

12.9.8 Worker Waiting Areas

Taking into account the maximum number of workers who will be on board, a sufficient number of properly sized chairs are to be placed at suitable positions on board to allow workers to wait safely during ship navigation.

“Rules for high speed craft” has been partly amended as follows:

Part 1 GENERAL RULES

Chapter 1 GENERAL

1.1 General

Paragraph 1.1.9 has been added as follows.

1.1.9 Work-Ships

Work-ships are to comply with **Part O of the Rules for the Survey and Construction of Steel Ships.**

“Guidance for the survey and construction of steel ships” has been partly amended as follows:

Part O WORK-SHIPS

O1 GENERAL

O1.2 General

O1.2.4 Class Notation

Sub-paragraph (11) has been renumbered to (12), and Sub-paragraph (11) has been added as follows.

With respect to ships complying with relevant requirements given in this part, notation corresponding to the purpose of those ships defined in **1.3.2, Part O of the Rules** are affixed to the classification characters as follows:

((1) to (10) are omitted.)

(11) Wind Farm Support Vessel

(a) Ships primarily engaged in transporting workers to the offshore wind turbines and serving as accommodation facilities for workers

Wind Farm Support Vessel - Service Operation Vessel (abbreviated as *WFSV-SOV*)

(b) Ships primarily engaged in transporting workers

Wind Farm Support Vessel -Crew Transfer Vessel (abbreviated as *WFSV-CTV*)

In addition, in cases where **12.8.2-3, Part O of the Rules** is applied and when requested by shipowners, the following additional notation may be affixed.

“Heavy Deck Cargo” (abbreviated as *HDC*)

(1~~1~~2) Notation, except for that mentioned above, corresponding to intended purposes of work-ships

Chapter O12 has been added as follows.

O12 Wind Farm Support Vessels

O12.1 General

O12.1.1 Application

The “Special consideration” referred to in 12.1.1-4, Part O of the Rules means measures deemed appropriate by the Administration (for example, risk assessments and treatments for ships with large embarking capacities, or the application of the *SPS Code*).

O12.2 Stability

O12.2.1 General

1 “Ships specially approved by the Society” referred to in 12.2.1-1, Part O of the Rules means ships complying with O7.2.1-2.

2 The intact stability for the ships referred to in -1 above is to comply with O7.2.1-1.

3 For ships complying with *IMO* Resolution *MSC.235(82)*, as amended., the O7.2.1-3 is to comply with where 1.3.9, Annex U1.2.1 “Guidance for Stability Information for Master” is applied.

O12.4 Hull Equipment

O12.4.2 Personnel Transfer Arrangements

The “Personnel Transfer Arrangements” referred to in 12.4.2, Part O of the Rules includes fenders installed on the bow parts of ships, which come into contact with offshore structures for personnel transfer.

O12.8 Special Requirements for Ships Engaged in Transporting Workers to Offshore Wind Turbines and Serving as Accommodation Facilities for Such Workers

O12.8.1 Stability

The “stability requirements separately specified by the Society” referred to in 12.8.1-2, Part O of the Rules refers to O11.2.2.

O12.8.2 Hull Construction

Water heads used for calculating the scantlings of structure end bulkheads and deckhouse boundary walls are to comply with O7.3.5.

O12.8.3 Hull Equipment

1 In cases where ships are fitted with steel fenders, such ships are to be in accordance with O7.4.2.

2 The thickness of wooden sheathing is to be in accordance with O7.4.3.

3 The section moduli of cargo rails and stanchions are to be in accordance with O7.4.4.

O12.8.4 Helicopter Facilities

With respect to 12.8.4-1(5), Part O of the Rules, in cases where pumps used for the foam fire-extinguish systems required by Chapter 18, Part R of the Rules are also used as main fire pumps, operation of a foam fire-extinguish system at its required output is to permit the simultaneous use of the minimum required number of jets of water at the required pressure from the fire main.