



**RULES
FOR THE CLASSIFICATION AND CONSTRUCTION
OF MOBILE OFFSHORE DRILLING UNITS**

**PART III
SUBDIVISION, STABILITY AND FREEBOARD**

July
2024

GDAŃSK

RULES FOR CLASSIFICATION AND CONSTRUCTION OF MOBILE OFFSHORE DRILLING UNITS

developed and edited by Polski Rejestr Statków S.A., hereinafter referred to as PRS, consist of the following Parts:

- Part I – Classification Regulations
- Part II – Construction, Strength and Materials
- Part III – Subdivision, Stability and Freeboard
- Part IV – Machinery Installations
- Part V – Fire Safety
- Part VI – Electrical Installations
- Part VII – Helicopter Facilities

however, “Materials and welding” shall comply with the applicable requirements of *Part IX – Materials and Welding* of the *Rules for the Classification and Construction of Sea-going Ships*.

This *Part III* was approved by the PRS Board on 12 July 2024 and enters into force on 15 July 2024.

This *Part III* are extended and supplemented by the following Publications:

Publication 6/P – Stability

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1 GENERAL REQUIREMENTS

1.1 Introduction

This *Part III* has been developed in the editorial layout reflecting the layout of technical requirements contained in [Chapter 2 of the Code for the construction and equipment of mobile offshore drilling units \(MODU Code, the "Code" in short\)](#) and [IACS Unified Requirements – UR](#), cited in the original version, treated as a source documents, marked in the text with the appropriate colour of the font. At the end of the paragraph/ section there is the name and number of the paragraph/ section of the source document (if the number is not consistent with the source document).

The text of this *Part III* contains additional and specific PRS requirements/ recommendations/ interpretations, which are marked in black.

The purpose of such an editorial layout is easy verification the implementation of all applicable requirements and in the future to simplify procedure of implementing into *Rules* subsequent changes of the source documents.

At the end, there is a summary of currently applicable IMO documents and IACS Resolutions related to this *Part III*.

1.2 Application

1.2.1 This *Part III* applies to the design and construction of mobile offshore drilling units of all types, as defined in sub-chapter 1.2 of *Part I* of the Rules, hereinafter referred to as "units", which are assigned a class mark in accordance with sub-chapter 3.2 of this *Part I*.

1.2.2 Where in the text of this *Part III* or in IMO documents referred to therein, reference is made to the SOLAS Convention, the *Rules for the Classification and Construction of Sea-going Ships, Part III, Hull Equipment*, containing such requirements, may be applied.

1.2.3 Whenever this *Part III* leaves certain technical solutions to the discretion of the Administration, then PRS, acting as Recognized Organisation (RO), will make relevant decisions in cooperation with the Administration, in accordance with the provisions of the relevant Agreement with the Administration.

1.3 Definitions

General definitions of the terminology used in this *Part III* are given in sub-chapter 1.2 of *Part I – Classification Regulations*.

For the purposes of this *Part III*, unless expressly provided otherwise, the specific terms used therein have the meanings defined in this section.

1.3.1 *1988 LL Protocol* means the Protocol of 1988 relating to the International Convention on Load Lines, 1966, as amended. (MODU Code, 1.3.1)

1.3.2 *Depth for freeboard* has the same meaning as defined in regulation 3 of the 1988 LL Protocol. (MODU Code, 1.3.16)

1.3.3 *Freeboard* is the distance measured vertically downwards amidships from the upper edge of the deck line to the upper edge of the related load line. (MODU Code, 1.3.22)

1.3.4 *Length (L)* has the same meaning as defined in regulation 3 of the 1988 LL Protocol. (MODU Code, 1.3.29)

1.4 Documentation for the unit

The scope of documentation required for consideration and approval is given in subchapters 4.2 to 4.5 of *Part I* of the Rules.

2 SCOPE OF SUPERVISION

The scope of classification supervision of a newly constructed or reconstructed unit is specified in Chapter 2 of *Part I* of the Rules.

3 STABILITY

All units, as far as stability is concerned, shall comply with the applicable requirements contained in *Part IV – Stability and Subdivision, Rules for the Classification and Construction of Sea-going Ships and in Publication 6/P*.

3.1 Inclining test

3.1.1 An inclining test should be required for the first unit of a design, when the unit is as near to completion as possible, to determine accurately the light ship data (weight and position of centre of gravity).

3.1.2 For successive units which are identical by design, the light ship data of the first unit of the series may be accepted by the Administration in lieu of an inclining test, provided the difference in light ship displacement or position of centre of gravity due to weight changes for minor differences in machinery, outfitting or equipment, confirmed by the results of a lightweight survey, is less than 1% of the values of the light ship displacement and principal horizontal dimensions as determined for the first of the series. Extra care should be given to the detailed weight calculation and comparison with the original unit of a series of column-stabilized, semisubmersible types as these, even though identical by design, are recognized as being unlikely to attain an acceptable similarity of weight or centre of gravity to warrant a waiver of the inclining test.

3.1.3 The results of the inclining test, or those of the lightweight survey together with the inclining test results for the first unit should be indicated in the *Operating Manual*.

3.1.4 A record of all changes to machinery, structure, outfitting and equipment that affect the light ship data should be maintained in a light ship data alterations log and be taken into account in daily operations.

3.1.5 For column-stabilized units:

- .1** A lightweight survey or inclining test should be conducted at the first renewal survey. If a lightweight survey is conducted and it indicates a change from the calculated light ship displacement in excess of 1% of the operating displacement, an inclining test should be conducted, or the difference in weight should be placed in an indisputably conservative vertical centre of gravity and approved by the Administration.
- .2** If the survey or test at the first renewal survey demonstrated that the unit was maintaining an effective weight control programme, and at succeeding renewal surveys this is confirmed by the records under paragraph 3.1.4, light ship displacement may be verified in operation by comparison of the calculated and observed draught. Where the difference between the expected displacement and the actual displacement based upon draught readings exceed 1% of the operating displacement, a lightweight survey should be completed in accordance with paragraph 3.1.5.1.

3.1.6 The inclining test or lightweight survey should be carried out in the presence of an officer of the Administration, or a duly authorized person or representative of an approved organization.

3.2 Righting moment and heeling moment curves

3.2.1 Curves of righting moments and of wind heeling moments similar to figure 3-1 with supporting calculations should be prepared covering the full range of operating draughts, including those in transit conditions, taking into account the maximum loading of materials. The righting moment curves and wind heeling moment curves should be related to the most critical axes. Account should be taken of the free surface of liquids in tanks.

3.2.2 Where equipment is of such a nature that it can be lowered and stowed, additional wind heeling moment curves may be necessary and such data should clearly indicate the position of such equipment. Provisions regarding the lowering and effective stowage of such equipment should be included in the *Operating Manual* under section 14.1 of *MODU Code*.

3.2.3 The curves of wind heeling moments should be drawn for wind forces calculated by the following formula:

$$F = 0.5 C_S C_H \rho V^2 A$$

where:

- F = the wind force (newtons)
- C_S = the shape coefficient depending on the shape of the structural member exposed to the wind (see table 3-1)
- C_H = the height coefficient depending on the height above sea level of the structural member exposed to wind (see table 3-2)
- ρ = the air mass density (1.222 kg/m³)
- V = the wind velocity (metres per second)
- A = the projected area of all exposed surfaces in either the upright or the heeled condition (square metres).

3.2.4 Wind forces should be considered from any direction relative to the unit and the value of the wind velocity should be as follows:

- .1** In general a minimum wind velocity of 36 m/s (70 knots) for offshore service should be used for normal operating conditions and a minimum wind velocity of 51.5 m/s (100 knots) should be used for the severe storm conditions.
- .2** Where a unit is to be limited in operation to sheltered locations (protected inland waters such as lakes, bays, swamps, rivers, etc.) consideration should be given to a reduced wind velocity of not less than 25.8 m/s (50 knots) for normal operating conditions.

3.2.5 In calculating the projected areas to the vertical plane, the area of surfaces exposed to wind due to heel or trim, such as under-deck surfaces, etc., should be included using the appropriate shape factor. Open truss work may be approximated by taking 30% of the projected block area of both the front and back section, i.e. 60% of the projected area of one side.

3.2.6 In calculating the wind heeling moments, the lever of the wind overturning force should be taken vertically from the centre of pressure of all surfaces exposed to the wind to the centre of lateral resistance of the underwater body of the unit. The unit is to be assumed floating free of mooring restraint.

3.2.7 The wind heeling moment curve should be calculated for a sufficient number of heel angles to define the curve. For ship-shaped hulls the curve may be assumed to vary as the cosine function of vessel heel.

3.2.8 Wind heeling moments derived from wind tunnel tests on a representative model of the unit may be considered as alternatives to the method given in paragraphs 3.2.3 to 3.2.7. Such heeling moment determination should include lift and drag effects at various applicable heel angles.

Table 3-1 – Values of the coefficient C_s

Shape	C_s
Spherical	0.4
Cylindrical	0.5
Large flat surface (hull, deckhouse, smooth under-deck areas)	1.0
Drilling derrick	1.25
Wires	1.2
Exposed beams and girders under deck	1.3
Small parts	1.4
Isolated shapes (crane, beam, etc.)	1.5
Clustered deckhouses or similar structures	1.1

Table 3-2 – Values of the coefficient C_H

Height above sea level (metres)	C_H
0 – 15.3	1.00
15.3 – 30.5	1.10
30.5 – 46.0	1.20
46.0 – 61.0	1.30
61.0 – 76.0	1.37
76.0 – 91.5	1.43
91.5 – 106.5	1.48
106.5 – 122.0	1.52
122.0 – 137.0	1.56
137.0 – 152.5	1.60
152.5 – 167.5	1.63
167.5 – 183.0	1.67
183.0 – 198.0	1.70
198.0 – 213.5	1.72
213.5 – 228.5	1.75
228.5 – 244.0	1.77
244.0 – 259.0	1.79
above 259	1.8

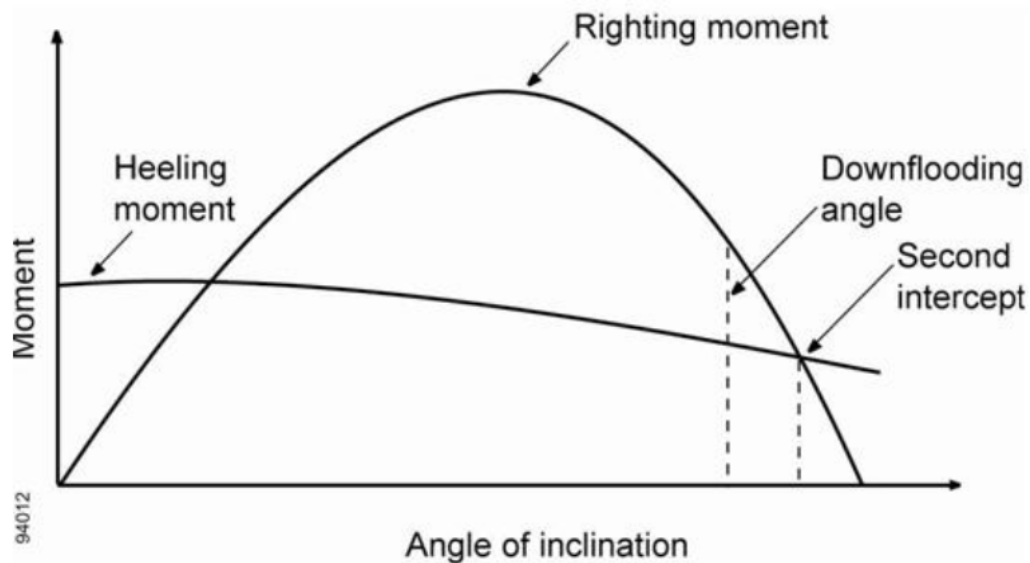


Figure 3-1 – Righting moment and heeling moment curves

3.3 Intact stability criteria

3.3.1 The stability of a unit in each mode of operation should meet the following criteria (see also figure 3-1):

- .1 For surface and self-elevating units the area under the righting moment curve to the second intercept or downflooding angle, whichever is less, should be not less than 40% in excess of the area under the wind heeling moment curve to the same limiting angle.
- .2 For column-stabilized units * the area under the righting moment curve to the angle of downflooding should be not less than 30% in excess of the area under the wind heeling moment curve to the same limiting angle.

Refer to An example of alternative intact stability criteria for twin-pontoon column-stabilized semisubmersible units, adopted by IMO by res. A.650(16).

- .3 The righting moment curve should be positive over the entire range of angles from upright to the second intercept.

3.3.2 Each unit should be capable of attaining a severe storm condition in a period of time consistent with the meteorological conditions. The procedures recommended and the approximate length of time required, considering both operating conditions and transit conditions, should be contained in the *Operating Manual*. It should be possible to achieve the severe storm condition without the removal or relocation of solid consumables or other variable load. However, the Administration may permit loading a unit past the point at which solid consumables would have to be removed or relocated to go to severe storm condition under the following conditions, provided the allowable KG is not exceeded:

- .1 in a geographic location where weather conditions annually or seasonally do not become sufficiently severe to require a unit to go to severe storm condition; or
- .2 where a unit is required to support extra deck load for a short period of time that falls well within a period for which the weather forecast is favourable.

The geographic locations, weather conditions and loading conditions in which this is permitted should be identified in the *Operating Manual*.

3.3.3 Alternative stability criteria may be considered by the Administration, provided an equivalent level of safety is maintained and if they are demonstrated to afford adequate positive initial stability. In determining the acceptability of such criteria, the Administration should consider at least the following and take into account as appropriate:

- .1 environmental conditions representing realistic winds (including gusts) and waves appropriate for world-wide service in various modes of operation;
- .2 dynamic response of a unit. Analysis should include the results of wind tunnel tests, wave tank model tests, and non-linear simulation, where appropriate. Any wind and wave spectra used should cover sufficient frequency ranges to ensure that critical motion responses are obtained;
- .3 potential for flooding taking into account dynamic responses in a seaway;
- .4 susceptibility to capsizing considering the unit's restoration energy and the static inclination due to the mean wind speed and the maximum dynamic response;
- .5 an adequate safety margin to account for uncertainties.

3.4 Subdivision and damage stability

Surface and self-elevating units

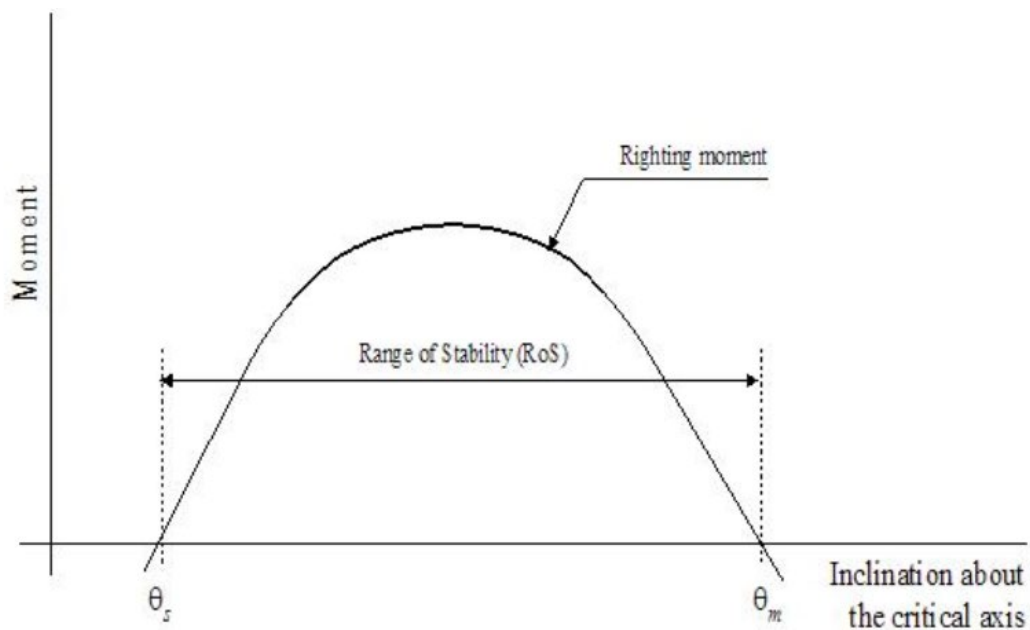


Figure 3-2 – Residual stability for self-elevating units

3.4.1 The unit should have sufficient freeboard and be subdivided by means of watertight decks and bulkheads to provide sufficient buoyancy and stability to withstand:

- .1 in general, the flooding of any one compartment in any operating or transit condition consistent with the damage assumptions set out in section 3.5; and
- .2 for a self-elevating unit, the flooding of any single compartment while meeting the following criterion (see figure 3-2):

$$\text{RoS} \geq 7^\circ + (1.5 \theta_s)$$

where:

$$\text{RoS} \geq 10^\circ$$

$RoS = \text{range of stability, in degrees} = \theta_m - \theta_s$

where:

$\theta_m = \text{maximum angle of positive stability, in degrees}$

$\theta_s = \text{static angle of inclination after damage, in degrees}$

The range of stability is determined without reference to the angle of downflooding.

3.4.2 The unit should have sufficient reserve stability in a damaged condition to withstand the wind heeling moment based on a wind velocity of 25.8 m/s (50 knots) superimposed from any direction. In this condition the final waterline, after flooding, should be below the lower edge of any downflooding opening.

Column-stabilized units

3.4.3 The unit should have sufficient freeboard and be subdivided by means of watertight decks and bulkheads to provide sufficient buoyancy and stability to withstand a wind heeling moment induced by a wind velocity of 25.8 m/s (50 knots) superimposed from any direction in any operating or transit condition, taking the following considerations into account:

- .1** the angle of inclination after the damage set out in paragraph 3.5.10.2 should not be greater than 17°;
- .2** any opening below the final waterline should be made watertight, and openings within 4 m above the final waterline should be made weathertight;
- .3** the righting moment curve, after the damage set out above, should have, from the first intercept to the lesser of the extent of weathertight integrity under paragraph 3.4.3.2 and the second intercept, a range of at least 7°. Within this range, the righting moment curve should reach a value of at least twice the wind heeling moment curve, both being measured at the same angle. * See figure 3-3 below.

* Refer to *An example of alternative stability criteria for a range of positive stability after damage or flooding for column-stabilized semisubmersible units*, adopted by IMO by resolution A.651(16).

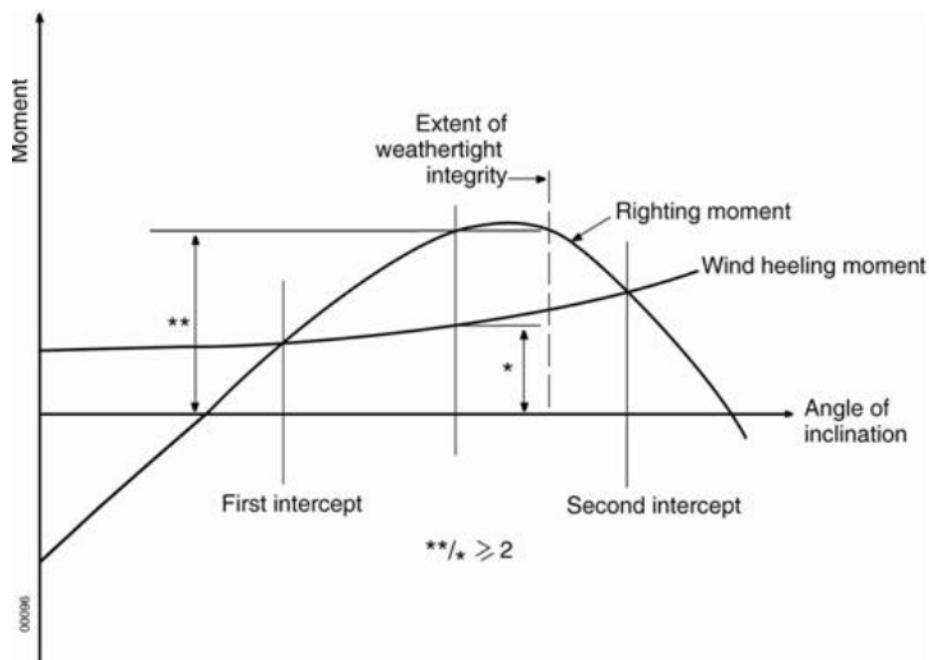


Figure 3-3 – Righting moment and wind heeling moment curves

3.4.4 The unit should provide sufficient buoyancy and stability in any operating or transit condition to withstand the flooding of any watertight compartment wholly or partially below the waterline in question, which is a pump-room, a room containing machinery with a salt water cooling system or a compartment adjacent to the sea, taking the following considerations into account:

- .1 the angle of inclination after flooding should not be greater than 25°;
- .2 any opening below the final waterline should be made watertight;
- .3 a range of positive stability* should be provided, beyond the calculated angle of inclination in these conditions, of at least 7°.

* Refer to *An example of alternative stability criteria for a range of positive stability after damage or flooding for column-stabilized semisubmersible units*, adopted by IMO by resolution A.651(16).

All types of units

3.4.5 Compliance with the provisions of paragraphs 3.4.1 to 3.4.4 should be determined by calculations which take into consideration the proportions and design characteristics of the unit and the arrangements and configuration of the damaged compartments. In making these calculations, it should be assumed that the unit is in the worst anticipated service condition as regards stability and is floating free of mooring restraints.

3.4.6 The ability to reduce angles of inclination by pumping out or ballasting compartments or application of mooring forces, etc., should not be considered as justifying any relaxation of these provisions.

3.4.7 Alternative subdivision and damage stability criteria may be considered for approval by the Administration provided an equivalent level of safety is maintained. In determining the

acceptability of such criteria, the Administration should consider at least the following and take into account:

- .1 extent of damage as set out in section 3.5;
- .2 on column-stabilized units, the flooding of any one compartment as set out in par. 3.4.4;
- .3 the provision of an adequate margin against capsizing.

3.5 Extent of damage

Surface units

3.5.1 In assessing the damage stability of surface units, the following extent of damage should be assumed to occur between effective watertight bulkheads:

- .1 horizontal penetration: 1.5 m; and
- .2 vertical extent: from the base line upwards without limit.

3.5.2 The distance between effective watertight bulkheads or their nearest stepped portions which are positioned within the assumed extent of horizontal penetration should be not less than 3 m; where there is a lesser distance, one or more of the adjacent bulkheads should be disregarded.

3.5.3 Where damage of a lesser extent than in paragraph 3.5.1 results in a more severe condition, such lesser extent should be assumed.

3.5.4 All piping, ventilation systems, trunks, etc., within the extent of damage referred to in paragraph 3.5.1 should be assumed to be damaged. Positive means of closure should be provided at watertight boundaries to preclude the progressive flooding of other spaces which are intended to be intact.

Self-elevating units

3.5.5 In assessing the damage stability of self-elevating units, the following extent of damage should be assumed to occur between effective watertight bulkheads:

- .1 horizontal penetration: 1.5 m; and
- .2 vertical extent: from the base line upwards without limit.

3.5.6 The distance between effective watertight bulkheads or their nearest stepped portions which are positioned within the assumed extent of horizontal penetration should be not less than 3 m; where there is a lesser distance, one or more of the adjacent bulkheads should be disregarded.

3.5.7 Where damage of a lesser extent than in paragraph 3.5.5 results in a more severe condition, such lesser extent should be assumed.

3.5.8 Where a mat is fitted, the above extent of damage should be applied to both the platform and the mat but not simultaneously, unless deemed necessary by the Administration due to their close proximity to each other.

3.5.9 All piping, ventilation systems, trunks, etc., within the extent of damage referred to in paragraph 3.5.5 should be assumed to be damaged. Positive means of closure should be provided at watertight boundaries to preclude the progressive flooding of other spaces which are intended to be intact.

Column-stabilized units

3.5.10 In assessing the damage stability of column-stabilized units, the following extent of damage should be assumed:

- .1 Only those columns, underwater hulls and braces on the periphery of the unit should be assumed to be damaged and the damage should be assumed in the exposed portions of the columns, underwater hulls and braces.
- .2 Columns and braces should be assumed to be flooded by damage having a vertical extent of 3 m occurring at any level between 5 m above and 3 m below the draughts specified in the *Operating manual*. Where a watertight flat is located within this region, the damage should be assumed to have occurred in both compartments above and below the watertight flat in question. Lesser distances above or below the draughts may be applied to the satisfaction of the Administration, taking into account the actual operating conditions. However, the required damage region should extend at least 1.5 m above and below the draught specified in the *Operating manual*.
- .3 No vertical bulkhead should be assumed to be damaged, except where bulkheads are spaced closer than a distance of one eighth of the column perimeter at the draught under consideration, measured at the periphery, in which case one or more of the bulkheads should be disregarded.
- .4 Horizontal penetration of damage should be assumed to be 1.5 m.
- .5 Underwater hull or footings should be assumed to be damaged when operating in a transit condition in the same manner as indicated in paragraphs 3.5.10.1, 3.5.10.2, 3.5.10.4 and either paragraph 3.5.10.3 or 3.5.6, having regard to their shape.
- .6 All piping, ventilation systems, trunks, etc., within the extent of damage should be assumed to be damaged. Positive means of closure should be provided at watertight boundaries to preclude the progressive flooding of other spaces which are intended to be intact.

IACS UR D3/Rev.6 - General design parameters

(...)

D3.7 Stability

D3.7.1 General

All units are to have positive stability in calm water equilibrium position, for the full range of draughts when in all modes of operation afloat, and for temporary positions when raising or lowering. In addition, all units are to meet the stability requirements set forth herein for all applicable conditions.

D3.7.2 Intact stability

All units are to have sufficient stability (righting ability) to withstand the overturning effect of the force produced by a sustained wind from any horizontal direction, in accordance with the stability criteria given in D3.8, for all afloat modes of operation. Realistic operating conditions are to be evaluated, and the unit should be capable of remaining in the operating mode with a sustained wind velocity of not less than 36 m/s (70 knots). The capability is to be provided to change the mode of operation of the unit to that corresponding to a severe storm condition, with a sustained wind velocity of not less than 51,5 m/s (100 knots), in a reasonable period of time for the particular unit. In all cases, the limiting wind velocities are to be specified and instructions should be included in the *Operating Booklet* for changing the mode of operation by redistribution of the variable load and equipment, by changing draughts, or both. For restricted operations consideration may be given to a reduced sustained wind velocity of not less than 25,8 m/s (50 knots). Particulars of the applicable service restrictions should be recorded in the *Operating*



Booklet. For the purpose of calculation it is to be assumed that the unit is floating free of mooring restraints. However, the possible detrimental effects of mooring restraints are to be considered.

D3.7.3 Damage stability

- (1) All units are to have sufficient stability to withstand the flooding from the sea of any single compartment or any combination of compartments consistent with the damage assumption set out in IACS UR D4.4.1, D5.6.1 and D6.4.1, for operating and transit modes of operation. The unit is to possess sufficient reserve stability in the damaged condition to withstand the additional heeling moment of a 25,8 m/s (50 knots) sustained wind superimposed from any direction.
- (2) Additionally, column stabilized units are to have sufficient stability to withstand, in any operating or transit condition with the assumption of no wind, the flooding of any single watertight compartment located wholly or partially below the waterline in question, which is a pump room, a room containing machinery with a salt water cooling system or a compartment adjacent to the sea.
- (3) For all types of units, the ability to compensate for damage incurred, by pumping out or by ballasting other compartments, etc., is not to be considered as alleviating the above requirements. For the purpose of calculation, it is to be assumed that the unit is floating free of mooring restraints. However, possible detrimental effects of mooring restraints are to be considered.

D3.7.4 Light ship weight and centre of gravity

An inclining test will be required for the first unit of a design when as near to completion as possible, to determine accurately the light ship weight and position of centre of gravity. An inclining test procedure is to be submitted to PRS for review prior to the test, which is to be witnessed by PRS Surveyor. For successive units of a design, which are basically identical with regard to hull form, with the exception of minor changes in arrangement, machinery, equipment, etc., and with concurrence by PRS that such changes are minor, detailed weight calculations showing only the differences of weight and centres of gravity will be satisfactory, provided the accuracy of the calculations is confirmed by a deadweight survey. The results of the inclining test, or deadweight survey and inclining experiment adjusted for weight differences, should be reviewed by PRS prior to inclusion in the *Operating Booklet*.

D3.8 Stability criterion under wind force

D3.8.1 Intact condition

Righting moment curves and wind heeling moment curves related to the most critical axis, with supporting calculations, are to be prepared for a sufficient number of conditions covering the full range of draughts corresponding to afloat modes of operation (see Fig. 1). Where drilling equipment is of the nature that it can be lowered and stowed, additional wind heeling moment and stability curves may be required, and such data should clearly indicate the position of such equipment. In all cases, except column stabilized units, the area under the righting moment curve to the second intercept or downflooding angle, whichever is less, is not to be less than 40% in excess of the area under the wind heeling moment curve to the same limiting angle. For column stabilized units, the area under the righting moment curve to the angle of downflooding is not to be less than 30% in excess of the area under the wind heeling moment curve to the same limiting angle. In all cases, the righting moment curve is to be positive over the entire range of angles from upright to the second intercept.

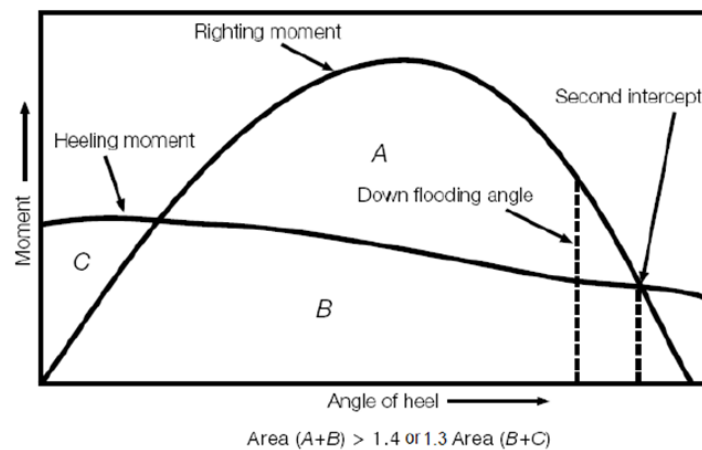


Fig. 1 Righting moment and heeling curves

D3.8.2 Wind heeling moment

The wind heeling moment is to be calculated at several angles of inclination for each mode of operation. The calculations should be performed in a manner to reflect the range of stability about the most critical axis. The lever for the heeling force should be taken vertically from the centre of lateral resistance or, if available, the centre of hydrodynamic pressure, of the underwater body to the centre of pressure of the areas subject to wind loading. In calculating wind heeling moments for shipshaped hulls, the curve may be assumed to vary as the cosine function of the vessel's heel.

Wind heeling moments should be based on wind forces calculated by the following formula:

$$F = 0.5C_s C_H \rho V^2 A$$

where:

F = the wind force (N),

C_s = the shape coefficient,

C_H = the height coefficient,

ρ = the air mass density (1.222 kg/m³),

V = the wind velocity (m/s),

A = the projected area of all exposed surfaces in either the upright or the heeled condition (m²).

Note: All units are to be consistent.

- (i) The values of the coefficient C_s depend on the shape of the wind-exposed area and should be based on the following:

Shape	C_s
Spherical	0.4
Cylindrical	0.5
Large flat surface (hull, deckhouse, smooth under-deck areas)	1.0
Drilling derrick	1.2
Wires	1.3
Exposed beams and girders under deck	1.4
Small parts	1.5
Isolated shapes (crane, beam, etc.)	1.1

Clustered deckhouses or similar structures	
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Shapes or combinations of shapes which do not readily fall into the specified categories will be subject to special consideration by PRS.

(ii) The values of the coefficient C_h depend on the height of the centre of the wind exposed area sea level and are given below:

		Height		C_h
Metres		Feet		
Over	Not exceeding	Over	Not exceeding	
0	15.3	0	50	1.0
15.3	30.3	50	100	1.10
30.5	46.0	100	150	1.20
46.0	61.0	150	200	1.30
61.0	76.0	200	250	1.37
76.0	91.5	250	300	1.43
91.5	106.5	300	350	1.48
106.5	122.0	350	400	1.52
122.0	137.0	400	450	1.56
137.0	152.5	450	500	1.60
152.5	167.5	500	550	1.63
167.5	183.0	550	600	1.67
183.0	198.0	600	650	1.70
198.0	213.5	650	700	1.72
213.5	228.5	700	750	1.75
228.5	244.0	750	800	1.77
244.0	259.0	800	850	1.79
above 259		Above 850		1.80

(iii) In calculating the wind forces, the following procedures are recommended:

- In the case of units with columns, the projected areas of all columns should be included; i.e. no shielding allowance should be taken.
- Areas exposed due to heel, such as underdecks etc., should be included using the appropriate shape coefficients.
- The block projected area of a clustering of deckhouses may be used in lieu of calculating each individual area. The shape coefficient may be assumed to be 1.1.
- Isolated houses, structural shapes, cranes etc., should be calculated individually, using the appropriate shape coefficient.
- Open truss work commonly used for derrick towers, booms and certain types of masts may be approximated by taking 30% of the projected block area of each side, e.g. 60% of the projected block area of one side for double-sided truss work. An appropriate shape coefficient is to be taken from the table.

D3.8.3 Damage conditions

- Self elevating and surface type units are to have sufficient stability per D3.7.3(1), such that the final waterline is located below the lower edge of any opening that does not meet the watertight integrity requirements of IACS UR D7.4.2.

For self-elevating units particularly, the flooding of any single compartment with the assumption of no wind while meeting the following criterion:

$$RoS = \theta_m - \theta_s \geq \text{Max}\{(7^\circ + 1.5\theta_s^\circ), 10^\circ\}$$

where:

RoS = range of stability, in degrees where:

θ_m = maximum angle of positive stability, in degrees,

θ_s = static angle of inclination after damage, in degrees.

The range of stability is determined without reference to the angle of downflooding. Refer to Fig. 2.

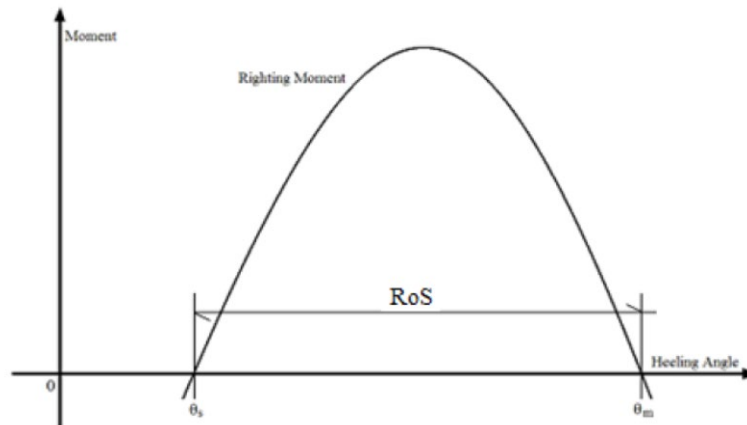


Fig. 2 Residual stability for self-elevating units

- (2) Column stabilized units are to have sufficient stability per D3.7.3(1) such that:
- The final waterline is located below the lower edge of any opening that does not meet the watertight integrity requirements of IACS UR D7.4.2. (Attention is drawn to 3.4.3 of the 2009 MODU Code which limits the inclination of the unit relative to this final waterline, to be not greater than 17 degrees. Refer to Fig. 3. Compliance with this limitation may be required by some Administrations).
 - Within the provided extent of weathertight integrity the damage righting moment curve is to have a range of at least 7 degrees beyond its first intercept with the 25.8 m/sec (50 knots) wind heeling moment curve to its second intercept or downflooding angle, whichever is less. Further, the damage righting moment curve is to reach a value of at least twice the wind heeling moment curve, both measured at the same angle. Refer to Fig. 3.
 - Openings within 4 m above the final waterline are to be made weathertight.

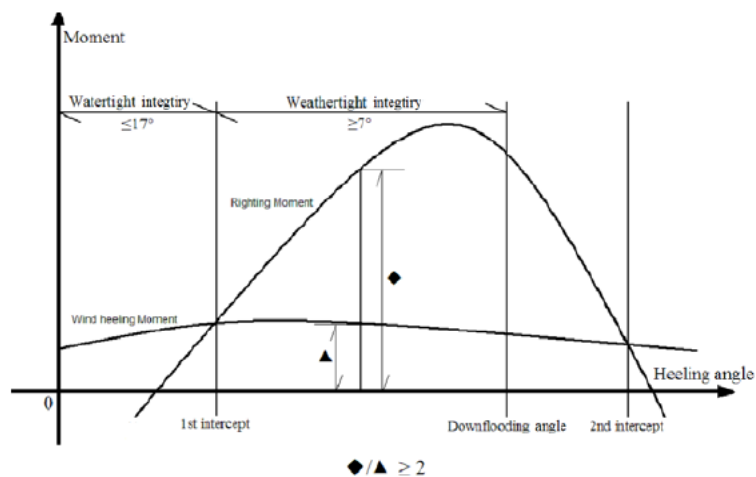


Fig. 3 Residual damage stability requirements for column stabilized units

- (3) Column stabilized units are to have sufficient stability per D3.7.3(2) such that:
- (a) the equilibrium waterline is located below the lower edge of any opening that does not meet the watertight integrity requirements of IACS UR D7.4.2. (Attention is drawn to 3.4.4 of the *2009 MODU Code* which limits the inclination of the unit, relative to this equilibrium waterline, to be not greater than 25 degrees. Compliance with this limitation may be required by some Administrations).
 - (b) sufficient margin of stability is provided. (Attention is drawn to 3.4.4 of the *2009 MODU Code* which requires a range of positive stability of at least 7 degrees beyond the first intercept of the righting moment curve and the horizontal coordinate axis of the static stability curve to the second intercept of them or the downflooding angle, whichever is less. Compliance with this range may be required by some Administrations).

D3.8.4 Wind tunnel tests

Wind heeling moments derived from authoritative wind tunnel tests on a representative model of the unit may be considered as alternatives to the method given herein. Such heeling moment determination is to include lift effects at various applicable heel angles, as well as drag effects.

D3.8.5 Other stability criteria

- (1) Alternative stability criteria may be considered acceptable provided the criteria afford adequate righting moment to resist the heeling effects of operating and environmental forces and sufficient margins to preclude downflooding and capsizing in intact and damaged conditions.
- (2) The following will be considered in determining the adequacy of alternative criteria submitted for review:
 - a) Environmental conditions representing realistic winds (including gusts) and waves appropriate for various modes of operations;
 - b) Dynamic response of a unit. Where appropriate, the analysis should include the results of wind tunnel tests, wave tank model tests and nonlinear simulation. Any wind and wave spectra used should cover sufficient frequency ranges to ensure that critical motion responses are obtained;
 - c) Potential for downflooding, taking into account dynamic responses and wave profile;
 - d) Susceptibility to capsizing considering the unit's restoration energy, static inclination due to mean wind speed and maximum dynamic responses;

- e) A safety margin consistent with the methodology to account for uncertainties;
- f) Damage assumptions at least equivalent to the requirements contained in Sections IACS UR D4.4.1, D5.6.1 and D6.4.1;
- g) For column stabilized units one compartment flooding assumptions at least equivalent to the requirement contained in D3.7.3(2).

IACS UR D4/Rev.3 - Self-elevating drilling units

(...)

D4.4 Damage stability

D4.4.1 In assessing the damage stability of self-elevating drilling units as required by IACS UR D3.7.3, the following extent of damage is to be assumed to occur between effective watertight bulkheads:

- (i) Horizontal penetration: 1,5 m (5 ft).
- (ii) Vertical extent: bottom shell upwards without limit.

The distance between effective watertight bulkheads or their nearest stepped portions which are positioned within the assumed extent of horizontal penetration should be not less than 3 m; where there is a lesser distance, one or more of the adjacent bulkheads should be disregarded.

Where a bottom mat is fitted, assumed damage penetration simultaneous to both the mat and the upper hull need only be considered when the lightest draught allows any part of the mat to fall within 1,5 m (5 ft) vertically of the waterline, and the difference in horizontal dimension of the upper hull and mat is less than 1,5 m (5 ft) in any area under consideration. If damage of a lesser extent results in a more severe final equilibrium condition, such lesser extent shall be assumed.

All piping, ventilating systems, trunks, etc., within this extent are to be assumed damaged. Positive means of closure are to be provided to preclude progressive flooding of other intact spaces. In addition, the compartments adjacent to the bottom shell are also to be considered flooded individually.

The recessed ends and sides of the drilling slot need not be subject to horizontal penetration if warning signs be posted on each side of the vessel stating that no boats be allowed inside the drilling slot. Instructions to this effect should be included in the *Operating Booklet*.

IACS UR D5/Rev.3 - Column stabilized drilling units

(...)

D5.6 Damage stability

D5.6.1 In assessing the damage stability of column stabilized drilling units as required by IACS UR D3.7.3, the following assumed damage conditions apply.

- (1) Only those columns, underwater hulls and braces on the periphery of the unit should be assumed to be damaged and the damage should be assumed in the exposed portions of the columns, underwater hulls and braces.
- (2) Columns and braces should be assumed to be flooded by damage having a vertical extent of 3.0 m occurring at any level between 5.0 m above and 3.0 m below the drafts specified in the Operating manual. Where a watertight flat is located within this region, the damage should be assumed to have occurred in both compartments above and below the

watertight flat in question. Lesser distances above or below the draughts may be applied taking into account the actual operating conditions. However, the extent of required damage region should be at least 1.5 m above and below the draft in question.

- (3) No vertical bulkhead should be assumed to be damaged, except where bulkheads are spaced closer than a distance of one eighth of the column perimeter at the draught under consideration, measured at the periphery, in which case one or more of the bulkheads should be disregarded.
- (4) Horizontal penetration of damage should be assumed to be 1.5 m.
- (5) Underwater hulls or footings should be assumed to be damaged when operating in a transit condition in the same manner as indicated in D5.6.1 (1), (2), (4) and having regard to their shape, either D5.6.1 (3) or between effective watertight bulkheads.
- (6) If damage of a lesser extent results in a more severe damage equilibrium condition, such a lesser extent shall be assumed.
- (7) All piping, ventilation systems, trunks, etc., within the extent of damage should be assumed to be damaged. Positive means of closure should be provided to preclude the progressive flooding of other spaces which are intended to be intact.

IACS UR D6/Rev.1 - Surface type drilling units

(...)

D6.4 Damage stability

D6.4.1 Extent of damage

In assessing the damage stability of surface type drilling units as required by IACS UR D3.7.3, the following extent of damage is to be assumed to occur between effective watertight bulkheads:

- (i) Horizontal penetration: 1.5 m (5 ft).
- (ii) Vertical extent: bottom shell upwards without limit.

The distance between effective watertight bulkheads or their nearest stepped portions which are positioned within the assumed extent of horizontal penetration should be not less than 3 m; where there is a lesser distance, one or more of the adjacent bulkheads should be disregarded.

If damage of a lesser extent results in a more severe final equilibrium condition, such lesser extent shall be assumed.

All piping, ventilating systems, trunks, etc., within this extent are to be assumed damaged. Positive means of closure are to be provided to preclude progressive flooding of other intact spaces. In addition, the compartments bounded by the bottom shell are to be considered flooded individually.

4 SUBDIVISION

4.1 Watertight integrity

4.1.1 The number of openings in watertight subdivisions should be kept to a minimum compatible with the design and safe operation of the unit. Where penetrations of watertight decks and bulkheads are necessary for access, piping, ventilation, electrical cables, etc., arrangements should be made to maintain the watertight integrity of the enclosed compartments. (MODU Code 3.6.1)

4.1.2 Where valves are provided at watertight boundaries to maintain watertight integrity, these valves should be capable of being locally operated. Remote operation may be from a pump-room or other normally manned space, a weather deck, or a deck which is above the final waterline after flooding. In the case of a column-stabilized unit this would be the central ballast control station. Valve position indicators should be provided at the remote control station. (MODU Code 3.6.2)

4.1.3 Watertight doors should be designed to withstand water pressure to a head up to the bulkhead deck or freeboard deck respectively. A prototype pressure test should be conducted for each type and size of door to be installed on the unit at a test pressure corresponding to at least the head required for the intended location. The prototype test should be carried out before the door is fitted. The installation method and procedure for fitting the door on board should correspond to that of the prototype test. When fitted on board, each door should be checked for proper seating between the bulkhead, the frame and the door. Large doors or hatches of a design and size that would make pressure testing impracticable may be exempted from the prototype pressure test, provided that it is demonstrated by calculations that the doors or hatches maintain watertightness at the design pressure, with a proper margin of resistance. After installation, every such door, hatch or ramp should be tested by means of a hose test or equivalent. (MODU Code 3.6.3)

4.1.4 For self-elevating units the ventilation system valves required to maintain watertight integrity should be kept closed when the unit is afloat. Necessary ventilation in this case should be arranged by alternative approved methods. (MODU Code 3.6.4)

Internal openings

4.1.5 The means to ensure the watertight integrity of internal openings should comply with the following:

- .1** Doors and hatch covers which are used during the operation of the unit while afloat should be remotely controlled from the central ballast control station and should also be operable locally from each side. Open/shut indicators should be provided at the control station.
- .2** Doors or hatch covers in self-elevating units, or doors placed above the deepest load line draft in column-stabilized and surface units, which are normally closed while the unit is afloat may be of the quick acting type and should be provided with an alarm system (e.g., light signals) showing personnel both locally and at the central ballast control station whether the doors or hatch covers in question are open or closed. A notice should be affixed to each such door or hatch cover stating that it is not to be left open while the unit is afloat.
- .3** Remotely operated doors should meet SOLAS regulation II-1/13-1. (MODU Code 3.6.5)

4.1.6 The means to ensure the watertight integrity of internal openings which are intended only to provide access for inspection and are kept permanently closed during the operation of the unit, while afloat, should have a notice affixed to each such closing appliance stating that it is to be kept closed while the unit is afloat; however, manholes fitted with close bolted covers need not be so marked. (MODU Code 3.6.6)

External openings

4.1.7 All downflooding openings the lower edge of which is submerged when the unit is inclined to the first intercept between the righting moment and wind heeling moment curves in any intact or damaged condition should be fitted with a suitable watertight closing appliance, such as closely spaced bolted covers. (MODU Code 3.6.7)

4.1.8 Where flooding of chain lockers or other buoyant volumes may occur, the openings to these spaces should be considered as downflooding points. (MODU Code 3.6.8)

IACS UR D7/Rev.3 - Watertight integrity

D7.1 Watertight boundaries

D7.1.1 All units are to be provided with watertight bulkheads as may be required by the applicable requirements of the *Rules for the Classification and Construction of Sea-going Ships, Part II - Hull*. In all cases, the plans submitted are to clearly indicate the location and extent of the bulkheads. In the case of column stabilized drilling units, the scantlings of the watertight flats and bulkheads are to be made effective to that point necessary to meet the requirements of damage stability and are to be indicated on the appropriate plans.

D7.1.2 All surface type units are to be fitted with a collision bulkhead as may be required by the applicable requirements of the *Rules for the Classification and Construction of Sea-going Ships, Part II - Hull*. Sluice valves, cocks, manholes, watertight doors, etc., are not to be fitted in the collision bulkhead. Elsewhere, watertight bulkheads are to be fitted as necessary to provide transverse strength and subdivision.

D7.2 Tank boundaries

D7.2.1 Tanks for fresh water or fuel oil, or any other tanks which are not intended to be kept entirely filled in service, are to have divisions or deep swashes as may be required to minimize the dynamic stress on the structure. Tight divisions and boundary bulkheads of all tanks are to be constructed in accordance with the applicable requirements of the *Rules for the Classification and Construction of Sea-going Ships, Part II - Hull*. The arrangement of all tanks, together with their intended service and the height of the overflow pipes, is to be clearly indicated on the plans submitted for approval. Consideration is to be given to the specific gravity of the liquid in the tank.

D7.2.2 Tanks are to be tested in accordance with the applicable requirements specified in Publication 21/P - Ship Hull Structure Tests.

D7.3 Boundary penetrations

D7.3.1 Where watertight boundaries are required for damage stability, they are to be made watertight throughout, including piping, ventilation, shafting, electrical penetrations, etc. For compliance with the requirements of damage stability, in accordance with IACS UR D3.7.3, where individual lines, ducts or piping systems serve more than one compartment or are within the extent of damage, satisfactory arrangements are to be provided to preclude the possibility of progressive flooding through the system to other spaces, in the event of damage.

D7.3.2 Piping systems and ventilation ducts designed to watertight standards of the type mentioned in D7.3.1 are to be provided with valves in each compartment served. These valves are to be capable of being remotely operated from the weather deck, pump room or other normally manned space. Valve position indicators are to be provided at the remote control stations.

D7.3.3 Non-watertight ventilation ducts as mentioned in D7.3.1 are to be provided with watertight valves at the subdivision boundaries and the valves are to be capable of being operated from a remote location, with position indicators on the weatherdeck, or in a normally manned space. For self-elevating units, ventilating systems which are not used during the transit operations may be secured by alternative methods, subject to special consideration.

D7.4 Closures

D7.4.1 General

External closing appliances are to be as prescribed by applicable load line requirements. Special consideration will be given to openings in the upper deck of column stabilized units.

D7.4.2 General requirements related to watertight integrity

- (1) External openings, such as air pipes (regardless of closing appliances), ventilators, ventilation intakes and outlets, non-watertight hatches and weathertight doors, which are used during operation of the unit while afloat, are not to submerge when the unit is inclined to the first intercept of the righting moment and wind heeling moment curves in any intact or damaged condition. Openings, such as side scuttles of the non-opening type, manholes and small hatches, which are fitted with appliances to ensure watertight integrity, may be submerged*. Such openings are not to be regarded as emergency exits. Where flooding of chain lockers or other buoyant volumes may occur, the openings to these spaces should be considered as downflooding points.

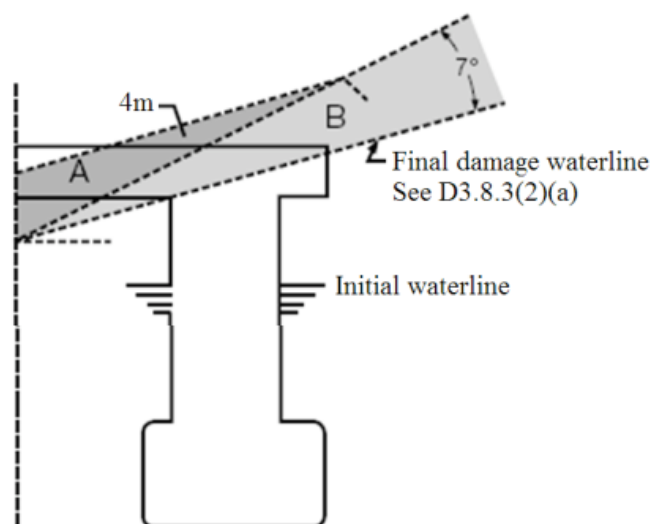
* Such openings are not allowed to be fitted in the column of stabilized units (See IACS UR D5.3).

- (2) External openings fitted with appliances to ensure watertight integrity, which are kept permanently closed while afloat, are to comply with the requirements of D7.4.2 (4).
- (3) Internal openings fitted with appliances to ensure watertight integrity are to comply with the following:
 - .1 doors and hatch covers which are used during the operation of the unit while afloat should be remotely controlled from the central ballast control station and should also be operable locally from each side. Open/shut indicators should be provided at the control station. In addition, remotely operated doors provided to ensure the watertight integrity of internal openings which are used while at sea are to be sliding watertight doors with audible alarm. The power, control and indicators are to be operable in the event of main power failure. Particular attention is to be paid to minimizing the effect of control system failure. Each power-operated sliding watertight door shall be provided with an individual hand operated mechanism. It shall be possible to open and close the door by hand at the door itself from both sides;
 - .2 doors or hatch covers in self-elevating units, or doors placed above the deepest load line draft in column-stabilized and surface units, which are normally closed while the unit is afloat may be of the quick acting type and should be provided with an alarm system (e.g., light signals) showing personnel both locally and at the central ballast control station whether the doors or hatch covers in question are open or closed. A notice should be affixed to each such door or hatch cover stating that it is not to be left open while the unit is afloat;
 - .3 the closing appliances are to have strength, packing and means for securing which are sufficient to maintain watertightness under the design water pressure of the watertight boundary under consideration.
- (4) Internal openings fitted with appliances to ensure watertight integrity, which are to be kept permanently closed while afloat, are to comply with the following:
 - .1 a signboard to the effect that the opening is always to be kept closed while afloat is to be fitted on the closing appliance in question;
 - .2 opening and closing of such closure devices should be noted in the unit's logbook, or equivalent;

- .3 manholes fitted with bolted covers need not be dealt with as under .1;
- .4 the closing appliances are to have strength, packing and means for securing which are sufficient to maintain watertightness under the design water pressure of the watertight boundary under consideration.

D7.4.3 General requirements related to weathertight integrity

- (1) Any opening, such as an air pipe, ventilator, ventilation intake or outlet, non-watertight sidescuttle, small hatch, door, etc., having its lower edge submerged below a waterline associated with the zones indicate in .1 or .2 below, is to be fitted with a weathertight closing appliance to ensure the weathertight integrity, when:
 - .1 a unit is inclined to the range between the first intercept of the right moment curve and the wind heeling moment curve and the angle necessary to comply with the requirements of IACS UR D3.8.1 during the intact condition of the unit while afloat; and
 - .2 a column stabilized unit is inclined to the range:
 - a) necessary to comply with the requirements of IACS UR D3.8.3 (2)(b) and with a zone measured 4.0 m perpendicularly above the final damaged waterline per IACS UR D3.8.3 (2)(a) referred to Fig.4, and
 - b) necessary to comply with the requirements of IACS UR D3.8.3 (3)(b).
- (2) External openings fitted with appliances to ensure weathertight integrity, which are kept permanently closed while afloat, are to comply with the requirements of D7.4.2(4) (.1) and (.2).
- (3) External openings fitted with appliances to ensure weathertight integrity, which are secured while afloat are to comply with the requirements of D7.4.2(3) (.1) and (.2).



A - 4m zone of weathertightness
B - 7 degrees zone of weathertightness

Fig. 4 Minimum weathertight integrity requirements for column stabilized units

5 FREEBOARD

5.1 General

5.1.1 The requirements of the 1988 LL Protocol, including those relating to certification, should apply to all units and certificates should be issued as appropriate. The minimum freeboard of units which cannot be computed by the normal methods laid down by that Protocol should be determined on the basis of meeting the applicable intact stability, damage stability and structural requirements for transit conditions and drilling operations while afloat. The freeboard should not be less than that computed from the Protocol where applicable. (MODU Code 3.7.1)

5.1.2 The requirements of the 1988 LL Protocol with respect to weathertightness and watertightness of decks, superstructures, deckhouses, doors, hatchway covers, other openings, ventilators, air pipes, scuppers, inlets and discharges, etc., should be taken as a basis for all units in the afloat condition. (MODU Code 3.7.2)

5.1.3 In general, heights of hatch and ventilator coamings, air pipes, door sills, etc., in exposed positions and their means of closing should be determined by consideration of the provisions regarding both intact and damage stability. (MODU Code 3.7.3)

5.1.4 All downflooding openings which may become submerged before the angle of inclination at which the required area under the intact righting arm curve is achieved should be fitted with weathertight closing appliances. (MODU Code 3.7.4)

5.1.5 With regard to damage stability, the provisions of paragraphs 3.4.3.2, 3.4.4 and 3.6.7 should apply. (MODU Code 3.7.5)

5.1.6 Administrations should give special consideration to the position of openings which cannot be closed in emergencies, such as air intakes for emergency generators, having regard to the intact righting arm curves and the final waterline after assumed damage. (MODU Code 3.7.6)

Surface units

5.1.7 Load lines should be assigned to surface units as calculated under the terms of the 1988 LL Protocol and should be subject to all the conditions of assignment of that Protocol. (MODU Code 3.7.7)

5.1.8 Where it is necessary to assign a greater than minimum freeboard to meet the provisions regarding intact or damage stability or on account of any other restriction imposed by the Administration, regulation 6(6) of the 1988 LL Protocol should apply. When such a freeboard is assigned, seasonal marks above the centre of the ring should not be marked and any seasonal marks below the centre of the ring should be marked. If a unit is assigned a greater than minimum freeboard at the request of the owner, regulation 6(6) need not apply. (MODU Code 3.7.8)

5.1.9 Where moonpools are arranged within the hull in open communication with the sea, the volume of the moonpool should not be included in the calculation of any hydrostatic properties. If the moonpool has a larger cross-sectional area above the waterline at 85% of the depth for freeboard than below, an addition should be made to the geometric freeboard corresponding to the lost buoyancy. This addition for the excess portion above the waterline at 85% of the depth for freeboard should be made as prescribed below for wells or recesses. If an enclosed superstructure contains part of the moonpool, deduction should be made for the effective length of the superstructure. Where open wells or recesses are arranged in the freeboard deck, a correction equal to the volume of the well or recess to the freeboard deck divided by the waterplane area at 85% of the depth for freeboard should be made to the freeboard obtained after all other corrections, except bow height correction, have been made. Free surface effects of the flooded well or recess should be taken into account in stability calculations. (MODU Code 3.7.9)

5.1.10 The procedure described in **paragraph 5.1.9** (3.7.9 of *MODU Code*) should also apply in cases of small notches or relatively narrow cut-outs at the stern of the unit. (MODU Code 3.7.10)

5.1.11 Narrow wing extensions at the stern of the unit should be considered as appendages and excluded for the determination of length (L) and for the calculation of freeboards. The Administration should determine the effect of such wing extensions with regard to the provisions relating to the strength of unit based upon length (L). (MODU Code, 3.7.11)

Self-elevating units

5.1.12 Load lines should be assigned to self-elevating units as calculated under the terms of the 1988 LL Protocol. When floating, or when in transit from one operational area to another, units should be subject to all the conditions of assignment of that Protocol unless specifically excepted. However, these units should not be subject to the terms of that Protocol while they are supported by the seabed or are in the process of lowering or raising their legs. (MODU Code 3.7.12)

5.1.13 The minimum freeboard of units which due to their configuration cannot be computed by the normal methods laid down by the 1988 LL Protocol should be determined on the basis of meeting applicable provisions regarding intact stability, damage stability and structure in the afloat condition. (MODU Code 3.7.13)

5.1.14 Where it is necessary to assign a greater than minimum freeboard to meet intact or damage stability provisions or on account of any other restriction imposed by the Administration, regulation 6(6) of the 1988 LL Protocol should apply. When such a freeboard is assigned, seasonal marks above the centre of the ring should not be marked and any seasonal marks below the centre of the ring should be marked. If a unit is assigned a greater than minimum freeboard at the request of the owner, regulation 6(6) need not apply. (MODU Code 3.7.14)

5.1.15 Where moonpools are arranged within the hull in open communication with the sea, the volume of the moonpool should not be included in the calculation of any hydrostatic properties. If the moonpool has a larger cross-sectional area above the waterline at 85% of the depth for freeboard than below, an addition should be made to the geometric freeboard corresponding to the lost buoyancy. This addition for the excess portion above the waterline at 85% of the depth for freeboard should be made as prescribed below for wells or recesses. If an enclosed superstructure contains part of the moonpool, deduction should be made for the effective length of the superstructure. Where open wells or recesses are arranged in the freeboard deck, a correction equal to the volume of the well or recess to the freeboard deck divided by the waterplane area at 85% of the depth for freeboard should be made to the freeboard obtained after all other corrections, except bow height correction, have been made. Free surface effects of the flooded well or recess should be taken into account in stability calculations. (MODU Code 3.7.15)

5.1.16 The procedure described in **paragraph 5.1.15** (3.7.15 of *MODU Code*) should apply in cases of small notches or relatively narrow cut-outs at the stern of the unit. (MODU Code 3.7.16)

5.1.17 Narrow wing extensions at the stern of the unit should be considered as appendages and excluded for the determination of length (L) and for the calculation of freeboards. The Administration should determine the effect of such wing extensions with regard to the requirements of the 1988 LL Protocol for the strength of unit based upon length (L). (MODU Code 3.7.17)

5.1.18 Self-elevating units may be manned when under tow. In such cases a unit would be subject to the bow height and reserve buoyancy requirements which may not always be possible to achieve. In such circumstances, the Administration should consider the extent of application of

regulations 39(1), 39(2) and 39(5) of the 1988 LL Protocol, as amended, and give special consideration to such units, having regard to the occasional nature of such voyages on predetermined routes and to prevailing weather conditions. (MODU Code 3.7.18)

5.1.19 Some self-elevating units utilize a large mat or similar supporting structure which contributes to the buoyancy when the unit is floating. In such cases the mat or similar supporting structure should be ignored in the calculation of freeboard. The mat or similar supporting structure should, however, always be taken into account in the evaluation of the stability of the unit when floating since its vertical position relative to the upper hull may be critical. (MODU Code 3.7.19)

Column-stabilized units

5.1.20 The hull form of this type of unit makes the calculation of geometric freeboard in accordance with the provisions of chapter III of the 1988 LL Protocol impracticable. Therefore the minimum freeboard of each column-stabilized unit should be determined by meeting the applicable provisions for:

- .1 the strength of the unit's structure;
- .2 the minimum clearance between passing wave crests and deck structure (see paragraphs 2.7.1 to 2.7.3); and
- .3 intact and damage stability. (MODU Code 3.7.20)

5.1.21 The minimum freeboard should be marked in appropriate locations on the structure. (MODU Code 3.7.21)

5.1.22 The enclosed deck structure of each column-stabilized unit should be made weathertight. (MODU Code 3.7.22)

5.1.23 Windows, sidescuttles and portlights, including those of the non-opening type, or other similar openings should not be located below the deck structure of column-stabilized units. (MODU Code 3.7.23)

5.1.24 Administrations should give special consideration to the position of openings which cannot be closed in emergencies, such as air intakes for emergency generators, having regard to the intact righting arm curves and the final waterline after assumed damage. (MODU Code 3.7.24)

IACS UR D3/Rev.6 - General design parameters

(...)

D3.9 Load line

D3.9.1 Any unit to which a load line is required to be assigned under the applicable terms of the International Convention on Load Lines should be subject to compliance with the Convention. All other units are to have load line marks which designate the maximum permissible draught when the unit is in the afloat condition. Such markings are to be placed at suitable visible locations on the structure, to the satisfaction of PRS. These marks, where practicable, are to be visible to the person in charge of mooring, lowering or otherwise operating the unit. The permissible draughts are to be established on the basis of meeting the applicable stability and structural requirements as set forth herein for afloat modes of operation, with such seasonal allowances as may be determined. In no case is the draught to exceed that permitted by the International Convention on Load Lines, where applicable. A load line, where assigned, is not applicable to bottom-supported units when resting on the sea bed, or when lowering to or raising from such position.

D3.9.2 Column Stabilized Units

1. The hull form of column stabilized units makes the calculations of geometric freeboard in accordance with the provisions of the *Load Line Convention* impracticable. Therefore, the minimum freeboard of each column stabilized unit should be determined by meeting the applicable requirements for:

- a) the strength of unit's structure;
- b) the minimum clearance between passing wave crests and deck structure; and
- c) intact and damage stability requirements.

2. The enclosed deck structure of each column stabilized unit should be specially considered by PRS for each unit.

3. PRS should also give special consideration to the position of openings which cannot be closed in emergencies, such as air intakes for emergency generators having regard to the intact righting arm curves and the final waterline after assumed damage.

(...)

List of reference IMO documents in *Part III*

IMO Resolutions

1. A.650(16): An example of alternative intact stability criteria for twin-pontoon column-stabilized semisubmersible units.
2. A.651(16): An example of alternative stability criteria for a range of positive stability after damage or flooding for column-stabilized semisubmersible units.

List of IACS resolutions implemented to *Part II*

Unified Requirements (UR)

D3/Rev.6	General design parameters
D4/Rev.3	Self-elevating drilling units
D5/Rev.3	Column stabilized drilling units
D6/Rev.1	Surface type drilling units
D7/Rev.3	Watertight integrity