

# **Regulations of 4 December 2015 No. on towing arrangement and transit of mobile offshore units (Towing Regulations)**

**Legal basis:** Laid down by the Norwegian Maritime Authority on 4 December 2015 under the Act of 16 February 2007 No. 9 relating to ship safety and security (Ship Safety and Security Act) sections 2, 6, 9, 11, 14, and 21, cf. Formal Delegation of 16 February 2007 NO. 171 and Formal Delegation of 31 May 2007 No. 590

**EEA references:** EEA Agreement, Annex II Chapter XIX point 1 (Directive 98/34/EC as amended by Directive 98/48/EC).

**Amendments:** Amended by Regulation of 28 June 2016 No. 833.

## **Chapter 1 Scope of application**

### *Section 1 Scope of application*

- (1) These Regulations apply to Norwegian mobile offshore units.
- (2) These Regulations do not apply to permanently anchored units as specified in Regulations of 10 July 2009 No. 998 on positioning and anchoring systems on mobile offshore units (Anchoring Regulations 09) section 14 fourth paragraph (c).

## **Chapter 2 Propulsion and towing force**

Chapter title amended by Regulation of 28 June 2016 No. 833.

### *Section 2 Necessary forces during transit*

A mobile offshore unit shall have sufficient force either by self-propulsion, towing force or combined self-propulsion and towing force to keep the unit in a fixed position at:

- a) 20 m/s wind;
- b) 1 m/s current;
- c) a significant wave height of 5 m ( $H_s$ );
- d) zero up-crossing wave period ( $T_z$ ) between 6 and 9 seconds.

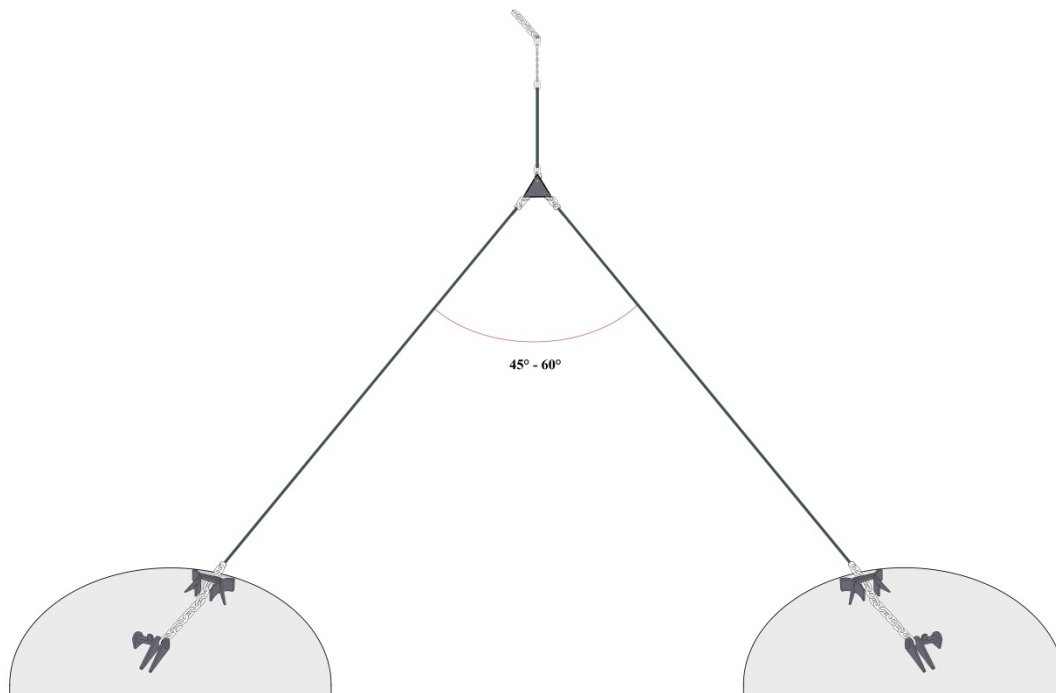
## **Chapter 3 Towing arrangement**

### *Section 3 Types of towing arrangements*

- (1) Mobile offshore units shall be provided with:
  - a) a main towing arrangement;
  - b) an emergency towing arrangement;
  - c) a narrow water towing arrangement.
- (2) A main towing arrangement is not required when the mobile offshore unit is certified for independent navigation and by self-propulsion complies with the requirements of section 2.

### *Section 4 Main towing arrangement*

- (1) A main towing arrangement shall consist of:
  - a) at least two fastening devices on the unit, sufficiently spaced to have control during the towing operation;
  - b) one or more towing connections;
  - c) one weak link per towing connection, with a suitable chain in the end to place in the shark-jaw of the towing vessel. Weak link means the part of the towing connection which is intended to collapse first in case of overloading;
  - d) shackles for connections.
- (2) The following spare material shall be on board during the towing operation:
  - a) one complete towing connection;
  - b) two weak links, including shackles for the mounting arrangement.
- (3) If only one towing vessel is used, a bridle with a flounder plate shall be used. The upper angle of the bridle shall be between  $45^\circ$  and  $60^\circ$ , as illustrated below:



### Section 5 *Emergency towing arrangement*

(1) An emergency towing arrangement shall consist of:

- a) a towing connection with a suitable chain in the end to place in the shark-jaw of the towing vessel;
- b) shackles for connections.

(2) The emergency towing arrangement shall be capable of being arranged for one towing vessel.

(3) Non-self-propelled units may, as an alternative to the second paragraph, be fitted with emergency towing arrangement for the same number of towing vessels as the main towing arrangement.

(4) A mobile offshore unit need not comply with the requirement of the second paragraph if the unit is certified or the building contract has been placed before 1 January 2016.

(5) During transit, it shall be possible to hook the emergency towing arrangement to the towing vessel after loss of main and emergency power.

Amended by Regulation of 28 June 2016 No. 833.

### Section 6 *Narrow water towing arrangement*

A narrow water towing arrangement shall consist of attachment points for towing lines suitable for connection to an assistance vessel when such vessel is required by the coastal State.

## Chapter 4 **Design and dimensioning of the main and emergency towing arrangement**

### Section 7 *Design of the towing arrangement*

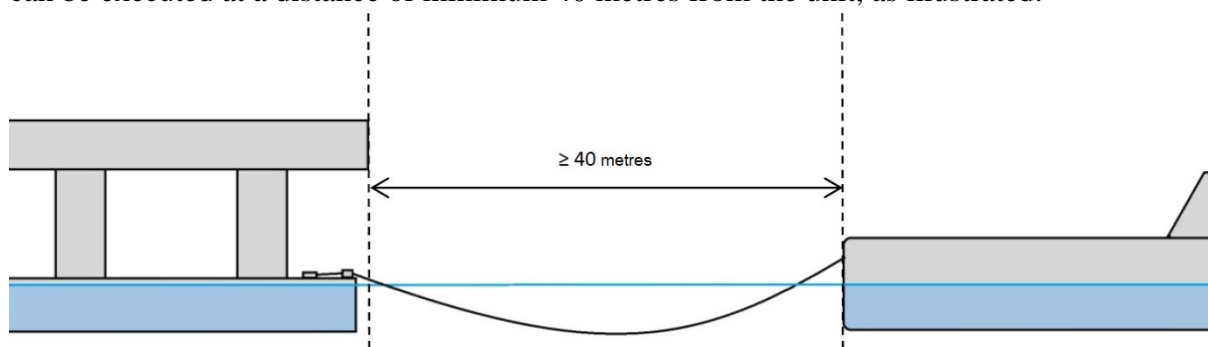
(1) The towing connection shall consist of a chain or a combination of chain and wire. Where the towing connection is subject to heavy wear and tear, a chain shall be used.

(2) Wire in towing connections shall be fitted with terminations, with solid thimbles or cast socket, suitable for towing operations.

(3) The position, construction and arrangement of the attachments shall be such that it is easy and quick to replace the towing equipment in calm waters.

(4) All loose equipment which is part of the towing arrangement shall have a certificate from the manufacturer (certificate of compliance), and be suitable for towing operations.

(5) The towing connection shall be of sufficient length, so that connection to the towing vessel can be executed at a distance of minimum 40 metres from the unit, as illustrated:



Amended by Regulation of 28 June 2016 No. 833.

### Section 8 *Dimensioning of towing arrangement*

(1) The design load ( $F_D$ ) for the towing arrangement shall at least be equal to the requirements for towing force specified in section 2.

(2) The propulsion power of a mobile offshore unit shall not be included in the dimensioning of the emergency towing arrangement.

(3) The weak link shall have a breaking strength so as to withstand at least three times  $F_D$ .

(4) The breaking strength of other towing equipment shall be at least 30% higher than the breaking strength of the weak link. If the breaking strength of the weak link is clearly defined, the percentage may be lower.

(5) As an alternative to the requirements of the third and fourth paragraphs, a unit which is certified, or for which the building contract has been placed, before 1 January 2016, may be fitted with:

a) a weak link with a breaking strength so as to withstand between two times  $F_D$  and the breaking strength of the towing equipment;

b) towing equipment with a breaking strength so as to withstand at least three times  $F_D$ .

(6) Triplates shall be so dimensioned that the yield limit is not exceeded when subjected to a load that causes other towing equipment to break, cf. fourth paragraph.

(7) The shackles for connection shall have a breaking strength that exceeds the breaking strength of the strongest part of the towing connection.

(8) Fastening devices for towing, hawseholes, etc. shall be dimensioned with a utilization factor of 0.9, and associated supporting structure with 0.8, against the material's yield limit in relation to the breaking strength pursuant to the fourth paragraph. Strength analyses shall be made for the most unfavourable direction of the towline pull.

Amended by Regulation of 28 June 2016 No. 833.

### Section 9 *Additional requirements for the main towing arrangement*

(1) A weak link shall be placed at the end of the towing equipment which is connected to the towing vessel.

(2) In the event of a break in the main towing arrangement, it shall be possible to establish a new tow connection in a quick and safe manner.

(3) The unit shall be fitted with a retrieving arrangement which shall be dimensioned to retrieve the combined load of the unit's towing connection and have a safety margin equal to the weight of 150 metres of wire of the heaviest type used for towing the unit.

## Chapter 5 **Planned transit**

### Section 10 *Requirements for transit*

(1) Transits shall take place in such a way that it causes the least possible encumbrance and danger to other activities. Special regard shall be paid to fishing and shipping.

(2) Weather restricted or unrestricted operations shall be performed within the unit's design criteria.

(3) Weather restricted and unrestricted operations mean:

a) "*weather restricted operations*": Operations with reliable weather forecasts, where the operation's reference period ( $T_R$ ) is less than 96 hours and the planned operation period based on a conservative schedule for the operation ( $T_{POP}$ ) is less than 72 hours.

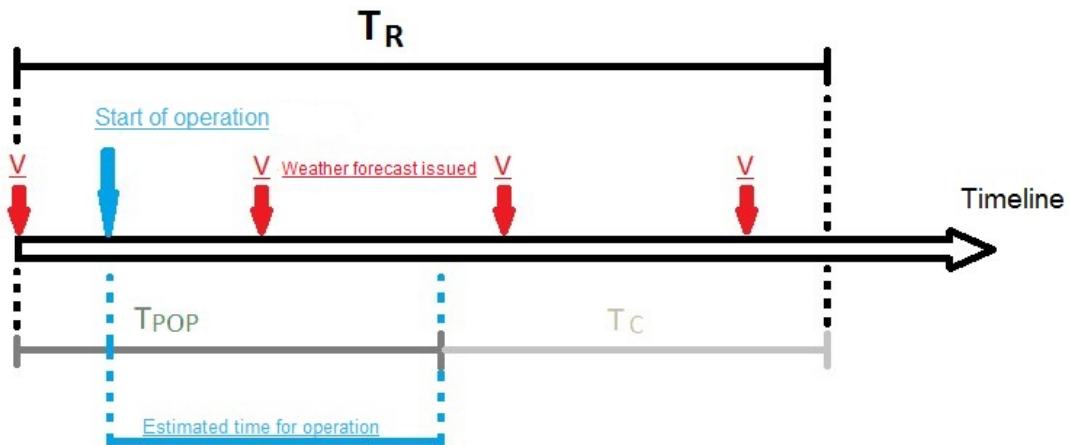
$$T_R = T_{POP} + T_C$$

where

$T_R$  starts at the time of the last weather forecast before the operation commences,

$T_C$  = Estimated maximum contingency time.  $T_C$  shall cover general uncertainty in  $T_{POP}$ , and possible contingency situations that will require additional time to complete the operation.

b) "*unrestricted operations*": Operations where either  $T_R$  is of longer duration than 96 hours or  $T_{POP}$  is of longer duration than 72 hours or where the weather forecasts are unreliable.



$T_R$  starts at the time of the weather forecast. The operation starts when the unit leaves the safe condition.

(4) Before a weather restricted operation:

a) an updated weather forecast for each 12-hour period of the waters in question shall be obtained;

b) the weather window shall be three times the planned operation time. Alternatively, the risk-based method in DNV-OS-H101 chapter 4 can be used to estimate the weather window. A standard with an equivalent safety level can be used. When using a risk-based method, the weather window shall not be less than 1.5 times the planned operation time.

(5) Environmental criteria for unrestricted operations shall be based on extreme value statistics for the areas in question. When active use of long term weather forecasts can predict any extreme weather conditions within the defined  $T_R$ , the weather criteria may be reduced in consultation with the Norwegian Maritime Authority. Extreme value statistics means environmental conditions with a 10-year return period for towing operations lasting up to 30 days and a 100-year return period for operations lasting more than 30 days.

(6) Unrestricted operations shall not be carried out if environmental conditions which may pose a risk to life, property and the environment are forecast.

#### Section 11 *Additional requirements for self-elevating units during transit*

(1) During towing, the legs of a self-elevating unit shall be secured in a position which is accepted by an MOU classification society.

(2) Before a weather restricted operation:

a) safe jack-up locations along the tow route shall be established where the distance between the locations is not more than 12 hours;

b) the deck cargo shall have a permanent location;

- c) the deck cargo shall be accounted for in the design and operation criteria;
- d) the deck cargo shall be secured in order to withstand environmental loads that may occur during the towing operation, and heeling caused by damage to the unit, cf. section 21 of the Regulations of 20 December 1991 No. 878 on stability, watertight subdivision and watertight/weathertight means of closure on mobile offshore units.

(3) Deck cargo shall not be carried during an unrestricted operation. There shall only be personnel on board for periods when this is necessary for the execution of the towing operation.

## **Chapter 6 Risk assessment and procedure**

### **Section 12 Risk assessment**

(1) Prior to each transit, the company shall carry out a risk assessment. The risk assessment shall at least include:

- a) the personnel necessary for carrying out the towing operation;
- b) the number of towing vessels needed assessed against the consequence of a single failure, e.g. line breakage or engine breakdown;
- c) the condition of the towing vessel and specifications, including towing equipment and towing arrangement;
- d) the towing vessel's force restriction in order to protect against overloading of the towing arrangement;
- e) weather conditions in relation to design criteria;
- f) the reliability of the weather forecast;
- g) the need for and the use of fendering;
- h) safe distance to towing vessel during hook-up;
- i) stability;
- j) seafastening;
- k) planned tow route, including port of refuge and bunkering station;
- l) necessary ballasting during the towing operation;
- m) assessment of vulnerability and criticality of the ballast system;
- n) any additional measures during towing in coastal waters or in areas with other installations and upon departure and arrival;
- o) contingency plan in case the operation criteria are exceeded;
- p) availability of towing force;
- q) the amount of oil and chemicals on board assessed against any environmental consequence in the event of a discharge.

(2) For self-elevating units, the risk assessment shall also include:

- a) seabed conditions on jack-up locations;
- b) pre-loading during jacking up operations, including accept criteria for minimum and maximum permitted submersion of legs in the seabed;
- c) safe jack-up locations along the planned tow route.

### **§ 13 Procedure for the planning and execution of transits**

The unit shall have a procedure for the planning and execution of transits. The procedure shall at least include:

- a) how towing or transits shall be executed, including interaction between the unit and the towing vessel;
- b) items to be checked before and during transits, i.a. weather forecast, seafastening, weathertight and watertight closing;
- c) relevant structural restrictions and operational limitations, i.a. wave height, wave period, wind, current, deck cargo, draught and temperature;
- d) diagrams showing wind forces as function of wind velocity, current forces as function for current velocity and wave drift forces in relation to significant wave height and period;

- e) stability data;
  - f) general arrangement;
  - g) specification of the unit's thrust, if any, including relevant redundancy;
  - h) ballast system;
  - i) required personnel and competence;
  - j) safety equipment;
  - k) the towing design load ( $F_D$ ) for the towing equipment and arrangement, including the emergency towing arrangement;
  - l) methods for establishing a new towing connection;
  - m) anchor particulars (if fitted) and the use thereof;
  - n) measures during critical events, e.g. line breakage, engine breakdown, extreme weather.
- A possible measure may be e.g. increasing the length of the towing connection.

(2) For self-elevating units, the procedure shall also include securing of legs and inspection of leg wells.

## **Chapter 7 Concluding provisions**

### **Section 14 Exemptions**

(1) The Norwegian Maritime Authority may exempt a mobile offshore unit from one or more of the requirements of the Regulations if the company applies for an exemption in writing and one of the following requirements is met:

- a) it is established that the requirement is not essential and that it is justifiable in terms of safety;
- b) it is established that compensating measures will maintain the same level of safety as required by these Regulations;
- c) it is established that the requirement hinders the development and use of innovative solutions when such solutions will maintain the same level of safety as required by these Regulations.

(2) Statement from safety representative shall be attached to the application for exemption.

### **Section 15 Transitional provision**

Mobile offshore units may, as an alternative to the requirements of sections 2 to 13, comply with Appendix I until the next certificate issue if the building contract has been placed, or the unit is certified, before 1 January 2016.

### **Section 16 Entry into force**

These Regulations enter into force on 1 January 2016. As from the same date, Regulations of 17 December 1986 No. 2319 on field moves and towing of mobile offshore units and concerning towing system and mooring of supply ships at such units are repealed.

## **Appendix I**

(Appendix I contains excerpts from the Regulations of 17 December 1986 No. 2319 on field moves and towing of mobile offshore units and on towing system and mooring of supply ships at such units. These Regulations were repealed on 1 January 2016. The numbering in Appendix I corresponds to the section numbers of the repealed Regulations.)

### *6. Towing and field moves*

1. Towing or field moves by means of a mobile offshore unit's own propulsion machinery shall not take place without prior notification to the Norwegian Maritime Authority.
2. Towing or field moves by means of a mobile offshore unit's own propulsion machinery shall be carried out in accordance with the international and Norwegian rules and regulations in force at the time in question<sup>1,2</sup>. The towing/field moves

shall take place in such a way that it causes the least possible encumbrance in the area. Special regard shall be had to fishing and shipping.

3. Essential personnel only may remain on board self-elevating units during towing. All necessary safety measures shall be taken.
4. When making a field move (not more than 12 hours between possible jack-up locations) with a self-elevating unit, those positions where jacking up of the unit is possible and safe, shall be indicated in the track marked on the chart. Maximum distance between these jack-up locations shall be such that it is possible to tow and jack up in the indicated position within 12 hours. The necessary towing force shall be calculated with due regard to expected current, wind and weather conditions. Necessary information to carry out such calculations shall be contained in the operations manual.
5. Prior to start of each 12 hour towing period mentioned in subparagraph 4 above (for self-elevating units), there shall be a favourable weather forecast for the following 72 hours for the waters in question. There shall further be a weather forecast showing that the conditions for the next 12 hours after jacking down will be within the maximum allowable environmental conditions given in the operations manual. Otherwise jacking down shall not be commenced.
6. Prior to commencing an ocean tow (more than 12 hours between possible jack-up locations) of a self-elevating unit, a special permission shall be obtained from the Norwegian Maritime Authority.
7. The operation manual shall contain instructions as to how a tow normally shall be carried out as well as detailed check lists or similar providing the necessary information on preparations, weathertight and watertight closing, calculations, etc. to be carried out prior to and during a tow and a field move. In addition, the following background information shall be included in the operations manual:
  - limiting data on each mode of operation during the towing/field move, such as maximum load, wave height, wave period, wind, current, draught, temperature, etc.
  - complete resistance curves for wind, current and waves up to maximum environmental conditions for calculation of the total towing resistance which the unit will be exposed to during towing, from which it shall be possible to calculate necessary towing force and number of towing vessels(tugs), and also speed of drifting under extreme weather conditions.

1 Regulations of 6 February 1978 on towing assistance. (Repealed).

2 Reference is made to, inter alia, MSC/Circ. 884 of 21 December 1998 – Guidelines for Safe Ocean Towing.

#### 7. Requirements for the towing system

1. Mobile offshore units shall be provided with a main towing system, emergency towing system and narrow water towing system. Omission of the main towing system is accepted provided one of the following conditions is met:
  - a) The mobile offshore unit has a ship's hull, is certified for independent navigation and complies with all provisions of section 7 subparagraph 2; or
  - b) The mobile offshore unit has the Norwegian Maritime Authority's Equipment Class 3 for the dynamic positioning system on board, is certified for independent navigation and complies with all provisions of section 7 subparagraph 2.
2. During towing in calm weather and no current, there shall always be available at least necessary towing force (or combined towing force and self-propulsion) to achieve a speed of at least 5 knots for semi-submersible units and at least 3 knots for self-elevating units. Further, there shall be sufficient force to hold still and manoeuvre the unit safely against a wind of 20 m/sec. with associated wave and current of 2 m/sec.
3. If the unit cannot comply with the requirements in subparagraph 2 above by means of its own propulsion system, it shall employ towing vessels(tugs) having the necessary towing force.<sup>1</sup>
4. The main towing system shall be arranged for one and two towing vessels(tugs), and in special cases for three.
5. The emergency towing system shall be arranged for two towing vessels(tugs). This may be arranged by using the ordinary anchor line, or a similar system.
6. The narrow water towing system shall be arranged in such a manner and for such a number of towing vessels(tugs) that safe towing and manoeuvring can be carried out.
7. The loads for which the towing system is dimensioned shall be given in the operations manual.
8. If a break occurs during ocean towing, emergency towing and narrow water towing, it shall be possible to quickly establish a new towing connection in a safe manner under all weather conditions. Planned methods shall be given as background material in the operations manual.
9. The main towing system shall be dimensioned for at least the towing force which is necessary to:
  - keep a speed of 5 or 3 knots (cf. subparagraph 2 above) in calm waters
  - hold the unit still against a wind speed of 20 m/sec. with associated waves and a current of 2 m/sec.The main towing system shall, however, be dimensioned for 75 tonnes.
10. Construction of the towing system
  - 10.1. The main towing system shall consist of at least:
    - Two attachments to the unit
    - Two chain/wire connections to the unit
    - One triangular plate or equivalent (if a towing vessel(tug) is used)
    - One «weak link»
    - Shackles for connections
  - 10.2. The attachments to the unit shall be dimensioned with a safety factor of 3 in relation to the yield strength of the material, taking into account a towing direction of 0°–90°, off centerline both sides.
  - 10.3. Where a bridle is used, the attachments for this shall be as far apart as possible.

- 10.4. The position, construction and arrangement of the attachments shall be such that it is reasonably easy and quick to change the chain/wire connection in calm waters.
- 10.5. The towing pennants shall consist of chain or steel wire rope, or a combination of these. Where the connection is subject to specially heavy wear and tear (e.g. hawserhole), a chain shall be used.
- 10.6. Each chain-/wire connection shall have a breaking strength of at least 3 times the static bollard pull of the towing vessel(tug) and normally a length approximately equal to the distance between the two towing attachments.
- 10.7. The towing pennants and «weak link» shall be fitted with «hard eyes».
- 10.8. When one towing vessel(tug) is used, a «towing heart» (triangular plate) or equivalent shall be used when connecting the chain/wire connection mentioned in subparagraph 10.1 above. Allowable bollard pull is then equal to that per tug, calculated according to subparagraph 10.6. above.
- 10.9. The shackles in both ends of the chain/wire connection and in both ends of the «weak link» shall have a breaking strength which is higher than the breaking strength of the strongest part of the towing system.
- 10.10. «The weak link» shall be the weakest part of the complete towing system. The length ought to be approx. 40 – 60 metres so that connection to the towing vessel (tug) can be executed at a safe distance from the unit. The breaking strength should be approx. 2 – 3 times the maximum allowable static bollard pull. «The weak link» shall be placed between the chain/wire connection (or triangular plate) and the towing line of the tug.
- 10.11. It shall be possible to retrieve the chain/wire connection in case one part of the towing system should break. This retrieving system may consist of a line from each chain/ wire connection to a winch or crane on the deck of the unit and the line from it shall have sufficient capacity to retrieve the combined load of the chain/wire connection with shackles and «weak links» and 150 metres of towing wire of the heaviest type normally used for towing the unit. (If there are water depths of more than 150 m within the towing area in question, and there is a need to change towing wire, calculations shall be based on the relevant maximum water depth). After retrieving the chain/wire connection, it shall be possible to demount a damaged towing line under all weather conditions, and also to change «the weak link» if necessary.
- 10.12. The following spare parts shall be on board the unit during ocean towing:
  - One chain/wire connection (complete)
  - Three shackles for «the weak link»
  - Three «weak links».
11. Equipment which is part of the towing system such as wire, chain, shackles, etc. shall be supplied together with a factory (test) certificate (as for components for hoisting gear).
12. Alternative systems
  - Alternative towing systems giving the same operational safety may be used.