Helicopter decks
FOREWORD

DNV GL offshore standards contain technical requirements, principles and acceptance criteria related to classification of offshore units.

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Any comments may be sent by e-mail to rules@dnvgl.com

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CHANGES – CURRENT

This document supersedes the July 2015 edition.
Changes in this document are highlighted in red colour. However, if the changes involve a whole chapter, section or sub-section, normally only the title will be in red colour.

, entering into force 1 July 2017

• General
The standard is aligned with the design philosophy in DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5.

• Ch.2 Sec.1 Material
  — Ch.2 Sec.1: Reference to DNVGL-RU-SHIP Pt.3 Ch.3 Sec.1 for selection of material is included.
  — Ch.2 Sec.1: NORSOK M-102 referred as an alternative recognized standards for bolted connections.

• Ch.2 Sec.2 Design loads and load combinations
  — Ch.2 Sec.2 [1.5]: Wind velocity is aligned with MODU (2009) code.
  — Ch.2 Sec.2 [1.5]: Design criteria for Vortex induced Vibrations (ViV) is specified.

• Ch.2 Sec.3 Structural strength
  — Ch.2 Sec.3 [1.4]: Fatigue requirements are specified.

Editorial corrections

In addition to the above stated changes, editorial corrections may have been made.
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**Changes – current**

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**Changes – historic**
CHAPTER 1 INTRODUCTION

SECTION 1 INTRODUCTION

1 General

1.1 Introduction
This standard is intended to provide requirements and guidance to the design of helicopter decks constructed in steel or aluminium, for mobile offshore units and offshore installations.

1.2 Objective
The objectives of this standard shall:
— provide an internationally acceptable standard of safety for helicopter decks by defining minimum requirements for the design, materials and construction
— serve as a contractual reference document
— serve as a guideline for designers, suppliers, purchasers, contractors and regulators
— specify procedures and requirements for helicopter decks subject to DNV GL certification and classification.

1.3 Scope
The scope of this standard covers requirements for material and structural strength of the helicopter deck and support structure.
Governmental and flag state regulations, e.g. SOLAS or MODU code, may include requirements in excess of the provisions of this standard.

Guidance note:
Requirements to unit safety, helicopter safety, refuelling and hangar facilities are given in DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5.
NMD Helicopter deck regulations as applicable on Norwegian shelf are provided in DNVGL-SI-0166 Ch.2 Sec.10.

1.4 Application
The standard is applicable for helidecks positioned on units operating worldwide and field specific.
2 Normative references

2.1 General
The rule and standards listed below include provisions which, through reference in the text, constitute provisions of this offshore standard. The latest issue of the references shall be used unless otherwise agreed. Other recognised rules and standards may be used provided it can be demonstrated that these meet or exceed the requirements of the rules and standards listed below.

Any deviations, exceptions and modifications to the design codes, rules and standards shall be documented and agreed between the contractor, purchaser and verifier, as applicable.

2.2 DNV GL rules

Table 1 DNV GL Rules for classification of ships

<table>
<thead>
<tr>
<th>Reference</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5</td>
<td>DNV GL Rules for ships, helicopter installations - HELDK</td>
</tr>
</tbody>
</table>

2.3 DNV GL Offshore standards

Table 2 DNV GL Offshore standards

<table>
<thead>
<tr>
<th>Reference</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNVGL-OS-C101</td>
<td>Design of offshore steel structures, general - LRFD method</td>
</tr>
<tr>
<td>DNVGL-OS-C201</td>
<td>Structural design of offshore units - WSD method</td>
</tr>
</tbody>
</table>

3 Class guidance and recommended practice
The documents in Table 3 include acceptable methods for fulfilling requirements in the standards. Other recognised documents may be used provided it is shown that they meet or exceed the level of safety of the actual standards.

Table 3 Other DNV GL and DNV references

<table>
<thead>
<tr>
<th>Reference</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNVGL-RP-C203</td>
<td>Fatigue strength analysis of offshore steel structures</td>
</tr>
<tr>
<td>DNV-RP-C205</td>
<td>Environmental conditions and environmental loads</td>
</tr>
<tr>
<td>DNVGL-CG-0128</td>
<td>Buckling</td>
</tr>
</tbody>
</table>
## 4 Definitions

### Table 4 Verbal forms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>shall</td>
<td>verbal form used to indicate requirements strictly to be followed in order to conform to the document</td>
</tr>
<tr>
<td>should</td>
<td>verbal form used to indicate that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required</td>
</tr>
<tr>
<td>may</td>
<td>verbal form used to indicate a course of action permissible within the limits of the document</td>
</tr>
</tbody>
</table>
5 Abbreviations and symbols

5.1 Abbreviations

Table 5 Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>In full</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAA</td>
<td>Civil Aviation Authority</td>
</tr>
<tr>
<td>CG</td>
<td>class guideline</td>
</tr>
<tr>
<td>F.P.</td>
<td>forward perpendicular</td>
</tr>
<tr>
<td>OS</td>
<td>offshore standard</td>
</tr>
<tr>
<td>RP</td>
<td>recommended practice</td>
</tr>
<tr>
<td>SOLAS</td>
<td>International Convention for the Safety of Life at Sea</td>
</tr>
<tr>
<td>VIV</td>
<td>vortex induced vibration</td>
</tr>
</tbody>
</table>

5.2 Symbols

\[ C_w = \text{wave coefficient according to DNVGL} \ [\text{-}] \]
\[ C_p = \text{wind pressure coefficient} \ [\text{-}] \]
\[ g = \text{acceleration due to gravity} \ [\text{m/s}^2] \]
\[ t = \text{mean time} \ [\text{s}] \]
\[ V = \text{velocity} \ [\text{m/s}] \]
\[ z = \text{position above water line} \ [\text{m}] \]
\[ \sigma = \text{stress} \ [\text{N/mm}^2] \]
\[ \eta = \text{usage factor} \ [\text{-}] \]
\[ a = \text{unit size factor for wave impact pressure} \ [\text{-}] \]
CHAPTER 2 TECHNICAL PROVISIONS

SECTION 1 MATERIALS

1 Structural categorisation
The main load bearing structural elements, i.e. girders, pillars, and bracings of helicopter deck pancake and support structure for helicopter deck (sub-structure), are categorised as following:
— for offshore ships: material class III, see DNVGL-RU-SHIP Pt.3 Ch.3 Sec.1
— for other offshore units: primary structure, see DNVGL-OS-C101 Ch.2 Sec.3.

2 Material selection

2.1 General
The grades of steel and aluminium materials shall be in compliance with the requirements of:
— for offshore ships: DNVGL-RU-SHIP Pt.3 Ch.3 Sec.1
— for other offshore units: for steel structures, see DNVGL-OS-C101 Ch.2 Sec.3
— for aluminium structures: DNVGL-RU-SHIP Pt.3 Ch.3 Sec.1.

2.2 Design temperatures
The helicopter deck including sub-structure shall be designed for design temperatures equal to the lowest mean daily temperature for the area(s) where the unit shall operate. Definition of mean temperature is given in DNVGL-OS-C101 Ch.1 Sec.1.

2.3 Steel and aluminium connections
Requirements for steel and aluminium connections are given in the DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5 [1.10].

Guidance note:
International recognized standards for bolted connections, e.g. NORSOK M-102, may be used.

---e-n-d---o-f---g-u-i-d-a-n-c-e---n-o-t-e---
SECTION 2 DESIGN LOADS AND LOAD COMBINATIONS

1 General

1.1 General
The design loads and load combinations presented below are based on DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5 with additional requirements specified.

1.2 Landing force
The landing forces shall follow DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5 [2.2].

1.3 Inertia force
Inertia forces from accelerations shall be based on the same design criteria as used for the unit it is located on.
Ship-shaped and semi-submersible units:
Inertia forces from accelerations shall be based on 100 years return period taken from a hydrodynamic analysis for the actual location(s) the unit shall operate. For worldwide operation the North Atlantic scatter diagram shall be used, ref. DNV-RP-C205. Correlations between accelerations ($a_x$, $a_y$, $a_z$) may be taken into consideration. For ships the accelerations given in DNVGL-RU-SHIP Pt.3 Ch.4 Sec.3 may be used.

Jack-up units:
Inertia forces shall be based on a hydrodynamic analysis for the restricted transit condition, or a simplified motion characteristic described in DNVGL-OS-C104.

1.4 Green sea

1.4.1 General
Green sea pressure on the helideck pancake shall be assessed according to relevant DNV GL offshore standards for each unit type. For most free-standing helideck structures located high above the seawater level, typically for column stabilised units and elevated jack-ups, green sea pressure is normally not applicable.
Ship-shaped units shall use the green sea pressure given in DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5 [2], with a minimum sea pressure of 3 kN/m².
1.4.2 Impact pressure
Impact pressure on the helideck support members (sub-structure) shall be evaluated for stowed conditions. For ship-shaped units, the green sea impact pressure given in DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5 [2.4.2] shall be used for members located forward of 0.15 L from F.P, and for members extended outside the ship side. For other positions the green sea impact pressure as defined in the DNVGL-RU-SHIP Pt.3 Ch.4 Sec.5 [3.4] shall be used.

For other unit types, e.g. jack-ups in transit condition or semi submersibles, the green sea impact pressure events should be specially considered, e.g. by model tests or hydrodynamic calculations. Green sea impact pressure may alternatively be calculated according to

**Guidance note:**
For other unit types, DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5 [2.4.2] may be used to estimate the impact pressure by setting:

\[ a = 4.5. \]
The wave coefficient, \( C_w \):

\[ C_w = 12.0 \text{ for unlimited operational} \]
\[ C_w = 1.2 \cdot H_s \text{ for units with operational limitation, but not taken less than } 6.0 \]

---e-n-d---o-f---g-u-i-d-a-n-c-e---n-o-t-e---

1.5 Wind loads

1.5.1 The values in Table 1 are applicable for world wide operation. The wind velocity should be aligned with the design criteria for the unit it is located on.

**Table 1 One minute wind speed (m/s) for different loading conditions**

<table>
<thead>
<tr>
<th>Loading condition</th>
<th>Landing</th>
<th>Stowed</th>
<th>Stowed - Wind suction</th>
<th>V/V</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_{1\text{min.10}} )</td>
<td>36 m/s</td>
<td>51.5 m/s</td>
<td>51.5 m/s</td>
<td>42 m/s</td>
</tr>
<tr>
<td>Return period</td>
<td>-</td>
<td>100 year</td>
<td>100 year</td>
<td>1 year</td>
</tr>
</tbody>
</table>

(See 2009 MODU code Ch.3.2.4)

For landing and stowed conditions, 3 second gust wind velocity \( V_{3\text{sec.}} \) shall be used. The scaling factor from 1 minute wind velocity to 3 second wind velocity, and to the actual vertical position of the helideck pancake above the seawater level, is given in Table 2.

For vortex induced vibration (ViV) calculations, one minute wind velocity \( V_{1\text{min.}} \) shall be used. Adjustment for actual position of the helideck pancake above the seawater level is given in Table 2.
### Table 2 Design wind velocity (m/s) for strength and ViV application

<table>
<thead>
<tr>
<th>Helideck elevation (m)</th>
<th>Landing 36 m/s (1 min.)</th>
<th>Stowed 51.5 m/s (1 min.)</th>
<th>Wind suction 51.5 m/s (1 min.)</th>
<th>Scale factor ( f = \frac{V_{3sec}}{V_{1min,10m}} )</th>
<th>ViV (m/s)</th>
<th>ViV scale factor for helideck elevation, ( f = \frac{V_{1min}}{V_{1min,10m}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>40.6</td>
<td>58.0</td>
<td>58.0</td>
<td>1.127</td>
<td>42.0</td>
<td>1.000</td>
</tr>
<tr>
<td>20</td>
<td>43.7</td>
<td>62.5</td>
<td>62.5</td>
<td>1.213</td>
<td>45.6</td>
<td>1.086</td>
</tr>
<tr>
<td>30</td>
<td>45.5</td>
<td>65.0</td>
<td>65.0</td>
<td>1.263</td>
<td>47.7</td>
<td>1.136</td>
</tr>
<tr>
<td>40</td>
<td>46.7</td>
<td>66.9</td>
<td>66.9</td>
<td>1.298</td>
<td>49.2</td>
<td>1.171</td>
</tr>
<tr>
<td>50</td>
<td>47.7</td>
<td>68.3</td>
<td>68.3</td>
<td>1.326</td>
<td>50.4</td>
<td>1.199</td>
</tr>
<tr>
<td>60</td>
<td>48.5</td>
<td>69.5</td>
<td>69.5</td>
<td>1.349</td>
<td>51.3</td>
<td>1.221</td>
</tr>
<tr>
<td>70</td>
<td>49.2</td>
<td>70.4</td>
<td>70.4</td>
<td>1.368</td>
<td>52.1</td>
<td>1.241</td>
</tr>
<tr>
<td>80</td>
<td>49.8</td>
<td>71.3</td>
<td>71.3</td>
<td>1.384</td>
<td>52.8</td>
<td>1.257</td>
</tr>
</tbody>
</table>

**Guidance note:**
The values in Table 2 is calculated according to the following formula:
\[
U_{t,z} = U_{1min,10} \cdot 0.9023 \cdot \left[ 1 + 0.137 \cdot \ln(z/10) - 0.047 \cdot \ln(t/600) \right]
\]
For additional information regarding wind calculations, see DNV-RP-C205.

---e-n-d---o-f---g-u-i-d-a-n-c-e---n-o-t-e---

#### 1.5.2 The wind pressure acting on the surface of helicopter decks shall be calculated using a pressure coefficient \( C_p = 2.0 \) at the leading edge of the helicopter deck, linearly reducing to \( C_p = 0 \) at the trailing edge, taken in the direction of the wind. The pressure shall be calculated for acting both upwards and downwards.

#### 1.5.3 Slender structural members shall be designed to avoid vortex induced vibrations (ViV) as given in DNV-RP-C205 [9.5.4].

**Guidance note:**
In addition to evaluating the ViV calculations based on single member natural frequency formulas, it may be necessary to use FE eigenvalue analysis for complex frame structure in order to determine all vibration modes and exact values of frequency that may be critical to ViV.

---e-n-d---o-f---g-u-i-d-a-n-c-e---n-o-t-e---
1.6 Ice loads

Ice loads shall be applied as found applicable for the location(s) the unit is intended to operate.

For worldwide operation:

Ice loads according to DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5 [2.5.2] shall be used. For ice thickness up to 5 cm, the ice load on the helideck pancake and its sub-structure may be replaced applying 200 kg/m$^2$ on the helideck pancake area.

For artic water operation:

The ice mass application given in Table 3 together with the ice loads for artic waters given in DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5 [2.5.2] shall be used.

1.7 Load combinations

The load combinations given in Table 3 are applicable for offshore units. The table is based on the load and load combinations given in the DNV GL rules for ships Pt.6 Ch.5 Sec.5 [2].

Table 3 Load combinations for offshore helicopter installations

<table>
<thead>
<tr>
<th>Load case</th>
<th>Load combinations</th>
<th>Stowed helicopter + ice + vertical and transverse accelerations + wind</th>
<th>Stowed helicopter + ice + vertical and longitudinal accelerations + wind</th>
<th>Static load condition</th>
<th>Helicopter landing</th>
<th>Wind suction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design load scenario</td>
<td></td>
<td>S + D</td>
<td>S + D</td>
<td>S</td>
<td>A</td>
<td>S + D</td>
</tr>
<tr>
<td>Mass of structure</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mass of equipment</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mass of helicopter</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Landing loads according to [1.2]$^2$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Ice mass on both sides of helideck pancake $^5$</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Ice mass on the supporting structure: 100% of the surface that get green sea loading, 50% of the surface that not get green sea loading $^5$</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Green sea pressure on helideck according [1.4.1]</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Green sea impact pressure according to [1.4.2] on pillars supporting erected helicopter decks $^3$ $^4$</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Wind force - Acting horizontally according to [1.5] $^4$</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Wind force - Acting downwards/upwards according to [1.5]</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Load combinations 3)

<table>
<thead>
<tr>
<th>Load combination</th>
<th>Stowed helicopter + ice + vertical and transverse accelerations + wind</th>
<th>Stowed helicopter + ice + vertical and longitudinal accelerations + wind</th>
<th>Static load condition</th>
<th>Helicopter landing</th>
<th>Wind suction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind force - Acting upwards according to [1.5]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Vertical accelerations times mass</td>
<td>( m_U(g + a_Z) )</td>
<td>( m_U(g + a_Z) )</td>
<td>( m_Ug )</td>
<td>( m_Ug )</td>
<td>( m_U(g - a_Z) )</td>
</tr>
<tr>
<td>Transverse accelerations times mass</td>
<td>( \pm m_U a_Y )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longitudinal accelerations times mass</td>
<td></td>
<td>( \pm m_U a_X )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hull girder deflections (vertical bending moment) 6)</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) For global strength, the green sea impact pressure shall not be taken larger than 37.5% of the impact pressure on each individual member. For local check of individual members, 100% green sea impact pressure as specified in [1.4.2] shall be used.

2) The locations for the helicopter landings shall cover the worst locations for all members of the helideck and supporting structure.

3) The acceleration and wind action shall be evaluated for load actions in the most unfavourable directions. Wind load action on the pancake shall cover both upwards and downwards load direction in combination, with horizontal load direction increments of maximum 45 degree.

4) Wind loads given in [1.5] and green sea impact pressure given in [1.4.2] shall not to be applied simultaneously. The largest value of either wind loads or green sea impact pressure shall be applied the actual member.

5) Ice loads shall be included as found applicable, see [1.6].

6) Only applicable for integrated helicopter decks on ship-shaped units. For landing conditions only the static hull girder deformation load shall be considered, while in stowed conditions both global static and dynamic deformation loads shall be considered.

where:

\( m_U \) = mass of the helideck unit including structure, helicopter, equipment and ice, in [t]

\( a_X \) = longitudinal acceleration, in m/s\(^2\), at the centre of gravity of the helideck

\( a_Y \) = transverse acceleration, in m/s\(^2\), at the centre of gravity of the helideck

\( a_Z \) = vertical acceleration, in m/s\(^2\), at the centre of gravity of the helideck
SECTION 3 STRUCTURAL STRENGTH

1 Strength requirements

1.1 Deck platting and stiffeners
Requirements for deck platting and stiffeners are given in DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5 [3.2].

1.2 Girders and supporting structure
The scantlings shall be based on direct stress analysis. The basic allowable usage factor, $\eta_0$, is as follows:

<table>
<thead>
<tr>
<th>Operational conditions:</th>
<th>Load case:</th>
<th>$\eta_0$</th>
</tr>
</thead>
<tbody>
<tr>
<td>stowed</td>
<td>A, B</td>
<td>0.8</td>
</tr>
<tr>
<td>static load</td>
<td>C</td>
<td>0.6</td>
</tr>
<tr>
<td>landing</td>
<td>D</td>
<td>1.0</td>
</tr>
<tr>
<td>wind suction</td>
<td>E</td>
<td>0.8</td>
</tr>
</tbody>
</table>

1.3 Buckling
Buckling shall be carried out according to DNVGL-CG-0128.

**Guidance note:**
International recognized standards for buckling control, e.g. Eurocode 3, may alternatively be used.

---e-n-d-o-f-g-u-i-d-a-n-c-e-n-o-t-e---

1.4 Fatigue
The helideck support structure shall be checked for fatigue, using the same design criteria as for the unit it is located on.

**Guidance note:**
The fatigue scope may normally be limited to the proximity of the connection interfaces with the hull structure, using the inertia loads from the helideck dead-weight (helideck’s pancake including fixed equipment and sub-structure).

---e-n-d-o-f-g-u-i-d-a-n-c-e-n-o-t-e---
SECTION 4 MISCELLANEOUS

1 General

DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5 [4] shall be complied for requirements to safety nets, tie-down points and surface friction of helicopter decks.
CHAPTER 3 CERTIFICATION AND CLASSIFICATION

SECTION 1

1 Classification

1.1 Application

1.1.1 As well as representing DNV GL’s recommendations on safe engineering practice for general use by the offshore industry, the offshore standards also provide the technical basis for DNV GL classification, certification and verification services.

1.1.2 A complete description of principles, procedures, applicable class notations and technical basis for offshore classification is given by the rules for classification of offshore units, see Table 1.

Table 1 DNV GL rules for classification: Offshore units

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNVGL-RU OU-0101</td>
<td>Offshore drilling and support units</td>
</tr>
<tr>
<td>DNVGL-RU OU-0102</td>
<td>Floating production, storage and loading units</td>
</tr>
<tr>
<td>DNVGL-RU OU-0103</td>
<td>Floating LNG/LPG production, storage and loading units</td>
</tr>
<tr>
<td>DNVGL-RU OU-0104</td>
<td>Self elevating units</td>
</tr>
</tbody>
</table>
1.2 Class designation

1.2.1 Offshore units and installations fitted with helicopter decks that have been designed, constructed and installed in accordance with the requirements of this standard under supervision of DNV GL may be given the class notation **HELDK** together with qualifiers as defined in Table 2.

Table 2 HELDK optional class notation

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Qualifier</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>HELDK</td>
<td>&lt;none&gt;</td>
<td>helicopter deck structure, see Ch.2</td>
</tr>
<tr>
<td>Mandatory:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design requirements:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>— DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5</td>
<td>S</td>
<td>vessel safety, see DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5 [5]</td>
</tr>
<tr>
<td>FiS survey requirements:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>— DNVGL-RU-SHIP Pt.7 Ch.1 Sec.6</td>
<td>H</td>
<td>helicopter safety, see DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5 [6]</td>
</tr>
<tr>
<td>— DNVGL-RU-SHIP Pt.7 Ch.1 Sec.6</td>
<td>F</td>
<td>helicopter service facility, see DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5 [7]</td>
</tr>
<tr>
<td>— CAA-N</td>
<td></td>
<td>requirements specified by the Norwegian Civil Aviation Authorities, see DNVGL-SI-0166 Ch.2 Sec.10</td>
</tr>
</tbody>
</table>

1.2.2 The application of the different qualifiers is restricted as follows:

— the qualifier H can only be applied together with the qualifier S.
— the qualifier F can only be applied together with the qualifiers SH.
— the qualifier **CAA-N** can only be applied together with qualifiers SH or SHF.

1.3 Assumptions

1.3.1 Any deviations, exceptions and modifications to the designed codes and standards given as recognised reference codes shall be documented and approved by DNV GL.

1.3.2 Where codes and standards call for the extent of critical inspections and tests to be agreed between contractor or manufacturer and client, the resulting extent shall be agreed with DNV GL.

1.4 Documentation

Documentation for classification shall be in accordance with DNVGL-RU-SHIP Pt.6 Ch.5 Sec.5 [1.6].

2 Certification and testing

Requirements to certification and testing of products are given in the DNV GL Rules for ships Pt.6 Ch.5 Sec.5 [1.7] and [1.8].
Main changes July 2015

• General
The revision of this document is part of the DNV GL merger, updating the previous DNV standard into a DNV GL format including updated nomenclature and document reference numbering, e.g.:
— Main class identification 1A1 becomes 1A.
— DNV replaced by DNV GL.
— DNV-RP-A201 to DNVGL CG 0168. A complete listing with updated reference numbers can be found on DNV GL’s homepage on internet.

To complete your understanding, observe that the entire DNV GL update process will be implemented sequentially. Hence, for some of the references, still the legacy DNV documents apply and are explicitly indicated as such, e.g.: Rules for Ships has become DNV Rules for Ships.
Driven by our purpose of safeguarding life, property and the environment, DNV GL enables organizations to advance the safety and sustainability of their business. We provide classification and technical assurance along with software and independent expert advisory services to the maritime, oil and gas, and energy industries. We also provide certification services to customers across a wide range of industries. Operating in more than 100 countries, our 16 000 professionals are dedicated to helping our customers make the world safer, smarter and greener.