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FOREWORD

DNV GL rules for classification contain procedural and technical requirements related to obtaining and retaining a class certificate. The rules represent all requirements adopted by the Society as basis for classification.

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Changes - current

This document supersedes DNVGL-RU-OU-0101, April 2016.
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.

Main changes January 2017, entering into force 1 July 2017

- General
  The document has been restructured as follows:
  - The principles and procedures for classification as stated in its Ch.1 have been aligned with DNVGL-RU-SHIP Pt.1 Ch.1 General regulations.
  - Design references to DNV rules for classification: Ship has been replaced by references to DNV GL rules for classification: Ships.
  - The scope of the document have been limited to floating units only, i.e. self-elevating units has been taken out from scope with a reference to DNVGL-RU-OU-0104 Rules for classification of self-elevating units.

- Ch.1 Sec.1 Introduction
  - Ch.1 Sec.1 Table 1 Included new guidance note in definition of main functions.

- Ch.2 Sec.4 Supplementary requirements for accommodation units
  - Ch.2 Sec.4 [3.4] Updated certification requirements for offshore gangways.

- Ch.2 Sec.6 Supplementary requirements for wind turbine installation units
  - Updated clause including content previously in DNV-OS-J301 and DNV Rules for classification: Ships.

- Ch.2 Sec.7 Optional class notations
  - Ch.2 Sec.7 [7.2] Updated references to qualifiers of HELDK notation.
  - Ch.2 Sec.7 [11] Included description of new notation Walk2work.
  - Removed notations DSV and OPP.

Editorial corrections

In addition to the above stated changes, editorial corrections may have been made.
<table>
<thead>
<tr>
<th>CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Changes – current</strong></td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td><strong>Chapter 1 Principles and procedures for classification</strong></td>
</tr>
<tr>
<td>19</td>
</tr>
<tr>
<td><strong>Section 1 Introduction</strong></td>
</tr>
<tr>
<td>19</td>
</tr>
<tr>
<td>1 Introduction</td>
</tr>
<tr>
<td>19</td>
</tr>
<tr>
<td>1.1 General</td>
</tr>
<tr>
<td>19</td>
</tr>
<tr>
<td>1.2 Organisation</td>
</tr>
<tr>
<td>19</td>
</tr>
<tr>
<td>1.3 Objects covered</td>
</tr>
<tr>
<td>19</td>
</tr>
<tr>
<td>2 Definitions and abbreviations</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>2.1 Verbal forms</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>2.2 Definitions</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>2.3 Abbreviations</td>
</tr>
<tr>
<td>25</td>
</tr>
<tr>
<td>3 Normative references</td>
</tr>
<tr>
<td>27</td>
</tr>
<tr>
<td>3.1 Normative references</td>
</tr>
<tr>
<td>27</td>
</tr>
<tr>
<td>3.2 DNV GL reference documents</td>
</tr>
<tr>
<td>27</td>
</tr>
<tr>
<td>3.3 Other references</td>
</tr>
<tr>
<td>28</td>
</tr>
<tr>
<td>4 Informative references</td>
</tr>
<tr>
<td>28</td>
</tr>
<tr>
<td>4.1 DNV GL informative references</td>
</tr>
<tr>
<td>28</td>
</tr>
<tr>
<td>4.2 Other references</td>
</tr>
<tr>
<td>29</td>
</tr>
<tr>
<td><strong>Section 2 Classification principles</strong></td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>1 General</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>1.1 The Society</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>2 The classification concept</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>2.1 Introduction</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>2.2 Main Class and Class Notations</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>2.3 Conditions and assumptions involving other parties</td>
</tr>
<tr>
<td>31</td>
</tr>
<tr>
<td>2.4 Interactions with Flag Administrations and statutory requirements</td>
</tr>
<tr>
<td>31</td>
</tr>
<tr>
<td>2.5 Applicable rules</td>
</tr>
<tr>
<td>32</td>
</tr>
<tr>
<td>2.6 Documentation and information</td>
</tr>
<tr>
<td>33</td>
</tr>
<tr>
<td>2.7 Disclosure of information</td>
</tr>
<tr>
<td>34</td>
</tr>
<tr>
<td>2.8 Access</td>
</tr>
<tr>
<td>34</td>
</tr>
<tr>
<td>2.9 Calibration of equipment</td>
</tr>
<tr>
<td>35</td>
</tr>
<tr>
<td>2.10 Service suppliers</td>
</tr>
<tr>
<td>35</td>
</tr>
<tr>
<td>3 Appeals</td>
</tr>
<tr>
<td>35</td>
</tr>
<tr>
<td>3.1 Decisions taken by the Society</td>
</tr>
<tr>
<td>35</td>
</tr>
<tr>
<td>4 Statutory certification</td>
</tr>
<tr>
<td>35</td>
</tr>
</tbody>
</table>

Offshore drilling and support units
4.1 General ............................................................................................................. 35
4.2 Service suppliers .............................................................................................. 36

Section 3 Classification scope and notations ........................................................ 37

1 Scope of classification .................................................................................... 37
  1.1 General ........................................................................................................ 37
  1.2 Rule parts ..................................................................................................... 37
  1.3 Rule particulars ............................................................................................ 37

2 Class notations .................................................................................................. 38
  2.1 General ........................................................................................................ 38
  2.2 Construction symbols ................................................................................... 38
  2.3 Main character of class ............................................................................... 38
  2.4 Structural design notations .......................................................................... 38
  2.5 Service notations ........................................................................................ 39
  2.6 Optional class notations related to special equipment and systems .......... 39
  2.7 Optional class notations related to cold climate operation......................... 39
  2.8 Special feature notations ............................................................................ 40
  2.9 Service restrictions ..................................................................................... 41
  2.10 Compliance with coastal state legislation .................................................. 42
  2.11 Combination of notations ......................................................................... 42

Section 4 Assignment of class .............................................................................. 44

1 Assignment of class – new Units .................................................................... 44
  1.1 General ........................................................................................................ 44
  1.2 Requirements for Builder or Designer .......................................................... 44
  1.3 Applicable rules .......................................................................................... 45
  1.4 Plan approval .............................................................................................. 46
  1.5 Survey during construction ...................................................................... 46
  1.6 Installation of machinery, systems and equipment .................................... 47
  1.7 Testing and Commissioning ...................................................................... 47

2 Assignment of class – existing Units .............................................................. 48
  2.1 General ........................................................................................................ 48
  2.2 Applicable rules ........................................................................................ 48
  2.3 Design approval ......................................................................................... 48
  2.4 Class entry Survey .................................................................................... 48

3 The Class Certificate ........................................................................................ 48
  3.1 General ........................................................................................................ 48
  3.2 Late Commissioning .................................................................................. 49

4 The register of Units ......................................................................................... 49
  4.1 General ........................................................................................................ 49

Section 5 Retention of class .................................................................................. 50
1 Conditions for retention of Class
   1.1 General requirements
   1.2 The Customer’s obligations
   1.3 Maintenance
2 The Society’s involvement
   2.1 Applicable Rules
   2.2 Surveys
   2.3 Conditions and Memoranda
   2.4 Survey statement and Survey status
   2.5 Damage and repairs
   2.6 Conversions and Alterations
   2.7 Temporary equipment
3 Endorsement and renewal of the Class Certificate
   3.1 Endorsement of the Class Certificate
   3.2 Renewal of the Class Certificate
4 Suspension and withdrawal of Class
   4.1 General
   4.2 Suspension of Class
   4.3 Reinstatement following Class suspension
   4.4 Withdrawal of Class
   4.5 Re-assignment of Class following Class withdrawal
5 Change of Owner or Manager
   5.1 General
6 Force majeure
Section 6 Certification of materials, components and systems
   1 General
   1.1 Introduction
   1.2 Requirements for Manufacturer
2 The Society’s involvement
   2.1 General
   2.2 Plan approval
   2.3 Type approval
   2.4 Survey
   2.5 Manufacturing Survey Arrangement
3 Suspension and withdrawal of certificates
   3.1 General
Chapter 2 Design and construction provisions
Section 1 Design and construction requirements for 1A main class
# Contents

1 General ...............................................................................................................64
   1.1 Introduction .................................................................................................64
   1.2 Technical reference documents .................................................................64
   1.3 General assumptions ..................................................................................65

2 Safety principles and arrangement .................................................................... 65
   2.1 General ..........................................................................................................65
   2.2 Design principles ..........................................................................................65
   2.3 Arrangement ...................................................................................................65
   2.4 Escape and evacuation ..................................................................................65

3 Materials ............................................................................................................ 65
   3.1 Technical requirements ................................................................................65
   3.2 Supplementary classification requirements ..................................................65

4 Structural design ................................................................................................66
   4.1 Scope ............................................................................................................66
   4.2 Technical requirements ................................................................................66

5 Fabrication and testing of offshore structures ...................................................66
   5.1 Technical requirements ................................................................................66
   5.2 Supplementary classification requirements ..................................................67

6 Stability and watertight/weathertight integrity .................................................67
   6.1 Technical requirements ................................................................................67

7 Mooring and towing ........................................................................................... 67
   7.1 General ..........................................................................................................67
   7.2 Temporary mooring ......................................................................................67
   7.3 Towing ...........................................................................................................68
   7.4 Supplementary classification requirements ..................................................68

8 Marine and machinery systems and equipment .................................................68
   8.1 Technical requirements ................................................................................68
   8.2 Supplementary classification requirements ..................................................69

9 Electrical systems and equipment ......................................................................69
   9.1 Supplementary classification requirements ..................................................69

10 Instrumentation and telecommunication systems ............................................69
   10.1 Technical requirements ..............................................................................69
   10.2 Supplementary classification requirements ................................................69

11 Fire protection ................................................................................................... 70
   11.1 Technical requirements ..............................................................................70
   11.2 Supplementary classification requirements ................................................70

12 Preparation for surveys and inspections on location .......................................70
   12.1 General ........................................................................................................70

13 Summary of technical reference standards ..................................................... 71
Section 2 Supplementary requirements for drilling units ........................................... 73

1 General ..................................................................................................................... 73
   1.1 Introduction ........................................................................................................... 73
   1.2 Scope .................................................................................................................... 73

2 Safety principles and arrangement ..................................................................... 73
   2.1 General ............................................................................................................... 73
   2.2 Arrangement ....................................................................................................... 73
   2.3 Area classification .............................................................................................. 73
   2.4 Emergency shutdown ....................................................................................... 73
   2.5 Escape, evacuation and communication ........................................................... 73

3 Structural design .................................................................................................... 74
   3.1 General ............................................................................................................... 74

4 Fire protection ......................................................................................................... 74
   4.1 General ............................................................................................................... 74
   4.2 Supplementary technical requirements .............................................................. 74

5 Temporary mooring ............................................................................................... 74

6 Summary of requirements ..................................................................................... 75

Section 3 Supplementary requirements for well intervention units ....................... 76

1 General ..................................................................................................................... 76
   1.1 Introduction ........................................................................................................... 76

2 General requirements ........................................................................................... 76
   2.1 Structural design ............................................................................................... 76
   2.2 Position keeping .............................................................................................. 77

3 Requirements for Well intervention 1 ................................................................. 77
   3.1 General ............................................................................................................... 77
   3.2 Supplementary requirements ............................................................................ 77

4 Requirements for Well intervention 2 ................................................................. 78
   4.1 General ............................................................................................................... 78
   4.2 Arrangement ....................................................................................................... 78
   4.3 Area classification .............................................................................................. 78
   4.4 Emergency shutdown ....................................................................................... 78
   4.5 Escape, evacuation and communication ........................................................... 78
   4.6 Fire Protection ................................................................................................... 79

Section 4 Supplementary requirements for accommodation units ...................... 80

1 General ..................................................................................................................... 80
   1.1 Introduction ........................................................................................................... 80

2 Safety principles and arrangement ..................................................................... 80
   2.1 Emergency shutdown ....................................................................................... 80

3 Structural strength ................................................................................................. 80
### Contents

3.1 General.............................................................................................................. 80
3.2 Design loads......................................................................................................80
3.3 Containerised modules.....................................................................................80
3.4 Gangways.........................................................................................................81

**4 Electrical systems and equipment**..................................................................81
4.1 Emergency source of power and emergency installation.................................81

**5 Position keeping**.............................................................................................81

**Section 5 Supplementary requirements for crane units**......................................82
1 Introduction......................................................................................................... 82
   1.1 Objective.......................................................................................................82
   1.2 Safety principles – emergency shutdown....................................................82
2 Structural design..................................................................................................82
   2.1 General.......................................................................................................82
   2.2 Technical requirements.............................................................................82
3 Stability and watertight integrity.........................................................................82
4 Crane with substructure..................................................................................... 82
   4.1 Certification...............................................................................................82
   4.2 Substructure...............................................................................................82

**Section 6 Supplementary requirements for wind turbine installation units**...........83
1 General...............................................................................................................83
   1.1 Introduction...............................................................................................83
2 General requirements........................................................................................ 83
   2.1 Structural strength....................................................................................83
   2.2 Stability and watertight.............................................................................83
   2.3 Position keeping......................................................................................83
3 Crane installations.............................................................................................83

**Section 7 Optional class notations**.....................................................................84
1 Introduction......................................................................................................... 84
   1.1 General.......................................................................................................84
   1.2 Technical reference documents.................................................................84
   1.3 General assumptions..............................................................................84
2 Enhanced systems.............................................................................................84
   2.1 General.......................................................................................................84
   2.2 Technical requirements.............................................................................85
   2.3 Certification of materials and components...............................................85
3 Position mooring equipment.............................................................................85
   3.1 General.......................................................................................................85
   3.2 Technical requirements.............................................................................85
   3.3 Certification requirements.........................................................................85
4 Position mooring system
4.1 General
4.2 Application
4.3 Technical requirements
4.4 Certification of materials and components

5 Dynamic positioning systems
5.1 General
5.2 Technical requirements
5.3 Certification of materials and components

6 Drilling plant
6.1 General
6.2 Technical requirements
6.3 Certification of materials and components
6.4 DRILL(US)

7 Helicopter decks
7.1 General
7.2 Technical requirements
7.3 Certification of materials and components

8 Well testing facilities
8.1 General
8.2 Technical requirements
8.3 Certification of materials and components

9 Temporary oil storage facilities
9.1 General
9.2 Technical requirements
9.3 Certification of materials and components

10 Crane installations
10.1 General
10.2 Technical requirements
10.3 Certification
10.4 Testing

11 Offshore gangways
11.1 General
11.2 Technical requirements
11.3 Certification of materials and components

12 Additional fire protection
12.1 General
12.2 Technical requirements
12.3 Certification of materials and components
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Loading computer</td>
<td>96</td>
</tr>
<tr>
<td>13.1</td>
<td>General</td>
<td>96</td>
</tr>
<tr>
<td>13.2</td>
<td>Technical requirements</td>
<td>97</td>
</tr>
<tr>
<td>13.3</td>
<td>Certification of materials and components</td>
<td>97</td>
</tr>
<tr>
<td>14</td>
<td>Periodically unattended machinery space</td>
<td>97</td>
</tr>
<tr>
<td>14.1</td>
<td>General</td>
<td>97</td>
</tr>
<tr>
<td>14.2</td>
<td>Technical requirements</td>
<td>97</td>
</tr>
<tr>
<td>14.3</td>
<td>Certification of materials and components</td>
<td>97</td>
</tr>
<tr>
<td>15</td>
<td>Well intervention system</td>
<td>97</td>
</tr>
<tr>
<td>15.1</td>
<td>General</td>
<td>97</td>
</tr>
<tr>
<td>15.2</td>
<td>Technical requirements</td>
<td>98</td>
</tr>
<tr>
<td>15.3</td>
<td>Certification of materials and components</td>
<td>99</td>
</tr>
<tr>
<td>16</td>
<td>Hull monitoring system</td>
<td>99</td>
</tr>
<tr>
<td>16.1</td>
<td>General</td>
<td>99</td>
</tr>
<tr>
<td>16.2</td>
<td>Technical requirements</td>
<td>99</td>
</tr>
<tr>
<td>17</td>
<td>Fatigue methodology for ship-shaped units</td>
<td>99</td>
</tr>
<tr>
<td>17.1</td>
<td>General</td>
<td>99</td>
</tr>
<tr>
<td>17.2</td>
<td>Technical requirements</td>
<td>100</td>
</tr>
<tr>
<td>18</td>
<td>Noise, vibration and comfort rating notations</td>
<td>100</td>
</tr>
<tr>
<td>18.1</td>
<td>General</td>
<td>100</td>
</tr>
<tr>
<td>18.2</td>
<td>Technical requirements</td>
<td>100</td>
</tr>
<tr>
<td>18.3</td>
<td>Certification requirements</td>
<td>101</td>
</tr>
<tr>
<td>19</td>
<td>Cold climate notations</td>
<td>101</td>
</tr>
<tr>
<td>19.1</td>
<td>General</td>
<td>101</td>
</tr>
<tr>
<td>19.2</td>
<td>Structural strength</td>
<td>101</td>
</tr>
<tr>
<td>19.3</td>
<td>Winterized</td>
<td>103</td>
</tr>
<tr>
<td>20</td>
<td>Environmental notations</td>
<td>103</td>
</tr>
<tr>
<td>20.1</td>
<td>General</td>
<td>103</td>
</tr>
<tr>
<td>20.2</td>
<td>Objective</td>
<td>104</td>
</tr>
<tr>
<td>20.3</td>
<td>Technical requirements</td>
<td>104</td>
</tr>
<tr>
<td>21</td>
<td>Enhanced system verification</td>
<td>105</td>
</tr>
<tr>
<td>21.1</td>
<td>General</td>
<td>105</td>
</tr>
<tr>
<td>21.2</td>
<td>Technical requirements</td>
<td>106</td>
</tr>
<tr>
<td>21.3</td>
<td>Certification requirements</td>
<td>106</td>
</tr>
<tr>
<td>22</td>
<td>Integrated software dependent systems</td>
<td>106</td>
</tr>
<tr>
<td>22.1</td>
<td>General</td>
<td>106</td>
</tr>
<tr>
<td>22.2</td>
<td>Technical requirements</td>
<td>106</td>
</tr>
<tr>
<td>22.3</td>
<td>Certification requirements</td>
<td>106</td>
</tr>
<tr>
<td>23</td>
<td>Special feature notations</td>
<td>107</td>
</tr>
</tbody>
</table>
Chapter 3 Classification in operation

Section 1 General provisions

1 Introduction

1.1 General

1.2 Survey pre-planning and record keeping

1.3 Asbestos free declaration

1.4 Alternative survey arrangements

1.5 Surveys performed by approved companies

2 Periodical surveys

2.1 General

2.2 Postponement of periodical surveys

2.3 Survey of units out of commission

2.4 Survey schedules

2.5 Class notations

Section 2 General requirements for structure and machinery surveys

1 General

1.1 Preparation for survey

2 Structure and equipment

2.1 Conditions for survey and access to structures

2.2 Survey extent

2.3 Repair of structural damage or deterioration

3 Machinery and systems

3.1 Maintenance and preparation for survey

3.2 Machinery verification

4 Special provisions for ageing offshore units

4.1 General

4.2 Corrosion measurements and condition of protective coating

4.3 Fatigue utilization index

Section 3 Periodical survey extent for main class

1 General

1.1 Introduction

1.2 In-service inspection program

2 Annual survey
2.1 Survey extent.................................................................................................................. 129
2.2 Structure and equipment, general.................................................................................. 129
2.3 Structure and equipment, type specific......................................................................... 131
2.4 Machinery and safety systems....................................................................................... 132
3 Intermediate survey ........................................................................................................ 134
  3.1 General......................................................................................................................... 134
  3.2 Structure and equipment............................................................................................... 135
  3.3 Machinery and safety systems – all units...................................................................... 135
4 Renewal survey, structure and equipment ..................................................................... 136
  4.1 General......................................................................................................................... 136
  4.2 All units........................................................................................................................ 136
  4.3 Specific requirements for ship-shaped units.................................................................. 140
  4.4 Specific requirements for column-stabilised units....................................................... 141
  4.5 Specific requirements for units of other shape............................................................ 145
5 Renewal survey, machinery and systems ....................................................................... 145
  5.1 General......................................................................................................................... 145
  5.2 Machinery...................................................................................................................... 145
  5.3 Electrical installations................................................................................................... 146
  5.4 Safety and control systems........................................................................................... 147
Section 4 Miscellaneous main class surveys...................................................................... 149
1 Propeller shaft survey ...................................................................................................... 149
  1.1 General......................................................................................................................... 149
2 Propeller connection survey ........................................................................................... 150
  2.1 General......................................................................................................................... 150
  2.2 Dismantling of propellers............................................................................................. 150
3 Survey of geared thrusters for main propulsion and positioning..................................... 150
  3.1 Definitions..................................................................................................................... 150
  3.2 Survey extent............................................................................................................... 151
4 Survey of podded thrusters for main propulsion and positioning.................................... 151
  4.1 General......................................................................................................................... 151
  4.2 Scheduled surveys....................................................................................................... 151
5 Boiler survey..................................................................................................................... 151
6 Thermal oil heater survey............................................................................................... 151
7 Survey of the unit’s bottom and related items................................................................. 151
  7.1 Schedule....................................................................................................................... 151
  7.2 Survey planning and record keeping............................................................................ 152
  7.3 Ship-shaped units (ship or barge type units)................................................................. 152
  7.4 Column-stabilised units............................................................................................... 152
  7.5 Self-elevating units..................................................................................................... 152
Section 5 Periodical survey extent for additional service notations ................................. 154

1 Introduction..................................................................................................... 154

2 Drilling units.................................................................................................. 154
   2.1 Introduction............................................................................................... 154
   2.2 Annual survey........................................................................................... 154
   2.3 Complete survey....................................................................................... 154

3 Well intervention units.................................................................................... 155
   3.1 Introduction............................................................................................... 155
   3.2 Annual survey........................................................................................... 155
   3.3 Complete survey....................................................................................... 155

4 Accommodation unit........................................................................................ 156
   4.1 Introduction............................................................................................... 156
   4.2 Annual survey........................................................................................... 156
   4.3 Complete survey....................................................................................... 156

5 Crane unit........................................................................................................ 156
   5.1 Introduction............................................................................................... 156
   5.2 Annual survey........................................................................................... 156
   5.3 Complete survey....................................................................................... 156

6 Wind turbine installation units......................................................................... 157
   6.1 Introduction............................................................................................... 157
   6.2 Annual survey........................................................................................... 157
   6.3 Complete survey....................................................................................... 157

7 Offshore support units..................................................................................... 157
   7.1 Introduction............................................................................................... 157

Section 6 Optional class notation surveys............................................................ 158

1 Introduction..................................................................................................... 158
   1.1 General.................................................................................................... 158

2 Position mooring equipment.......................................................................... 158
   2.1 Application............................................................................................... 158
   2.2 Annual survey........................................................................................... 158
   2.3 Renewal survey....................................................................................... 159

3 Position mooring system............................................................................... 161
   3.1 Application............................................................................................... 161
   3.2 Annual survey........................................................................................... 161
   3.3 Annual survey- thruster assisted systems.................................................. 162
3.4 Complete survey........................................................................................................ 163
3.5 Complete survey – thruster assisted systems.........................................................163

4 Dynamic positioning systems.................................................................................. 165
  4.1 General.................................................................................................................. 165
  4.2 Specific requirements........................................................................................... 165
  4.3 Annual and complete survey................................................................................ 165

5 Drilling plant............................................................................................................. 165
  5.1 Application.......................................................................................................... 165
  5.2 Annual survey..................................................................................................... 166
  5.3 Complete survey................................................................................................ 169
  5.4 Well test equipment survey................................................................................ 175
  5.5 DRILL (US) ......................................................................................................... 177

6 Helicopter deck........................................................................................................ 178
  6.1 Application.......................................................................................................... 178
  6.2 Complete survey................................................................................................ 178

7 Well test.................................................................................................................. 178
  7.1 Application.......................................................................................................... 178
  7.2 Annual and complete surveys............................................................................. 178

8 Temporary oil storage............................................................................................. 179
  8.1 Application.......................................................................................................... 179
  8.2 Annual survey..................................................................................................... 179
  8.3 Complete survey................................................................................................ 179

9 Crane....................................................................................................................... 179
  9.1 Application.......................................................................................................... 179
  9.2 Annual survey..................................................................................................... 180
  9.3 Complete survey (5-yearly, Renewal)................................................................. 182

10 Offshore gangways................................................................................................ 183
  10.1 General............................................................................................................. 183
  10.2 Surveys.............................................................................................................. 183
  10.3 Repairs and modifications................................................................................ 183

11 Diving systems...................................................................................................... 184

12 Additional fire protection arrangements.............................................................. 184
  12.1 General............................................................................................................. 184
  12.2 Complete survey............................................................................................. 184

13 Loading computers for damage control............................................................... 184
  13.1 Application........................................................................................................ 184
  13.2 Annual survey and complete surveys............................................................... 184

14 Periodically unattended machinery space and machinery centrally operated.... 184
14.1 Application .................................................................................................. 184
14.2 Annual and complete surveys .................................................................... 184

15 Well intervention system ........................................................................... 184
15.1 Application .................................................................................................. 184
15.2 Annual survey ............................................................................................ 185
15.3 Complete survey ....................................................................................... 188

16 Hull monitoring system ............................................................................... 194
16.1 Application .................................................................................................. 194
16.2 Objective .................................................................................................... 194
16.3 Annual survey ............................................................................................ 194

17 Noise, vibration and comfort rating ......................................................... 194
17.1 Application .................................................................................................. 194
17.2 Vibration ..................................................................................................... 194
17.3 Comfort rating ............................................................................................ 194

18 Winterization ................................................................................................ 195
18.1 Application .................................................................................................. 195
18.2 Annual survey ............................................................................................ 195
18.3 Complete survey ....................................................................................... 196

19 Environmental notations ........................................................................... 196
19.1 Ballast water management systems ......................................................... 196
19.2 Clean or Clean Design ............................................................................ 196
19.3 Recycling ..................................................................................................... 196
19.4 Vapour control systems (VCS) .................................................................. 196

20 Integrated software dependent systems .................................................. 197
20.1 General ....................................................................................................... 197
20.2 Annual survey ............................................................................................ 197
20.3 Complete survey ....................................................................................... 197

21 Special feature notations ........................................................................... 197
21.1 Non self-propelled units ............................................................................ 197
21.2 Tailshaft monitoring .................................................................................. 198

Section 7 Survey arrangements ....................................................................... 200
1 Introduction ..................................................................................................... 200
2 Machinery survey arrangements .................................................................. 200
2.1 General ....................................................................................................... 200
2.2 Machinery continuous ............................................................................... 208
2.3 Machinery planned maintenance system .................................................. 208
2.4 Machinery planned maintenance system – reliability centred ................. 209
2.5 Offshore condition monitoring ................................................................. 216
3 Drilling equipment survey arrangements .................................................. 219
3.1 General ........................................................................................................ 219
3.2 Drilling equipment continuous ....................................................................... 219
3.3 Drilling equipment planned maintenance system ............................................... 219
3.4 Drilling equipment planned maintenance system – reliability centred .............. 223
3.5 Drilling equipment condition monitoring ........................................................... 224

4 Structural survey arrangements ...................................................................... 225
4.1 General ........................................................................................................ 225
4.2 Renewal (periodic) ......................................................................................... 225
4.3 Structural continuous ..................................................................................... 225
4.4 Structural integrity management ................................................................... 225

Section 8 Surveys performed by approved companies ......................................... 228
1 Surveys by approved companies ...................................................................... 228
1.1 General ........................................................................................................ 228
1.2 Thickness measurements ................................................................................ 228
1.3 Bottom survey afloat .................................................................................... 228
1.4 Non-destructive testing .................................................................................. 228
1.5 Mooring chain inspections ........................................................................... 229
1.6 Condition monitoring ...................................................................................... 229

Appendix A Terms and Conditions .................................................................. 230
Appendix B Introduction to offshore classification ............................................. 234
1 Introduction ..................................................................................................... 234
2 The classification system ............................................................................. 234
2.1 The classification process and its limitations ............................................. 234
2.2 Who needs classification? ..................................................................... 234
2.3 Recognition of DNV GL ........................................................................ 234
2.4 Responsibility for safety at sea ............................................................ 235
2.5 Classification of newbuildings ....................................................................... 235
2.6 Classification in the operational phase ...................................................... 236
2.7 Owner’s duties ........................................................................................ 236

3 Remuneration ............................................................................................. 236
4 Classification support ..................................................................................... 237
4.1 General ........................................................................................................ 237
4.2 Pre-contract support ................................................................................... 237
4.3 In-service support ....................................................................................... 237
4.4 Limitations ................................................................................................... 237
Appendix C Mooring equipment acceptance standard guidance.......................................................... 238

1 General........................................................................................................................................... 238

2 Anchor chains; renewal survey examination guide................................................................. 238

2.1 General.................................................................................................................................. 238

2.2 Diameter loss due to abrasion and corrosion................................................................. 239

2.3 Joining shackle defects and repair.................................................................................. 240

2.4 Anchors acceptance criteria and repair.......................................................................... 240

Changes - historic..................................................................................................................... 241
1 Introduction

1.1 General
This publication presents DNV GL’s Rules for Classification of Offshore Drilling and Support Units, the terms and procedures for assigning and maintaining classification, including listing of the applicable technical references to be applied for classification.

1.2 Organisation
This document is divided into three main chapters as follows:
— Ch.1: providing general information about Classification principles and procedures
— Ch.2: providing design and construction requirements for the newbuilding phase
— Ch.3: providing requirements for retention of Class in the operational phase.

1.3 Objects covered
This document covers Classification of mobile offshore units of the following design types:
— ship-shaped units
— column-stabilised units
— cylindrical units
for the following services:
— drilling
— well intervention
— accommodation
— heavy-lifting
— wind turbine installation
— general offshore support.

Guidance note:
Self-elevating units for the above mentioned services are as covered by DNVGL-RU-OU-0104 Rules for self-elevating units.
2 Definitions and abbreviations

2.1 Verbal forms

Table 1 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>

2.2 Definitions

Table 2 Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alteration</td>
<td>A change that does not affect the basic character or structure of the Unit it is applied to.</td>
</tr>
<tr>
<td>Assessment</td>
<td>An act of assessing, appraising or evaluating a condition of a product, process or system.</td>
</tr>
<tr>
<td>Builder</td>
<td>The party contracted to build a ‘unit in compliance with the Society’s Rules.</td>
</tr>
<tr>
<td>Certificate</td>
<td>A document confirming compliance with the Society’s Rules or with other rules and regulations for which the Society has been authorized to act.</td>
</tr>
<tr>
<td>Certification</td>
<td>A service that comprises assessment of compliance with applicable requirements and issuance of a Certificate is compliance is confirmed.</td>
</tr>
<tr>
<td>Class</td>
<td>Class is assigned to and will be retained for Units, which the Society has found to be in compliance with applicable requirements of the Society’s rules.</td>
</tr>
<tr>
<td>Class Certificate</td>
<td>Certificate confirming compliance with the Society’s Rules as applicable and at the time of Survey.</td>
</tr>
<tr>
<td>Class Entry</td>
<td>Assignment of Class to an existing Unit.</td>
</tr>
<tr>
<td>Class Notation</td>
<td>An abbreviation or keyword expressing a specific feature relating to a Unit or its machinery, systems and equipment, or service area while referring to specific requirements in the Rules.</td>
</tr>
<tr>
<td>Classification</td>
<td>A service which comprises the development and maintenance of independent technical standards for Units – Class Rules and standards, and to verify compliance with the Rules and standards throughout the Unit’s life. The extent of and methods for verifying compliance will be decided by the Society to establish reasonable assurance that the relevant Rules are complied with.</td>
</tr>
<tr>
<td>Close-up examination</td>
<td>An examination where the details of structural components are within the close visual inspection range of the surveyor, i.e. preferably within reach of hand</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Coating conditions                        | — GOOD: condition with only minor spot rusting  
                                        | — FAIR: condition with local breakdown at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition  
                                        | — POOR: condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration |
| Commissioning                             | A process of assuring that components, equipment and the systems are functioning in accordance with the functional requirements |
| Concurrent surveys                        | Surveys required to be concurrently completed shall have the same date of completion.  
                                        | A survey required to be carried out in conjunction with or carried out as part of another survey shall be completed on or before the completion of the other survey, however, within the time window for that survey. |
| Condition of Class                        | A requirement that specific measures, Repairs or Surveys shall be carried out within a specific time limit in order to retain Class. |
| Condition on behalf of the Flag Administration | A requirement that specific measures, Repairs or Surveys shall be carried out within a specific time limit in order to retain the statutory Certificate  
<pre><code>                                    | A Condition on behalf of the Flag Administration will be issued only when the Society has been authorised by the Flag Administration, see [4]. |
</code></pre>
<p>| Conditions                                | General term that includes both Condition of Class and Condition on behalf of the Flag Administration. |
| Contract for Construction                 | A contract between the prospective Owner and the Builder to build a Unit, see Sec.2 [1.3.2].                                               |
| Conversion                                | Change that substantially alters the dimensions, carrying capacity or the type of the Unit.                                                |
| Critical structural areas                 | Areas that have been identified from calculations to require monitoring or from the service history of the subject Unit or from similar or sister Units to be sensitive to cracking, buckling or corrosion which would impair the structural integrity of the Unit |
| Customer                                  | Any person and/or company which has requested the Society’s service and/or has entered into a contract for services directly with the Society. |
| Deficiency                                | A failing or shortcoming with respect to applicable requirements.                                                                         |
| Designer                                  | A party who created or developed Documentation which is submitted to the Society for approval or information. |
| Documentation                             | Drawings, descriptions, calculations, reports, procedures, certificates and similar information describing e.g. the design, installation, testing, operation, maintenance or status of an object. |
| Exceptional circumstances                 | Unavailability of dry-docking facilities; unavailability of repair facilities; unavailability of essential materials, equipment or spare parts; or delays incurred by action taken to avoid severe weather conditions |
| Emergency towing                          | Towing related to an emergency situation normally caused by failure of the units own propulsion (compare with normal towing) |
| Flag Administration                       | The government of the state whose flag the Unit is entitled to fly.  |
| Guidance Notes                            | Additional information containing advice which is not required for the assignment or retention of Class, but with which the Society, based on experience, advises compliance. |</p>
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent tank</td>
<td>Self-supporting tank which does not form part of the unit’s hull and does not contribute to the hull strength</td>
</tr>
<tr>
<td>Independent gravity tank</td>
<td>A tank with design vapour pressure not exceeding 0.7 bar</td>
</tr>
<tr>
<td>Interpretation</td>
<td>Norms for fulfilling the associated principal requirements as defined by other regulatory bodies on matters which are left to the satisfaction of the flag administration or are vaguely worded. These do not preclude the use of other alternative solutions, but these shall be documented and approved for compliance to the principal requirement equivalent to the original interpretation.</td>
</tr>
<tr>
<td>Lay-up</td>
<td>Term used for Units that are out of commission. In this state the offshore Units may be at anchorage or permanently moored in a safe harbour.</td>
</tr>
<tr>
<td>Main Character of Class</td>
<td>Characters showing compliance with a defined set of Classification Rules for hull and/or machinery.</td>
</tr>
<tr>
<td>Main functions</td>
<td>In the context of these Rules for Classification:</td>
</tr>
<tr>
<td></td>
<td>— structural strength</td>
</tr>
<tr>
<td></td>
<td>— stability, watertight integrity and weathertightness</td>
</tr>
<tr>
<td></td>
<td>— drainage and bilge pumping</td>
</tr>
<tr>
<td></td>
<td>— ballasting</td>
</tr>
<tr>
<td></td>
<td>— propulsion (as applicable)</td>
</tr>
<tr>
<td></td>
<td>— steering (as applicable)</td>
</tr>
<tr>
<td></td>
<td>— position keeping (as applicable)</td>
</tr>
<tr>
<td>Main hoisting system</td>
<td>All major lifting equipment directly involved in lifting pipe, riser etc. into and out of the well, such as drawworks, hydraulic cylinders, top drive, links, elevators etc. Pipe handling equipment used for making up and breaking out pipe/stands are not considered main hoisting systems.</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>An organisation that manufactures the material or product, or carries out part production that determines the quality of the material or product, or does the final assembly of the product.</td>
</tr>
<tr>
<td>Mechanical completion</td>
<td>Verification that the components, equipment and the systems are constructed, installed and tested in accordance with applicable drawings and specifications and are ready for testing and commissioning in a safe manner.</td>
</tr>
<tr>
<td>Memorandum to Owner</td>
<td>Information related to the Unit, its machinery, systems and equipment or applicable requirements. A Memorandum to Owner will be issued in relation to information that does not require any corrective action or Survey.</td>
</tr>
<tr>
<td>Mobile Offshore Unit</td>
<td>A buoyant construction engaged in offshore operations including drilling, production, storage or support functions, not intended for service at one particular offshore location, and which can be relocated without major dismantling or modification.</td>
</tr>
<tr>
<td>Newbuilding</td>
<td>A new Unit under construction at a Builder.</td>
</tr>
<tr>
<td>Offshore Installation</td>
<td>A buoyant or non-buoyant construction engaged in offshore operations including drilling, production, storage or support functions, and which is designed and intended for use at one particular location for an extended period.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Overall examination</td>
<td>An examination intended to report on the overall condition of the structure.</td>
</tr>
<tr>
<td>Owner</td>
<td>The registered owner and/or manager of the Unit and/or any other organisation and/or person who has assumed the responsibility for operation of the Unit and who on assuming such responsibility has agreed to take over all the duties and responsibilities related to the Unit.</td>
</tr>
<tr>
<td>Patrolling</td>
<td>An independent and unscheduled check that the applicable processes, activities and associated Documentation of the building functions continue to comply with the Rules and statutory requirements.</td>
</tr>
<tr>
<td>Plan approval</td>
<td>A systematic and independent examination of drawings, design documents or records by the Society in order to verify compliance with the Rules or statutory requirements where authorised by the Flag Administration. The extent and method of Plan Approval will be decided at the discretion of the Society.</td>
</tr>
<tr>
<td>Plan Approval Staff</td>
<td>Personnel authorized to carry out Plan Approval and to conclude whether or not compliance with the Rules or statutory instruments has been met.</td>
</tr>
<tr>
<td>Port State Authority</td>
<td>The maritime authority in the country of the Unit's port of call.</td>
</tr>
<tr>
<td>Position mooring</td>
<td>Anchoring system for position keeping at the Unit's working location.</td>
</tr>
<tr>
<td>Pressure vessel</td>
<td>A tank with design gas or vapour pressure exceeding 0.7 bar.</td>
</tr>
<tr>
<td>Procedural requirements</td>
<td>Requirements for the process of assessing compliance with technical requirements. Procedural requirements cover:</td>
</tr>
<tr>
<td></td>
<td>— basis for design assessment, i.e. information or Documentation requirements</td>
</tr>
<tr>
<td></td>
<td>— requirements for certification of products</td>
</tr>
<tr>
<td></td>
<td>— requirements for Surveys to assign, maintain and retain Class.</td>
</tr>
<tr>
<td>Prompt and thorough repair</td>
<td>A permanent repair completed at the time of survey to the satisfaction of the Surveyor, therein removing the need for the imposition of any associated Condition of Class.</td>
</tr>
<tr>
<td>Quality Audit</td>
<td>A systematic and independent examination to determine whether established work processes and quality systems are adhered to.</td>
</tr>
<tr>
<td>Quality system</td>
<td>A quality management system and established procedures for production and control.</td>
</tr>
<tr>
<td>Quality survey plan</td>
<td>A plan that systematically identifies activities related to the Classification project (e.g. construction, installation, testing, mechanical completion, pre-commissioning, testing and commissioning) and the extent of involvement each party (i.e. yard's QC, yard's QA, DNV GL and owners (if desired)) will undertake. Such a plan needs to be submitted to the Society for approval prior to commencement of Classification projects.</td>
</tr>
<tr>
<td>Reliability</td>
<td>The ability of a component or a system to perform its required function under given conditions for a given time interval.</td>
</tr>
<tr>
<td>Representative tanks</td>
<td>Those tanks which are expected to reflect the condition of other tanks of similar type and service and with similar corrosion protection systems. When selecting representative tanks account shall be taken of the service and repair history on board and identifiable critical and/or suspect areas.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Retroactive Requirement</td>
<td>A requirement in the Rules or a statutory requirement that will enter into force for certain Units in operation and under construction at a given date or at an upcoming Survey. The Retroactive Requirement will specify the required actions to be taken in order to retain Class or statutory certification. RR related to statutory certification will be issued only if the Society has been authorised to carry out statutory certification on behalf of the Flag Administration.</td>
</tr>
<tr>
<td>Rules</td>
<td>Independent standard that consist of all requirements, technical and procedural, adopted by the Society as the basis for Classification. and published in DNV GL’s Rules for Classification and referred documents.</td>
</tr>
<tr>
<td>Sighting Survey</td>
<td>A survey to confirm that the relevant construction or the equipment is in a satisfactory condition and, as far as can be judged, will remain so until the postponed survey has been carried out.</td>
</tr>
<tr>
<td>Society</td>
<td>DNV GL AS and its affiliates carrying out Classification and Statutory Certification.</td>
</tr>
<tr>
<td>Safety Systems</td>
<td>Systems, including required utilities, which are provided to prevent, detect/warn of an accidental event/abnormal conditions and/or mitigate its effects</td>
</tr>
<tr>
<td></td>
<td><strong>Interpretation:</strong></td>
</tr>
<tr>
<td></td>
<td>The following should be considered as safety systems:</td>
</tr>
<tr>
<td></td>
<td>— ESD, including blowdown where relevant</td>
</tr>
<tr>
<td></td>
<td>— PSD</td>
</tr>
<tr>
<td></td>
<td>— fire and gas detection</td>
</tr>
<tr>
<td></td>
<td>— PA/GA</td>
</tr>
<tr>
<td></td>
<td>— fire-fighting systems</td>
</tr>
<tr>
<td></td>
<td>— BOP incl. control system</td>
</tr>
<tr>
<td></td>
<td>— safety systems for essential or important services</td>
</tr>
<tr>
<td></td>
<td>— safety systems are normally considered as “on-demand” functions.</td>
</tr>
<tr>
<td></td>
<td>---e-n-d---o-f---i-n-t-e-r-p-r-e-t-a-t-i-o-n---</td>
</tr>
<tr>
<td>Spaces</td>
<td>separate compartments including holds and tanks</td>
</tr>
<tr>
<td>Statement of Compliance</td>
<td>A document confirming compliance with specified requirements for which the Society has not been authorised to act. Compliance is confirmed on the date as given in the statement.</td>
</tr>
<tr>
<td>Statutory Certification</td>
<td>A service with the intention of confirming compliance with regulatory codes and regulations - in agreement with relevant Flag Administrations.</td>
</tr>
<tr>
<td>Substantial corrosion</td>
<td>Extent of corrosion such that assessment of corrosion pattern indicates wastage in excess of 75% of allowable margins, but within acceptable limits.</td>
</tr>
<tr>
<td>Survey</td>
<td>A systematic and independent examination of a Unit, materials, components or systems in order to verify compliance with the Rules and/or statutory requirements. Surveys will be carried out on the Unit, at the construction or repair site as well as at sub-suppliers and other locations at the discretion of the Society, which also decides the extent and method of Survey.</td>
</tr>
<tr>
<td>Surveyor</td>
<td>Personnel authorised to carry out Surveys and to conclude whether or not compliance has been met.</td>
</tr>
<tr>
<td>Suspect areas</td>
<td>Areas showing substantial corrosion and/or are considered by the Surveyor to be prone to rapid wastage.</td>
</tr>
</tbody>
</table>
### Technical Requirements

Requirements for design and construction of a Unit, system or component, and the minimum requirements they shall meet during the operational lifetime.

### Temporary Conditions

Design conditions not covered by operating conditions, e.g. conditions during fabrication, mating and installation phases, and dry transit phases.

### Temporary Equipment

Equipment intended for use on board for a period not exceeding 30 months and which is covered by Class, requires hook-up to systems covered by Class and/or is a significant deck load and/or may pose a risk for fire, explosion and escape routes.

### Temporary Mooring

Anchoring in sheltered waters or harbours exposed to moderate environmental loads.

### Tentative Rules and Standards

Provisional Rules or Standards to which DNV GL reserves the right to make immediate and/or retroactive adjustments in order to obtain the purpose intended.

### (normal) Towing

Drawing or pulling the Unit by a chain or line using a tug boat. Normally towing is performed for Units without any propulsion for (re-)location (compare with emergency towing).

### Transit Conditions

All wet Unit movements from one geographical location to another.

### Unit

In the context of these Rules signifies a Mobile Offshore Unit (MOU).

### Verification

A service that confirms through the provision of objective evidence (analysis, observation, measurement, test, records or other evidence) that specified requirements have been met.

### Witnessing

Attendance of tests or measurements with the intention of verifying compliance with agreed test or measurement procedures.

### 2.3 Abbreviations

#### Table 3 Abbreviations

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>API</td>
<td>American Petroleum Institute</td>
</tr>
<tr>
<td>BOP</td>
<td>blow out preventer</td>
</tr>
<tr>
<td>BS</td>
<td>British Standard (issued by British Standard Institution)</td>
</tr>
<tr>
<td>CG</td>
<td>DNV GL class guideline</td>
</tr>
<tr>
<td>CMC</td>
<td>certification of materials and components</td>
</tr>
<tr>
<td>CMMS</td>
<td>computerised maintenance management system</td>
</tr>
<tr>
<td>CC</td>
<td>condition of class</td>
</tr>
<tr>
<td>CA</td>
<td>condition on behalf of the flag administration</td>
</tr>
<tr>
<td>CM</td>
<td>condition monitoring</td>
</tr>
<tr>
<td>CBM</td>
<td>condition based maintenance</td>
</tr>
<tr>
<td>DFF</td>
<td>design fatigue factors</td>
</tr>
<tr>
<td>EDP</td>
<td>emergency disconnect package</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ERP</td>
<td>enterprise resources planning tool</td>
</tr>
<tr>
<td>DPMS</td>
<td>drilling equipment planned maintenance system</td>
</tr>
<tr>
<td>ESD</td>
<td>emergency shut down</td>
</tr>
<tr>
<td>FEA</td>
<td>design pressure</td>
</tr>
<tr>
<td>FMECA</td>
<td>functional failure analysis</td>
</tr>
<tr>
<td>FMEA</td>
<td>failure mode, effects and criticality analysis</td>
</tr>
<tr>
<td>FMEA</td>
<td>failure mode and effects analysis</td>
</tr>
<tr>
<td>FUI</td>
<td>fatigue utilisation index</td>
</tr>
<tr>
<td>HAZOP</td>
<td>hazard and operability study</td>
</tr>
<tr>
<td>IACS</td>
<td>International Association of Classification Societies</td>
</tr>
<tr>
<td>IC</td>
<td>inspection category</td>
</tr>
<tr>
<td>IEC</td>
<td>International Electrotechnical Commission</td>
</tr>
<tr>
<td>IIP</td>
<td>in service inspection program</td>
</tr>
<tr>
<td>IMO</td>
<td>International Maritime Organization</td>
</tr>
<tr>
<td>ISO</td>
<td>International Organisation for Standardization</td>
</tr>
<tr>
<td>HP</td>
<td>high pressure</td>
</tr>
<tr>
<td>HT</td>
<td>high temperature</td>
</tr>
<tr>
<td>KPI</td>
<td>key performance indicator</td>
</tr>
<tr>
<td>LRFD</td>
<td>load and resistance factor design</td>
</tr>
<tr>
<td>MC</td>
<td>mechanical completion</td>
</tr>
<tr>
<td>MO</td>
<td>memorandum to owner</td>
</tr>
<tr>
<td>MPI</td>
<td>magnetic particle inspection</td>
</tr>
<tr>
<td>MDF</td>
<td>mean down time</td>
</tr>
<tr>
<td>MTTF</td>
<td>mean time to failure (effective failure rate with or without maintenance carried out)</td>
</tr>
<tr>
<td>MTBF</td>
<td>mean time between failure (MTBF = MTTF + MDF)</td>
</tr>
<tr>
<td>NDT</td>
<td>non-destructive testing</td>
</tr>
<tr>
<td>OEM</td>
<td>original equipment manufacturer</td>
</tr>
<tr>
<td>OS</td>
<td>DNV GL offshore standard</td>
</tr>
<tr>
<td>OTG</td>
<td>DNV GL offshore technical guide</td>
</tr>
<tr>
<td>QSP</td>
<td>quality survey plan</td>
</tr>
<tr>
<td>RBI</td>
<td>risk based inspection</td>
</tr>
<tr>
<td>RCM</td>
<td>reliability centered maintenance</td>
</tr>
</tbody>
</table>
### Term Definition

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RCA</td>
<td>root cause analysis</td>
</tr>
<tr>
<td>RBM</td>
<td>risk based maintenance</td>
</tr>
<tr>
<td>RP</td>
<td>DNV GL recommended practice</td>
</tr>
<tr>
<td>RR</td>
<td>retroactive requirement</td>
</tr>
<tr>
<td>SAE</td>
<td>Society of Automotive Engineers</td>
</tr>
<tr>
<td>SCF</td>
<td>stress concentration factor</td>
</tr>
<tr>
<td>SWL</td>
<td>safe working load</td>
</tr>
<tr>
<td>UT</td>
<td>ultrasonic testing</td>
</tr>
<tr>
<td>WSD</td>
<td>working stress design</td>
</tr>
</tbody>
</table>

### 3 Normative references

#### 3.1 Normative references

This document includes references to other DNV GL documents and recognised codes and standards which shall be used in conjunction with the requirements given in this document for assignment of class.

#### 3.2 DNV GL reference documents

Applicable DNV GL reference documents are listed in Table 4. See Sec.2 [1.2] for applicable editions.

#### Table 4 DNV GL reference documents

<table>
<thead>
<tr>
<th>Reference</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNVGL-OS-A101</td>
<td>Safety principles and arrangement</td>
</tr>
<tr>
<td>DNVGL-OS-B101</td>
<td>Metallic materials</td>
</tr>
<tr>
<td>DNVGL-OS-C101</td>
<td>Design of offshore steel structures, general – LRFD method</td>
</tr>
<tr>
<td>DNVGL-OS-C102</td>
<td>Structural design of offshore ships</td>
</tr>
<tr>
<td>DNVGL-OS-C103</td>
<td>Structural design of column-stabilised units – LRFD method</td>
</tr>
<tr>
<td>DNVGL-OS-C104</td>
<td>Structural design of self-elevating units – LRFD method</td>
</tr>
<tr>
<td>DNVGL-OS-C201</td>
<td>Structural design of offshore units – WSD method</td>
</tr>
<tr>
<td>DNVGL-OS-C301</td>
<td>Stability and watertight integrity</td>
</tr>
<tr>
<td>DNVGL-OS-C401</td>
<td>Fabrication and testing of offshore structures</td>
</tr>
<tr>
<td>DNVGL-OS-D101</td>
<td>Marine and machinery systems and equipment</td>
</tr>
<tr>
<td>DNVGL-OS-D201</td>
<td>Electrical installations</td>
</tr>
<tr>
<td>DNVGL-OS-D202</td>
<td>Automation, safety, and telecommunication systems</td>
</tr>
<tr>
<td>DNVGL-OS-D301</td>
<td>Fire protection</td>
</tr>
<tr>
<td>DNVGL-OS-E101</td>
<td>Drilling plant</td>
</tr>
</tbody>
</table>
3.3 Other references

Other normative references are given in Table 5. See Sec.2 [1.2] for applicable editions.

### Table 5 Other normative references

<table>
<thead>
<tr>
<th>Reference</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IACS</td>
<td>International Association of Classification Societies, International Association of Classification Societies, Shipbuilding and Repair Quality Standard, see <a href="http://www.iacs.org.uk">www.iacs.org.uk</a></td>
</tr>
</tbody>
</table>

4 Informative references

4.1 DNV GL informative references

The publications listed in Table 6 are referenced in the text of this document, and may be used as a source of supplementary services and information. See Sec.2 [1.2] for applicable editions.

### Table 6 DNV GL informative references

<table>
<thead>
<tr>
<th>Reference</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<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>
<tr>
<td>DNVGL-RP-C210</td>
<td>Probabilistic methods for planning of inspection for fatigue cracks in offshore structures</td>
</tr>
<tr>
<td>DNVGL-RP-C302</td>
<td>Risk based corrosion management</td>
</tr>
<tr>
<td>DNVGL-SI-0166</td>
<td>Verification for compliance with Norwegian shelf regulations</td>
</tr>
<tr>
<td>DNVGL-SI-0167</td>
<td>Verification for compliance with United Kingdom shelf regulations</td>
</tr>
<tr>
<td>DNVGL-SI-0003</td>
<td>Verification for compliance with United States regulations on the outer continental shelf</td>
</tr>
<tr>
<td>DNVGL-CP-0338</td>
<td>DNV GL type approval scheme</td>
</tr>
</tbody>
</table>
4.2 Other references

Other references are given in Table 7. See Sec.2 [1.2] for applicable editions.

Table 7 Other references

<table>
<thead>
<tr>
<th>Reference</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>API RP 2I</td>
<td>In-service inspection of mooring hardware for floating drilling units</td>
</tr>
<tr>
<td>API RP 8B</td>
<td>Inspection, maintenance, repair, and re-manufacture of hoisting equipment</td>
</tr>
<tr>
<td>BS 5430-1</td>
<td>Periodic inspection, testing and maintenance of transportable gas containers (excluding dissolved acetylene containers). Specification for seamless steel containers of water capacity 0.5 litres and above</td>
</tr>
<tr>
<td>EN 13306</td>
<td>Maintenance terminology</td>
</tr>
<tr>
<td>EN 15341</td>
<td>Maintenance key performance indicators (KPI)</td>
</tr>
<tr>
<td>EN 15628</td>
<td>Qualification of maintenance personnel</td>
</tr>
<tr>
<td>IEC 60300-3-10</td>
<td>Dependability management Part 3-10: Application guide maintainability</td>
</tr>
<tr>
<td>IEC 60300-3-11</td>
<td>Dependability management Part 3-11: Application guide reliability centred maintenance (RCM)</td>
</tr>
<tr>
<td>IEC 60300-3-14</td>
<td>Dependability management Part 3-14: Application guide maintenance and maintenance support</td>
</tr>
<tr>
<td>ISO 3166</td>
<td>Codes for the representation of names of countries and their subdivisions</td>
</tr>
<tr>
<td>ISO 4309</td>
<td>Cranes – Wire ropes – Care, maintenance, installation, examination and discard</td>
</tr>
<tr>
<td>ISO 12482</td>
<td>Cranes - Monitoring for crane design working period</td>
</tr>
<tr>
<td>ISO 14224</td>
<td>Collection and exchange of reliability and maintenance data for equipment (see also API Std 689)</td>
</tr>
<tr>
<td>ISO 9001</td>
<td>Quality management systems – Requirements</td>
</tr>
<tr>
<td>ISO 17359</td>
<td>Condition monitoring and diagnostics of machines – General guidelines</td>
</tr>
<tr>
<td>ISO 18436</td>
<td>Condition monitoring and diagnostics of machines - Requirements for training and certification of personnel</td>
</tr>
<tr>
<td>ISO 13379-1</td>
<td>Condition monitoring and diagnostics of machines - Data interpretation and diagnostics techniques</td>
</tr>
<tr>
<td>PD 5500 (Previous BS 5500)</td>
<td>Specification for unfired fusion welded pressure vessels</td>
</tr>
<tr>
<td>SAE JA1011</td>
<td>Evaluation criteria for reliability centred maintenance (RCM) process</td>
</tr>
</tbody>
</table>
SECTION 2 CLASSIFICATION PRINCIPLES

1 General

1.1 The Society

1.1.1 DNV GL is an organisation with the objective of safeguarding life, property, and the environment. DNV GL operates through the limited company DNV GL AS, which is registered in Norway and operates through a worldwide network of affiliates and offices.

DNV GL carries out Classification, Certification and other verification services related to mobile offshore units, facilities, systems, materials and components and performs research in connection with these functions. Moreover, provided its integrity is not impaired, DNV GL may perform assignments which utilize its knowledge or which contribute to develop knowledge that will be required for the performance of these tasks.

1.1.2 The DNV GL General Terms and Conditions - Classification Services (the T&Cs) (see App.A) are an integral part of the Rules in their latest version. In case of any ambiguities or contradictions between the T&Cs and other parts of the Rule, the provisions of the T&Cs shall prevail.

2 The classification concept

2.1 Introduction

2.1.1 The Classification concept consists of the development and application of Rules and referred Offshore Standards with regard to design, construction and Survey of Mobile Offshore Units.

2.1.2 In general, the Rules and standards cover requirements for:

— availability of Main Functions and the safety of installations supporting the Main Functions
— the structural strength and integrity of essential parts of the unit’s hull and its appendages
— the safety of machinery, systems and equipment supporting non-Main Functions that constitute possible hazards to personnel and unit
— safety levels and availability beyond that of Main Class (see [2.2.2])

2.1.3 Class may be assigned to a unit when the Society has established reasonable assurance that the Rules are complied with.

2.1.4 The assignment of Class is documented by the issuance of a Class Certificate or an interim Class Certificate and the entry of the unit’s main particulars and details of Class in the Society’s Register (see Sec.4 [4]).

2.1.5 Class is maintained during the service period provided applicable requirements are observed and Surveys carried out. The Class will be retained on the condition that the requirements applicable for retention of Class are complied with. Retention of Class is confirmed by annual endorsements and renewal of the Class Certificate at 5-year intervals.

2.2 Main Class and Class Notations

2.2.1 The Class Notations are based on the following structure:

— Main Class Notations
— structural design Notations
— service Notations
— additional Class Notations related to special equipment and systems
— additional Class Notations related to cold climate operations
— service restrictions.

Applicable Class Notations are provided in Sec. 3.

2.2.2 Mandatory Class Notations stipulate requirements for:
— availability of Main Functions and the safety of installations supporting the Main Functions
— structural strength and integrity of essential parts of the unit’s hull and its appendages
— the safety of machinery, systems and equipment supporting non-Main Functions that constitute possible hazards to personnel and unit.

2.2.3 Class Notations are assigned to a Unit in order to determine applicable requirements in the Rules for assignment and/or retention of that Class Notation.

2.2.4 Additional Class Notations include requirements to safety levels and availability beyond that of Main Class and mandatory Class Notations.

2.2.5 Upon consideration, Class Notations as found in other Rule books published by the Society may be assigned to a unit complying with these Class Notations.

2.3 Conditions and assumptions involving other parties

2.3.1 Classification is performed on the basic assumption that other parties involved fulfil their individual obligations, including ensuring compliance with the Rules. Classification does not substitute the role and/or release the obligations of other parties.

2.3.2 Nothing contained in these Rules or in any Certificate, report or document issued in connection with or pursuant to these Rules, shall relieve any Customer, Designer, engineer, Builder, Manufacturer, yard, seller, supplier, Owner, operator, unit management or any other party from any obligations or consequences of default whatsoever.

2.3.3 Compliance with the Rules does not imply that a Unit is considered seaworthy. The acceptance and Commissioning of a Unit is the exclusive responsibility of the Owner.

2.4 Interactions with Flag Administrations and statutory requirements

2.4.1 The Unit’s arrangement and equipment shall comply with the requirements given by its Flag Administration, as applicable.

Such compliance is a prerequisite for Class. Compliance shall be demonstrated by possession of the applicable convention certificates issued according to [4]. The Society will not verify compliance with these requirements unless authorised by the Flag Administration.

2.4.2 If the Society has not been authorised to undertake Statutory Certification on behalf of a Flag Administration, the Society assumes the right to refuse to issue, or withdraw Class for such units. The Society decides the extent of authorization found necessary in order to retain Class.
2.5 Applicable rules

2.5.1 The Rules lay down Technical and Procedural requirements related to obtaining and retaining a Class Certificate.

2.5.2 The Rules stipulate requirements for the design, construction, Survey and testing of Mobile Offshore Units.

2.5.3 The Rules stipulate requirements for structures, materials, machinery, systems and equipment.

2.5.4 The Rules cover in some areas requirements also stipulated by IMO conventions and codes.

   Guidance note:
   For issuance of statutory Certificates, compliance with the statutory instruments will prevail where the Rules and IMO conventions and codes differ, see [2.5.1].

2.5.5 The Rules and amendments to the Rules accepted by the Society will enter into force on a date decided by the Society. Unless stated otherwise, the entry into force date shall be six (6) months after the date of publication.

   Guidance note:
   The date on which changes to the Rules come into force is shown on page 3 of new/revised chapters of the Rules.

2.5.6 Periodical survey requirements for retaining Class shall be according to the Rules in force at the time of Survey (given in Ch.3).

2.5.7 In the case where service experience and/or theoretical findings show that unacceptable risks may exist in connection with items covered by the existing Rules, the Society may, at any time, decide to lay down supplementary or amended requirements concerning the assignment and retention of Class.

2.5.8 If an amendment to the Rules is made mandatory to Units already contracted (see Sec.3 [1.3.3]) or to Units that have already been assigned Class, this will be especially stated.

2.5.9 The Society may consider the use of risk based assessments as a means of documenting compliance with requirements in the Rules.

   Guidance note:
   The assessment may be carried out using the format presented in IMO MSC-MEPC.2/Circ.12 Revised Guidelines for Formal Safety Assessment (FSA) for use in the IMO rule-making process.

2.5.10 Alternatives to detailed requirements in the Rules may be accepted when the overall safety and Reliability level is found to be equivalent or better than that of the Rules. Approval may be revoked if subsequent information indicates that the chosen alternative is not satisfactory.
2.5.11 If detailed requirements are not prescribed in the Rules, the Society may consider the safety and Reliability level of a proposed solution, or require clarification to resolve the issue. The Society reserves the right to accept or reject proposed solutions without justification.

2.5.12 The approval as described in [2.5.11] shall be based on an agreed scheme of analysis that is separately worked out and approved.

Guidance note:
For new technology, Recommended practice DNV-RP-A203 can be a suitable basis for such scheme.

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

2.5.13 Upon request by the Customer, DNV GL may consider the use of other recognised codes and standards as part of the basis for classification. Such agreed alternative arrangements shall be specified in the Class agreement.

2.5.14 The Society reserves the exclusive right to interpret, decide equivalence or make exemptions to the Rules.

2.5.15 The Rules are an integral part of the Society's Classification service. The safety objectives inherent in the Rules are achieved in conjunction with this Classification service. Using the rules without the corresponding classification services may have the result that safety objectives are not met.

2.5.16 The Rules are under the sole ownership rights and copyrights of the Society. It is prohibited by anyone else than the Society to offer and/or perform Classification services, wholly or partly, on the basis of and/or pursuant to these Rules without the Society's prior written consent. The Society is not responsible for the consequences arising from any use of the Rules by others.

2.6 Documentation and information

2.6.1 All Documentation and information that may influence the judgement, decisions and requirements of the Society for the purpose of Classification, shall be made available to the Society. It is the Customer's responsibility to document and/or demonstrate compliance with the Rules. Information may be made available by submitting documents to the Society or by permitting Surveys performed by the Society at the Customer's premises, onboard the Unit or at the premises of the Customer's sub-contractors.

2.6.2 Requirements for Documentation in relation to Plan Approval or used for information shall be submitted to the Society by the Customer. If additional Documentation and/or information are required, the Society will ask for this specifically.

2.6.3 The submitted documentation, which forms the basis for Classification shall, at all times, reflect the true status. In this respect, any revisions of documents required for plan approval shall therefore be submitted to the Society.

2.6.4 The supply of information should take place electronically and on a continuous basis in a format accepted by the Society, e.g. by online access to the Society's data bases.

2.6.5 The Customer warrants that he/she has the necessary rights to disclose relevant documentation and information to the Society.
2.6.6 The submitted documentation shall use SI-units (International System of Units) unless otherwise agreed.

2.7 Disclosure of information

2.7.1 The Society will not disclose any information received or reports made in connection with Classification to any other party than those entitled thereto (see IACS PR03) or those having been given the right to receive information by legislation, court decision or written permission from the owner of the information.

2.7.2 The Society will not disclose information that can be considered as the property of another party except when permission is given in writing by that party.

2.7.3 Internal communication, notes and calculations produced within the Society in connection with Classification will not be disclosed to other parties.

2.7.4 Notwithstanding [2.7.1] to [2.7.3], the following parties will have access to such information:
   — authorised representatives of the Flag Administration
   — authorised audit teams performing audits in connection with certification of the Society.

2.7.5 Notwithstanding [2.7.11] and [2.7.3], the Society may disclose information requested by a court order, governmental body (including regional bodies) or other public investigation bodies that are authorised by a decree.

2.7.6 Information recorded in the Society's Register of Vessels, which encompass the status of Classification and statutory Surveys and Certificates issued by the Society, overdue Conditions, Class suspensions, withdrawals and reinstatements, will be published and/or released to any interested party e.g. through Equasis according to IACS PR16.

2.7.7 The Society may at its discretion release information to other classification societies concerning relevant technical information on serious structural, machinery and system failures for the purpose of improving safety and protection of the marine environment. The Owner will be informed accordingly. See also IACS PR02.

2.8 Access

2.8.1 For the purpose of verifying compliance with the Rules, the Customer shall provide the Society's Surveyors with safe access to the Unit and/or to their premises.
   The premises and objects to be surveyed shall as agreed be cleaned and prepared for Survey.

2.8.2 The Customer shall provide Flag Authorities and authorised audit and/or inspection teams with safe access to the Unit and/or to their premises in order to audit the Society's compliance with applicable Rules, regulations and quality standards.

2.8.3 The Society reserves the right to decline to perform a requested service when inadequate access is provided or the safety of its Surveyors may be compromised.
2.9 Calibration of equipment

Measuring and test equipment used by Customers, the result of which may form the basis for the Surveyor's decisions, shall have a calibration status to an appropriate accuracy according to the Rules or as accepted by the Surveyor.

2.10 Service suppliers

Suppliers providing services on behalf of the customer, such as measurements, tests and maintenance of safety systems and equipment, the result of which may form the basis for the Surveyor's decisions, shall be approved by the Society, according to criteria established by the Society.

3 Appeals

3.1 Decisions taken by the Society

The Customer may request in writing that a decision made by the Society shall be taken up for reconsideration. The expenses incurred shall be paid by the Customer. However, if the earlier decision is revoked, the Society's expenses will be covered by the Society.

4 Statutory certification

4.1 General

4.1.1 The Society undertakes Statutory Certification on behalf of Flag Administrations when and to the extent the Society has been authorised to do so by the individual Flag Administration. Statutory Certification includes inter alia approval, Survey and the issuance of statutory Certificates. When the Society acts on behalf of a Flag Administration, the Society follows international statutory instruments, IACS Unified Interpretations and DNV GL Statutory Interpretations, and generally follows guidance issued by IMO in Circulars etc. unless the Flag Administration has instructed the Society otherwise.

4.1.2 It is assumed by the Society that required statutory Surveys for Units Classed by the Society will be carried out by the Society or by officers of the Flag Administration itself and that statutory Certificates will be issued by the Society or by the Flag Administration with the exceptions mentioned in [4.1.3] to [4.1.6]. The Society assumes the right to withdraw Class if statutory Certificates are not issued as described in this paragraph.

4.1.3 The Society may accept that Safety Management Certificates (ISM code) are issued by a third party that has been authorised by the Flag Administration and complies with the Code for Recognized Organisations (RO Code), adopted by Resolution MSC.349(92).

4.1.4 The Society may accept that International Ship Security Certificates (ISPS code) are issued by a third party that has been authorised by the Flag Administration and complies with MSC/Circ.1074.

4.1.5 The Society may accept that Maritime Labour Certificates are issued by a third party that has been authorised by the Flag Administration and complies with MLC, 2006.

4.1.6 The Society may accept that Cargo Ship Safety Radio Certificates (SOLAS) are issued by a third party that has been authorised by the Flag Administration.
4.1.7 For a dually Classed Unit, where the Society has not been authorised by the Flag Administration to issue statutory Certificates, the Society may accept that such certificates are issued by the other class society as authorised by the Flag Administration.

4.2 Service suppliers

Where Surveyors use the services of service suppliers in making decisions affecting statutory requirements, the suppliers shall be approved by either:

— the relevant Flag Administration
— a duly authorised organisation acting on behalf of the Flag Administration
— an equipment supplier when explicitly described by IMO conventions, resolutions or circulars, or
— the Society.
SECTION 3 CLASSIFICATION SCOPE AND NOTATIONS

1 Scope of classification

1.1 General

The rules and referred standards define acceptance criteria for design, construction, survey and testing of offshore units, their marine and machinery installations, systems and equipment, applicable to the newbuilding and operational phase.

1.2 Rule parts

These Rules states terms and procedures for assigning and maintaining class for offshore drilling and support units, as well as listing the applicable technical reference documents stipulating technical requirements for classification. These may be DNV GL offshore standards, other DNV GL standards and internationally recognised codes.

1.3 Rule particulars

The rules with reference standards give requirements in the following areas:

Table 1 Hull and main structure

<table>
<thead>
<tr>
<th>Hull and main structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>— strength</td>
</tr>
<tr>
<td>— materials and welding</td>
</tr>
<tr>
<td>— corrosion protection</td>
</tr>
<tr>
<td>— constructional fire protection</td>
</tr>
<tr>
<td>— weathertight and watertight integrity</td>
</tr>
<tr>
<td>— stability and floatability</td>
</tr>
<tr>
<td>— tank arrangement.</td>
</tr>
</tbody>
</table>

Table 2 Marine and machinery installations and equipment

<table>
<thead>
<tr>
<th>Marine and machinery installations and equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machinery installations and equipment, including their related auxiliary functions, with respect to strength and performance as applicable to the following main functions:</td>
</tr>
<tr>
<td>— power generation</td>
</tr>
<tr>
<td>— position keeping</td>
</tr>
<tr>
<td>— propulsion (as applicable)</td>
</tr>
<tr>
<td>— steering (if applicable)</td>
</tr>
<tr>
<td>— fire and flammable gas detection, fire protection and extinguishing</td>
</tr>
<tr>
<td>— drainage and bilge pumping</td>
</tr>
<tr>
<td>— ballasting</td>
</tr>
<tr>
<td>— emergency shutdown systems (as applicable)</td>
</tr>
</tbody>
</table>

Other machinery installations, regardless of their contribution to the main functions stated above, when located in enclosed hull compartments below the damage water line.

Other installations stated in the rules.
2 Class notations

2.1 General
Classed units will be given a class designation consisting of:
— construction symbol
— main character of class
— basic design notation
— service notation
— special equipment and systems notations (as applicable)
— special feature notations (as applicable).

2.2 Construction symbols

2.2.1 The symbol ☑ will be given to units built under the supervision of the Society.

2.2.2 The construction symbol ☑ will be assigned to Units built under the supervision of a classification society recognized by the Society and later assigned class with the Society. For such Units the class notations which the Society considers to have the equivalent intent will be assigned.

2.2.3 Units other than those described in [2.2.1] and [2.2.2] will not be assigned a construction symbol when classed with the Society.

2.3 Main character of class

2.3.1 The notation 1A will be assigned to Units with hull, machinery, systems and equipment ound to be in compliance with applicable rule requirements as given in this section.

2.3.2 The main class notation 1A will also be assigned to Units designed and constructed in accordance with the rules of another classification society, and later assigned class with the Society.

2.4 Structural design notations
The structural design notation indicates the type of structural design. The notations currently in use are given in Table 3.

Table 3 Class notations related to structural design

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Design requirements</th>
<th>Survey requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column-stabilised</td>
<td>A structure dependent on the buoyancy of widely spaced columns for floatation and stability in all modes of operation</td>
<td>Ch.2 Sec.1</td>
<td>Ch.3</td>
</tr>
<tr>
<td>Ship-shaped</td>
<td>Monohull ship and barge structures having displacement hulls with or without propulsion machinery</td>
<td>Ch.2 Sec.1</td>
<td>Ch.3</td>
</tr>
<tr>
<td>Cylindrical</td>
<td>A cylindrical shaped displacement hull with or without machinery</td>
<td>Ch.2 Sec.1</td>
<td>Ch.3</td>
</tr>
</tbody>
</table>
2.5 Service notations

2.5.1 Units constructed according to rules for offshore classification, arranged for a particular service and found to be in accordance with the relevant requirements for such service, will be given a corresponding service notation.

2.5.2 Service notations currently in use are defined in Table 4.

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Design requirements</th>
<th>Survey requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile offshore</td>
<td>A structure not properly characterised by the above notations</td>
<td>Ch.2 Sec.1</td>
<td>Ch.3</td>
</tr>
</tbody>
</table>

Table 4 Class notations related to service

2.5.3 The service notations in Table 4 shall be considered mandatory for the relevant types of units except for Well intervention 1 (see Ch.2 Sec.3 for further details).

2.5.4 Classification services related to hydrocarbon production, storage and loading are presented in rules for production and storage units.

2.5.5 Units intended for both drilling and production service (FDPSO) shall comply with the requirements for production units in rules for production and storage units and for drilling units in this document (in case of conflicting requirements, the most stringent requirement will prevail).

2.6 Optional class notations related to special equipment and systems

Units having special equipment or systems found to satisfy specified class requirements will be given a corresponding additional class notation. Notations currently in use are given in Table 5.

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Design requirements</th>
<th>Survey requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>BWM</td>
<td>Ballast water management</td>
<td>Ch.2 Sec.7 [20]</td>
<td>Ch.3 Sec.6 [18]</td>
</tr>
</tbody>
</table>
### Class notation

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Design requirements</th>
<th>Survey requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean</td>
<td>Arrangements for controlling and limiting operational emissions and discharges</td>
<td>Ch.2 Sec.7 [20]</td>
<td>Ch.3 Sec.6 [18]</td>
</tr>
<tr>
<td>COMF-MOU</td>
<td>Comfort class</td>
<td>Ch.2 Sec.7 [18]</td>
<td>Ch.3 Sec.6 [16]</td>
</tr>
<tr>
<td>Crane-offshore</td>
<td>Onboard crane which may comprise offshore and platform cranes</td>
<td>Ch.2 Sec.7 [10]</td>
<td>Ch.3 Sec.6 [9]</td>
</tr>
<tr>
<td>DPS</td>
<td>Dynamic positioning system</td>
<td>Ch.2 Sec.7 [5]</td>
<td>Ch.3 Sec.6 [4]</td>
</tr>
<tr>
<td>DRILL</td>
<td>Drilling plant</td>
<td>Ch.2 Sec.7 [6]</td>
<td>Ch.3 Sec.6 [5]</td>
</tr>
<tr>
<td>DYNPOS</td>
<td>Dynamic positioning system</td>
<td>Ch.2 Sec.7 [5]</td>
<td>Ch.3 Sec.6 [4]</td>
</tr>
<tr>
<td>E0</td>
<td>Periodically unattended machinery space</td>
<td>Ch.2 Sec.7 [14]</td>
<td>Ch.3 Sec.6 [13]</td>
</tr>
<tr>
<td>ECO</td>
<td>Machinery centralised operated</td>
<td>Ch.2 Sec.7 [14]</td>
<td>Ch.3 Sec.6 [13]</td>
</tr>
<tr>
<td>ES</td>
<td>Enhanced systems</td>
<td>Ch.2 Sec.7 [3]</td>
<td>N/A</td>
</tr>
<tr>
<td>ESV</td>
<td>Enhanced system verification</td>
<td>Ch.2 Sec.7 [21]</td>
<td>N/A</td>
</tr>
<tr>
<td>F</td>
<td>Additional fire protection</td>
<td>Ch.2 Sec.7 [12]</td>
<td>Ch.3 Sec.6 [11]</td>
</tr>
<tr>
<td>FMS</td>
<td>Fatigue methodology for ship-shaped units</td>
<td>Ch.2 Sec.7 [17]</td>
<td>N/A</td>
</tr>
<tr>
<td>HELDK</td>
<td>Helicopter deck</td>
<td>Ch.2 Sec.7 [7]</td>
<td>Ch.3 Sec.6 [6]</td>
</tr>
<tr>
<td>HMON</td>
<td>Hull monitoring system</td>
<td>Ch.2 Sec.7 [16]</td>
<td>Ch.3 Sec.6 [15]</td>
</tr>
<tr>
<td>ISDS</td>
<td>Integrated software dependent system</td>
<td>Ch.2 Sec.7 [22]</td>
<td>Ch.3 Sec.6</td>
</tr>
<tr>
<td>LCS-DC</td>
<td>Loading computer system</td>
<td>Ch.2 Sec.7 [13]</td>
<td>Ch.3 Sec.6 [12]</td>
</tr>
<tr>
<td>ME</td>
<td>Position mooring equipment</td>
<td>Ch.2 Sec.7 [3]</td>
<td>Ch.3 Sec.6 [2]</td>
</tr>
<tr>
<td>POSMOOR</td>
<td>Position mooring system</td>
<td>Ch.2 Sec.7 [4]</td>
<td>Ch.3 Sec.6 [3]</td>
</tr>
<tr>
<td>Recyclable</td>
<td>Inventory of hazardous materials part 1</td>
<td>Ch.2 Sec.7 [20]</td>
<td>Ch.3 Sec.6 [18]</td>
</tr>
<tr>
<td>TEMPSTORE</td>
<td>Temporary storage of oil</td>
<td>Ch.2 Sec.7 [9]</td>
<td>Ch.3 Sec.6 [8]</td>
</tr>
<tr>
<td>VCS</td>
<td>Vapour control systems</td>
<td>Ch.2 Sec.7 [20]</td>
<td>Ch.3 Sec.6 [18]</td>
</tr>
<tr>
<td>VIBR</td>
<td>Vibration level criteria for machinery, components, equipment and structure</td>
<td>Ch.2 Sec.7 [18]</td>
<td>Ch.3 Sec.6 [16]</td>
</tr>
<tr>
<td>Walk2work</td>
<td>Certified offshore gangway installed with related unit requirements</td>
<td>Ch.2 Sec.7 [11]</td>
<td>DNVGL-ST-0358</td>
</tr>
<tr>
<td>WELL</td>
<td>Well intervention system</td>
<td>Ch.2 Sec.7 [15]</td>
<td>Ch.3 Sec.6 [14]</td>
</tr>
<tr>
<td>WELLTEST</td>
<td>Well test system</td>
<td>Ch.2 Sec.7 [8]</td>
<td>Ch.3 Sec.6 [7]</td>
</tr>
</tbody>
</table>

### 2.7 Optional class notations related to cold climate operation

#### 2.7.1 Units designed or strengthened for operation within particular geographical or environmental areas found to be in accordance with relevant class rule requirements may be assigned a corresponding optional class notation.

#### 2.7.2 Optional class notations related to cold climate service are given in Table 6.
2.7.3 Further details on notation qualifiers and application for different Unit types is given in Ch.2 Sec.7 [18].

Table 6 Class notations related to cold climate

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Design requirements</th>
<th>Survey requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAT</td>
<td>Design ambient air temperature for material selection suitable for regular service during winter to Arctic or Antarctic waters</td>
<td>Ch.2 Sec.7 [18]</td>
<td>N/A</td>
</tr>
<tr>
<td>Ice</td>
<td>Structural strength for navigation in ice</td>
<td>Ch.2 Sec.7 [18]</td>
<td>N/A</td>
</tr>
<tr>
<td>PC</td>
<td>Polar Class – structural strength for navigation in ice-infested polar waters</td>
<td>Ch.2 Sec.7 [18]</td>
<td>N/A</td>
</tr>
<tr>
<td>Winterized</td>
<td>Systems designed for operation in cold climate</td>
<td>Ch.2 Sec.7 [18]</td>
<td>Ch.3 Sec.6 [16]</td>
</tr>
</tbody>
</table>

2.8 Special feature notations

2.8.1 Special feature notations provide information regarding special design assumptions, arrangements or equipment which is not covered by other class notations.

2.8.2 Special feature notations currently in use are listed in Table 7.

Table 7 Class notations related to special features

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Design requirements</th>
<th>Survey requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIS</td>
<td>Built for in-water survey</td>
<td>Ch.2 Sec.7 [22]</td>
<td>N/A</td>
</tr>
<tr>
<td>INERT</td>
<td>Inert gas system</td>
<td>DNVGL-RU-SHIP Pt.5 Ch.3 Sec.11</td>
<td>N/A</td>
</tr>
<tr>
<td>Non-self-propelled</td>
<td>Towing assistance will be required during transit</td>
<td>Ch.2 Sec.7 [22]</td>
<td>Ch.3 Sec.6 [19]</td>
</tr>
<tr>
<td>TMON</td>
<td>Tailshaft monitoring</td>
<td>Ch.2 Sec.7 [22]</td>
<td>Ch.3 Sec.6 [19]</td>
</tr>
</tbody>
</table>

2.9 Service restrictions

2.9.1 Units not approved for unrestricted service will have relevant service restrictions stated in the appendix to the classification certificate. These units will be given the class notation R to indicate that restrictions apply. The notation R will be inserted after the main character of class.

Guidance note:
Notation R is normally not used for self-elevating units. The service restrictions are specified in the appendix to the classification certificate.

---e-n-d---o-f---g-u-i-d-a-n-c-e---n-o-t-e---
2.9.2 Other service restrictions or operational limits included in the design assumptions of a unit will be stated in the appendix to the classification certificate, and/or on special signboards onboard.

2.9.3 Service restrictions and deviations from the rule requirements shall be addressed in a memo for owners (MO) informing them about the assumption for the class notation if the unit shall be operated outside the geographical areas or other boundaries agreed in the classification contract.

2.10 Compliance with coastal state legislation

2.10.1 When DNV GL is requested to carry out verification in accordance with coastal state regulations for the complete unit or parts of the unit, an additional notation may be assigned to the relevant class designations, consisting of the relevant coastal state code and the issue of coastal state regulations used as basis for verification in brackets, e.g.:

DRILL(N).

2.10.2 Coastal state code notations currently in use, are listed in Table 8.

Table 8 Notations for coastal state verification

<table>
<thead>
<tr>
<th>Notation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodation(N)</td>
<td></td>
</tr>
<tr>
<td>Drilling(N)</td>
<td></td>
</tr>
<tr>
<td>Well intervention(N)</td>
<td></td>
</tr>
<tr>
<td>DRILL(N)</td>
<td>Verified for compliance with DNV GL’s interpretation of relevant Norwegian coastal state requirements.</td>
</tr>
<tr>
<td>HELDK-SH(N) / HELDK-SHF(N)</td>
<td></td>
</tr>
<tr>
<td>Crane-offshore(N)</td>
<td></td>
</tr>
<tr>
<td>COMF-MOU(N)</td>
<td></td>
</tr>
<tr>
<td>DRILL(US)</td>
<td>Verified for compliance with DNV GL’s interpretation of relevant US outer continental shelf</td>
</tr>
<tr>
<td>UKVS</td>
<td>Verified for compliance with DNV GL’s interpretation of relevant UK coastal state requirements.</td>
</tr>
</tbody>
</table>

2.10.3 For further information on procedures and scope of verification for coastal state requirements, see DNV GL statutory interpretations for coastal state regulations listed in Sec.1 Table 6.

2.11 Combination of notations

2.11.1 Class notations shall be combined as follows:

* 1A <service restriction, if any><basic design notation> <service notation> <special equipment and systems notations><special feature notations>

Example:

* 1A Column-stabilised Drilling POSMOOR Non-self-propelled.
2.11.2 Ship-shaped units may also be assigned relevant class notations given in DNVGL-RU-SHIP.
SECTION 4 ASSIGNMENT OF CLASS

1 Assignment of class – new Units

1.1 General
A request for Classification of a new Mobile Offshore Unit shall be submitted in writing by the Customer. The Society reserves the right to decline a request for Classification.

1.2 Requirements for Builder or Designer

1.2.1 Builders or Designers unfamiliar to the Society shall provide the Society with evidence of their capability to successfully manage Classification projects.

Guidance note:
Evidence may incorporate successful outcome of Classification projects carried out for another classification society or successful outcome of design projects of similar nature.

---end---of---guidance---note---

1.2.2 Builders or Designers shall instruct their subcontractors and suppliers of materials, machinery systems and equipment that the Society's Rules apply and that the Society's Certificates shall be provided as and when required by the Rules.

1.2.3 Welding of important structures, machinery installations and equipment shall be carried out by approved welders, with approved welding consumables, following approved welding procedures and at welding shops approved by the Society. Requirements for approval of welding shops, welders, manufacturers of welding consumables, welding consumables, and welding procedures are given in DNVGL-OS-C401 and by a series of detailed approval programmes.

1.2.4 The following Documentation from the Builder or Designer (workshop and yard) and from subcontractors shall be submitted when requested by the Society:
— information related to the Builder’s or Designer’s quality control and quality management system
— information related to the Builder's procedures for managing materials that are excluded from use on board by Class and/or statutory requirements
— an Asbestos Free Declaration confirming that structures, machinery, systems and equipment on board are asbestos free and meets the requirements set forth in SOLAS Ch.II-1/3-5.2
— list of relevant subcontractors to the Builder
— list of relevant subcontractors to the manufacturer of systems and components to be delivered for the product, if applicable.

1.2.5 To assess compliance with the Rules the Society may require additional Documentation and carry out an Assessment of yard’s processes, systems and personnel related to Classification projects. The results of the Assessment may be used as a basis to decide on the extent of the involvement of Surveyors of the Society. The extent of verification shall be clearly reflected in a quality survey plan (QSP).

Guidance note:
A generic version of a QSP issued by the Society can be used as a model to develop an appropriate QSP for specific Classification projects that should be submitted to the Society for approval before commencing activities in the project.

---end---of---guidance---note---
1.2.6 Calculations specified in the requirements shall be carried out by computer programs supplied by, or recognised by the Society. Programs applied where reliable results have been demonstrated to the satisfaction of the Society are regarded as recognised programs. Generally valid approvals for computer programs are, however, not given by the Society.

1.3 Applicable rules

1.3.1 The Rules that apply for assignment of Class to a new Unit are generally those in force at the date of "contract for construction".

The Society may upon special consideration and in agreement with the parties involved decide on the Rules to be applied.

1.3.2 The term date of "contract for construction" shall be construed as follows:

1) The date of "contract for construction" of a Unit is the date on which the contract to build the Unit is signed between the prospective Owner and the Builder. This date and the construction numbers (i.e. hull numbers) of all the Units included in the contract are to be declared to the Classification Society by the party applying for the assignment of Class to a newbuilding.

2) The date of "contract for construction" of a series of Units, including specified optional Units for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective Owner and the Builder.

Units built under a single contract for construction are considered a "series of Units" if they are built to the same approved plans for Classification purposes. However, Units within a series may have design alterations from the original design provided:

a) such Alterations do not affect matters related to Classification, or

b) if the Alterations are subject to Classification requirements, these Alterations are to comply with the Classification requirements in effect on the date on which the Alterations are contracted between the prospective Owner and the Builder or, in the absence of the Alteration contract, comply with the Classification requirements in effect on the date on which the Alterations are submitted to the Society for approval.

The optional Units will be considered part of the same series of Units if the option is exercised not later than 1 year after the contract to build the series was signed.

3) If a contract for construction is later amended to include additional Units or additional options, the date of "contract for construction" for such Units is the date on which the amendment to the contract, is signed between the prospective Owner and the Builder. The amendment to the contract is to be considered as a "new contract" to which 1 and 2 above apply.

4) If a contract for construction is amended to change the Unit type, the date of "contract for construction" of this modified Unit, or Units, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the Builder.

(IACS PR 29 Rev.0)

1.3.3 For a Unit in a series of identical Units under construction to the Class of, or of a design previously approved by another classification society, the Society may accept the design approved by that classification society. This is provided a review by the Society has demonstrated that the design in principle meets the Society’s Rule requirements for Main Class, and mandatory Class Notations as applicable.

1.3.4 For a Unit where the Flag Administration undertakes approval and surveys of items covered by the statutory instruments which are also covered by the Rules, the Society may accept their decisions as basis for assigning Class, provided the Society’s remaining requirements for Main Class and mandatory Class
Notations are complied with. Necessary Documentation, such as copies of approved plans, reports and other particulars approved by the Flag Administration shall be submitted.

1.3.5 For a Unit intended to be permanently moored on location for production and/or storage of hydrocarbons, the Society may accept decisions by the national administration with jurisdiction over the waters in which the Unit shall operate (the shelf state) as basis for assigning Class.

1.3.6 When Class is assigned on the basis of a design approved by another classification society, the Flag Administration or according to Flag Administration requirements or decisions by national authorities according to [1.3.4], [1.3.5] or [1.3.6], information to this effect shall be included in the Appendix to the Classification Certificate (see [3.1.5]).

In case of Class being assigned on the basis of Flag Administration requirements according to [3.1.5] an Memorandum to Owner shall also be issued (see [2.3.7]).

1.4 Plan approval

1.4.1 The following Documentation shall be submitted as specified in the Rules and according to lists of required Documentation supplied by the Society:
   — drawings, plans and specifications required for Plan Approval
   — technical descriptions, calculations and data, including material specifications.

Any documents submitted for re-approval shall be especially marked to identify revised parts.

1.4.2 Where subcontractors and suppliers are involved, the Customer shall co-ordinate the submission of required Documentation, as well as co-ordinate any approval comments given by the Society.

1.4.3 Documents subject to Plan Approval will be assessed by and at the discretion of the Society. The results of the Assessment will be stated in a letter of approval. Comments, conditions and limitations may be stated in the letter of approval or on the plans returned.

1.4.4 The plan approval may be revoked at any time if subsequent information indicates that the solution was contrary to the Rules.

1.5 Survey during construction

1.5.1 When a Unit is built under the supervision of the Society, the Society will survey:
   — that the construction and scantlings comply with the requirements of the Rules and the approved plans, and that the required materials are used
   — that the materials, components and systems have been certified in accordance with the Rules
   — that the work is carried out in compliance with the applicable Rules and acceptable standards
   — that satisfactory tests are carried out to the extent and in the manner prescribed by the Rules.

   Guidance note:

   The construction survey shall include all relevant parts irrespective of sub-contracting and geographical location of manufacturing of e.g modules, legs, pontoons.

   ---e-n-d---o-f---g-u-i-d-a-n-c-e---n-o-t-e---
1.5.2 The scope of Survey is decided by the Society. The scope has been established utilising knowledge acquired from, amongst other, operational experience with risk based methods and experience feedback from internal and external sources.

1.5.3 The Society may increase the scope based on observed quality during construction.

1.5.4 The Society may base its Verification methods on the Quality System as implemented in the Builder's fabrication processes and as accepted by the Society. The Surveys at the Builder’s premises may consist of a combination of visual inspection, review of records and witnessing of manufacturers' tests and measurements.

1.5.5 The Customer shall submit to the Society Certificates for materials, components and systems installed in the Unit and as required by the Rules.

1.6 Installation of machinery, systems and equipment

1.6.1 All machinery, systems and equipment covered by the Rules shall in general be new.

Guidance note:
If second hand equipment complies with applicable Rules for the Newbuilding, it may upon special consideration by the Society be installed, provided the Owner has given a written acceptance.

1.6.2 The extent of participation in the mechanical completion activities by the Society shall be clearly identified in the QSP submitted by the Customer and accepted by the Society. The extent of participation shall be limited to ensuring compliance with the requirement of Classification Rules and applicable statutory requirements.

1.7 Testing and Commissioning

1.7.1 Where specified by the Rules, testing shall be carried out in the presence of a Surveyor, and related requirements for test programmes shall be observed.

1.7.2 A test programme shall be prepared by the Customer and accepted by the Society. The programme shall specify systems and components to be tested, and the testing procedure. The Society may, in order to verify compliance with the Rules, request additional tests and/or data to be recorded.

1.7.3 Procedures for pre-commissioning, testing and Commissioning for all the systems onboard that are covered by the scope of Classification shall be prepared by the Customer and accepted by the Society.

1.7.4 The tests shall give evidence as to satisfactory operation and performance in accordance with the Rules. When testing control and safety systems, failure modes shall be simulated as realistically as possible.

1.7.5 The extent of participation by the Society shall be clearly identified in the QSP submitted by the Customer and accepted by the Society, and shall be limited to ensure compliance with the requirement of Classification Rules and applicable statutory requirements.
2 Assignment of class – existing Units

2.1 General
A request for Class Entry of an existing Unit shall be submitted in writing by the Customer. The Society reserves the right to accept or decline an application for Class Entry.

2.2 Applicable rules
Applicable Rules for Units at Class Entry are given in Sec.5 [2.1].

2.3 Design approval

2.3.1 Before a Unit, which has not been built under the supervision of the Society, is surveyed for assignment of Class, the information required in [1.4.1] shall, in general, be submitted for Plan Approval. For a Unit Classed with a recognised classification society, the submitted information may be reduced to plans showing the main scantlings and arrangements of the actual hull and machinery installations.

2.3.2 The extent of Plan Approval for a Unit, which has not been Classed, or which was previously Classed with a classification society not covered by [2.3.1], will be specified in each case.

2.3.3 For a Unit that has been built under the supervision of another classification society, the Society may, on the basis of an overall consideration and Survey, exempt the Unit from requirements in the Rules.

2.4 Class entry Survey

2.4.1 Prior to assigning Class to an existing Unit, that Unit shall undergo the Surveys pertaining to the age and type of the Unit as a minimum. The scope of Survey will in each separate case be decided by the Society.

2.4.2 Before assigning Class, the Flag Administration will be notified about the Class Entry. The Flag Administration may decide that an extended scope of Surveys has to be carried out.

3 The Class Certificate

3.1 General

3.1.1 The Society will issue a Class Certificate as proof of assignment of Class.

3.1.2 Class may be assigned with Conditions of Class.

3.1.3 The Class Certificate is valid provided conditions for retention of Class are complied with, as follows:
— for a new Unit: to a date not exceeding 5 years from the date of Class assignment
— for an existing Unit: to a date not exceeding 5 years from the expiry date of the existing Certificate
— for an existing Unit taken into Class: to a date not exceeding 5 years from the date of Class assignment or, if the Society accepts the periodical Surveys credited by the previous classification society, until the expiry date of the Class Certificate of the previous classification society
— for an interim Class Certificate: to a date not exceeding 15 months from assignment of Class.
3.1.4 Upon request, declarations confirming compliance with the Rules may be issued for hull, machinery or specific Class Notations provided the Society’s main class has been assigned.

3.1.5 An Appendix to the Class Certificate will be issued stating assumptions for the assignment of Class and restrictions regarding the use of the Unit which were established or assumed at the time of assignment of Class.

3.2 Late Commissioning
If the Unit is not immediately commissioned upon delivery, but is laid up for a period, the Unit may be accepted for entry into service upon application by the Owner. The Unit may be subject to a condition Survey before entering into service.

The extent and scope of Survey will depend on the time period laid up and conservation measures taken. Provided the hull, machinery, systems and equipment are found in all respects free from deterioration, subsequent periodical Surveys will date from the time of the condition Survey.

4 The register of Units

4.1 General

4.1.1 When a Unit has been assigned Class, its main particulars and details of the Class assigned will be entered in the Society’s Register of vessels. In addition to the Class Notations, appropriate data related to identification, flag, ownership and other particulars will also be entered.

4.1.2 The Class assignment date is entered in the Register of vessels. For Units built under the supervision of the Society, the due date for the periodical Surveys will be calculated from this date. For Units built under the supervision of another classification society, the due date for the periodical surveys will depend upon the existing periodical Survey schedule defined by the previous classification society.
SECTION 5 RETENTION OF CLASS

1 Conditions for retention of Class

1.1 General requirements

1.1.1 The Unit shall be adequately manned, and the hull, machinery, systems and equipment shall be competently handled at all times.

1.1.2 Operation of the Unit shall comply with the assumptions and conditions stated in the Appendix to the Class Certificate and in applicable operating manuals.

1.1.3 The Unit, its hull structure, machinery, systems and equipment shall be maintained at a standard complying with the requirements of the Rules (see also [1.3]).

1.1.4 Installed machinery, systems and equipment carried onboard in excess of the minimum required for Main Class shall either be maintained to applicable standards, or be removed or disconnected in such a way as to ensure that the installed machinery, system or equipment cannot be used. Installed diving systems are subject to special provisions as given in DNVGL-RU-OU-0375. These provisions include transferable diving systems installed temporarily.

1.1.5 Temporary systems and equipment shall comply with relevant requirements in accordance with the assigned Class Notations of the Unit.

1.1.6 The statutory Certificates required by applicable international conventions and/or national legislation shall be valid at all times and shall be issued by the Society, the Flag Administration itself, or by a third party approved by the Flag Administration, within the limitations set out in Sec.2.4.

1.2 The Customer’s obligations

1.2.1 In order to retain a Unit’s class with the Society, the Customer shall:
— at all times, ensure that the Unit is maintained to the Rule standard
— submit complete and correct information related to the Unit and its use, which is of significance to the Society for its assessment of the condition of the Unit in relation to the Rules
— ensure that the Unit is competently handled
— subject the Unit to unscheduled Surveys when deemed necessary by the Society
— rectify Deficiencies and carry out any Conditions of Class or Retroactive Requirements specified by the Society
— subject the Unit to Surveys as required by the Rules, and provide the necessary facilities for safe execution of Surveys
— submit complete and correct information on the ownership and management of the Unit, addresses and corresponding administrative information pertinent to the "Register of Vessels"
— submit correct information on the registration of the Unit
— keep onboard and ashore a set of as-built drawings/Documentation including subsequent Alterations/Conversions
— pay all fees and expenses due to the Society. The Owner has, together with managers, charterers and operators, a joint and several liability for any such fees and expenses. If a request for services is made by any other party than the Owner, that party will, in addition to the Owner, be responsible for the payment of the relevant fees
— notify the Society when the Unit is laid up or otherwise taken out of service for a period of more than 3 months.

1.2.2 If the hull structure, machinery, systems or equipment covered by Classification sustain damage to such an extent that it may be presumed to lead to a Condition of Class (see [2.3]), the Society shall immediately be informed. The Unit shall be surveyed according to instructions from the Society. The survey shall be of an extent considered necessary by the attending Surveyor for ascertaining the extent of the damage.

1.2.3 If inspections by port, Flag or shelf state Administration reveal deficiencies related to Certificates issued by DNV GL, the Customer shall immediately notify the Society. In case of detention, the Society shall be contacted for immediate attendance.

1.3 Maintenance

1.3.1 The Customer shall ensure that the Unit, its hull structure, machinery, systems and equipment at all times is properly maintained.

**Guidance note:**

Maintenance of the hull structure, machinery, systems and equipment is normally to be in accordance with applicable recognised standards in the industry or in accordance with procedures recommended by the manufacturer.

---end---of---guidance---note---

1.3.2 The Unit shall have implemented a maintenance system. The maintenance system shall ensure that:
— inspections and maintenance are carried out at defined intervals
— any defect is reported with its possible cause, if known
— appropriate correction or repair action is taken
— records of these activities are maintained.

1.3.3 Machinery, systems and equipment that are replaced shall be delivered with Certificates and Documentation as required by the Rules for the original machinery, systems and equipment. Certification according to current Rules which are less stringent than those originally enforced, may be accepted by the Society on a case by case basis.

2 The Society's involvement

2.1 Applicable Rules

2.1.1 Units built under the supervision of the Society shall in general be maintained and Repaired in compliance with the Rules to which it was constructed, except in cases mentioned in 2.5 and[2.6.].

2.1.2 For Units built under the supervision of a classification society recognised by the Society, the Rules in force at the same date as those enforced by the other society will be applied. If such date is not known, the Society’s Rules in force at the date of "contract for construction" will be applied (see Sec.4 [1.3.2]).

2.1.3 For Units other than those covered by [2.1.1] and [2.1.2], the Society's Rules for new Units in force at the time of entry into Class will be applied.

2.1.4 Amendments to the Rules may be made retroactive. If so, this will be specially stated in the Rules.
2.1.5 In cases where amendments to the Rules are made applicable to existing Units at the first annual, intermediate or renewal Survey after a specified date, or after the Unit reaches a specified age, the expiry date of the related Survey time window shall determine when the amendments become effective.

2.2 Surveys

2.2.1 The objective of a survey shall be to establish reasonable assurance that the Unit, its hull structure, machinery, systems and equipment are in compliance with the Rules and suitable for continued safe and reliable operation.

2.2.2 A Survey may consist of a combination of visual inspections, audits, measurements, functional testing, non-destructive testing and review of maintenance and other relevant records.

2.2.3 The minimum extent of prescribed periodical Surveys are given in Ch.3. The Society may increase the extent of Surveys when deemed necessary in order to ascertain the condition of the Unit.

2.3 Conditions and Memoranda

2.3.1 A Condition of Class will be imposed for, but not limited to the following:
— Repairs and/or renewals related to damage, defect or breakdown that are considered by the Society to be sufficiently serious to affect the assigned Class (e.g. grounding, structural damages, machinery damages, wastage over the allowable limits etc.)
— supplementary Survey requirements
— temporary repairs.

2.3.2 The Society will issue a Condition of Class when deemed necessary to carry out Assessments in order to ascertain whether damage, a defect or a deficiency affecting the Class has been sustained or is imminent.

2.3.3 A Condition of Class may contain the following:
— a description of the deficiency, defect, damage or the Assessment required
— required action
— due date for the required action to be completed
— possible temporary requirements imposed until the required action has been completed.
Alternatively the Condition of Class may refer to a Survey statement for above details.

2.3.4 If a Condition of Class is considered by the Society to seriously affect the Unit’s safety and Reliability, immediate action will be required. Otherwise a time limit will be given for the action to be completed.

2.3.5 A Condition of Class will be deleted when the Society, through a Survey or received information, is satisfied that requested action has been satisfactory completed.

2.3.6 When the Society has been authorised to carry out a statutory Survey and identifies a finding that exclusively relates to a statutory Certificate, a Condition on behalf of the Flag Administration will be imposed for specific measures, Repairs or Surveys that shall be carried out within a specific time limit in order to retain the statutory Certificate.
2.3.7 For information related to the Unit, its machinery systems, and equipment or to requirements in the Rules, the Society may issue a Memorandum to Owner. A Memorandum to Owner may supplement information given otherwise, e.g. in the Appendix to the Class Certificate or the Society’s Register of Vessels.

2.3.8 An Memorandum to Owner may be used in, but not limited to, the following cases:
— exemptions from requirements in the Rules
— accepted deviations from applicable requirements
— limitations on the use of the Unit or its equipment
— defects or deficiencies of no concern to Class
— deleted Class Notations
— equipment in excess of Class requirements disused
— information related to agreed Survey arrangements.

2.3.9 Outstanding findings will be given in writing at completion of Surveys and may be recorded as Condition of Class. Findings may also be communicated verbally during the course of Surveys. Findings that have been corrected before the Survey has been completed will not be recorded as Condition of Class.

2.3.10 The Society may at any time modify a Condition of Class or Memorandum to Owner if considered appropriate. The Owner will be notified accordingly.

2.3.11 Condition of Class or Memorandum to Owner are recorded in the Unit’s Class status from where they will be deleted when no longer valid. The Owner will be notified accordingly.

2.3.12 The Owner will be informed of Retroactive Requirements.

2.4 Survey statement and Survey status

2.4.1 The Surveyor will provide a statement to the Customer on Surveys carried out.

2.4.2 Survey statements may contain the following information, to the extent applicable in each case:
— types of Surveys carried out
— Certificates issued, endorsed or extended
— damage, defects and/or deficiencies observed
— confirmation that Repairs have been completed and accepted by the Surveyor
— Conditions issued or deleted
— Memorandum to Owner issued or deleted
— Retroactive Requirements issued or deleted.

2.4.3 The Society will make Class status reports available to Customers on the Society’s Internet website, see Sec.2 [2.7].

It is the Customer’s responsibility to obtain this information from the Society’s Internet website. Class status reports, on paper, may be distributed upon request.

2.4.4 Any document issued by the Society in relation to Surveys performed reflects the condition of the Unit at the time of the Survey only.
2.5 Damage and repairs

2.5.1 Repairs shall in general be carried out in such a way that the original design and scantlings are restored. Possible design modifications or reduced scantlings based on current Rules which are less stringent than those originally enforced, may be accepted by the Society on a case by case basis before the Repairs are carried out.

2.5.2 Repairs to the hull structure, machinery, systems or equipment covered by the Rules shall be carried out by qualified personnel and in compliance with applicable Rules, with good engineering practice and under the supervision of a Surveyor.

Guidance note:
Guidelines for hull Repairs can be found in DNVGL-CG-0172.

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

2.5.3 Repairs as stipulated in [2.5.2] may be carried out without the attendance of a Surveyor (e.g. during voyage) provided a Repair plan is accepted by the Society in advance. A Surveyor shall be called for acceptance of such Repairs when completed.

2.5.4 In any emergency circumstance, emergency Repairs shall be effected immediately. The Repairs shall be documented in the Unit’s log and submitted thereafter to the Society for use in determining further Survey requirements.

2.6 Conversions and Alterations

2.6.1 Alterations of Units, except for assignment of New Class Notations, shall in general comply with the Rules applied during Newbuilding/see Sec.4). Upon request, the current Rules may be applied.
Conversion of a Unit shall in general comply with the current Rules. Current Rules will in general be applied when assigning a new Class Notation to a Unit.

2.6.2 If the hull structure, machinery, systems or equipment shall be converted or altered, the changes shall be documented and be approved in the same manner as for new Units.

Guidance note:
Alterations to the hull structure, machinery, systems and equipment made possible by amendments of the applicable Rules may be undertaken provided the general safety and reliability level required for retention of Class will be maintained.

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2.6.3 Conversion or alterations shall take place under the supervision of the Society.

2.7 Temporary equipment

2.7.1 The Society shall be informed before the installation of temporary equipment as defined in Sec.1 [2.2].

2.7.2 Temporary equipment covered by class scope shall be approved and certified in line with [1.1.5].

2.7.3 For temporary equipment not covered by the scope of Classification, it shall be confirmed that placement of this equipment on board does not negatively affect the safety of the Unit.
Guidance note:
The following aspects typically should be considered:
— blocking of escape ways
— that the equipment is covered by the fire and gas system and ESD logic, as applicable
— deck load limits
— effects on hazardous areas
— interface to systems covered by Class (no negatively affect on availability)
— sea fastening.

---end---of---guidance---note---

3 Endorsement and renewal of the Class Certificate

3.1 Endorsement of the Class Certificate

3.1.1 The Class Certificate will be endorsed upon satisfactory completion of annual and intermediate Surveys for Main Class and Class Notations, as applicable. The Certificate will be endorsed for satisfactory completion of renewal Survey if there is a delay in issuance of the new Certificate according to [3.2]. The Class Certificate will not be endorsed unless the following has been dealt with and accepted by the Society:
— overdue periodical Class Surveys
— overdue continuous Survey items
— overdue Conditions of Class
— overdue Retroactive Requirement.

Guidance note:
In the case where an overdue survey is related to an optional class notation, the class certificate may be endorsed provided the relevant optional class notation is suspended.

---end---of---guidance---note---

3.1.2 If the Class Certificate is endorsed at completion of renewal Surveys, the Surveyor may extend its validity as necessary, but not more than to a date 5 months after the completion date, or after the expiry date of the Class Certificate, whichever comes first. If the Class Certificate has expired at the time of renewal Survey completion, new Certificate should be issued.

3.1.3 In the case where postponement of the renewal Survey has been granted upon the Customer’s written request, the Surveyor will endorse the Class Certificate and extend its validity, but not more than 3 months beyond the expiry date of the Class Certificate.

3.1.4 In the case where the Main Class annual survey is commenced prior to the defined time window, the Survey shall be completed not more than 6 months after the date of commencement. In such cases the Certificate will be endorsed for advancement of anniversary date (due date) for the subsequent annual Surveys.

Expiry date of the Class Certificate may remain unchanged, but additional Surveys may be required so that the prescribed Survey intervals are not exceeded.

3.2 Renewal of the Class Certificate

3.2.1 A new Class Certificate will replace the existing Class Certificate when renewal survey has been satisfactory completed and the Society has established reasonable assurance that the requirements for retention of Class have been met.
3.2.2 The new Class Certificate will be valid to a date not exceeding 5 years from:
- the expiry date of the existing Certificate when the renewal Survey has been completed within 3 months before the expiry date of the existing Certificate, or
- the expiry date of the existing Certificate when the renewal Survey has been completed after the expiry date of the existing Certificate, or
- the completion date of the renewal Survey when the renewal Survey has been completed more than 3 months before the expiry date of the existing Certificate, or
- the completion date of the renewal Survey when the renewal Survey has been commenced more than 15 months before the expiry date of the existing Certificate.

3.2.3 In cases where postponement of a renewal Survey has been granted, the new Class Certificate will be valid to a date not exceeding 5 years from the expiry date of the existing Certificate before the extension was granted.

3.2.4 In cases where the renewal Survey is carried out concurrently with a Conversion as defined in [2.6], or when the renewal Survey has been completed following Unit being laid up or being out of service for a considerable period due to a major Repair or modification, the validity of the new Certificate will be 5 years from the date of completion of renewal Survey. In such cases, the scope of the renewal survey shall be increased to the extent of the next renewal Survey.

3.2.5 For certain Units the Certificate validity and Survey intervals may be reduced by the Society, e.g. for Units with new or novel design or for systems or items exposed to abnormal rates of wear or failure. Such conditions will be stated in the Appendix to the Class Certificate and in Memorandum to Owners”.

4 Suspension and withdrawal of Class

4.1 General

4.1.1 Class may be withdrawn at any time if the Society finds it justified.

4.1.2 The Society may suspend or withdraw a Unit’s Class where the conditions for retention of Class have been violated.

4.1.3 The decision to suspend or withdraw a Unit’s Class is made by the Society. However, in cases of automatic suspension, see [4.2.1] and [4.2.2], no individual evaluation is made. Suspension or withdrawal of Class may take effect immediately or after a specified period of time. In special cases, the suspension or withdrawal of Class may be made with retroactive effect (see [4.2.5]).

4.1.4 If the violation only affects requirements related to optional Class Notations, the suspension or withdrawal may be limited to these Class Notations only.

4.1.5 When Class is suspended or withdrawn, the Society will:
- inform the Owner
- inform the Flag Administration
- make an entry to this effect in the Society’s "Register of Vessels"
In the cases of Class suspension, a time limit will be given for when the Class will be withdrawn. This time limit will in general not exceed 6 months. A longer suspension period may be granted when the Unit is not operating, as in cases of lay-up, awaiting disposition in case of a casualty or attendance for reinstatement.

4.2 Suspension of Class

4.2.1 The Class will automatically be suspended with immediate effect if the renewal Surveys for hull, machinery, systems and equipment related to Main Class and/or mandatory Class Notations are not completed before the expiry date of the Class Certificate, and no postponement has been granted or unless the Unit is under attendance for completion of the Survey.

4.2.2 If the annual or intermediate Surveys for Main Class and/or mandatory Class Notations are not completed within 3 months from the anniversary date of the Class Certificate, the Class is automatically suspended with immediate effect, unless the Unit is under attendance for completion of the Survey.

4.2.3 The Society may decide to suspend a Unit's Class if the Unit is deemed to be unable to continue safe and reliable operation, e.g. as a result of a major casualty.

4.2.4 If any outstanding debt owed to the Society is not paid within a notified date, the Society may suspend the Unit's Class with immediate effect.

4.2.5 In addition to the conditions laid down above, a Unit's Class may be suspended with immediate effect in cases where:
   — rectification of Deficiencies has not been carried out or otherwise dealt with in an appropriate manner
   — rectification of Deficiencies has not been surveyed and accepted by the Surveyor
   — the Rules or other requirements imposed by the Society have been violated.

4.2.6 Class will not be automatically suspended according to [4.2.1] or [4.2.2] whilst a Unit is laid up, provided the requirements in Ch.3 are complied with.

4.3 Reinstatement following Class suspension

4.3.1 If the overdue Surveys leading to Class suspension as given in [4.2.1], [4.2.2] and [4.2.3] or requirements as given in [4.2.5] are carried out within the specified time, the Class will be reinstated provided the following is met:
   a) The result of the Survey is such that all observed Deficiencies are satisfactory rectified. The Society may after consideration accept that minor Deficiencies are pending to be carried out.
   b) No overdue periodical Surveys or overdue Conditions of Class at that time.

4.3.2 The Society reserves the right to decline an application for reinstatement of Class.

4.3.3 If the Class has been suspended due to outstanding debt, the Class will automatically be reinstated when all outstanding debt has been paid, provided that there are no other reasons for suspension as outlined in [4.2].

4.4 Withdrawal of Class

4.4.1 The Owner can request a withdrawal of Class at any time.
4.4.2 If the overdue Surveys specified in [4.2.1], [4.2.2] and [4.2.3] or requirement as given in [4.2.4] are not carried out within the specified time after the Class suspension, the Society will withdraw the Unit's Class.

4.4.3 When a Unit proceeds to sea without having rectified a Condition of Class which was required to be dealt with before leaving port, the Class will be withdrawn with immediate effect.

4.4.4 If the Society becomes aware that a Unit continues operation with serious damage or defects in violation of Class requirements, the Class may be withdrawn with effect from the time this became known to the Society. The Class withdrawal may be made retroactively.

4.4.5 When it is considered that an Owner's failure to comply with Rule requirements is sufficiently serious or fraudulent, the withdrawal of Class may, at the discretion of the Society, be extended to include other Units controlled or operated by the same Owner.

4.4.6 If any outstanding debt owed to the Society is not paid within a notified date, the Society may withdraw the Unit's Class with one month's written notice. This also applies when the obligation to pay rests with a Builder or with the Unit's previous Owner. In special cases a shorter notice may be given.

4.4.7 If the Owner makes a general assignment for the benefit of his creditors or if any proceedings are commenced in court or any order or judgement is given by any court for liquidation, winding up of the Owner, the Society may withdraw the Class with immediate effect.

4.4.8 For Units having statutory Certificates issued by third parties, except in those cases defined in Sec.2 [3.1], the Class may be withdrawn.

4.5 Re-assignment of Class following Class withdrawal

4.5.1 In all other cases than that given in [4.4.1], and if the circumstances leading to withdrawal of Class no longer exist, a Unit may be re-assigned Class upon written request. The extent of Survey will in such instances be decided by the Society.

4.5.2 The Society reserves the right to decline an application for re-assignment of Class.

4.5.3 A new Class Certificate will be issued when the Survey has been satisfactory completed and the Society is satisfied that the requirements for retention of Class have been met.

4.5.4 When the Unit is re-assigned Class, the Society will:
   — inform the Owner
   — inform the Flag Administration
   — make an entry to this effect in the Society's "Register of Vessels"
   — make the information publicly available.
5 Change of Owner or Manager

5.1 General

5.1.1 A Unit shall retain Class when transferred to another Owner or manager. The previous Customer shall give the Society immediate notice, in writing, of such transfers. Obligations according to the Rules shall remain with the previous Customer until the Society is in receipt of such notice, in writing. See [1.2].

5.1.2 Class Notations and Survey arrangements based on certification of the management of operations will be deleted automatically when the management of a Unit is transferred.

6 Force majeure

If due to force majeure, the Unit is not accessible for Surveys when Surveys become overdue, the Society may allow the Unit to operate in Class. This is provided that the Unit proceeds directly to an agreed location and, if necessary, proceeds to an agreed repair facility at which the Survey can be completed. In this context the "Force Majeure" means damage to the Unit, unforeseen inability of Surveyors to attend the Unit due to governmental restrictions on right of access or movement of personnel, unforeseen delays or inability to complete operations due to unusually lengthy periods of severe weather, strikes, civil strife, acts of war or other force majeure.
SECTION 6 CERTIFICATION OF MATERIALS, COMPONENTS AND SYSTEMS

1 General

1.1 Introduction

1.1.1 The scope of Classification requires that specified materials, components and systems intended for the Unit are certified according to the Rules. The objective of Certification is to ensure that materials, components and systems used in Units to be Classed by the Society comply with the Rule requirements. Certification normally includes both Plan Approval and Survey during production and/or of the final product (see [2.2] and [2.3]).

1.1.2 Ch.2 and the referred Offshore Standards define the extent of the Certification that is required for Class.

Guidance note:
Subcontracted parts of a newbuilding like modules, legs, pontoons etc. are not regarded as part of the materials, components and systems certification described in this section, but are considered as part of the new-building process as described in Sec.4.

1.1.3 When the Society issues a Certificate to document compliance with requirements as described in this section, the Certificate will normally be in an electronic format that will be signed digitally. The electronic version of the digitally signed Certificate represents the original of the Certificate and any paper version is a copy.

1.2 Requirements for Manufacturer

1.2.1 Manufacturers of materials, components and systems of categories not covered by Sec.4 [1.2] shall be considered for approval according to criteria established by the Society, as applicable.

1.2.2 Quality control of materials, components and systems, shall be traceable and documented in writing. Further, quality control shall be carried out by qualified personnel at facilities and with equipment suitable for that control.

1.2.3 The following is mandatory and a prerequisite for issuance of Certificates:
— document handling system to ensure the product is free from asbestos. This shall also include control with sub-suppliers and contractors
— an Asbestos Free Declaration confirming that the product is free from asbestos and meets the requirements set forth in SOLAS Ch.II-1/3-5.2.

2 The Society’s involvement

2.1 General

2.1.1 Compliance with Rules for materials, components and systems will be confirmed by the types of documents as defined in DNVGL-RU-SHIP Pt.1 Ch.3 Sec.5 [2].

The applicable chapters and sections of the Rules and referred Offshore Standards specify which types of documents are required.
2.1.2 Where the Rules require Works Certificate or Test Report, the Surveyor may at any time require the tests to be carried out in his presence and/or that the Surveyor check elements of the production control.

2.1.3 For identification and traceability, certified products shall be marked in accordance with the description given in the Product Certificate and as specified by the applicable chapters of the Rules.

2.1.4 For certain components and systems the Certification will be based on defined internationally acceptable standards and certification schemes as defined in applicable chapters of the Rules. Compliance with the requirements of the standard shall be documented as required by that standard.

2.2 Plan approval

2.2.1 The Plan Approval of materials, components and systems shall be on a case by case basis or follow the procedure for type approval, see [2.3].

2.2.2 When the case by case procedure is used, Documentation of the design shall be submitted for Plan Approval for each application as required in the applicable chapters of the Rules.

2.2.3 A letter of approval or design verification report will be issued by the Society when compliance with the requirements for the design has been confirmed.

2.3 Type approval

2.3.1 Type approval is a procedure for approval of standard designs and/or routinely manufactured, identical components to be used in DNV GL classed objects. Type approval can be applied to:
   — products
   — groups of products
   — systems.

2.3.2 The type approval procedure may consist of the following elements:
   — design Assessment
   — initial Survey
   — type testing
   — issue of a type approval Certificate.

The type approval procedure used by the Society is described in DNVGL-CP-0338.

2.3.3 When the type approval procedure is used, the following shall be submitted for approval as required in type approval programmes and the applicable chapters of the Rules:
   — documentation of the design
   — results of type testing normally witnessed by a Surveyor.

A type approval Certificate will be issued by the Society when compliance with the design requirements is confirmed.

2.3.4 For certain products and systems as defined in applicable chapters of the Rules, only type approval is required. For these products and systems no Survey is required, i.e. no product Certificate is required.
2.3.5 For certain products and systems as defined in the applicable chapters of the Rules, type approval is a mandatory procedure for Plan Approval.

2.3.6 Products and systems manufactured for stock shall normally be type approved.

2.3.7 For type approved products, where the basis for approval is the Rules, plans and technical descriptions of the product need not be submitted for approval for each Unit unless otherwise stated as a condition on the type approval Certificate. In such cases only the arrangement or system plans, interface plans and those plans mentioned on the type approval Certificate shall be submitted for approval.

2.4 Survey

2.4.1 The Survey of materials, components and systems shall either be on a case by case basis or on the basis of an established Manufacturing Survey Arrangement (MSA), see [2.5].

2.4.2 When the case by case procedure is used, the Survey shall be performed on the basis of approved design Documentation for the actual application and as required in the applicable chapters of the Rules and referred Offshore Standards. Compliance with the approved design Documentation and applicable requirements will be documented by Certificates as required in the applicable chapters of the Rules.

2.4.3 When the Survey is based on an MSA, the Survey shall be performed on the basis of approved design Documentation, applicable Rule requirements and in accordance with requirements and procedures laid down in the MSA. Compliance with the approved design Documentation and applicable requirements shall be documented by Certificates as specified in the MSA and/or as required in the applicable chapters of the Rules and referred Offshore Standards.

2.5 Manufacturing Survey Arrangement

2.5.1 When the procedures and processes of a Manufacturer’s Quality System are in compliance with the Rules, a Manufacturing Survey Arrangement (MSA) may be established with the Manufacturer as an alternative to the Survey described in the applicable Rules.

2.5.2 The MSA shall be described in a document stating the requirements, scope, acceptance criteria, Documentation and the roles of the Society and the Manufacturer in connection with the Survey.

2.5.3 When it is agreed through an MSA that the majority of the required Surveys and tests are completed without the presence of a Surveyor, it required that the Manufacturer has in operation a Quality System certified by an accredited certification body to ISO 9001, or equivalent.

2.5.4 When establishing an MSA, an initial Assessment of the Manufacturer’s ability to control product quality and to comply with the scope, requirements and criteria laid down in the MSA will be performed. The extent and frequency of periodical assessments of the Manufacturer will be included in the MSA. The Society reserves the right to conduct further inspections without notice at its sole discretion.

2.5.5 When the MSA is based on a certified Quality System, the MSA automatically becomes invalid if the Quality System Certificate no longer is valid.
3 Suspension and withdrawal of certificates

3.1 General

3.1.1 A product Certificate, type approval Certificate or approval of Manufacturer Certificate may be suspended or withdrawn at any time if the Society finds it justified.

3.1.2 The decision to suspend or withdraw a Certificate is made by the Society. Suspension or withdrawal of a Certificate may take effect immediately or after a specified period of time. In special cases, the withdrawal of a Certificate may be made with retroactive effect.

3.1.3 When a certificate is suspended or withdrawn the Society will:
— inform the Customer
— make the information publicly available.

In the cases of suspension, a time limit will be given for when the Certificate will be withdrawn.
CHAPTER 2 DESIGN AND CONSTRUCTION PROVISIONS

SECTION 1 DESIGN AND CONSTRUCTION REQUIREMENTS FOR 1A MAIN CLASS

1 General

1.1 Introduction

1.1.1 This section identifies design and construction requirements common to all types of mobile offshore units. Units complying with these requirements will be assigned a main character of class ★ 1A followed by a description of the basic design concept of the unit, e.g. column-stabilised unit.

1.1.2 The following discipline areas are covered within main class:
— safety principles and arrangement
— materials
— hull design and fabrication
— temporary mooring and towing
— stability, watertight and weathertight integrity
— marine and machinery systems and equipment
— electrical systems and equipment
— instrumentation and telecommunication systems
— fire protection.

1.1.3 Systems and structures will be certified or classified based on the following main activities:
— design approval
— certification of materials and components (CMC)
— survey during construction and installation
— survey during commissioning.

Further description of activity procedures are given in Ch.1 Sec.4.

1.1.4 The requirements of this section are given as:
— references to standards, codes and rules containing technical requirements which shall be complied with for assignment of main class
— supplementary requirements which shall be applied in conjunction with the technical reference documents for assignment of class
— requirements for CMC.

1.2 Technical reference documents

1.2.1 Technical requirements are given by reference to selected:
— DNV GL offshore standards (OS)
— DNV GL class guidelines (CG)
— DNV GL recommended practices (RP)
— other DNV GL rules and standards
— internationally recognised codes and standards.
1.2.2 The technical reference documents which shall be applied are given in the following subsections and are summarised in Table 2.

1.3 General assumptions

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

1.3.2 Where referred codes and standards call for the extent of inspections and tests to be agreed between contractor, manufacturer and customer, the resulting extent shall be agreed with DNV GL. DNV GL may accept alternative solutions found to represent an overall safety level equivalent to that stated in the requirements of this document or the referred standards.

2 Safety principles and arrangement

2.1 General
Safety principles and arrangement include the following discipline areas:
— design principles, including generic accidental loads
— arrangement; including segregation of areas and location of plants and equipment
— escape and evacuation.

2.2 Design principles
The requirements given in DNVGL-OS-A101 Ch.2 Sec.1 shall be complied with.

2.3 Arrangement
Arrangement of the unit shall be in accordance with the requirements of DNVGL-OS-A101 Ch.2 Sec.2.

2.4 Escape and evacuation
Escape and evacuation shall be in accordance with DNVGL-OS-A101 Ch.2 Sec.5.

3 Materials

3.1 Technical requirements
Materials for:
— rolled steel for structural applications, boilers and pressure vessels
— steel tubes, pipes and fittings
— steel forgings
— steel castings
— aluminium alloys
shall comply with the requirements given by DNVGL-OS-B101 unless otherwise stated in the relevant technical reference documents.

3.2 Supplementary classification requirements
3.2.1 Certification requirements for materials are given in DNVGL-OS-B101 Ch.3.
3.2.2 Rolled, forged or cast elements of steel and aluminium for structural application shall be supplied with DNV GL's material certificates in compliance with the requirements given in DNVGL-OS-B101 Ch.3.

4 Structural design

4.1 Scope

4.1.1 Class scope on structural design common to all type of mobile offshore units and all services covers the following aspects:
- hull incl. superstructure
- crane pedestals (pedestal below slewing ring)
- attachment of helideck support structure
- foundation and support for heavy equipment (equipment where the static forces exceed 50 kN or resulting static bending moments at deck exceed 100 kNm).

Additional elements relevant for specific service are listed in the subsequent sections.

4.1.2 Excluded from the scope are:
- ice and soil conditions
- earthquake and other environmental events defined by an annual probability equal or lower than to $10^{-4}$.

4.1.3 Transit conditions are included in the structural design scope of work. Temporary conditions are not included unless specifically specified. See definitions in Ch.1 Sec.1 [2].

4.2 Technical requirements

Structural design shall comply with the following design codes and approved either on the principles of the working stress design (WSD) method or the LRFD methodology depending on hull shape as listed in Table 1.

<table>
<thead>
<tr>
<th>Hull Shape</th>
<th>WSD</th>
<th>LRFD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ship-shaped</td>
<td>DNVGL-OS-C102</td>
<td>DNVGL-OS-C102 Sec.13</td>
</tr>
<tr>
<td>Column-stabilized</td>
<td>DNVGL-OS-C201</td>
<td>DNVGL-OS-C103</td>
</tr>
<tr>
<td>Cylindrical</td>
<td>DNVGL-OS-C101</td>
<td>DNVGL-OS-C101</td>
</tr>
</tbody>
</table>

5 Fabrication and testing of offshore structures

5.1 Technical requirements

5.1.1 Requirements for:
- welding procedures and qualification of welders
- fabrication and tolerances
- testing
- corrosion protection systems

shall be in accordance with DNVGL-OS-C401.
Chapter 2  Section 1

Guidance note:
The term purchaser in this standard should be understood as DNV GL.

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

5.1.2 For ship-shaped units designed for benign waters, the requirements may be in accordance with DNVGL-RU-SHIP Pt.2 Ch.4, except for specific structural elements (e.g. topside structures, topside support etc). The application is subject to a case by case approval.

5.2 Supplementary classification requirements
Classification procedures specifically related to fabrication and testing of offshore structures are given in DNVGL-OS-C401 Ch.3.

6 Stability and watertight/weathertight integrity

6.1 Technical requirements

6.1.1 Requirements for:
— intact and damaged stability
— watertight integrity
— freeboard
— weathertight closing appliances
shall be in accordance with DNVGL-OS-C301.

6.1.2 If onboard computers for stability calculations are installed, these systems shall be approved in accordance with requirements in DNVGL-RU-SHIP Pt.6 Ch.4 Sec.7.

7 Mooring and towing

7.1 General

7.1.1 Depending on type of unit, main class stipulates requirements for:
— temporary mooring
— towing.

Guidance note:
The above includes both normal and emergency towing. For the definitions of these and temporary mooring versus position mooring see Ch.1 Sec.1 [1.2.2].

Certification of the position mooring equipment on request by the owner or if required by flag administration is covered by the class notation ME as described in Ch.2 Sec.7 [3].

The notation POSMOOR can be assigned to units where in addition to the equipment covered under ME, the units position mooring system capability is in accordance with DNVGL-OS-E301 Ch.2 Sec.2.

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

7.2 Temporary mooring

7.2.1 Self propelled units shall have an arrangement for temporary mooring.
For ship-shaped units, the arrangement shall be in accordance with the DNVGL-RU-SHIP Pt.3 Ch.3, for other structural designs in accordance with DNVGL-OS-E301 Ch.2 Sec.4.
Equipment for barges will be considered case by case.

7.2.2 For units with the additional class notation POSMOOR or ME, the requirements for temporary mooring are normally covered within this notation.

Guidance note:
Additional requirements or relaxations apply for specific service notations as given in Sec.2 to Sec.6.

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

7.3 Towing

7.3.1 Ship-shaped units with propulsion shall have towing arrangement according to DNVGL-RU-SHIP Pt.3 Ch.3, other units shall have an arrangement according DNVGL-OS-E301 Ch.2 Sec.4.

7.3.2 The towing fittings for normal towing may also be used for emergency towing.

7.3.3 For units with the additional class notations DYNPOS(AUTR) and DYNPOS(AUTRO), towing arrangements may take into account the specific thrust capabilities of the units as described in DNVGL-OS-E301 Ch.2 Sec.4 [16].

7.4 Supplementary classification requirements

7.4.1 Classification procedures specifically related to mooring and towing are given in DNVGL-OS-E301 Ch.3.

7.4.2 Certification requirements for equipment are given in DNVGL-OS-E301 Ch.3.

8 Marine and machinery systems and equipment

8.1 Technical requirements

8.1.1 Requirements for marine and machinery systems and equipment include:
— general piping design, fabrication and testing
— pumps, valves and pipe connections
— ballast, bilge and drainage systems
— air, overflow and sounding pipes
— cooling, feed water and condensation systems
— lubricating oil, fuel oil and thermal oil systems
— hydraulic, steam and pneumatic systems
— heating, ventilation and air conditioning systems
— propulsion and auxiliary machinery including thrusters
— boilers, pressure vessels and incinerators
— steering gear and turret machinery
and shall be designed, manufactured, tested and installed in accordance with DNVGL-OS-D101.

8.1.2 Units not equipped with propulsion and steering arrangements for independent transit will be given the special feature notation Non-self-propelled, and shall comply with DNVGL-OS-D101 as applicable for such type of units.
8.2 Supplementary classification requirements

8.2.1 Classification procedures specifically related to marine and machinery systems and equipment are given in DNVGL-OS-D101 Ch.3.

8.2.2 Certification requirements for equipment are given in DNVGL-OS-D101 Ch.3.

9 Electrical systems and equipment
Electrical systems and equipment include:
— system design
— switchgear and control gear assemblies
— rotating machinery
— static converters
— cables
— miscellaneous equipment
— installation and testing
— A.C. supply systems
— electric propulsion

and shall be designed, manufactured, tested and installed in accordance with DNVGL-OS-D201.

9.1 Supplementary classification requirements

9.1.1 Classification procedures specifically related to electrical systems and equipment are given in DNVGL-OS-D201 Ch.3.

9.1.2 Certification requirements for equipment are given in DNVGL-OS-D201 Ch.3.

10 Instrumentation and telecommunication systems

10.1 Technical requirements
Instrumentation and telecommunication systems and equipment include:
— design principles and system design
— computer based systems
— component design and installation
— environmental conditions
— user interface

and shall be designed, manufactured, tested and installed in accordance with DNVGL-OS-D202.

10.2 Supplementary classification requirements
Classification procedures specifically related to instrumentation and telecommunication systems are given in DNVGL-OS-D202 Ch.3.
Certification requirements for equipment are given in DNVGL-OS-D202 Ch.3.
11 Fire protection

11.1 Technical requirements

Fire protection include:

— passive fire protection
— active fire protection
— fire fighting systems
— fire and gas detection systems

and shall be designed, manufactured, tested and installed in accordance with DNVGL-OS-D301 Ch.2 Sec.1 to Sec.5.

11.2 Supplementary classification requirements

11.2.1 Classification procedures specifically related to fire protection are given in DNVGL-OS-D301 Ch.3.

11.2.2 Certification requirements for equipment are given in DNVGL-OS-D301 Ch.3.

12 Preparation for surveys and inspections on location

12.1 General

12.1.1 It is advised that operational survey and inspection aspects are taken into consideration at the design and construction stages.

12.1.2 The following matters will be taken into consideration for acceptance of surveys to be carried out on location:

— arrangement for underwater inspection of hull, propellers, thrusters, rudders and openings affecting seaworthiness
— marking of the hull
— means for blanking off all openings including side thrusters
— use of corrosion resistant materials for shafts
— use of glands for propeller and rudder
— accessibility of all tanks and spaces for inspection
— corrosion protection of hull or structure
— maintenance and inspection of thrusters
— measurement of wear in the propulsion shaft and rudder bearings
— testing facilities of all important machinery.
Guidance note:
The underwater body should be marked in such a way that the surveyor can identify the location of any damages found. One acceptable way of preparing ship-shaped hulls for underwater inspection is described in the following.
Transverse and longitudinal reference lines of minimum length 300 mm and minimum width 25 mm should be applied as marking. The marks should be made permanent by welding or otherwise and painted in contrast colour.
Markings should normally be placed as follows:
— at flat bottom in way of intersections of tank bulkheads or watertight floors and girders
— at unit's sides in way of the positions of transverse bulkheads (the marking need not be extended more than 1 m above the bilge plating)
— the intersection between tank top and watertight floors in way of the unit's sides
— all openings for sea suctions and discharges.
— letter/number codes may conveniently be applied on the shell for identification of tanks, sea suctions and discharges.
Markings should be adequately documented.

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

12.1.3 In addition to the above ship-shaped units can apply for the class notation **BIS** for in water survey of the bottom, see DNVGL-RU-SHIP Pt.6 Ch.9 Sec.1.

13 Summary of technical reference standards
Technical standards which shall be applied for assignment of main character of class for mobile offshore units are summarised in **Table 2**.

**Table 2 Technical reference standards for main character of class (1A)**

<table>
<thead>
<tr>
<th>Technical item</th>
<th>Reference standard</th>
<th>Applicable parts or comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAFETY PRINCIPLES AND ARRANGEMENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design principles</td>
<td>DNVGL-OS-A101</td>
<td>Ch.2 Sec.1 <em>Design principles and accidental loads</em></td>
</tr>
<tr>
<td>Arrangement</td>
<td></td>
<td>Ch.2 Sec.2 <em>Arrangement</em></td>
</tr>
<tr>
<td>Escape and evacuation</td>
<td></td>
<td>Ch.2 Sec.5 <em>Escape and communication</em></td>
</tr>
<tr>
<td>MATERIALS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metallic materials</td>
<td>DNVGL-OS-B101</td>
<td></td>
</tr>
<tr>
<td>STRUCTURAL DESIGN (select type as appropriate)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ship-shape structure</td>
<td>DNVGL-OS-C102</td>
<td>LRFD and WSD methodology</td>
</tr>
<tr>
<td>Column-stabilised type structure</td>
<td>DNVGL-OS-C103</td>
<td>LRFD methodology</td>
</tr>
<tr>
<td></td>
<td>DNVGL-OS-C201</td>
<td>WSD methodology</td>
</tr>
<tr>
<td>Cylindrical units</td>
<td>DNVGL-OS-C101</td>
<td>LRFD methodology</td>
</tr>
<tr>
<td></td>
<td>DNVGL-OS-C101</td>
<td>WSD methodology</td>
</tr>
<tr>
<td>HULL FABRICATION</td>
<td></td>
<td></td>
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<tr>
<td>Fabrication, including welding and NDT</td>
<td>DNVGL-OS-C401</td>
<td>For semi-submersible units</td>
</tr>
<tr>
<td></td>
<td>DNVGL-RU-SHIP Pt.2 Ch.4</td>
<td>For ship-shaped units</td>
</tr>
<tr>
<td>STABILITY AND WATERTIGHT INTEGRITY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical item</td>
<td>Reference standard</td>
<td>Applicable parts or comments</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------</td>
<td>--------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Stability, watertight integrity, freeboard and weathertight closing appliances</td>
<td>DNVGL-OS-C301</td>
<td>Covers all types of structures</td>
</tr>
<tr>
<td>MOORING AND TOWING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary mooring, towing</td>
<td>DNVGL-RU-SHIP Pt.3 Ch.3</td>
<td>Ship-shaped units</td>
</tr>
<tr>
<td></td>
<td>DNVGL-OS-E301</td>
<td>All other types of units</td>
</tr>
<tr>
<td>MARINE AND MACHINERY SYSTEMS AND EQUIPMENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piping design, manufacturing and testing; platform piping systems; machinery piping systems; machinery and mechanical equipment</td>
<td>DNVGL-OS-D101</td>
<td>All sections</td>
</tr>
<tr>
<td>ELECTRICAL SYSTEM EQUIPMENT</td>
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<td></td>
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<tr>
<td>Electrical systems including switchgear and controlgear assemblies, rotating machinery, static convertors, cables, installation, testing, and electric propulsion</td>
<td>DNVGL-OS-D201</td>
<td>All sections</td>
</tr>
<tr>
<td>INSTRUMENTATION AND TELECOMMUNICATION SYSTEMS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instrumentation systems including design principles, system design, computer based systems, component design and installation, and user interface</td>
<td>DNVGL-OS-D202</td>
<td>Ch.2:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sec.1 Design principles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sec.2 System design</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sec.3 Additional requirements for computer based systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sec.4 Component design and installation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sec.5 User interface</td>
</tr>
<tr>
<td>FIRE PROTECTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire protection including passive fire protection, active fire protection, fire fighting systems, fire and gas detection systems</td>
<td>DNVGL-OS-D301</td>
<td>Ch.2:</td>
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<tr>
<td></td>
<td></td>
<td>Sec.1 Passive Fire Protection</td>
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<tr>
<td></td>
<td></td>
<td>Sec.2 Active fire protection of specific areas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sec.3 Fire fighting systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sec.4 Fire and/or gas detection and alarm systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sec.5 Miscellaneous items</td>
</tr>
</tbody>
</table>
SECTION 2 SUPPLEMENTARY REQUIREMENTS FOR DRILLING UNITS

1 General

1.1 Introduction

1.1.1 This section identifies design and construction requirements for assignment of service notation Drilling.

1.1.2 The requirements in this section are supplementary to those for main class (1A) as stated in Sec.1.

1.2 Scope

1.2.1 Equipment installed in enclosed compartments below the damage water line that represent a risk to the integrity to the hull, shall be included in the scope of classification. The equipments shall comply with relevant design and construction requirements given in DNVGL-OS-E101.

Guidance note:
Relevant equipment and systems should be evaluated on a case by case basis. Equipment included in the scope is typically equipment handling hydrocarbons and/or where an incident may lead to a major accident. Examples of equipment to be evaluated are large independent pressurized bulk tanks and air pressure vessels for heave compensation.

---end---of---guidance---note---

2 Safety principles and arrangement

2.1 General
Service notation Drilling specifies additional requirements for:
— arrangement
— area classification
— shutdown
— escape, evacuation and communication.

2.2 Arrangement
Drilling units shall comply with DNVGL-OS-A101 Ch.2 Sec.6.

2.3 Area classification
Drilling units shall comply with DNVGL-OS-A101 Ch.2 Sec.3 and DNVGL-OS-A101 Ch.2 Sec.6.

2.4 Emergency shutdown
Drilling units shall comply with DNVGL-OS-A101 Ch.2 Sec.4 and DNVGL-OS-A101 Ch.2 Sec.6.

2.5 Escape, evacuation and communication
Drilling units shall comply with DNVGL-OS-A101 Ch.2 Sec.6.
3 Structural design

3.1 General

3.1.1 The structural strength shall be as required for the main class taking into account necessary strengthening of supporting structures for equipment applied in and forces introduced by the drilling operation. In addition to the elements as listed in Sec.1 [4.1], this includes:

— drill floor and sub-structure
— topside module stools
— foundation and support for heavy drill equipment (e.g. pipe rack, riser rack exceeding the limits as given in Sec.1 [4.1]).

3.1.2 When calculating the structural strength of the drill floor and substructure, relevant loading conditions shall be specified by the builder. Loadings from drill pipe on setback, tensioning equipment hook load, rotary table etc. shall be considered.

Local effects of horizontal components of tensioner forces, drilling torque etc. shall also be considered.

4 Fire protection

4.1 General

Service notation Drilling specifies additional requirements for:

— active fire fighting systems
— passive fire protection
— gas detection.

4.2 Supplementary technical requirements

Drilling units shall comply with DNVGL-OS-D301 Ch.2 Sec.6.

5 Temporary mooring

For units with the additional class notations DYNPOS(AUTR) and DYNPOS(AUTRO) temporary mooring arrangement is not required as a condition for classification.
### 6 Summary of requirements

Technical standards which shall be applied for assignment of service notation **Drilling** are summarised in Table 1.

<table>
<thead>
<tr>
<th>Technical item</th>
<th>Reference standard</th>
<th>Applicable parts or comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety principles and arrangement</td>
<td>DNVGL-OS-A101</td>
<td>Ch.2 Sec.1 to Sec.5, (1A requirements)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ch.2 Sec.6, Special requirements for drilling units</td>
</tr>
<tr>
<td>Materials</td>
<td>DNVGL-OS-B101</td>
<td>(No supplementary requirements to 1A)</td>
</tr>
<tr>
<td>Structural design of ship-shaped units</td>
<td>DNVGL-OS-C102</td>
<td>LRFD and WSD methodology (No supplementary requirements to 1A)</td>
</tr>
<tr>
<td>Structural design of column-stabilised units</td>
<td>DNVGL-OS-C103</td>
<td>LRFD methodology (No supplementary requirements to 1A)</td>
</tr>
<tr>
<td></td>
<td>DNVGL-OS-C201</td>
<td>WSD methodology (No supplementary requirements to 1A)</td>
</tr>
<tr>
<td>Structural fabrication</td>
<td>DNVGL-OS-C401</td>
<td>(No supplementary requirements to 1A)</td>
</tr>
<tr>
<td>Stability and watertight integrity</td>
<td>DNVGL-OS-C301</td>
<td>(No supplementary requirements to 1A)</td>
</tr>
<tr>
<td>Mooring and towing</td>
<td>DNVGL-RU-SHIP Pt.3 Ch.3</td>
<td>Ship-shaped units (No supplementary requirements to 1A)</td>
</tr>
<tr>
<td></td>
<td>DNVGL-OS-E301</td>
<td>Other units (No supplementary requirements to 1A)</td>
</tr>
<tr>
<td>Marine and machinery systems and equipment</td>
<td>DNVGL-OS-D101</td>
<td>(No supplementary requirements to 1A)</td>
</tr>
<tr>
<td>Electrical systems and equipment</td>
<td>DNVGL-OS-D201</td>
<td>(No supplementary requirements to 1A)</td>
</tr>
<tr>
<td>Instrumentation and telecommunication systems</td>
<td>DNVGL-OS-D202</td>
<td>Ch.2 Sec.1 to Sec.5 (1A requirements)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ch.2 Sec.6, Special requirements for drilling units</td>
</tr>
<tr>
<td>Fire protection</td>
<td>DNVGL-OS-D301</td>
<td>Sec.1 to Sec.5 (1A requirements)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sec.6, Supplementary requirements for drilling units</td>
</tr>
</tbody>
</table>
SECTION 3 SUPPLEMENTARY REQUIREMENTS FOR WELL INTERVENTION UNITS

1 General

1.1 Introduction

1.1.1 This section identifies design and construction requirements for assignment of service notation Well intervention 1 and Well intervention 2.

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WELL INTERVENTION</td>
<td>Vessel purpose well intervention</td>
<td></td>
<td>Excluding risers, i.e. no circulation of hydrocarbons</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Including risers, i.e. circulation of hydrocarbons</td>
</tr>
</tbody>
</table>

1.1.2 Well intervention 1 is applicable for vessels equipped for performing well intervention without introducing well fluids/hydrocarbons on board. The design may be based on DNV GL Rules for ships.

Guidance note:

By introducing well fluids it is meant an open pipe or umbilical that is connected to a live well. E.g. flushing of a lubricator that is connected to a closed production well is not considered as introducing well fluids.

---end---of---guidance---note---

1.1.3 Units intended and equipped for direct contact with well fluids e.g. through riser, coiled tubing or drill will be assigned class notation Well intervention 2.

1.1.4 For Well intervention 2 the requirements in this section are supplementary to those for main class (1A) as stated in Sec.1. Where no specific requirements for well intervention units are specified, the requirements for drilling units shall apply.

1.1.5 The service notation Well intervention 1 is a voluntary notation. Well intervention 2 is mandatory for DNV GL classed vessels.

1.1.6 Based on risk analysis or similar documentation related to the well intervention unit, DNV GL may accept alternative solutions found to represent an overall safety level equivalent to that stated in the requirements of this document or referred standards.

2 General requirements

2.1 Structural design

2.1.1 For ship-shaped units with Well intervention 1 or Well intervention 2 notation the structural design may be in accordance with DNVGL-RU-SHIP Pt.3 Ch.1.

Guidance note:

Note that additional requirements apply to comply with MODU Code.

---end---of---guidance---note---
2.1.2 Well intervention units that are not ship-shaped shall comply with the relevant sections of DNVGL-OS-C101 and:
— DNVGL-OS-C103 for column-stabilised units or installations
— DNVGL-OS-C106 for deep draught units or installations.

2.1.3 The structural strength shall be as required for the main class taking into account necessary strengthening of supporting structures for equipment applied and forces introduced by the well intervention facilities and operation.

2.2 Position keeping

Units with the notation **Well intervention 1** or **Well intervention 2** shall as a minimum comply with the class notation **DYNPOS(AUTR)** (IMO equipment class 2) as given in DNVGL-RU-SHIP Pt.6 Ch.3 Sec.1.

### 3 Requirements for Well intervention 1

3.1 General

3.1.1 Service notation **Well intervention 1** may be assigned to ships with hull, machinery, systems and equipment found to be in compliance with applicable rule requirements as given in DNVGL-RU-SHIP Pt.2 to Pt.4.

3.1.2 In addition to the supplementary requirements as given in [3.2], the structural design requirements of [2.1] and the position keeping of [2.2] apply.

3.1.3 Systems and equipment installed in enclosed compartments below the damage water line that represent a risk to the integrity to the hull, shall be included in the scope of classification.

**Guidance note:**

Relevant equipment and systems must be evaluated on a case by case basis. Equipment included in the scope is typically equipment handling hydrocarbons and/or where an incident may lead to a major accident. Examples of equipment to be evaluated are large independent pressurized bulk tanks and air pressure vessels for heave compensation.

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

3.2 Supplementary requirements

3.2.1 The unit shall have, if applicable, a foam extinguishing system of adequate capacity to extinguish possible pool fires in the work areas.

3.2.2 Potential reception tanks for handling of hydrocarbons shall be located taking into account the risk of fire and hydrocarbon leakages.

3.2.3 If the unit is equipped with tanks for carriage of liquid cargo in bulk with flash point below 60°C, such as crude oil, the requirements in the DNVGL-RU-SHIP Pt.5 Ch.6, shall be complied with.

3.2.4 Means shall be provided for rescue of personnel falling into the moon pool. The moon pool shall be fitted with a rescue ladder.

3.2.5 Machinery and other equipment necessary for the well intervention which shall be installed in hazardous areas shall be ex-certified corresponding to relevant zoned designation.
3.2.6 Hazardous area classification shall comply with DNVGL-OS-A101 Ch.2 Sec.3 [1] to DNVGL-OS-A101 Ch.2 Sec.3 [3] and DNVGL-OS-A101 Ch.2 Sec.6 [3.2], as applicable. The effects of lubricator flushing shall be taken into account for the definition of hazardous area classification.

3.2.7 The unit shall have a system for quick disconnect from the lubricator/well head.

3.2.8 The unit shall have a gas detection system and corresponding routines for shut down/isolation of non-ex equipment in case of gas detection.

Guidance note:
These supplementary classification requirements are typically written for operational modes that will introduce small volumes of hydrocarbons on board.

4 Requirements for Well intervention 2

4.1 General

4.1.1 This section identifies design and construction requirements for assignment of service notation Well intervention 2
The requirements for Well intervention 1 apply and in addition there are specific requirements for:
— arrangement
— area classification
— shutdown/disconnection
— escape, evacuation and communication
— fire protection.

4.1.2 There are similarities between a well intervention unit and a drilling unit. Therefore, reference is given to the requirements for drilling units, where no other requirements are given for such units.

4.2 Arrangement
Units shall comply with DNVGL-OS-A101 Ch.2 Sec.6 as applicable for well intervention units.

4.3 Area classification
Units shall comply with DNVGL-OS-A101 Ch.2 Sec.3 and DNVGL-OS-A101 Ch.2 Sec.6 as applicable for well intervention units.

4.4 Emergency shutdown
Units shall comply with DNVGL-OS-A101 Ch.2 Sec.4 and DNVGL-OS-A101 Ch.2 Sec.6 [4.1] and DNVGL-OS-A101 Ch.2 Sec.6 [4.2] as applicable for well intervention units.

4.5 Escape, evacuation and communication
Units shall comply with DNVGL-OS-A101 Ch.2 Sec.6 as applicable for well intervention units.
4.6 Fire Protection

4.6.1 Service notation **Well intervention 2** specifies additional requirements for:
— active fire fighting systems
— passive fire protection
— gas detection.

4.6.2 Units shall comply with DNVGL-OS-D301 Ch.2 Sec.6, as applicable for well intervention units.
SECTION 4 SUPPLEMENTARY REQUIREMENTS FOR ACCOMMODATION UNITS

1 General

1.1 Introduction

1.1.1 This section identifies design and construction requirements for assignment of service notation Accommodation.

1.1.2 Accommodation units are units primarily intended for accommodation of offshore personnel.

1.1.3 The service notation Accommodation is mandatory for classification of units primarily intended for accommodation of offshore personnel.

1.1.4 The requirements in this section are supplementary to those for main class as stated in Sec.1.

2 Safety principles and arrangement

2.1 Emergency shutdown
Accommodation units that are located adjacent to operational units which have potential for hydrocarbon release shall comply with DNVGL-OS-A101 Ch.2 Sec.4.

3 Structural strength

3.1 General
Service notation Accommodation includes requirements for the following:
— structural strength of the accommodation
— connection of the accommodation modules to main structure
— gangways.

3.2 Design loads
Structural strength shall be as required for main class assuming design loads for accommodation deck as for crew spaces or weather deck whichever is applicable.

3.3 Containerised modules

3.3.1 If containerised modules are used for accommodation, the structural strength of the connections between the modules and between the modules and the supporting structure shall be in accordance with the general requirements given for the main class, assuming forces as given for heavy components in DNVGL-OS-C103 Ch.2 Sec.2 [5.4].

3.3.2 For column-stabilised units the horizontal force shall not be taken less than:

\[ P_H = \sin \alpha g_0 M \ [\text{kN}] \]
where:
\[ M = \text{mass of unit, in t} \]
\[ \alpha = \text{angle of heel corresponding to loss of buoyancy of one column.} \]
Permissible usage factors are given in DNVGL-OS-C201 Sec.2 Table 2.

3.4 Gangways
The offshore gangway shall be delivered with the Society’s certificates in compliance with DNVGL-ST-0358, Certification of offshore gangways for personnel transfer. In agreement with the society the gangway may be certified based on other internationally recognised standards. Gangways certified by other societies may be accepted based on special consideration.

4 Electrical systems and equipment

4.1 Emergency source of power and emergency installation

4.1.1 The emergency power supply and emergency lighting shall be operable and capable of being used in the damaged conditions described in DNVGL-OS-C301.

4.1.2 Where the emergency source of power is a generator, a transitional source of emergency power shall be installed. This shall be an accumulator battery of sufficient capacity:
— to supply emergency lighting continuously for 30 minutes
— to close the watertight doors (if electrically operated), but not necessarily to close them simultaneously
— to operate the indicators (if electrically operated) which show whether power operated, watertight doors are open or closed
— to operate the sound signals (if electrically operated) which give warning that power operated, watertight doors are about to close
— to operate the fire detection and alarm systems, unless these systems are supplied by separate batteries.

4.1.3 Arrangements shall be such that the transitional source of emergency power will come into operation automatically in the event of failure of the main electrical supply.

4.1.4 Where the emergency source of power is an accumulator battery, arrangements shall be such that emergency lighting will automatically come into operation on failure of the main lighting supply.

4.1.5 An indicator shall be fitted in the control room, preferably in the main switchboard, to indicate when any accumulator battery fitted in accordance with this rule is being discharged.

4.1.6 The emergency switchboard may be supplied from the main switchboard during normal operation.

5 Position keeping
Ship shaped and column stabilized accommodation units shall have the class notation POSMOOR(V) or DYNPOS(AUTR).
Temporary mooring is not required as a condition for classification.
SECTION 5 SUPPLEMENTARY REQUIREMENTS FOR CRANE UNITS

1 Introduction

1.1 Objective

1.1.1 This section identifies design and construction requirements for assignment of service notation Crane.

1.1.2 Crane units are column-stabilised units specially intended for lifting purposes.

1.1.3 The requirements for main class 1A, as stated in Sec.1 shall be complied with in addition to the supplementary requirements for Crane listed in this section.

1.2 Safety principles – emergency shutdown

Crane units that are located adjacent to operational units which have potential for hydrocarbon release shall comply with DNVGL-OS-A101 Ch.2 Sec.4.

2 Structural design

2.1 General

The following is covered by the service notation:
— structural details relating to the lifting operations. Dynamic forces due to lifting operations and motions characteristics of the unit shall be taken into account
— supporting structures for the crane and strengthening of the deck structure
— devices for locking the crane in parked position (unit at sea).

2.2 Technical requirements

The hull structural strength shall in general be as required for main class taking into account necessary strengthening for supporting the crane(s). Crane units shall comply with the requirements of DNVGL-RU-SHIP Pt.5 Ch.10 Sec.2.

3 Stability and watertight integrity

The requirements of DNVGL-OS-C301 Ch.2, Sec. 1[6] shall be complied with.

4 Crane with substructure

4.1 Certification

The crane shall be delivered with the Society’s certificates in compliance with DNVGL-ST-0378, Standard for offshore and platform lifting appliances. In agreement with the society the crane may be certified based on other internationally recognised standards. Cranes certified by other societies may be accepted based on special consideration.

4.2 Substructure

Devices for locking the crane in parked position at sea will be specially considered taking into account environmental load conditions as indicated for the main class of the vessel.
SECTION 6 SUPPLEMENTARY REQUIREMENTS FOR WIND TURBINE INSTALLATION UNITS

1 General

1.1 Introduction

1.1.1 This section identifies design and construction requirements for assignment of service notation Wind turbine installation (WTIU).

1.1.2 WTIUs are specially intended for installation and/or maintenance of fixed and floating wind power equipment such as:
- foundations
- columns
- generator house
- blades.

1.1.3 Units covered by this service notation are not intended for operations related to development or production of hydrocarbons.

2 General requirements

2.1 Structural strength

The hull structural strength shall be as required for the main class taking into account necessary strengthening of supporting structures for equipment applied in the installation operations. All load effects caused by deck cargo and heavy equipment shall be accounted for in the design calculations for all operational phases.

2.2 Stability and watertight

Stability and watertight integrity shall comply with the additional requirements in DNVGL-OS-C301 Ch.2 Sec. 1 [6.2].

2.3 Position keeping

If a dynamic positioning system is installed, class notation DYNPOS or DPS is mandatory.

3 Crane installations

Wind Turbine Installation Units which are equipped with a crane, and is specially intended for lifting purposes, shall in addition to service notation Wind turbine installation be assigned the service notation Crane as specified in Sec.5.
SECTION 7 OPTIONAL CLASS NOTATIONS

1 Introduction

1.1 General

1.1.1 This section identifies design and construction requirements for assignment of additional class notations relating to system, equipment and special facility installations.

1.1.2 Units fitted with systems and/or special features complying with relevant requirements of this section may be assigned class notations as described.

1.2 Technical reference documents

1.2.1 Technical requirements are given by reference to selected:
— DNV GL offshore standards
— DNV GL classification guidelines
— DNV GL recommended practices
— other DNV GL/DNV rules and standards
— internationally recognised codes and standards.

1.2.2 The technical reference documents which shall be applied are given in the following subsections and summarised in Table 16.

1.3 General assumptions

1.3.1 DNV GL may accept alternative solutions found to represent an overall safety level equivalent to that stated in the requirements of this document or referred standards.

1.3.2 The requirements stated in this section for additional class notations shall be regarded as supplementary to those given for assignment of main class and relevant service notations.

2 Enhanced systems

2.1 General

2.1.1 This chapter summarizes the specific requirements for the Enhanced control & Safety systems (ES) notation as identified in the previous chapters.

2.1.2 Objective
The objective of the ES notation is to increase safety and reliability over the level as is represented by IMO’s MODU Code and main class.

2.1.3 Scope
ES covers requirements for machinery and systems, in special regarding control systems and fire safety.

2.1.4 Application
The notation is applicable for drilling and well intervention units.
2.2 Technical requirements

All of the technical requirements as listed in Table 1 come in addition to MODU Code 2009 and main class and additional service notation requirements as described in Sec.1 to Sec.6.

**Table 1 Requirements applicable for ES only**

<table>
<thead>
<tr>
<th>Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced ESD</td>
<td>DNVGL-OS-A101 Ch.3 Sec.1</td>
</tr>
<tr>
<td>Refrigeration plants</td>
<td>DNVGL-OS-D101 Ch.3 Sec.1</td>
</tr>
<tr>
<td>Alarm philosophy</td>
<td>DNVGL-OS-D202 Ch.3 Sec.1</td>
</tr>
<tr>
<td>Active fire protection for moon pool</td>
<td>DNVGL-OS-D301 Ch.3 Sec.1</td>
</tr>
</tbody>
</table>

2.3 Certification of materials and components

There are no additional requirements for CMC.

3 Position mooring equipment

3.1 General

**3.1.1** The notation ME may be assigned to units fitted with single or spread point mooring systems in accordance with the requirements of this section, not having applied for the POSMOOR notation.

**3.1.2 Objective**

The objective of the notation is to demonstrate that the mooring equipment is certified in accordance with DNVGL-OS-E301.

**3.1.3 Scope**

The notation covers the certification of mooring equipment and safety devices used for position mooring.

*Guidance note:*

The notation does not cover temporary mooring equipment. This equipment is part of by main class scope described in Ch.2 Sec.1. The notation does not cover the complete position mooring design and system approval to ensure mooring integrity within a set environmental window. For such a follow-up, the POSMOOR notation should be selected as described in [4] below and DNVGL-OS-E301 Ch.3 Sec.1.

---end---of---g-u-i-d-a-n-c-e---n-o-t-e---

3.2 Technical requirements

Design requirements to position mooring equipment shall be in accordance with DNVGL-OS-E301 Ch.2 Sec.4.

3.3 Certification requirements

Certification requirements to position mooring equipment shall be in accordance with DNVGL-OS-E301 Ch.3.
4 Position mooring system

4.1 General

4.1.1 POSMOOR notation may be assigned to units fitted with single or spread point mooring systems in accordance with the requirements of this section. The notation POSMOOR require specific technical capability requirements to position mooring capability beyond the class notation ME.

4.1.2 Objective
The notations aim to cover the reliability of the mooring system and equipment, for the purpose of ensuring safe position mooring.

4.1.3 Scope
The notation covers the following aspects:
— environmental conditions and loads
— mooring system analysis
— thruster assisted mooring
— mooring equipment
— tests.

4.2 Application

4.2.1 The notation is complemented with the qualifiers as described in Table 2.

Table 2 POSMOOR class notations

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>POSMOOR</td>
<td>Position mooring system</td>
<td>&lt;none&gt;</td>
<td>Passive position mooring system according the technical requirements of DNVGL-OS-E301 Ch.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mooring system designed according to API 2SK</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mooring system designed for positioning in vicinity of other structures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TA</td>
<td>Thruster assisted mooring system dependent on manual remote thrust control system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ATA</td>
<td>Thruster assisted mooring system dependent on automatic remote thrust control system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>R</td>
<td>Remaining thruster capacity after loss of most significant redundancy group</td>
</tr>
</tbody>
</table>

4.2.2 The qualifiers can be combined with the other qualifiers.

4.2.3 The qualifier R can be combined with TA and ATA (to TA, R and ATA, R respectively).
4.3 Technical requirements

4.3.1 The technical requirements of DNVGL-OS-E301 shall be complied with for assignment of the POSMOOR notations.

4.3.2 The technical requirements of API 2SK shall be complied for the qualifier.

4.4 Certification of materials and components
Certification of equipment shall be in accordance with DNVGL-OS-E301 Ch.3.

5 Dynamic positioning systems

5.1 General

5.1.1 The following notations may be assigned to units with dynamic positioning systems:

Table 3 Dynamic position class notations

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPS</td>
<td>Dynamic positioning system</td>
<td>Annual survey required</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>With an independent joystick back-up and a position reference back-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>With redundancy in technical design and with an independent joystick back-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>With redundancy in technical design and with an independent joystick back-up, plus a back-up DP-control system in an emergency DP-control centre, designed with physical separation for components that provide redundancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DYNPOS</td>
<td>Dynamic positioning system</td>
<td>Annual survey required</td>
<td></td>
</tr>
<tr>
<td>AUT</td>
<td>With an independent joystick back-up and a position reference back-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUTR</td>
<td>With redundancy in technical design and with an independent joystick back-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUTRO</td>
<td>With redundancy in technical design and with an independent joystick back-up, plus a back-up DP-control system in an emergency DP-control centre, designed with physical separation for components that provide redundancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUTS</td>
<td>Without redundancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Dynamic positioning system with enhanced reliability. Position and heading keeping ability meets intentions comparable to or exceeding DPS(2) Includes redundant DP control system and single independent alternative DP control system and manual levers control back-up Provides flexibility and increased availability of power and thrust by use of connected power systems, standby start and changeover of generator</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.1.2 Objective
The objective of the notations is to ensure the availability of dynamic positioning with various grades of redundancy in line with the IMO MSC/Circ.645 Guidelines for vessels with dynamic positioning systems.

5.1.3 The two notation series differ in their specific requirements and in general the DYNPOS series notations are requiring a higher degree of availability and robustness as compared to the DPS series notations. The detailed differences are outlined in the specific requirements given in this chapter.

5.1.4 Scope
The dynamic positioning system includes requirements for the following subsystems, control panels and back-up systems which are necessary to dynamically position the unit:
- power system
- controller
- measuring system
- thruster system
- remote thrust control
- control panels.

5.1.5 These rules do not include requirements or recommendations in regard to the vessels operation or other characteristics.

5.2 Technical requirements
5.2.1 Technical requirements for the dynamic positioning notations shall be in accordance with the DNVGL-RU-SHIP Pt.6 Ch.3 Sec.1.

5.2.2 Technical requirements for DYNPOS(ER) are given in DNVGL-RU-SHIP Pt.6 Ch.3 Sec.2.

5.2.3 For DPS notations granted through class entries, see DNVGL-RU-SHIP Pt.6 Ch.3 Sec.1.

5.3 Certification of materials and components
The certification of equipment shall be in accordance with DNVGL-RU-SHIP Pt.6 Ch.3 Sec.1.

6 Drilling plant
6.1 General
6.1.1 DRILL notation covers design fabrication, installation and operational aspects of offshore drilling facilities which have potential to affect safety of personnel or pollution of the environment.

6.1.2 Objective
The objective of the notation is to ensure the safety and reliability for drilling facilities.
6.1.3 Scope
DRILL notation requires certification of drilling equipment and systems, and approval of the complete drilling plant, which includes at least the following:
— drilling structures
— well control systems
— heave compensation and tensioning systems
— hoisting and rotating systems
— drilling equipment handling systems
— bulk storage, drilling fluid mixing and circulation, and cementing systems
— managed pressure drilling (MPD) systems
— well testing systems
— other drilling equipment (winches, gear transmissions, man-riding equipment).

6.1.4 The following structural items shall be considered during the certification:
— pipe and riser rack structure
— topside module structures, e.g., mud module, power module, bulk tank module, etc.

6.1.5 Application
The notation is applicable for units with the service notation Drilling.

6.2 Technical requirements

6.2.1 The requirements for drilling facilities are stated in DNVGL-OS-E101.

6.2.2 For well test system see Table 5 for the applicable requirements.

6.3 Certification of materials and components

6.3.1 Procedures and requirements for classification including certification of equipment shall be in accordance with DNVGL-OS-E101 Ch.3.

6.3.2 Manufacturers of materials, components and equipment for DRILL class shall, prior to construction is started, provide the Society with evidence of their capability to successfully carry out fabrication with adequate quality.

   Guidance note:
   Evidence may incorporate successful outcome of construction projects of similar nature.

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

6.4 DRILL(US)

6.4.1 Drilling systems and equipment for use on the Gulf of Mexico Outer Continental Shelf shall comply with the regulations of the Bureau of Safety and Environmental Enforcement (BSEE).

6.4.2 Objective
The objective of DRILL(US) is to ensure that the drilling plant is in compliance with relevant BSEE regulations.
6.4.3 Scope
The scope of DRILL(US) is identical with the scope as defined in DNVGL-OS-E101.

6.4.4 Application
Units equipped with drilling plants in compliance with DNVGL-OS-E101 and the requirements in this sub-section will be entitled to the class notation DRILL(US).

6.4.5 Technical requirements
Autoshear and Deadman systems must be provided on DP rigs.
See BSEE CFR Title 30, Chapter II, Part 250, par 250.442(f), 250.515(e) and 250.615(e)

6.4.6 Subsea BOP stack must be equipped with remotely operated vehicle (ROV) intervention capability. At a minimum, the ROV must be capable of closing one set of pipe rams, closing one set of blind-shear rams, and unlatching the lower marine riser package.
See BSEE CFR Title 30, Chapter II, Part. 250, par 250.442(d), 250.515(e) and 250.615(e)

7 Helicopter decks

7.1 General

7.1.1 Units fitted with erected landing platforms for helicopters or landing areas arranged directly on decks or top of deckhouses may be given the class notation HELDK together with qualifiers as defined in Table 4.

7.1.2 Objective
The objective of the HELDK notation is to ensure the safety and reliability of helicopter deck structure and ship safety in relation with helicopter operations and hangar facilities.

7.1.3 Scope
The scope of the notations is dependent on the qualifiers as listed in Table 4.

Table 4 HELDK class notation

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HELDK</td>
<td>Helicopter deck</td>
<td>&lt;none&gt;</td>
<td>Structure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S</td>
<td>Additional requirements to unit safety.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H</td>
<td>Additional requirements to helicopter safety</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>Additional requirements to helicopter facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Evaluated with respect to requirements for operation on the Norwegian Continental Shelf (NCS)</td>
</tr>
</tbody>
</table>

7.1.4 Application
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 can only be applied together with qualifiers SH or SHF.
7.2 Technical requirements
Technical requirements for HELDK shall comply with DNVGL-OS-E401 Ch.2 and DNVGL-RU-SHIP Pt.6 Ch.5 as listed below:
— DNVGL-OS-E401 Ch.2 Sec.1 to Sec.4 for notation HELDK
— DNVGL-RU-SHIP Pt.6 Ch.5 [5] Additional requirements for qualifier S
— DNVGL-RU-SHIP Pt.6 Ch.5 [6] Additional requirements for qualifier H
— DNVGL-RU-SHIP Pt.6 Ch.5 [7] Additional requirements for qualifier F.
For additional requirements for qualifier see DNVGL-SI-0166 Ch.2 Sec.9.

7.3 Certification of materials and components
There are no additional requirements regarding certification.

8 Well testing facilities

8.1 General

8.1.1 Introduction
Units equipped with facilities for well testing may be assigned class notation WELLTEST.

8.1.2 Objective
WELLTEST is intended for limited testing of wells in relation to drilling activities.

8.1.3 Scope
The scope of WELLTEST covers:
— structural requirements
— area arrangement
— processing facilities
— safety systems
— components.

8.1.4 Application
WELLTEST is applicable for units having service notation Drilling.

8.2 Technical requirements
The requirements as listed in Table 5 shall be complied with.

Table 5 Overview of applicable reference standards

<table>
<thead>
<tr>
<th>Technical item</th>
<th>Reference standards</th>
<th>Applicable parts of comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>DNVGL-OS-E101</td>
<td>Ch.2 Sec.5 [8]</td>
</tr>
<tr>
<td>Structure</td>
<td>DNVGL-OS-E101</td>
<td>Ch.2 Sec.1 [8] and [9]</td>
</tr>
<tr>
<td></td>
<td>DNVGL-OS-C101</td>
<td>General structural requirements</td>
</tr>
</tbody>
</table>
8.3 Certification of materials and components
Components subject to certification are given in DNVGL-OS-E101 Ch.3.

9 Temporary oil storage facilities

9.1 General

9.1.1 Objective
Units arranged and equipped with facilities for temporary storage of oil in relation to drilling or well testing activities may be assigned class notation TEMPSTORE.

9.1.2 Scope
The notation covers the following:
— arrangement
— hazardous area classification
— piping and equipment associated with storage
— passive and active fire protection.

9.1.3 Application
The following conditions apply for assignment of TEMPSTORE:
1) The notation applies to units with drilling as main activity; i.e. the unit shall have service notation Drilling.
2) Well testing and crude storage shall be undertaken onboard the drilling unit; transfer and storage of well test crude from another unit are not allowed.
3) Transportation of crude oil is not allowed (defined as carriage of oil from port to port or from field to shore with associated discharging in port).
4) Inter-field voyages between wells can be undertaken.

9.2 Technical requirements

9.2.1 The requirements given for storage units in the following offshore standards shall be complied with as applicable for TEMPSTORE:

- DNVGL-OS-A101
- DNVGL-OS-D101
- DNVGL-OS-D301.

9.2.2 Crude oil tanks may be arranged in pontoons and columns of column-stabilised units upon special consideration.

9.3 Certification of materials and components

There are no additional certification requirements.

10 Crane installations

10.1 General

10.1.1 Objective

The additional optional class notation Crane-offshore sets requirements for a design standard for on-board permanently installed cranes.

10.1.2 Scope

The scope for additional class notation Crane-offshore provides requirements for cranes with respect to:

- safety and functionality,
- devices for locking the crane in a parked position and for supporting the crane structure.

Two terms are used in this section to describe the intended use of the crane, these are: Offshore crane – for cargo handling outside the unit while at sea; Platform crane – for cargo handling on the unit.

10.1.3 Application

The additional class notation Crane-offshore applies to the selected cranes installed on units. Reference is given to the applicable structural standard (i.e. DNVGL-OS-C101 to DNVGL-OS-C201) concerning supporting structure (e.g. pedestal), DNVGL-OS-C301 concerning stability and DNVGL-OS-A101 concerning ESD if applicable.

An unit found to be in compliance with the requirements in this section may be assigned the additional class notation Crane-offshore.

10.1.4 For units intended for lifting as main service reference is also made to the service notation Crane described in Sec.5.

10.1.5 Definitions

Table 6 Definitions and abbreviation

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition or abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>offshore crane</td>
<td>a lifting appliance on board a vessel intended for handling of loads outside the vessel while at open sea</td>
</tr>
<tr>
<td>Term</td>
<td>Definition or abbreviation</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>platform crane</td>
<td>a lifting appliance on board an offshore unit intended for handling loads within and outside the vessel while in harbour and within the vessel while at sea</td>
</tr>
</tbody>
</table>

### 10.1.6 Documentation

The builder shall submit the documentation required by Table 7.

#### Table 7 Documentation requirements – builder

<table>
<thead>
<tr>
<th>Object</th>
<th>Documentation type</th>
<th>Additional description</th>
<th>Info</th>
</tr>
</thead>
</table>
| Cranes  | Z030 – Arrangement plan | Including:  
— main dimensions  
— limiting positions of movable parts  
— location onboard during operation and in parked position. | FI     |

AP = For approval; FI = For information

**Guidance note:**

Documentation requirements to hull support of the cranes are covered in DNVGL-OS-C101 to DNVGL-OS-C104.

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

### 10.2 Technical requirements

#### 10.2.1 Design loads

In addition to the specific design loads given in DNVGL-ST-0378 *Standard for certification of offshore and platform lifting appliances*, loads due to unit motions shall be considered. Design values of linear and angular accelerations are given in DNVGL-OS-C101.

#### 10.2.2 Parking and overturning

Devices shall be provided for all cranes in parked position (at sea) to be anchored to the hull structure. The anchoring devices shall be designed to withstand inertia forces due to ship motions and loads due to «out of service» winds. The strength calculations shall be based on accepted principles of statics and strength of materials, applying the safety factors as stipulated for load case III in the DNVGL-ST-0378.

#### 10.2.3 Sliding

In parked position (for a unit at sea) sliding is preferably to be prevented by means of anchoring devices. See [3.1]. If sliding is intended to be prevented by friction between rail and wheels only, the coefficient of friction shall not be taken greater than 0.15.

#### 10.2.4 For a crane in operation, sliding shall not to take place unless the forces parallel to rails exceed 1.3 times the values for load case II in the DNVGL-ST-0378. When this is not satisfied, sliding shall be prevented by a device locking the crane in position. The strength of this device shall be based on the safety factors for load case II/load combination II, as referred above.

### 10.3 Certification

For cranes that class notation Crane-offshore shall be applied to, the builder shall request the manufacturers to order certification as described in Table 8.
Table 8 Certification requirements

<table>
<thead>
<tr>
<th>Object</th>
<th>Certificate Type</th>
<th>Issued by</th>
<th>Certification Standard*</th>
<th>Additional Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offshore Crane</td>
<td>PC</td>
<td>Society</td>
<td>DNVGL-ST-0378</td>
<td>Product Certificate OLA0101, see DNVGL-ST-0378</td>
</tr>
<tr>
<td>Platform crane</td>
<td>PC</td>
<td>Society</td>
<td>DNVGL-ST-0378</td>
<td>Product Certificate OLA0101, see DNVGL-ST-0378</td>
</tr>
</tbody>
</table>

*Unless otherwise specified the certification standard is the rules.

10.4 Testing
After completed installation onboard, functional testing and load testing of the crane shall be carried out as specified in the DNVGL-ST-0378.

11 Offshore gangways

11.1 General

11.1.1 Units equipped with offshore gangways may be assigned class notation Walk2Work.

11.1.2 Objective
The Walk2work clarifies that the gangway has been certified against DNVGL-ST-0358 and that the unit is fit for Walk-to-work operations using the gangway.

11.1.3 Scope
The scope of the notation covers the gangway’s safety and functionality, devices for locking the gangway in a parked position (vessel at sea) and for supporting the gangway structure and testing of the gangway. In addition the notation covers the units stability and station keeping capability.

11.2 Technical requirements
The technical requirements of DNVGL-RU-SHIP Pt.6 Ch.5 Sec.16 apply, taking into account main class stability requirements as defined in DNVGL-OS-C301.

11.3 Certification of materials and components
The offshore gangway shall have a product certificate issues by the Society against DNVGL-ST-0358.

12 Additional fire protection

12.1 General

12.1.1 Units with additional fire safety measures in accommodation spaces and machinery spaces may be assigned class notation F The various qualifiers are related to areas subjected to additional fire protection as given in Table 7.
Table 9 Class notations for additional fire protection

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Additional fire protection</td>
<td>A</td>
<td>Accommodation space</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Machinery space</td>
</tr>
</tbody>
</table>

12.1.2 Objective
The F notation aims at increased fire protection through preventive measures as well as measures for reducing the consequences of fire.

12.1.3 Scope
The scope of the notation covers arrangement, structural and active fire protection, fire fighting systems and firefighter’s outfit.

12.1.4 Application
The qualifiers can be applied individual or in combination.

12.2 Technical requirements
The requirements as stated in the DNVGL-RU-SHIP Pt.6 Ch.5 Sec.4, shall be complied with for assignment of the class notations.

12.3 Certification of materials and components
There are no additional certification requirements.

13 Loading computer

13.1 General

13.1.1 Units having installed a system integrated systems developed to assist the master as a decision aid when the ship has been subjected to damage and consequent flooding may be given the class notation LCS(DC).

The letters are denoting loading computer system (damage control).

13.1.2 Objective
The objective of the notation is to ensure the correct calculating of damage stability following a collision, grounding or other incidents causing flooding.

13.1.3 Scope
A loading computer system designed for this purpose is assumed to consist of the following main parts:
- level sensors in all spaces which enables sounding of flooded compartments
- draught readings sensors to read draughts of the ship fore, midship (port and starboard) and aft
- a loading computer system, located on the navigation bridge (and safety centre, if located in a separate space from the navigation bridge), able to calculate the stability based on the input provided by the sensors.
13.2 Technical requirements
The requirements of the DNVGL-RU-SHIP Pt.6 Ch.4 Sec.7 shall be complied with as applicable.

13.3 Certification of materials and components
The certification covers the loading computer system and the software installed.

14 Periodically unattended machinery space

14.1 General

14.1.1 Units where all machinery in the engine room necessary for performance of main functions have been fitted with instrumentation and automation systems in compliance with this sub-section, may be assigned class notation E0 or ECO.

14.1.2 Objective
The class notation E0 denotes that the safety of the ship in all sailing conditions, including when manoeuvring and alongside, is equivalent to that of a ship whose machinery spaces are attended. The class notation ECO denotes that the ship is equipped with instrumentation and automation equipment and systems enabling the continuous supervision of its machinery from a centralised control station.

14.1.3 Scope
The scope of the notation covers:
— engine control system
— alarm system
— safety system
— fire detection and alarm system.

14.2 Technical requirements

14.2.1 Assignment of class notations E0 and ECO is based on compliance with the DNVGL-RU-SHIP Pt.6 Ch.2 Sec.2, with qualifications given in [13.2.2].

14.2.2 References to the DNVGL-RU-SHIP Pt.4 Ch.11 (fire protection) shall be replaced with DNVGL-OS-D301 for unit application.

14.3 Certification of materials and components
Certification requirements are given in the DNVGL-RU-SHIP.

15 Well intervention system

15.1 General

15.1.1 The WELL notation covers design and operational aspects of offshore well intervention facilities which have potential to affect safety of personnel or pollution of the environment. Table 8 gives an overview of the applicable qualifiers.
### Table 10 Overview of qualifiers

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WELL</td>
<td>Well intervention system</td>
<td>1</td>
<td>Vessel mounted system excluding subsea equipment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Vessel mounted system including subsea equipment.</td>
</tr>
</tbody>
</table>

#### 15.1.2 Objective
The objective of the notation is to ensure the safety and reliability of well intervention facilities.

#### 15.1.3 Scope

**WELL(1)** notation covers the vessel mounted systems used for well intervention, included but not limited to:
- structural items applicable for the well intervention installation and not covered by main class
- heave compensation and tensioning systems
- hoisting systems
- handling system for well control equipment (e.g. EDP/LRP) and pipe handling systems
- HC handling systems
- bulk storage, fluid circulation and mixing, cementing and well stimulation fluids systems
- other systems (e.g. winches, man riding equipment, skids, carriers)
- well intervention systems (e.g. Wire Line, Coil Tubing)
- well testing systems.

**WELL(2)** notation covers the vessel mounted systems as for **WELL(1)** and the subsea equipment used for well intervention, included but not limited to:
- riser, well control equipment
- well control system (e.g. riser, EDP/LRP).

#### 15.1.4 WELL(2) notation covers the vessel mounted systems as for **WELL(1)** and the subsea equipment used for well intervention, included but not limited to:
- riser, well control equipment
- well control system (e.g. riser, EDP/LRP).

#### 15.1.5 WELL(1) and WELL(2) include specific requirements relating to:
- design principles
- well intervention systems and equipment
- materials and welding
- piping
- electrical and control systems
- instrumentation component design and installation
- user interface (optional)
- manufacture, workmanship, testing and maintenance.

#### 15.1.6 Application
The notation are applicable for units with the service notation **Well intervention 2**.

#### 15.2 Technical requirements

**15.2.1** The requirements for well intervention systems are stated in **DNVGL-OS-E101**.

**15.2.2** For Well test system see **Table 5** for applicable requirements.
15.3 Certification of materials and components

Procedures and requirements for classification including certification of equipment and systems shall be in accordance with DNVGL-OS-E101 App.A.

**16 Hull monitoring system**

16.1 General

16.1.1 Units equipped with instrumentation system for monitoring hull behaviour in accordance with the requirements of this section may be assigned class notation HMON as given in the DNVGL-RU-SHIP Pt. 6 Ch. 9 Sec. 4.

16.1.2 Objective

The system will give warning when stress levels and the frequency and magnitude of accelerations approach levels which require corrective action.

16.1.3 Scope

The owner shall decide how the hull monitoring system should be configured, i.e. which features to be included and how the measured and processed data shall be used.

16.1.4 Application

See DNVGL-RU-SHIP Pt.6 Ch.9 Sec.4 for qualifier definitions.

16.2 Technical requirements

Assignment of HMON class notations is based on compliance with the DNVGL-RU-SHIP Pt. 6 Ch. 9 Sec. 4.

**17 Fatigue methodology for ship-shaped units**

17.1 General

17.1.1 Ship-shaped units may be assigned class notation FMS.

17.1.2 The requirement for FMS notation is an addition to the fatigue strength requirements for classification. The FMS notation has been introduced for owners or operators who require additional fatigue safety by using a detailed fatigue methodology for the structures, with increased focus of fatigue critical details during new building phase. The increased safety level will reduce the risk of disruption during production due to repair of fatigue damage.

17.1.3 FMS notation is based on minimum 20 year design fatigue life as default. If the design fatigue life is specified differently, the specified design fatigue life will be included in brackets, e.g. FMS(30). The environmental data for the transit and offshore sites, which form the basis for the design, will be specified in the appendix to the classification certificate.

17.1.4 The FMS notation covers design, fabrication and operation of the unit. The specific methodology for design and fabrication are included in the DNVGL-RP-C206 Fatigue Methodology for Offshore Ships. Inspection in the operational phase will be included in the in-service inspection program (IIP). The IIP can be based on a risk based approach.
17.2 Technical requirements
Assignment of class notation **FMS** is based on compliance with requirements in **DNVGL-RP-C206**.

### 18 Noise, vibration and comfort rating notations

#### 18.1 General

**18.1.1** Units arranged and equipped with the aim to reduce the impact of noise or vibration may be assigned for the following additional class notations as given below.

**Table 11 Class notations related to noise and vibration**

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COMF-MOU</strong></td>
<td>requirements for noise, vibration, illumination and indoor climate on board offshore facilities</td>
<td><strong>N</strong></td>
<td>As below, demonstrates compliance with NORSOK-S002</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>1</strong></td>
<td>Highest level of comfort</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>2</strong></td>
<td>Intermediate level of comfort</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>3</strong></td>
<td>Acceptable level of comfort</td>
</tr>
<tr>
<td><strong>VIBR</strong></td>
<td>Vibration level criteria for machinery, components, equipment and structure</td>
<td>&lt;none&gt;</td>
<td></td>
</tr>
</tbody>
</table>

**18.1.2 Objective**
The objective of **COMF-MOU** is to reduce the impact of noise and vibration related to comfort on board may be assigned for the following additional class notations

**18.1.3** The objective of **VIBR** is to reduce the risk of failure in machinery, components and structures onboard units, caused by excessive vibration.

**18.1.4 Scope**
The scope of **COMF-MOU** covers noise, vibration, illumination and indoor climate as reflected by the qualifiers listed in **Table 12**.

**18.1.5** The scope of **VIBR** covers

— machinery components and -equipment
— structure in compartments where machinery, components and equipment are situated close to the propeller(s).

**18.1.6 Application**
Units arranged and equipped with the aim to reduce the impact of noise and vibration, illumination and indoor climate related to comfort on board may be assigned for the additional class notations as listed in **Table 12**.

#### 18.2 Technical requirements

**18.2.1** The requirements of **DNVGL-OS-A301** shall be complied with as applicable for the notation **COMF-MOU**.
18.2.2 The requirements of the DNVGL-RU-SHIP Pt.6 Ch.4 Sec.12 shall be complied with as applicable for the notation VIBR.

18.3 Certification requirements
The measurement equipment used for demonstrating the compliance with the limits of COMF-MOU shall be certified or type approved as detailed in DNVGL-OS-A301 Ch.3 Sec.3.

19 Cold climate notations

19.1 General

19.1.1 Units designed or strengthened for operation within particular geographical or environmental areas found to be in accordance with relevant class rule requirements may be assigned corresponding optional class notation as specified in detail in the remaining of this sub-section.

19.1.2 Objective
The objective of the notations Ice and PC is to ensure enough strength for navigation and operation in ice infested waters.
The objective of the notation Winterized is to ensure operational availability of marine systems in cold climate conditions.

19.1.3 Scope
The notations Ice and PC cover requirements related to structural strength and tare further detailed in [18.2].
The notation Winterized include additional requirements for systems as further detailed in [18.3].

19.1.4 Application
The different notations and their related qualifiers are further detailed in Table 13 and Table 14.

19.2 Structural strength

19.2.1 Column-stabilised units
Column-stabilised units strengthened for navigation and/or operation in defined ice conditions in accordance with this sub-section may be assigned class notations as described in Table 13.

Table 12 Ice class notations for column-stabilised units

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice-T</td>
<td>Navigation in Ice with the assistance of icebreakers when necessary</td>
<td>1A</td>
<td>Intended for navigating in difficult ice conditions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1B</td>
<td>Intended for navigating in moderate ice conditions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1C</td>
<td>Intended for navigating in light ice conditions</td>
</tr>
<tr>
<td>Ice-L</td>
<td>Operation in ice</td>
<td></td>
<td>Intended for operation in ice determined based on defined ice-conditions, ice detection and ice management systems, operational and emergency procedures</td>
</tr>
</tbody>
</table>

19.2.2 Technical requirements for Ice-T are given in DNVGL-OS-C103 App.E or DNVGL-OS-C201 App.E.
19.2.3 Technical requirements for Ice-L shall as far as relevant and practicable be based on DNVGL-RU-SHIP Pt.6 Ch.6 Sec.1 Ice Strengthening for the Nordic Baltic and DNVGL-RU-SHIP Pt.5 Ch.1 Sec.8, Polar Class notations PC-6 and PC-7.

19.2.4 These rules do not consider aspects related to the operation of onboard equipment in cold climate. It is recommended that column-stabilised units intended to navigate and operate in cold climate environments for longer periods comply with the requirements as given in DNVGL-OS-A201 on cold climate (see [19.3]).

19.2.5 Ship-shaped units
Ship-shaped units strengthened for navigation in defined ice conditions in accordance with this sub-section may be assigned class notations as described in Table 14.

Table 13 Ice class notations for ship-shaped units.

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice</td>
<td>Navigation in ice – baltic ice classes</td>
<td>1A*</td>
<td>Normally capable of navigating in difficult ice conditions without the assistance of icebreakers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1A</td>
<td>Capable of navigating in difficult ice conditions, with the assistance of icebreakers when necessary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1B</td>
<td>Capable of navigating in moderate ice conditions, with the assistance of icebreakers when necessary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1C</td>
<td>Capable of navigating in light ice conditions, with the assistance of icebreakers when necessary</td>
</tr>
<tr>
<td>PC</td>
<td>Polar Class – navigation in ice-infested polar waters</td>
<td>1</td>
<td>Year-round operation in all polar waters</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Year-round operation in moderate multi-year ice conditions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>Year-round operation in second-year ice which may include multi-year ice inclusions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Year-round operation in thick first-year ice which may include old ice inclusions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>Year-round operation in medium first-year ice which may include old ice inclusions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>Summer/autumn operation in medium first-year ice which may include old ice inclusions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>Summer/autumn operation in thin first-year ice which may include old ice inclusions</td>
</tr>
</tbody>
</table>

19.2.6 Technical requirements for DAT are given in DNVGL-RU-SHIP Pt.5 Ch.1 Sec.7.

19.2.7 Technical requirements for Ice are given in DNVGL-RU-SHIP Pt.6 Ch.6 Sec.1.

19.2.8 Technical requirements for PC are given in DNVGL-RU-SHIP Pt.6 Ch.6 Sec.5.
19.3 Winterized

19.3.1 The table below list the different qualifiers for the Winterized notation.

**Table 14 Class notation Winterized**

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winterized</td>
<td>Operation in cold climate</td>
<td>Basic</td>
<td>Operation occasionally in cold climate for short periods</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cold</td>
<td>Operation in cold climate regularly or for an extended period of time, though not necessarily in ice-infested waters</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Polar</td>
<td>Operation in extreme cold climate of the polar regions year-round, typically in ice-infested waters</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>( t_w ) Extreme low ambient air temperature in °C</td>
</tr>
</tbody>
</table>

19.3.2 Application

For qualifier Basic, a relevant Ice notation is mandatory if intended to operate in ice-infested waters.

19.3.3 For qualifier Cold, a relevant Ice notation is mandatory if intended to operate in ice-infested waters.

19.3.4 For qualifier Polar, a relevant Ice notation and the class notation Clean or Clean(Design) are mandatory.

19.3.5 Additional details are given in DNVGL-OS-A201 Ch.3.

19.3.6 Technical requirements

The technical requirements are given in DNVGL-OS-A201 Ch.2.

19.3.7 Certification requirements

The certification requirements are given in DNVGL-OS-A201 Ch.3 Sec.2.

20 Environmental notations

20.1 General

Table 16 provides an overview of the environmental related notations.

**Table 15 Class notations related to environment**

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BWM</td>
<td>Ballast water management</td>
<td>E</td>
<td>Ballast water management system based on Exchange</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T</td>
<td>Ballast water management system on Treatment</td>
</tr>
</tbody>
</table>
### Table 20.2.1: Class Notations for Offshore Units

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean</td>
<td>Arrangements for controlling and limiting operational emissions and discharges</td>
<td>&lt;none&gt;</td>
<td>Basic operational requirements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Design</td>
<td>Additional operational requirements. Design requirements for protection against accidents and for limiting their consequences.</td>
</tr>
<tr>
<td>Recyclable</td>
<td>Safe and environmentally sound recycling of ships</td>
<td></td>
<td>Covering the development of Inventory of Hazardous Materials Part 1</td>
</tr>
<tr>
<td>VCS</td>
<td>Vapour control systems</td>
<td>1</td>
<td>Basic installation (meeting IMO MSC/Circ.585)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>VCS-1 + overfill alarm (meeting USCG CFR 46 part 39)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>VCS-2 + installation for onboard vapour processing</td>
</tr>
</tbody>
</table>

### 20.2 Objective

**20.2.1** The class notation **BWM** describes a ballast water management system in line with the International Convention for the Control and Management of Ship’s Ballast Water and Sediments as adopted by IMO 13 February 2004.

**20.2.2** The class notation **Clean** identifies the basic requirements for controlling and limiting operational emissions and discharges. The class notation **Clean(Design)** identifies additional requirements for controlling and limiting operational emissions and discharges. In addition, this notation specifies design requirements for protection against accidents and for limiting their consequences.

**20.2.3** The objective of **Recyclable** is to document early compliance with the requirements for IHM set forth by the IMO Hong Kong Convention for the Safe and Environmentally Sound Recycling of Ships.

**20.2.4** The objective of **VCS** is to define criteria which apply to shipboard systems for control of vapour emissions from liquid cargoes.

### 20.3 Technical requirements

**20.3.1 BWM**

The requirements given in the **DNVGL-RU-SHIP Pt.6 Ch.7 Sec.1**, shall be complied with for assignment of the class notation **BWM** following the different qualifiers as specified.

**20.3.2 Clean Design**

The requirements given in the **DNVGL-RU-SHIP Pt.6 Ch.7 Sec.2**, shall be complied with for assignment of the class notations **Clean** with the deviations as given in [19.3.4].

**20.3.3** For the application of **Clean(Design)** for offshore units, the requirement for **NAUT(AW)** or **NAUT(OSV)** can generally be waived based on an assumption of the lower navigational risk due to the operational pattern of the unit (i.e. most of time in a fixed location).

The requirement to oil tank protection as a distance to bottom shell plating may also be waived under certain conditions but shall be evaluated on a case by case basis.
20.3.4 Recyclable
The requirements given in the DNVGL-RU-SHIP Pt.6 Ch.7 Sec.4, shall be complied with for assignment of the class notation Recyclable.

20.3.5 VCS
The requirements given in the DNVGL-RU-SHIP Pt.6 Ch.4 Sec.12 shall be complied with for assignment of the class notation VCS.

21 Enhanced system verification

21.1 General

21.1.1 The notation ESV indicates that specified onboard system have been subject to enhance system verification.

21.1.2 Objective
The objective is to analyse the specified target system by use of one or more verification methods as described in these rules in order to provide objective evidence of acceptable functionality and quality according to stated requirements.

Guidance note:
Application of any enhanced system verification should provide an additional broader and/or deeper and/or earlier verification of the applicable requirements when compared to normal classification test activities required for the target system(s).

21.1.3 Scope
The requirements apply to marine and offshore systems and cover test and verification methods that may be utilized to assist in verification of functionality and performance of such systems.

21.1.4 Application
The target systems available for enhanced system verification methods in the ESV notation are specified in Table A1 of the DNVGL-RU-SHIP Pt.6 Ch.5 Sec.13.
Any combination of selected systems can be made.

21.1.5 The ESV notation can only be applied for systems covered by classification through main class and additional class notation assigned the unit.

21.1.6 The applied verification method is showed in the notation string as listed in Table 16.

21.1.7 The verification methods are aligned to be applied in conjunction with classification activities of systems at e.g. type approval, manufacturing survey, onboard testing, and on sea trial in order to provide additional evidence of expected and required functionality.

Table 16 Class notations related to enhanced system verification

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESV</td>
<td>Enhanced System verification</td>
<td>HIL-IS</td>
<td>Hardware in the loop, test package incl simulator provided by independent supplier</td>
</tr>
</tbody>
</table>
21.2 Technical requirements
There are not additional technical requirements to the target system.

21.3 Certification requirements
There are not additional certification requirements to the target system.

22 Integrated software dependent systems

22.1 General

22.1.1 Units built and tested in compliance with the requirements of DNVGL-OS-D203 may be assigned one of the optional class notations for integrated software-dependent systems shown in Table 17.

Table 17 ISDS Class notations

<table>
<thead>
<tr>
<th>Notation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISDS [system1,...,system n]</td>
<td>Units having undergone enhanced software-dependent system integration for the system(s) according to DNVGL-OS-D203</td>
</tr>
</tbody>
</table>

22.1.2 Objective
The objective of ISDS is to reduce the risk for delays in new-build projects and modification projects, as well as for downtime and accidents caused by software in the operation phase.

22.1.3 Scope
The systems covered by the notation shall be specified and are as shown by the given qualifiers. The selection of systems is listed in DNVGL-OS-D203 Ch.3 Sec.1 Table 1.

The scope of DNV GL’s involvement depends on the confidence level specified.

22.1.4 Application
Any combination of selected systems can be made.

22.1.5 ISDS can only be applied for systems as covered by classification through main class and other additional class notations.

22.1.6 Unless otherwise agreed the confidence levels of DNVGL-OS-D203 Ch.3 Sec.1 Table 1 apply.

22.2 Technical requirements
There are no additional technical product requirements.

22.3 Certification requirements
There are no additional certification requirements.
23 Special feature notations

23.1 General
Special feature notations provide information regarding special design assumptions, arrangements or equipment which is not covered by other class notations. Requirements related to special feature notations currently in use are described in this sub-section.

23.2 Propulsion

23.2.1 Objective
To indicate the specific propulsion and steering arrangements for independent transits.

23.2.2 Scope
For **Non-self-propelled** units the design scope for steering gear, tailshaft and thrusters for propulsion may be adjusted in accordance with the intended use (e.g. for **DYNPOS(AUTS)**, **POSMOOR**, as auxiliary installation, or not used at all).

23.2.3 Application
The **Non-self-propelled** notation can be applied for any vessel type and for any service objective.

23.3 Tailshaft monitoring

23.3.1 Objective
The objective of **TMON** is to extend the sterntube and propeller shaft survey interval.

23.3.2 Scope
The notation describes the monitoring of the sterntube in order to give sufficient information to evaluate the operation conditions for bearings, seals and shaft.

23.3.3 Application
**TMON** is applicable for conventional propulsion shafts with oil lubricated sterntube bearing.

23.3.4 Technical requirements
The technical requirements from **DNVGL-RU-SHIP Pt.6 Ch.9 Sec.5** apply.

23.3.5 Certification requirements
There are no specific certification requirements.

23.4 Special feature notation **BIS**

23.4.1 Objective
The **BIS** notation indicates that the ship is prepared for in-water survey.

23.4.2 Scope
The **BIS** notation covers:
- on board documentation
- marking of ship’s side and bottom
- rudder, tailshaft and thrusters.
23.4.3 Application
Units prepared for in-water survey during building may be given the notation BIS.

23.4.4 Technical requirements
The technical requirements in the DNVGL-RU-SHIP Pt.6 Ch.9 Sec.1, shall be complied with.

23.4.5 Certification requirements
There are no additional certification requirements.

24 Summary of reference documents for additional class notations
Rules and standards which shall be applied for assignment of system and special facility class notations are summarised in Table 19.

Table 18 Summary of reference documents for system and special facility notations

<table>
<thead>
<tr>
<th>Notation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIS</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.9 Sec.1</td>
</tr>
<tr>
<td>BWM</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.7 Sec.1</td>
</tr>
<tr>
<td>Clean</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.7 Sec.2</td>
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<tr>
<td>COMF-MOU</td>
<td>DNVGL-OS-A301</td>
</tr>
<tr>
<td>Crane-offshore</td>
<td>DNVGL-ST-0378</td>
</tr>
<tr>
<td>DRILL</td>
<td>DNVGL-OS-E101, DNVGL-SI-0166, Ch.2 Sec.6 [5.4]</td>
</tr>
<tr>
<td>DYNPOS</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.3 Sec.1</td>
</tr>
<tr>
<td>DYNPOS(ER)</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.3 Sec.2</td>
</tr>
<tr>
<td>DPS</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.3 Sec.1</td>
</tr>
<tr>
<td>ESV</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.5 Sec.13</td>
</tr>
<tr>
<td>E0/ECO</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.2 Sec.2</td>
</tr>
<tr>
<td>F</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.5 Sec.4</td>
</tr>
<tr>
<td>FMS</td>
<td>DNVGL-RP-C206</td>
</tr>
<tr>
<td>HELDK</td>
<td>DNVGL-OS-E401</td>
</tr>
<tr>
<td>HMON</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.9 Sec.4</td>
</tr>
<tr>
<td>Ice</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.6 Sec.1</td>
</tr>
<tr>
<td>ISDS</td>
<td>DNVGL-OS-D203</td>
</tr>
<tr>
<td>LCS(DC)</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.4 Sec.7</td>
</tr>
<tr>
<td>ME</td>
<td>DNVGL-OS-E301</td>
</tr>
<tr>
<td>PC</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.6 Sec.5</td>
</tr>
<tr>
<td>POSMOOR</td>
<td>DNVGL-OS-E301</td>
</tr>
<tr>
<td>Recyclable</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.7 Sec.4</td>
</tr>
<tr>
<td>Notation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>TEMPSTORE</td>
<td>DNVGL-OS-A101, DNVGL-OS-D101, DNVGL-OS-D301</td>
</tr>
<tr>
<td>TMON</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.9 Sec.5</td>
</tr>
<tr>
<td>VCS</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.4 Sec.1</td>
</tr>
<tr>
<td>VIBR</td>
<td>DNVGL-RU-SHIP Pt.6 Ch.8 Sec.1</td>
</tr>
<tr>
<td>WELL</td>
<td>DNVGL-OS-E101</td>
</tr>
<tr>
<td>WELLTEST</td>
<td>DNVGL-OS-E101</td>
</tr>
<tr>
<td>Winterized</td>
<td>DNVGL-OS-A201</td>
</tr>
</tbody>
</table>
CHAPTER 3 CLASSIFICATION IN OPERATION

SECTION 1 GENERAL PROVISIONS

1 Introduction

1.1 General

1.1.1 This chapter states the principles and requirements for retention of class to units covered by the provisions of these rules. Requirements are applicable to main class, service notations and additional class notations unless otherwise stated.

1.1.2 The extent of periodical surveying is presented in Sec.3 and Sec.4 for main class Sec.5 for additional service notations and Sec.6 for additional system and facility notations.

1.1.3 Self-elevating units shall be surveyed as described in rules for self-elevating units DNVGL-RU-OU-0104 Ch.6. For those being self-propelled, the survey of the propulsion systems is as given in this chapter.

1.1.4 A memo to owner (MO) shall be issued stating approved changes to survey procedures and acceptance criteria, if any. Technical basis for approved changes shall be stated.

1.1.5 DNV GL will develop and maintain an in-service inspection program (IIP) which will contain the structural items to be surveyed to satisfy the minimum requirements for retention class, as based on main class (1A) and the mandatory requirements related to service notations. The IIP excludes any additional class notations (e.g. special equipment and systems notations and special feature notations) The IIP constitutes the formal basis for surveying structural items under main class and shall be completed to the satisfaction of attending surveyor before the survey can be credited.

1.2 Survey pre-planning and record keeping

1.2.1 A specific survey program for renewal surveys and continuous surveys shall be worked out in advance of the renewal survey by the owner in cooperation with the classification society. The survey program is prepared in the Nauticus Production System (NPS) as a SIo survey job and IIP-job for the survey to be performed. The IIP is the structural part of the program (see Sec.3 [1.2]).

1.2.2 Plans and procedures for underwater surveys (or underwater inspection in lieu of dry-docking survey) shall be submitted for review in advance of the survey and made available on board. These should include drawings or forms for identifying the areas to be surveyed, the extent of hull cleaning, non-destructive testing locations (including NDT methods), nomenclature, and for the recording of any damage or deterioration found. Submitted data, after review by the Society, will be subject to revision if found to be necessary in light of experience.

1.2.3 Accessibility and facilities for surveys on location
Annual and special surveys may be carried out on location based on approved procedures outlined in a maintenance system and survey arrangement, without interrupting the function of the unit or installation. See Ch.2, Sec. 1[12] for matters which will be taken into consideration for acceptance of surveys to be carried out on location.
1.3 Asbestos free declaration

1.3.1 For vessels that shall comply with SOLAS Reg.II-1/3-5/MODU code 2.10.3 the surveyor will carry out a review of asbestos-free declarations documenting that new installations of materials do not contain asbestos.

1.3.2 For non-SOLAS vessels, a master's declaration that asbestos has not been installed on board the vessel since last survey shall be given.

1.4 Alternative survey arrangements

Alternative survey arrangements may be accepted as an option to applicable periodical surveys for main class. More details are given in Sec.7.

1.5 Surveys performed by approved companies

Parts of the periodical surveys may be carried out by companies approved by DNV GL. More details are given in Sec.8.

2 Periodical surveys

2.1 General

2.1.1 All units shall be subjected to periodical surveys in accordance with requirements of this chapter in order to confirm that the hull, machinery, equipment and systems remain in satisfactory condition and in compliance with approval or accepted standards.

2.1.2 Periodical surveys will belong to one of the following categories according to the level of survey requirements:
   — annual survey
   — intermediate survey
   — complete survey.

The survey required in conjunction with issuance of a new class certificate is denoted:
   — renewal survey.

The following specific surveys may be scheduled according to one or more of the above categories:
   — bottom survey
   — propulsion/positioning thruster survey
   — boiler survey (including steam generator survey)
   — thermal oil heater survey
   — survey of optional class notations (voluntary class notations).

2.1.3 Periodical surveys shall be carried out at prescribed intervals and within applicable time windows. A survey may be split in different parts, commenced and progressed within the time window provided all the requirements of the survey are completed by the end of the time window.

The main class intermediate survey cannot serve as commencement of the next renewal survey.

For concurrent surveys (see Table 1) the time window may be limited by that of the other survey.
2.1.4 The due date of a periodical survey will be established depending upon the survey interval, measured from one of the following events, whichever is relevant:

— date of class assignment
— date of commissioning
— due date of the previous corresponding survey
— date of completion of the previous corresponding survey
— date of completion of a major conversion.

A survey may be commenced prior to the defined time window at owner's request. In such a case the due date of subsequent surveys will be adjusted accordingly.

2.1.5 For certain units the survey intervals may be reduced, e.g. for units with new or novel design or with systems or items exposed to abnormal rate of wear or failure.

2.1.6 The scope of survey may be extended when compliance with applicable rules cannot be satisfactorily confirmed based on extent of surveys as given, or when the surveyor suspects that the unit is not maintained or handled in accordance with the basis for retention of class.

2.2 Postponement of periodical surveys

2.2.1 Except for annual and intermediate surveys for main class, the Society may accept to postpone periodical surveys upon special consideration in each separate case. Postponement of main class renewal survey may be considered only in exceptional circumstances.

2.2.2 Postponement of main class renewal survey shall not exceed 3 months. Postponement of periodical surveys will not affect the surveys next due date.

2.2.3 Postponement of the renewal survey may be granted only upon the owner's written request. Such a request shall be received by the Society well in advance of the expiry date of the classification certificate. A postponement of the renewal survey shall normally be based on satisfactory result from a sighting survey.

2.3 Survey of units out of commission

2.3.1 Units which have been out of commission, e.g. laid up, for a period of at least 12 months, shall be surveyed and tested before re-entering service. The extent of the surveys and tests will be considered in each case depending upon:

— the time the unit has been out of commission
— the maintenance and preservative measures taken during lay-up
— the extent of surveys carried out during the time out of commission.

As a minimum, function testing to confirm the satisfactory operation of the machinery installation shall be carried out. All overdue surveys shall be completed prior to re-entering service.

2.3.2 During lay-up, units shall be subjected to annual survey.

The extent of the annual survey will be reduced compared to main class annual survey, but shall cover watertight integrity, bilge system, fire hazard and equipment in use.
2.4 Survey schedules

2.4.1 Annual survey schedule is as follows:
— The due date in general corresponds to the anniversary date of the class assignment or the expiry of the previous classification certificate if different.
— The survey shall normally be carried out within a time window of 3 months on either side of the due date.
— In case a main class annual survey is commenced prior to the defined time window, the survey must be completed not more than 6 months after the date of the survey commencement. In such cases the anniversary dates for the subsequent annual surveys will be advanced, corresponding to a date not later than 3 months after the completion date of the commencement survey just carried out.
— An additional main class annual survey may be required when the anniversary date has been advanced. Annual surveys shall be performed each year, also those years where an intermediate, complete or renewal survey is performed. Survey requirements applicable for annual surveys are therefore not repeated for corresponding intermediate, complete or renewal surveys.

2.4.2 Intermediate survey schedule is as follows:
— The due date shall normally correspond to the date 2.5 years after the expiry date of the previous class certificate.
— The survey shall normally be carried out within a time window of 9 months on either side of the due date.
— The main class intermediate survey shall be completed concurrently with the second or third main class annual survey in each period of the classification certificate.
— The same surveys and thickness measurements of tanks or spaces cannot be credited towards both intermediate and renewal survey. Units that are re-commissioned after being laid-up may be specially considered.

2.4.3 Complete surveys are denoted:
— Complete survey (2.5 years), or
— Complete survey (5 years), or
— Complete survey (15 years).
Complete survey schedule is as follows:
— The due date corresponds to 2.5 years, 5 years or 15 years interval.
— The survey shall normally be carried out within a time window of 9 months before and 6 months after the due date.
— Survey required to be concurrent with the renewal survey shall be completed no later than at the completion of the renewal survey.

2.4.4 Renewal survey schedule is as follows:
— The due date is set at 5 years interval and corresponds to the expiry date of the classification certificate.
— The survey shall normally be completed within a time window of 3 months before the due date.
— The survey may be commenced at the fourth annual survey or between the fourth and fifth annual surveys.
— In case the survey is commenced more than 15 months before the expiry date of the classification certificate, the due date of the survey will be advanced to a date not later than 15 months after the completion date of the commencement survey.
— The renewal survey shall be completed concurrently with the last main class annual survey in each period of the classification certificate.
The same surveys and thickness measurements of tanks or spaces cannot be credited towards both intermediate and renewal survey. Units that are re-commissioned after being laid-up may be specially considered.

2.4.5 Bottom survey schedule is as follows:

a) The due date is set at intervals in accordance with the following:
   — two bottom surveys are required during each five-year period of the classification certificate
   — the interval between any two successive bottom surveys is in no case to exceed 36 months.

b) The survey shall be carried out on or before the due date.
   Time window is not applicable.
   (See MODU code 2009 1.6.1.5)

2.4.6 Survey of geared and podded thrusters for propulsion or dynamic positioning are scheduled according to complete survey (5 year). Podded thrusters shall also have an annual survey.

2.4.7 The due date of the boiler and steam drum/steam separator survey is set at intervals in accordance with the following:
   — Two boiler surveys are required during each five-year period of the classification certificate.
   — The interval between any two successive boiler surveys is in no case to exceed 36 months.
   During each boiler internal survey, the adjustment of the safety valves will be assessed by a surveyor.
   (see IACS UR Z18)
   — The survey shall be carried out on or before the due date. Time window is not applicable.
   — One boiler survey shall be carried out in conjunction with the renewal survey, i.e. not more than 15 months prior to the expiry date of the classification certificate.
   Units more than 8 years old and retaining the original fitting of a single unit, the main boiler shall be surveyed annually (full scope) and within the annual survey schedule.

2.4.8 Thermal oil heater survey schedule as in [2.4.7].

2.5 Class notations

2.5.1 Optional class notations where specific surveys have been defined are listed in Table 1.

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
<th>Survey type</th>
<th>Conjunction with main class survey</th>
<th>Survey requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean</td>
<td>Arrangements for controlling and limiting operational emissions and discharges</td>
<td>Annual</td>
<td>Annual</td>
<td>Sec.6 [17]</td>
</tr>
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<td>COMF-MOU</td>
<td>Noise, vibration, illumination and indoor climate</td>
<td>Complete (5 years)</td>
<td>N/A</td>
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<td>Crane-offshore</td>
<td>On board crane</td>
<td>Annual</td>
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<td></td>
<td>Complete (5 years)</td>
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<td></td>
</tr>
<tr>
<td>Class notation</td>
<td>Description</td>
<td>Survey type</td>
<td>Conjunction with main class survey</td>
<td>Survey requirements</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------------------------------</td>
<td>-------------</td>
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<td>---------------------</td>
</tr>
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<td>Diving system</td>
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<td>Annual</td>
<td>Sec.6 [9]</td>
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<td></td>
<td></td>
<td>Intermediate</td>
<td>Intermediate</td>
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<td></td>
<td>Complete</td>
<td>Renewal</td>
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</tr>
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<td></td>
<td>(5 years)</td>
<td></td>
<td></td>
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<td>Dynamic positioning system</td>
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<td>N/A</td>
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<td></td>
<td>Complete</td>
<td>N/A</td>
<td></td>
</tr>
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<td></td>
<td>(5 years)</td>
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<td></td>
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<td>DRILL</td>
<td>Drilling plant</td>
<td>Annual</td>
<td>N/A</td>
<td>Sec.6 [4]</td>
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<td></td>
<td>Complete</td>
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<td></td>
<td></td>
<td>(5 years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DYNPOS</td>
<td>Dynamic positioning system</td>
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<td>N/A</td>
<td>Sec.6 [3]</td>
</tr>
<tr>
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<td></td>
<td>Complete</td>
<td>N/A</td>
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<td></td>
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<td>(5 years)</td>
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<tr>
<td>E0</td>
<td>Periodically unattended machinery space</td>
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<td>Annual</td>
<td>Sec.6 [12]</td>
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<td></td>
<td>Complete</td>
<td>Renewal</td>
<td></td>
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<td></td>
<td>(5 years)</td>
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<tr>
<td>ECO</td>
<td>Machinery centralised operation</td>
<td>Annual</td>
<td>Annual</td>
<td>Sec.6 [12]</td>
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<td></td>
<td>Complete</td>
<td>Renewal</td>
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<tr>
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<td></td>
<td>(5 years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete</td>
<td>Renewal</td>
<td></td>
</tr>
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<td></td>
</tr>
<tr>
<td>F</td>
<td>Additional fire protection</td>
<td>Complete</td>
<td>Intermediate and renewal</td>
<td>Sec.6 [10]</td>
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<td>(2.5 years)</td>
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<td>HELDK</td>
<td>Helicopter deck</td>
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<td>Renewal</td>
<td>Sec.6 [5]</td>
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<td></td>
<td></td>
<td>(5 years)</td>
<td></td>
<td></td>
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<td>HMON</td>
<td>Hull monitoring system</td>
<td>Annual</td>
<td>Renewal</td>
<td>Sec.6 [14]</td>
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<td>ISDS</td>
<td>Integrated software dependent systems</td>
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<td>Annual</td>
<td>Sec.6 [6]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete</td>
<td>Renewal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LCS-DC</td>
<td>Loading computer system</td>
<td>Annual</td>
<td>Annual</td>
<td>Sec.6 [11]</td>
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<td>ME</td>
<td>Position mooring equipment</td>
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<td></td>
<td></td>
<td>Complete</td>
<td></td>
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<td></td>
<td></td>
<td>(5 years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POSMOOR</td>
<td>Position mooring system</td>
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<td>N/A</td>
<td>Sec.6 [2]</td>
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<tr>
<td></td>
<td></td>
<td>Complete</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5 years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recyclable</td>
<td>Inventory of hazardous materials Part 1</td>
<td>Complete</td>
<td>Renewal</td>
<td>Sec.6 [17]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5 years)</td>
<td></td>
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### Table 2 Class notations without survey requirements

<table>
<thead>
<tr>
<th>Class notation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIS</td>
<td>Built for In-water Survey</td>
</tr>
<tr>
<td>DAT</td>
<td>Design ambient air temperature suitable for regular service during winter to Arctic or Antarctic waters</td>
</tr>
<tr>
<td>FMS</td>
<td>Fatigue methodology for ship-shaped units</td>
</tr>
<tr>
<td>Ice</td>
<td>Navigation in ice</td>
</tr>
<tr>
<td>PC</td>
<td>Polar Class – navigation in ice-infested polar water</td>
</tr>
</tbody>
</table>
SECTION 2 GENERAL REQUIREMENTS FOR STRUCTURE AND MACHINERY SURVEYS

1 General

1.1 Preparation for survey

1.1.1 The owner shall provide the necessary facilities for safe execution of surveys.

1.1.2 For overall and close-up examination, means shall be provided to enable the surveyor to examine the structure in a safe and practical way, see [2.1].

2 Structure and equipment

2.1 Conditions for survey and access to structures

2.1.1 In preparation for survey and to allow for a thorough examination, all spaces shall be cleaned including removal from surfaces of all loose accumulated corrosion scale. In tanks where soft or semi-hard coatings have been applied, representative areas and those areas where it is obvious that further close-up examination is required shall be cleaned for inspection.

Guidance note:
Spaces should be sufficiently clean and free from water, scale, dirt, oil residues etc. to reveal corrosion, deformation, fractures, damage, or other structural deterioration. However, those areas of structure whose renewal has already been decided need only be cleaned and descaled to the extent necessary to determine the limits of the renewed areas. For more detailed information with regard to a tank where soft coatings have been applied, see IACS recommendation No. 44.

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

2.1.2 Casings, ceilings or linings, and loose insulation, where fitted, shall be removed, as required by the surveyor, for examination of plating and framing. Compositions on plating shall be examined and sounded, but need not be disturbed if found adhering satisfactorily to the plating.

2.1.3 All spaces shall be made safe for access, i.e. gas freed, ventilated and illuminated, and prepared for the surveyor to examine the structure in a safe and practical way. One or more of the following means for access, acceptable to the surveyor, shall be provided:

— permanent staging and passages through structures
— temporary staging and passages through structures
— lifts and moveable platforms
— hydraulic arm vehicles such as conventional cherry pickers
— boats or rafts
— portable ladder
— other equivalent means.

2.1.4 Rafts or boats alone may be allowed for survey of the under deck areas for tanks or spaces, if the depth of the webs is 1.5 m or less.

If the depth of the webs is more than 1.5 m, rafts or boats alone may be allowed only:

a) when the coating of the under deck structure is in GOOD condition and there is no evidence of wastage or
b) if a permanent means of access is provided in each bay to allow safe entry and exit. This means:
   — access direct from the deck via a vertical ladder and a small platform fitted approximately 2 m below the deck in each bay or
   — access to deck from a longitudinal permanent platform having ladders to deck in each end of the tank. The platform shall, for the full length of the tank, be arranged in level with, or above, the maximum water level needed for rafting of under deck structure. For this purpose, the ullage corresponding to the maximum water level shall be assumed not more than 3 m from the deck plate measured at the midspan of deck transverses and in the middle length of the tank.

If neither of the above conditions are met, then staging or other equivalent means of access shall be provided for the survey of the under deck areas.

The use of rafts or boats alone does not preclude the use of boats or rafts to move about within a tank during a survey.

 Guidance note:
See IACS Recommendation No. 39 – Guidelines for the use of Boats or Rafts for Close-up surveys.

 Guidance note:
Use of remote inspection technique methods to facilitate the required internal examinations, including close-up examinations and thickness measurements, may be specially considered by the Society. The methods applied should provide the information normally obtained from a survey carried out by the surveyor.
In order to verify the results, confirmatory close-up examinations and thickness measurements at selected locations will be carried out by the surveyor, not using the remote inspection technique method.
Proposals for use of remote inspection technique methods should be submitted to the Society for acceptance in advance of the survey.

2.1.5 A survey planning meeting shall be held prior to the commencement of any renewal and intermediate surveys between the attending surveyor(s), the owner's representative in attendance and the thickness measurement/NDT company representative, where involved.

2.2 Survey extent

2.2.1 The survey consists of examination, measurements and testing as required for different survey categories with the aim to ensure that the hull structure, hull equipment and piping are in satisfactory condition with respect to corrosion, deformation, fractures, damage or other structural deterioration.

2.2.2 When examination or overall examination is required the structure or object is visually examined from a significant distance. In such cases the general maintenance, the condition of protective coating, rust deposits, leakages and structural detachments and damage may be observed and the surveyor may extend the survey as considered necessary.

2.2.3 When close-up examination is specified by the rules or required by the surveyor the structure or object is visually examined from a distance normally within reach of hand. The surveyor may extend the close-up examination as deemed necessary taking into account the maintenance of the spaces under survey, the condition of the corrosion protection system and where spaces have structural arrangements or details which have suffered defects in similar spaces or on similar units according to available information.

2.2.4 Thickness measurements
The surveyor may require thickness measurements in any portion of the structure where signs of wastage are evident or in areas where wastage is normally found. The surveyor may extend the scope of the thickness measurements if considered necessary.
The minimum requirements for thickness measurements are presented in Ch.3 Sec.3 [4.3] Table 8 through Ch.3 Sec.3 [4.3] Table 10 for the respective unit types.

2.2.5 When thickness measurements are specified by the rules or required by the surveyor the measurements shall be carried out to an extent sufficient to determine both general and local corrosion levels.

Thickness measurements shall be carried out by a qualified company approved by the Society and witnessed by a surveyor (see also Sec.8 on Services by approved companies). This requires the surveyor to be on board, while the measurements are taken, to the extent necessary to control the process.

Where it is required to carry out thickness measurements of structures subject to close-up examination, these measurements shall be carried out simultaneously with the close-up examination.

The surveyor shall review the final thickness measurement report and countersign the cover page.

2.2.6 Where substantial corrosion, as defined in Ch.1 Sec.1 [2] is found, additional thickness measurements shall be taken to confirm the extent of substantial corrosion.

Areas found with substantial corrosion, which are not repaired, shall be recorded for thickness measurements at subsequent annual surveys.

2.2.7 The examination may be extended also in cases when:

— information is available of defects suffered on similar structure or details in similar tanks/compartments on similar units
— the structure under survey has been approved with reduced scantlings due to an approved corrosion control system
— suspect areas identified shall be recorded for examination at subsequent annual surveys.

Guidance note:
The requirements in [2.2.6] and [2.2.7] are not applicable to cargo tanks of FSOs or FPSOs.

2.2.8 The owner shall keep a complete record of all the thickness measurements and prepare a thickness measurement report including:

— locations of the measurements
— thickness measured and corresponding original thickness
— the date when the measurements were carried out
— type of measuring equipment
— personnel performing the measuring and their qualifications
— the report shall be signed by the operator.

These additional thickness measurements shall be carried out before the survey is considered as completed.

2.2.9 Corrosion allowance

In the design of column-stabilised units corrosion allowance is normally not included as the structure is considered adequately protected against corrosion, e.g. by sacrificial anodes, impressed current and coating.

For ship-shape units, corrosion addition is included as part of the DNV GL rules for ships, but in addition combined with a corrosion protection system similar for column-stabilised units.

The corrosion diminution criteria as given in DNVGL-CG-0172, shall be applied. Alternative methods may be accepted in agreement with the Society.
2.2.10 Conditions of protective coating

Where provided, the condition of protective coating of cargo holds, cargo tanks and ballast tanks shall be examined. The condition will be rated GOOD, FAIR or POOR as defined in Table 1.

Table 1 Conditions of protective coating

<table>
<thead>
<tr>
<th>Corrosion prevention system</th>
<th>Condition with only minor spot rusting.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrosion prevention system</td>
<td>Normally a full hard coating, usually to be epoxy coating or equivalent. Other coating systems, which are neither soft nor semi-hard coatings, may be accepted provided they are applied and maintained in compliance with the manufacturer's specification. (See IACS UR Z87/MSC.1/Circ 1330) However, soft and semi hard coatings, if already applied, may be accepted as result of a condition based assessment including a review of the organizational set-up to maintain adequate corrosion protection.</td>
</tr>
<tr>
<td>Coating condition GOOD</td>
<td>Condition with only minor spot rusting.</td>
</tr>
<tr>
<td>Coating condition FAIR</td>
<td>Condition with local breakdown at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition.</td>
</tr>
<tr>
<td>Coating condition POOR</td>
<td>Condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration.</td>
</tr>
</tbody>
</table>

2.2.11 For structures where original protective coatings are in GOOD condition, the extent of close-up examination and thickness measurements may be specially considered. Special consideration as used in this context is taken to mean, as a minimum, that sufficient close-up examination and thickness measurements are carried out to confirm the actual average condition of the structure under the protective coating. For areas with general breakdown of the protective coating, close-up examination and thickness measurements shall be carried out to an extent sufficient to determine both average and local corrosion levels.

2.2.12 The above also applies to tanks of stainless steel. If not otherwise specified, the same applies for recoated structures (by epoxy coating or equivalent, alternatively a type approved coating, e.g. semi-hard), provided that the condition of the protective coating is in GOOD condition and that documentation is available stating that:

— the scantlings were assessed and found satisfactory by a surveyor prior to re-coating
— the coating was applied according to the manufacturer's recommendations.

2.3 Repair of structural damage or deterioration

2.3.1 A prompt and thorough repair is a permanent repair completed at the time of survey to the satisfaction of the surveyor, therein removing the need for the imposition of any associated condition of class.

Guidance note:
There are situations that composite repairs can be accepted on a case by case basis. For the procedure to be followed it is referred to DNVGL-RP-C301. Class is involved before the application.
2.3.2 Any damage in association with wastage over the allowable limits (including buckling, grooving, detachment or fracture), or extensive areas of wastage over the allowable limits, which affects or, in the opinion of the surveyor, will affect the unit’s structural, watertight or weathertight integrity, shall be promptly and thoroughly repaired.

2.3.3 For locations where adequate repair facilities are not available, consideration may be given to allow the unit to proceed directly to a repair facility.

2.3.4 Additionally, when a survey results in the identification of significant corrosion or structural defects, either of which, in the opinion of the surveyor, will impair the unit’s fitness for continued service, remedial measures shall be implemented before the unit continues in service.

3 Machinery and systems

3.1 Maintenance and preparation for survey

3.1.1 Every unit shall have implemented a maintenance system including machinery system and equipment subject to class (see Table 1).

The maintenance system shall ensure that:

— inspections and maintenance are carried out at defined intervals
— any non-conformity is reported with its possible cause, if known
— appropriate corrective action is taken
— records of these activities are maintained.

The machinery and systems subject to class shall be maintained in accordance with the maintenance system implemented.

Guidance note:
The maintenance system may be paper based or in a electronic format.

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

3.1.2 In preparation for survey and to allow for a thorough examination, machinery components and related spaces shall be cleaned, including removal from surfaces of loose accumulated corrosion scale, mud and oil-residues. The spaces and components of attention shall have proper access including dismantling as necessary.

3.2 Machinery verification

3.2.1 If significant repairs are carried out to main or auxiliary machinery, a dock and/or sea trial shall be carried out as required by the attending surveyor.

3.2.2 For propulsion systems where shaft alignment calculations have been required, the alignment shall be confirmed by suitable measurements when the system has been dismantled and or when external forces (e.g. grounding, welding work) may have influenced the alignment.

The measurements shall be carried out with the ship afloat and be presented to the attending surveyor. Systems which require shaft alignment are specified in DNVGL-RU-SHIP Pt.4 Ch.2.

3.2.3 As an alternative to opening up for inspection, measurements may be carried on certain components such as vibration dampers, elastic couplings, speed governor and quick passing through device.
4 Special provisions for ageing offshore units

4.1 General

4.1.1 Mobile offshore units with age exceeding their initial design life (in many cases 20 years) shall be subject to evaluation for special provisions, both with respect to fatigue and coating/corrosion degradation.

4.1.2 The special provisions for maintaining required safety level is related to fatigue and corrosion condition of the hull and supporting structure. Degradation mechanisms due to ageing effects related to other aspects such as marine systems have also to be given due consideration by owner through maintenance, and by surveyors through regular surveys.

4.2 Corrosion measurements and condition of protective coating

The special provisions with regard to condition of protection coating system and minimum measurements are included in the descriptions for the renewal survey as specified in Sec.3 [4]. In addition is referred to [2.2] with regard to thickness measurements and inspection of protective coatings in general.

4.3 Fatigue utilization index

4.3.1 The fatigue utilization index (FUI) is defined as the ratio between the effective operational time and the initially documented fatigue life.

4.3.2 When the actual age of the unit exceeds the documented fatigue life, the fatigue utilisation index (FUI) shall be calculated for column-stabilised units.

4.3.3 FUI calculation is not required for ship-shaped units. These units have a more robust fatigue redundancy and are considered adequately covered by standard survey arrangements.

4.3.4 If fatigue cracks have been found in a unit prior to the FUI reaching 1.0, and the findings are located within fatigue sensitive areas of the unit, the owner shall assess structural details in these areas at latest prior to the renewal survey for the 5-year period.

4.3.5 Calculation of effective operational time shall be based on the recorded operation history. For the purpose of calculating the FUI, the following may be assumed:

- contribution from operation in harsh environment, e.g. North Sea, North Atlantic and Canada, equals actual operating time in such environment
- contribution from operation in other environments equals one third (1/3) of actual operating time in such environments
- periods of lay-up and yard stay may be disregarded.

4.3.6 Owner shall submit FUI as part of the planning process prior to renewal survey, see [4.3.2] above.

4.3.7 Operation of the unit may continue when FUI > 1.0 provided:

- the required safety level of the vessel is maintained
- no fatigue cracks have been found in critical areas of the unit
- the inspection program is extended.
4.3.8 When the FUI > 1.0, the following measures will in general be taken:
— The Society will issue a MO (memo to owner) stating the actual FUI.
— The installed leak detection system for column stabilized units shall be examined for leakage two times each month and shall be confirmed at each annual survey.

4.3.9 For a unit with FUI > 1.0 and where cracks have been detected in fatigue sensitive areas, the required safety level is in general considered satisfied either by:
— increasing the inspection frequency (i.e. NDT scope with 2 1/2 year interval) or
— by performing a condition based assessment for the vessel.

Where a condition based assessment for the unit is performed, the procedure and method shall be approved prior to the renewal survey for the next 5-year period.

Guidance note:
A condition based inspection planning is performed by judging the vessel based on the actual condition rather than on age in order to maintain the required safety level. In this context a scope implementing all or parts of the following procedure can/should be performed:
— Apply the results from a fatigue analysis. The detail level of the analysis will influence the results. Higher detail level reduces the uncertainties and increases the confidence in the results and hence reduces the inspection frequency.
— Mapping of critical connections with regard to fatigue capacity, i.e. ranking of fatigue sensitive details.
— Identify details to be modified/upgraded with regard to fatigue strength.
— Determine required safety level – dependent on consequence and access for inspection.
— Apply the fatigue results in a risk based analysis (RBI) including historical data from inspections/findings and inspection quality for preparing the inspection program.
— Evaluate the result from inspections (findings) and/or analysis and perform modifications/improvements ensuring that the associated risks are adequately controlled.
— Perform a continuous updating of the inspection plan based on inspection results.
— The inspection plan obtained from a condition based approach depends on the method and procedure applied, including the confidence level of the parameters considered. Less confidence increases the probability of failure (PoF) and hence the inspection frequency will increase.

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

4.3.10 Previous cracks located in fatigue sensitive areas shall be subject to additional NDE at intermediate surveys corresponding to the extent of the NDE inspection required for the renewal surveys.

4.3.11 Associated plans and procedures, i.e. condition based inspection plans applying risk based approach, shall be approved by the Society. The scope of the improvement program will depend on the initial assessment and owner's plans for further use of the unit. Units which have undergone an assessment and improvement program to the Society's satisfaction will be surveyed based on the modified inspection program.
SECTION 3 PERIODICAL SURVEY EXTENT FOR MAIN CLASS

1 General

1.1 Introduction

1.1.1 This section and Sec.4 presents the standard extent of surveys for retention of main class (1A) as applicable for all service notations. The descriptions for the different surveys cover first requirements relevant for all vessel types followed by vessel type specific descriptions for subsequently ship-shaped, column-stabilised and self-elevating units.

1.1.2 The requirements for service notations are given in Sec.5, and optional notations are given in Sec.6.

1.1.3 For units and installations with special feature notation Non-Self-propelled the survey scopes for steering gear, tailshaft and thrusters for propulsion may be adjusted to be in accordance with the intended use (e.g. for DYNPOS(AUTS), POSMOOR, as auxiliary installation, or not used).

1.1.4 The extent of the periodical survey on the unit’s structure is further detailed by the In-service Inspection Program (IIP) as described in [1.2].

1.2 In-service inspection program

1.2.1 IIP (see Sec.1 [2.1.5]) is developed on the basis of a general, experience-based scope in combination with design and fabrication particulars for the actual unit as well as experience from in-service surveys of units of similar type.

Guidance note:
Ship-shaped offshore units are not subject to Extended Hull Survey Requirements (EHSR) or Enhanced Survey Programs (as shown by the ESP class notation) as defined in the DNV GL Rules for ships.

---end---of---guidance---note---

1.2.2 The default basic scope for development of IIP for MOU is given in Table 1 through Table 2. Depending on the level of the design documentation, the basic scope might be altered.

Guidance note:
The basis scope for self-elevating units is given in DNVGL-RU-OU-0104 Ch.6.

---end---of---guidance---note---

If the design documents the structural fatigue utilisation with considerable margins or if the unit has FMS notation (see RU-OU-0102 Ch.2 Sec.6 [15.1]), the basic requirements for NDT inspection can be modified/reduced compared to the basic scope.

When the unit is operating in other environmental conditions than considered in the design, the inspection scope might as well be modified/changed, accounting for the actual application of the unit.

The owner/operator has the responsibility to provide the necessary documentation for class approval, when modification of the basic in-service inspection program is requested.
Guidance note:
The standard in-service inspection program (IIP) is a generic based program based on gained experience and accumulated knowledge from years of MOUs (and ships) surveys.
This inspection plan - level 1 - development, is a simple version of RBI (risk based inspection – where risk = probability of failure × consequence of failure. This is denoted basic RBI. This way of preparing the inspection program is mainly used where the design and fabrication information is limited (e.g. class transfer).
The second level, qualitative RBI, is based on the above basic RBI with the addition of design and fabrication particulars for the specific vessel. This might be detailed fatigue results, ultimate strength utilization, coating system applied etc. which will be combined as basis for preparing the in-service inspection plan. This approach is applied for units built according to DNV GL Rules and standards where experience from construction yard and approval centre are applied in preparing the inspection plan.
The third level is to prepare the in-service inspection program using a quantitative, refined probabilistic approach where uncertainties wrt. different parameters affecting degradation; i.e. related to fatigue, coating, corrosion and wear and tear are analysed for determination of inspection intervals which secure the necessary safety level to be maintained.
The quantitative approach is performed as an advisory service as requested by owner/operator and the modified inspection plan is to be approved by class before being applied as the in-service inspection plan class plan.

1.2.3 The extent of examination specified in the referred tables may be modified based on design documentation evaluation, inspection results/crack history and experience with similar units/details (defined as level 2 for the IIP).

1.2.4 The extent of examination specified in the referred tables may be refined by use of RBI methodologies (defined as level 3 for the IIP).

Guidance note:
At the 1st annual or intermediate survey after construction, column-stabilised units may be subject to examination of major structural components including non-destructive testing, as deemed necessary by the Society. If the Society deems such survey to be necessary, the extent should be agreed to by the Society and the owner or customer prior to commencement of the survey.
For further guidance on RBI see also DNVGL-RP-C210 Probabilistic methods for planning of inspection for fatigue cracks in offshore structures and DNVGL-RP-C302 Risk based corrosion management.

1.2.5 Detailed locations for thickness gauging will be prepared based on the condition of the unit and following the applicable tables in Sec.3 [4]. Measurements shall be recorded and stored in DNV GL’s structure integrity management (SIM) tool.
### Table 1 Basis scope for development of IIP for ship-shaped units

<table>
<thead>
<tr>
<th>TYPE OF SURVEY</th>
<th>AS</th>
<th>IS</th>
<th>RS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INT</td>
<td>EX</td>
<td>INT</td>
</tr>
<tr>
<td>Special areas for inspection 1) (SP) – connections:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP1 Moonpool openings</td>
<td>C</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>SP2 Turret</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Attachments of:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP4 Crane pedestals and top flange</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>SP6 Anchor windlasses</td>
<td>X</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>SP7 Anchor chain fairleads</td>
<td>C</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>SP8 Helideck, derrick and drill-floor support</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SP9 Other attachment/support connections e.g. sponsons, life-boat support structure</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Primary areas for inspection (PR): 2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PR4 Deck structure and turret</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>PR5 Drill floor with substructure</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>PR6 Crane/gangway pedestal</td>
<td>X</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>PR7 Lifeboat platforms support</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>PR8 Helideck and flare support structure</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>PR9 Other support structures</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

A = 100% 4)
B = 50% 3)
C = 25% 3)
X = Spot check 2-5% 3)
V = Visual inspection including close visual inspection of special areas.
NDT = Non-destructive testing, normally Magnetic Particle Inspection (MPI) and/or Eddy Current (ECI) of selected stress concentrations and fatigue sensitive details.

**Notes:**

1) Special areas for inspection (SP) are those sections of the structure which are in way of critical load transfer point, stress concentrations, often special steel selection etc. see listing in [4.3.2]

2) Primary areas for inspection (PR) are elements which are essential to the overall structural integrity of the unit.

3) See listing in [4.3.2]

4) of the total number of these parts.

5) The inspection extent might be reduced (be less than 100%) if based on design documentation, see [1.2.6] (above).
## Table 2 Basis scope for development of IIP for column-stabilised units

<table>
<thead>
<tr>
<th>Special areas for inspection ¹) (SP) – Connections;</th>
<th>TYPE OF SURVEY</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP1 Horizontal bracing</td>
<td>AS</td>
</tr>
<tr>
<td>Pontoon to pontoon</td>
<td>A</td>
</tr>
<tr>
<td>SP2 Vertical diagonal bracing</td>
<td>B</td>
</tr>
<tr>
<td>SP3 Columns to pontoon</td>
<td>X</td>
</tr>
<tr>
<td>Column to deck</td>
<td>X</td>
</tr>
<tr>
<td>SP4 Main Barge girder/bulkhead.</td>
<td>X</td>
</tr>
</tbody>
</table>

**Attachments of:**

<table>
<thead>
<tr>
<th>Special areas for inspection ¹) (SP) – Connections;</th>
<th>TYPE OF SURVEY</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP5 Crane pedestals and top flange</td>
<td>AS</td>
</tr>
<tr>
<td>SP6 Anchor windlasses</td>
<td>X</td>
</tr>
<tr>
<td>SP7 Anchor chain fairleads and anchor bolsters</td>
<td>C</td>
</tr>
<tr>
<td>SP8 Helideck, derrick and drill-floor support</td>
<td>X</td>
</tr>
<tr>
<td>SP9 Other attachment/support connections, e.g. flare and life boat support structures</td>
<td>X</td>
</tr>
</tbody>
</table>

**Primary areas for inspection (PR); ²)**

<table>
<thead>
<tr>
<th>Special areas for inspection ¹) (SP) – Connections;</th>
<th>TYPE OF SURVEY</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR1 Horizontal bracings</td>
<td>AS</td>
</tr>
<tr>
<td>PR2 Vertical diagonal bracings</td>
<td>C</td>
</tr>
<tr>
<td>PR3 Column and pontoon shell</td>
<td>X</td>
</tr>
<tr>
<td>PR4 Upper hull girders/bulkheads</td>
<td>X</td>
</tr>
<tr>
<td>PR5 Drill floor with substructure</td>
<td>X</td>
</tr>
<tr>
<td>PR6 Crane/gangway pedestal</td>
<td>X</td>
</tr>
<tr>
<td>PR7 Lifeboat platforms support</td>
<td>A</td>
</tr>
<tr>
<td>PR8 Helideck support structure</td>
<td>X</td>
</tr>
<tr>
<td>PR9 Other support structures</td>
<td>X</td>
</tr>
</tbody>
</table>
### TYPE OF SURVEY

<table>
<thead>
<tr>
<th></th>
<th>AS</th>
<th>IS</th>
<th>RS</th>
</tr>
</thead>
<tbody>
<tr>
<td>INT</td>
<td>INT</td>
<td>INT</td>
<td>INT</td>
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<tr>
<td>EXT</td>
<td>EXT</td>
<td>EXT</td>
<td>EXT</td>
</tr>
<tr>
<td>V ND</td>
<td>V ND</td>
<td>V ND</td>
<td>V ND</td>
</tr>
<tr>
<td>V NDT</td>
<td>V NDT</td>
<td>V NDT</td>
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</tr>
</tbody>
</table>

A = 100% \(^{6)}\)
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V = Visual inspection including close visual inspection of special areas

NDT = Non-destructive testing, normally Magnetic Particle Inspection (MPI) and/or Eddy Current (ECI) of selected stress concentrations and fatigue sensitive details

**Notes:**

1) Special area for inspection (SP) is those sections of the structure which are in way of critical load transfer point, stress concentrations, often special steel selection etc. see listing in [4.3.2].
2) Primary area for inspection (PR) are elements which are essential to the overall structural integrity of the unit. See listing in [4.3.2].
3) As a minimum centre bulkheads and corners to be covered.
4) May be waived if unit operating on DP.
5) - of the total number of these parts.
6) The inspection extent might be reduced (be less than 100%) if based on design documentation, see [1.2.6] above.
7) External NDT may be waived at IS if the unit has an approved leakage detection system according to guidelines issued by the Society.
8) Area adjacent to column connection to deck.
2 Annual survey

2.1 Survey extent

2.1.1 Annual survey is a general survey of the hull and equipment, machinery and systems to confirm that the unit complies with the relevant rule requirements and is in satisfactorily maintained condition. The survey will normally cover systems and parts for:
— structure and equipment
— machinery and safety systems
— temporary equipment as defined in Ch.1 Sec.1 [2.2].

The survey for the temporary equipment shall only confirm class involvement as specified in Ch.1 Sec.5 [2.7].

Guidance note:
The survey extent with regard to structure should follow the unit specific IIP as described in [1.2].
Survey requirements on towing and temporary mooring systems are covered by the separate survey scheme as described in Sec.4 [8]. Survey requirements on position mooring equipment and systems are covered by the voluntary notations ME respectively POSMOOR as described in Sec.6.

2.1.2 The survey may be performed on location provided that the structure, including submerged parts, can be thoroughly inspected as specified in the in-service inspection programme. If required, underwater inspection shall be in accordance with an approved procedure, and using approved personnel and equipment.

2.2 Structure and equipment, general

2.2.1 The following requirements are applicable for all types of structural design. Specific type requirements, e.g. self-elevating, ship-shaped, column stabilized, are given in [2.3].

2.2.2 Any material alterations to the unit (its structural arrangements, subdivision, superstructure, fittings, and closing appliances upon which the stability calculations or the load line assignment is based) shall be surveyed and the relevant documentation to be reviewed.
(see IACS Z15 3.3.2)

2.2.3 If a loading instrument or loading computer system is available onboard it shall be verified that the system has a valid certificate.
It shall be documented that an annual check of the loading instrument/computer by running one of the test conditions has been carried out. If not, the surveyor shall verify the running of the test condition onboard. Approved loading and stability information shall be verified available onboard. This information shall be the same as required when the unit was assigned class with the Society or at a later conversion of the unit, in accordance with the rule requirements applicable in each case.

2.2.4 The system for recording changes to the lightweight of the unit shall be examined.
(see MODU code 3.1.4)

Guidance note:
For more information and guidance with regards to lightweight control is referred to DNVGL-OTG-12 Lightweight monitoring and control during the operational life-cycle.
2.2.5 Items which are important for the reserve buoyancy in connection with stability of the unit shall be surveyed. The survey shall include inspection of external and internal closing appliances, ventilators, air pipes and flame screens, side scuttles, windows including deadlights, freeing ports, shutters, windows including deadlights, etc., as well as an external inspection of scupper valves and sanitary valves. The closing devices for all air intakes and openings into accommodation spaces, service spaces, machinery spaces, control stations and approved openings in superstructures and deckhouses shall be examined. (see IACS Z15 3.3.3)

2.2.6 External and internal weather and watertight doors, hatches and dampers shall be examined and function tested. Tightness test to be carried out if found necessary.

2.2.7 Sea water inlets and discharges shall be examined from the internal side of the unit.

2.2.8 Remote control system for valves in bilge including emergency, ballast and cooling water systems shall be surveyed and tested.

2.2.9 It shall be checked as far as practically possible that draught marks are legible. Functionality and proper working of draught measurement gauges shall be confirmed.

2.2.10 Manual and automatic fire doors and dampers shall be examined and function tested.

2.2.11 Ventilation ducts and operation of ventilation including emergency stop for engine and boiler rooms to be verified.

2.2.12 Emergency escape breathing device (EEBD) shall be verified in order.

2.2.13 Means of protection of the crew, such as guard rails, bulwarks, walkways and lifelines to be examined.

Guidance note:
For units or installations subjected to annual load line survey by DNVGL, the requirements in [2.2.8] and [2.2.13] are covered by this survey.
(see IACS Z15 3.3.3)

2.2.14 The appendix to the classification certificate and the documents referred to therein, shall be verified and kept available onboard the unit.

2.2.15 It shall be confirmed that the unit is operating within its approved design envelope as included in the appendix to classification certificate.

2.2.16 Where the unit has an impressed current cathodic protection system, the annual overview readings from the system shall be examined.

2.2.17 Condition of protective coating shall be reported on according Sec.2 [2.2.8]. For areas with general breakdown of the protective coating, close-up examination and thickness measurements shall be carried out to an extent sufficient to determine both general and local corrosion levels.
2.2.18 Suspect areas (substantial corrosion previously defined) or areas where substantial corrosion is found at the survey being carried out, shall have thickness measurements extended following Table 4 as guidance.

**Table 3 Thickness measurements, extent and pattern in way of areas with substantial corrosion**

<table>
<thead>
<tr>
<th>Area/structural member</th>
<th>Extent of measurement</th>
<th>Pattern of measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plating</td>
<td>Suspect area and adjacent plates</td>
<td>5 points over 1 m²</td>
</tr>
</tbody>
</table>
| Stiffeners             | Suspect area          | 3 points in line across web  
                          |                        | 3 points in line across flange |

See IACS UR Z7 Table 2

**Guidance note:**
See Sec.2 [2.2] for the extend of thickness measurements.  
See Sec.2 [4] for special provisions for ageing units.

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

2.2.19 Means of escape
Means of escape from working and accommodation spaces to muster location, helideck and lifeboat embarkation deck shall be verified in order.

2.2.20 For units with bow or stern loading arrangement emergency escape routes from the associated control station shall be verified in order.

2.2.21 Safety management certificate
For units that shall comply with SOLAS Reg. IX/2, irrespective of the issuing authority for the Safety Management Certificate (SMC), the surveyor will complete a list of evidence of possible safety management system failures recorded on the occasion of the annual survey. The list will be submitted with the annual survey report.

2.3 Structure and equipment, type specific

2.3.1 Additional requirements for ship-shaped units
There are no additional requirements.

2.3.2 Additional requirements for column-stabilised units
Units or installations with submerged primary structural members allowing internal access for inspection may be omitted from external survey, subject to satisfactory results from the internal survey.

2.3.3 Primary structural members which are flooded shall be subject to external survey unless otherwise agreed. The extent of survey is given in the in-service inspection program, and will comprise visual inspection of vital parts and may include non-destructive testing of highly stressed areas.

2.3.4 The means for leakage detection of dry bracings shall be function tested. Records of owner’s routine testing and inspection of the area shall be reviewed. If owners routines are not duly followed up, external NDT of the column to brace connections may be required to be carried out.

2.3.5 Additional requirements for self-elevating units
A complete overview of the requirements is given in rules for self-elevating units, DNVGL-RU-OU-0104 Ch.6.
2.3.6 Additional requirements for units of other shape
The requirements for ship-shaped units shall be applied as far as practical.

2.4 Machinery and safety systems

2.4.1 All units
The survey shall include examination of spaces for machinery, boilers and incinerators, and equipment located therein, with particular attention to general cleanliness and maintenance with special attention to fire/explosion hazards.

2.4.2 The main and auxiliary steering gear arrangement (including azimuth arrangements of thrusters) shall be tested for proper functioning including test of alarm and safety functions.

2.4.3 As the surveyor deems necessary, running tests and/or opening of machinery, tests of safety devices and equipment with verification of integrity/function of:
— jacketed high pressure fuel injection piping system
— shielding of flammable oil piping system
— insulation of hot surfaces exceeding 220°C
— oil burning equipment on boilers, hot water heaters, incinerators and inert gas generators.

2.4.4 Remote shutdown for fuel-oil transfer service pumps and ventilating equipment, together with oil tank outlet valves where required to be capable of being remotely closed shall be proved satisfactory (quick closing valves).
(See IACS UR Z15, 2.8.2)

2.4.5 Helifuel systems shall be examined with attention to general cleanliness, maintenance and fire/explosion hazards.

2.4.6 Survey of boilers (oil/gas fired, exhaust heated, composite, electric heated and steam generators) shall be carried out according to DNVGL-RU-SHIP Pt.7 Ch.1 Sec.2.
These requirements are also applicable to steam/thermal oil heated steam generators.

2.4.7 The bilge and ballasting system and related subsystems, such as remote operation of pumps, valves and tank level indication shall be visually surveyed and tested.

2.4.8 For fire extinguishing systems the survey shall include:
— testing of the water fire fighting system i.e. fire pumps, fire mains, hydrants and hoses as deemed necessary
— verification of the international shore connection
— verification of the non-portable and portable fire extinguishers and portable foam applicators
— examination of the fire fighter's outfit
— examination of the fixed fire extinguishing systems.

2.4.9 The following systems shall be surveyed and tested for correct functioning:
— fire detection and alarm system
— fixed gas detection and alarm system, both flammable and toxic
— general alarm system and communication between control stations.
2.4.10 For electrical installations the survey shall include:

— examination of main source of electrical power with respect to general condition, fire hazard and personnel safety, i.e. generators, main switchboards, distribution boards, control gear, consumers, chargers and battery/UPS systems

— test of automatic start and connection to the switchboard of the stand-by generator set by initiating shutdown of the running diesel generator causing black-out.

   Guidance note:
   During this test, the emergency generator should be disabled. The test is applicable for all E0/ECO vessels (built at any time) and all vessels constructed on or after 1 July 1998, where electricity is necessary for propulsion and steering.
   For DP3 rigs with independent engine rooms and switchboard rooms, a total blackout is not required for this test, but a test of individual engine rooms is acceptable.
   Applicable test records may replace the required testing.

— inspection of insulation monitoring devices for all distribution systems. If in doubt of correct reading (ex. if the reading is infinity), the device shall be tested

— examination of cable installations with respect to general condition, support and physical protection

— examination of emergency source of electrical power with respect to general condition, fire hazard, personnel safety and function, i.e. generator, emergency switchboard, emergency distribution boards, control gear, chargers, emergency consumers and battery/UPS systems

— check if any modifications are done in the electrical system

— test of emergency power system, i.e. manual and automatic connection of generator/batteries to emergency switchboards, alternative start methods

— it shall be verified that records of inspections and maintenance of Ex- installations in accordance with the implemented maintenance system are kept available onboard

— verify that the document Schedule of batteries is kept up to date.

2.4.11 In hazardous area the following equipment and systems shall be surveyed and tested:

— ventilation systems shall be function tested. The tests shall include emergency stop systems and alarms for lost ventilation

— self-closing gastight doors and airlocks including other openings or accesses

— alarms or shutdown of pressurised equipment

— electrical equipment and cables

— devices for monitoring of insulation resistance or earth leak monitoring including alarms

— protection devices for combustion engines.

(see IACS UR Z15 3.5 and 3.7)

2.4.12 Control and monitoring systems for main and auxiliary machinery shall be surveyed including:

— propulsion machinery

— electric power generation and distribution

— steam generation

— thermal oil heating

— oil or gas burning equipment on incinerators, inert gas generators and hot water heaters.

The survey shall include:

— alarm functions

— safety functions

— remote control functions
— automatic control and shutdown functions
— remote back-up means of operation
— manual override
— electrical and mechanical condition, labels, signboards etc.
— control panels and local indicating instruments
— emergency lighting in engine room
— communication systems
— fire alarm and fire protection systems.
— verification of the change handling process for control and monitoring systems, see DNVGL-OS-D202 Ch.2 Sec.3.

Guidance note:
For units with notation E0 or ECO, see Sec.6 [13].

2.4.13 Emergency shutdown facilities shall be surveyed and tested.

Guidance note:
If operations make it difficult to carry out testing, a low level ESD is sufficient to comply to the above. As an alternative, a review of ESD test records can be done.

2.4.14 Additional requirements ship-shaped units
No additional requirements.

2.4.15 Additional requirements for column-stabilised units
No additional requirements.

2.4.16 Additional requirements for self-elevating units
A total overview of all relevant requirements is given in DNVGL-RU-OU-0104 Ch.6 Sec.4.

2.4.17 Additional requirements for units of other shape
No additional requirements.

3 Intermediate survey

3.1 General

3.1.1 Intermediate survey is a survey including visual examinations, measurements and testing as applicable, of the hull and equipment, machinery and systems, in order to confirm that the offshore unit complies with the relevant rule requirements and is in satisfactorily maintained condition. The required examinations, measurements and testing shall be carried out before the intermediate survey is regarded as completed.

3.1.2 The survey shall, in general, be carried out as the annual survey, but with extended visual inspection and non-destructive testing of the structure as given in relevant rules and in-service inspection programme (where relevant), see [1.2].

3.1.3 The survey may be performed on location provided that the structure, including submerged parts, can be thoroughly inspected as specified in the in-service inspection programme. If required, underwater inspection shall be in accordance with an approved procedure, and using approved personnel and equipment.
3.2 Structure and equipment

3.2.1 All units
Particular attention shall be given to corrosion prevention systems in ballast spaces, free flooding areas and other locations subjected to sea water from both sides.

3.2.2 Suspect areas identified shall be recorded for examination at subsequent annual surveys. Areas found with substantial corrosion, which are not repaired, shall also be recorded for thickness measurements at subsequent annual surveys.

3.2.3 For units over 5 years of age, the unit ballast tanks as specified in [3.2.5] to [3.2.7] respectively shall be internally examined, thickness gauged, placed in satisfactory condition as found necessary, and reported upon.
If such examinations reveal no visible structural defects, the examination may be limited to a verification that the corrosion prevention system remains effective.
(see IACS Z15 4.3)

3.2.4 For units over 10 years of age, the survey of sewage (black water) tanks and wastewater (grey water) tanks shall include:
— For integral tanks internal examination.
— Tanks with hard coating of internal structures recorded in GOOD condition at the previous renewal survey may be specially considered based on a satisfactory external examination.
The internal examination of tanks used in association with sewage treatment may be specially considered based on a satisfactory external examination and provided that an internal inspection has been carried out in accordance with onboard maintenance system during the last 12 months and relevant records are provided and confirmed.
— For independent tanks external examination including the tank supporting structures.
— Thickness measurements shall be carried out as deemed necessary.

3.2.5 Additional requirements for ship-shaped units
The specific areas as mentioned in [3.2.3], are one peak tank and at least two other representative ballast tanks between the peak bulkheads used primarily for water ballast.
(see IACS Z15 4.3.2)

3.2.6 Additional requirements for column-stabilised units
The specific areas as mentioned in [3.2.3] are representative ballast tanks in footings, lower hull, or free-flooding compartments as accessible, and at least two ballast tanks in columns or pontoons.
(see IACS Z15 4.3.4)

3.2.7 Additional requirements for self-elevating units
A complete overview is given in DNVGL-RU-OU-0104 Ch.6 Sec.4.

3.2.8 Additional requirements for units of other shape
Requirements for ship-shaped units shall be applied as far as practical.

3.3 Machinery and safety systems – all units
There are no additional survey requirements.
4 Renewal survey, structure and equipment

4.1 General

4.1.1 Renewal survey is a major survey including visual examinations, measurements and testing of the hull and equipment, machinery and systems, in order to confirm that the unit complies with the relevant rule requirements and is in satisfactorily maintained condition.

The required examinations, measurements and tests shall be carried out before the renewal survey is regarded as completed.

Guidance note:
Survey requirements on towing and temporary mooring systems are covered by the separate survey scheme as described in Sec.4 [8]. Survey requirements on position mooring equipment and systems are covered by the voluntary notations ME respectively POSMOOR as described in Sec.6.

4.1.2 Possible deficiencies shall normally be rectified before the renewal survey is regarded as completed. The Society may accept that minor deficiencies, recorded as condition of class, are rectified within a specified time limit, normally not exceeding 3 months after the survey completion date.

4.1.3 Surveys on location

Renewal surveys may be carried out on location without interrupting the function of the unit, provided that they are based on approved procedures outlined in a maintenance system and survey arrangement.

4.1.4 See also Ch.2 Sec.1 [12] for matters that will be taken into consideration for acceptance of surveys on location.

4.1.5 Provisions regarding fatigue safety factors and corrosion protection shall be in accordance with the following requirements:
— DNVGL-OS-C102 for ship-shaped units
— DNVGL-OS-C103 App.A for column-stabilised units.

4.2 All units

4.2.1 An annual survey (ref [2]) shall be carried out as part of the renewal survey.

The extent of the survey on the structure is given in the IIP as described in [1.2], and will additionally include the requirements given in the remaining of this section.

4.2.2 Thickness measurements shall as a minimum be carried as specified in [4.3] and [4.4] for respectively ship-shaped and column stabilized units.

Additional thickness measurements may be required where wastage is evident or suspect as evaluated during surveys.

4.2.3 Air pipe heads on exposed decks shall be externally and internally examined following the guidance note below. According to the results of the examination, the surveyor may require examination of other air pipe heads.
Guidance note:

<table>
<thead>
<tr>
<th>Vessel type</th>
<th>1st renewal survey</th>
<th>2nd renewal survey</th>
<th>3rd renewal survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ship-shaped</td>
<td>Preferably serving ballast tanks as follows:</td>
<td>all within 0.25 L from the forward end</td>
<td>all air pipe heads. Exemption may be considered for air pipe heads where there is substantiated evidence of replacement within the previous five years.</td>
</tr>
<tr>
<td></td>
<td>— one port and one starboard, forward</td>
<td>— at least 20% of those serving spaces aft,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>— one port and one starboard, serving spaces aft.</td>
<td>preferably serving ballast tanks</td>
<td></td>
</tr>
<tr>
<td>All other units</td>
<td>Four randomly chosen, preferably serving ballast tanks</td>
<td>25% of all the air pipes randomly chosen</td>
<td></td>
</tr>
</tbody>
</table>

---end---of---guidance---note---

4.2.4 All tanks, compartments and free-flooding spaces throughout the unit shall be examined externally and internally for excess wastage or damage.

The survey shall include all structures, piping systems outside machinery area, i.e. plating and framing, valves, coupling, anodes, equipment for level indication, bilges and drain wells, sounding, venting, pumping and drainage arrangements.

Suspect and/or critical structural areas should be examined and may be required to be tested for tightness, non-destructive tested or thickness gauged.

4.2.5 For sewage (black water) tanks and wastewater (grey water) tanks the survey shall include:

— For integral tanks internal examination.
  For units not exceeding 10 years of age the internal examination of tanks used in association with sewage treatment may be specially considered based on a satisfactory external examination and provided that an internal inspection has been carried out in accordance with onboard maintenance system during the last 12 months and relevant records are provided and confirmed.
  — For independent tanks external examination including the tank supporting structures.

Thickness measurements shall be carried out as deemed necessary.

4.2.6 Where provided, the condition of the corrosion prevention system of cargo oil tanks shall be examined.

4.2.7 Examination of fuel oil, lube oil and fresh water tanks shall be in accordance with Table 5. Independent tanks in machinery spaces shall be externally examined including the tank supporting structures.

Table 4 Minimum requirements for internal examination of service tanks

<table>
<thead>
<tr>
<th>Tank</th>
<th>Age of unit, years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 to 5</td>
</tr>
<tr>
<td>Fuel oil/diesel oil</td>
<td></td>
</tr>
<tr>
<td>— engine room/machinery space</td>
<td>None</td>
</tr>
<tr>
<td>— area outside engine room/machinery space</td>
<td>None</td>
</tr>
<tr>
<td>Lube oil</td>
<td>None</td>
</tr>
</tbody>
</table>
4.2.8 The watertight integrity of internal tanks, bulkheads, decks and other compartments shall be verified by visual inspection.
Special arrangements related to stability such as watertight closing appliances for openings in internal bulkheads and decks, cross-flooding, counter-flooding etc., shall be examined and tested if necessary.
Bulkhead shaft seals shall be verified. Dismantling shall be carried out where necessary to examine condition of the bulkhead seal.

Guidance note:
Documented maintenance may be considered as a base for extent of dismantling.

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

4.2.9 Pressure vessels, compartments and/or critical structural areas may be required pressure tested for tightness if found necessary due to actual suspect status condition as evaluated at survey.
Testing of structures forming boundaries of double bottom, deep tanks, peak tanks and other tanks, including holds adapted for the carriage of water ballast, shall can be performed as given in the guidance note below. The surveyor may require further testing.
Testing of double bottoms and other spaces not designed for the carriage of liquid may be omitted, provided a satisfactory internal examination together with an examination of the tank top is carried out.
Independent tanks in machinery spaces shall be tested as deemed necessary.
Guidance note:

<table>
<thead>
<tr>
<th>Tanks to be tested</th>
<th>Test head or pressure</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ballast tanks</td>
<td>Top of air pipe</td>
<td></td>
</tr>
<tr>
<td>Cargo holds adapted for carriage of ballast</td>
<td>Near the top of cargo hold hatch coaming</td>
<td>3)</td>
</tr>
<tr>
<td>Bilge water holding tanks</td>
<td>Top of air pipe</td>
<td>2) alternatively as for fuel oil tanks</td>
</tr>
<tr>
<td>Fuel oil tanks</td>
<td>Head of liquid to the highest point that liquid will rise under service conditions</td>
<td>2), 3)</td>
</tr>
<tr>
<td>Lub. Oil tanks</td>
<td>Head of liquid to the highest point that liquid will rise under service conditions</td>
<td>2)</td>
</tr>
<tr>
<td>Fresh water tanks</td>
<td>Head of liquid to the highest point that liquid will rise under service conditions</td>
<td>2), 3)</td>
</tr>
<tr>
<td>Sewage (black and grey water) tanks</td>
<td>Top of air pipe</td>
<td>As deemed necessary by the surveyor</td>
</tr>
<tr>
<td>Tanks containing other liquids</td>
<td>Head of liquid to the highest point that liquid will rise under service conditions</td>
<td>As deemed necessary by the surveyor</td>
</tr>
</tbody>
</table>

Notes:
1) Gravity tanks of integral type
2) Tanks within machinery spaces may be specially considered based on external examination of the tank boundaries and a confirmation from the master stating that no leakages or other defects have been observed during operation of the vessel.
3) Tanks within the cargo area may be specially considered based on a satisfactory external examination of the tank boundaries and a confirmation from the master stating that the pressure testing has been carried out according to the requirements with satisfactory results.

4.2.10 Remote level indicating systems for ballast tanks shall be surveyed and function tested.

4.2.11 Bottom survey
A bottom survey shall be carried out in accordance with Sec.4 [7] as part of the renewal survey.
(see IACS Z15 2.2.1)

4.2.12 Other underwater items
Sea chests and other sea inlets and discharges (above and below the waterline) with valves, including sanitary valves and scupper valves, shall be opened for survey. Alternative survey methods may be accepted upon special consideration provided equivalency to opening up is achieved.

4.2.13 Signboards
The presence of required signboards shall be verified.

4.2.14 Corrosion protection
The cathodic protection system of the submerged zone shall be surveyed by visual inspection. The efficiency of the system for the forthcoming 5-year period shall be confirmed. Corrosion in welds of vital parts which may be subject to fatigue shall be particularly considered.
Potential measurements to be performed if deemed necessary.
### 4.2.15 Major appurtenances

Fixation of major appurtenances to the main structure shall be surveyed. These may typically include derrick structure, crane pedestals, helicopter decks, lifeboat platforms and heavy deck modules or skids.

### 4.3 Specific requirements for ship-shaped units

#### 4.3.1 Thickness measurements shall as a minimum be carried out as shown in Table 6.

**Table 5 Minimum Requirements for Thickness Measurements for Ship-shaped Units at Renewal survey**

<table>
<thead>
<tr>
<th>Renewal survey No.1</th>
<th>Renewal survey No.2</th>
<th>Renewal survey No.3</th>
<th>Renewal survey No.4 and subsequent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 0-5 years</td>
<td>Age 5-10 years</td>
<td>Age 10-15 years</td>
<td>Age &gt;15 years</td>
</tr>
</tbody>
</table>

1) Suspect areas throughout the unit.
2) One transverse section of deck plating abreast the moon pool opening within the amidships 0.6L, together with internals in way as deemed necessary. Where the unit is configured with side ballast tanks, the plating and internals of the tanks are also to be gauged in way of the section chosen.
3) Moon pool boundary bulkhead plating.

1) Suspect areas throughout the unit.
2) Two Transverse Sections (Girth Belts) of deck, bottom and side plating abreast the moon pool and one hatch opening within the amidships 0.6L together with internals in way as deemed necessary. Where unit is configured with side ballast tanks, the plating and internals of the tanks to be gauged in way of the required belts, Remaining internals in ballast tanks to be gauged as deemed necessary.
3) Moon pool boundary bulkhead plating.
4) Internal in forepeak tank as deemed necessary.
5) Selected air pipes and ventilator coamings on exposed main deck.

1) Suspect areas throughout the Unit
2) A minimum of three transverse sections (Girth Belts) of deck, bottom, side, and longitudinal-bulkhead plating in way of the moon pool and other areas within the amidships 0.6L, together with internals in way (including in perimeter ballast tanks, where fitted in way of belts).
3) Moon pool boundary bulkhead plating.
4) Internals in forepeak and afterpeak tanks as deemed necessary.
5) Lowest strake of all transverse bulkheads in hold spaces. Remaining bulkhead plating to be gauged as deemed necessary.
6) All plates in two wind and water strakes, port and starboard, full length.
7) All exposed main deck plating full length and all exposed first-tier super-structure deck plating (poop, bridge and forecastle decks).
8) All keel plates full length plus additional bottom plating as deemed necessary by the surveyor, particularly in way of cofferdams and machinery spaces.
9) Duct keel or pipe tunnel plating or pipe tunnel plating and internals as deemed necessary.
10) All air pipes and ventilator coamings on exposed main deck.
4.3.2 Inspection area categorisation

Application categories for structural components to be inspected referred in Table 7, are defined in Sec.3 Table 1.

Special areas for inspection:
— Connections of bulkheads, stiffeners, flats or decks in the moonpool area. Moonpool corners and attachments.
— Turret – connections within structure at support.
— External brackets, portions of bulkheads, and frames which are designed to receive concentrated loads at intersections of major structural members.
— Support connections for helideck, derrick and drill-floor etc.
— Highly utilised areas supporting anchor line fairleads and winches, crane pedestals, flare towers/booms etc.
— Other support areas – lifeboat platform supports etc.

Primary areas for inspection:
— Structural members of bulkheads, stiffeners, flats or decks and girders in deck structure and turret.
— Deck plating, heavy flanges, and bulkheads within the upper hull or platform which form box or I type supporting structure.
— Bulkheads, decks, stiffeners and girders which provide local reinforcement or continuity of structure in way of intersections, except areas where the structure is considered for special application.
— Main support structure of heavy sub-structures and equipment, e.g. anchor line fairleads, cranes, drill-floor substructure, lifeboat platform, thruster foundation and helicopter deck.

Other areas for inspection:
— upper platform decks, or decks of upper hulls except areas where the structure is considered primary or special areas for inspection
— deckhouses
— other structures not categorised as special or primary.

4.4 Specific requirements for column-stabilised units

4.4.1 Thickness measurements shall be carried out as shown in Table 7.

Table 6 Minimum requirements for thickness measurements – column-stabilised units

<table>
<thead>
<tr>
<th>Id.</th>
<th>Area</th>
<th>Renewal survey No.1 Age 0-5 years</th>
<th>Renewal survey No.2 Age 5-10 years</th>
<th>Renewal survey No.3 Age 10-15 years</th>
<th>Renewal survey No.4 and subsequent Age &gt;15 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All</td>
<td>Suspect areas</td>
<td>Suspect areas</td>
<td>Suspect areas</td>
<td>Suspect areas</td>
</tr>
<tr>
<td>Id.</td>
<td>Area</td>
<td>Renewal survey No.1 Age 0-5 years</td>
<td>Renewal survey No.2 Age 5-10 years</td>
<td>Renewal survey No.3 Age 10-15 years</td>
<td>Renewal survey No.4 and subsequent Age &gt;15 years</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2</td>
<td>Structural components of Special and Primary areas for inspection</td>
<td>Areas with indication of wastage.</td>
<td>Areas with indication of wastage.</td>
<td>Areas with indication of wastage.</td>
<td>Areas with indication of wastage.</td>
</tr>
<tr>
<td>3</td>
<td>Bracings</td>
<td>Representative plates in splash zone. Internals as deemed necessary.</td>
<td>Representative plates in splash zone. Representative plates and stiffeners at the connection to column/pontoon and bracings (k-nodes).</td>
<td>Representative plates and internals in splash zone. Representative plates and stiffeners at the connection to column/pontoon and bracings (k-nodes).</td>
<td>Representative plates and internals in splash zone. Representative plates and stiffeners at the connection to column/pontoon and bracings (k-nodes).</td>
</tr>
<tr>
<td>4</td>
<td>Columns</td>
<td>Representative plates in splash zone. Internals as deemed necessary.</td>
<td>Representative plates and internals in splash zone. Selective plates and stiffeners of selective seawater tanks.</td>
<td>Representative plates and internals in splash zone. Selective plates and stiffeners of selective seawater tanks.</td>
<td>Representative plates and internals in splash zone. Selective plates and stiffeners of selective seawater tanks.</td>
</tr>
<tr>
<td>5</td>
<td>Pontoon s</td>
<td>One girth belt of each pontoon. Selective tank top plates of selective seawater tanks.</td>
<td>Two girth belts of each pontoon. Selective tank top plates of all seawater tanks.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Column and/or Pontoon seawater tanks used for trimming the vessel</td>
<td></td>
<td>Representative plates and stiffeners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Chain lockers</td>
<td>Representative plates and stiffeners.</td>
<td>Representative plates and stiffeners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Exposed upper hull where box or I beams receive major concentrated loads</td>
<td>Representative plates and stiffeners.</td>
<td>Representative plates and stiffeners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Id.</td>
<td>Area</td>
<td>Renewal survey No.1 Age 0-5 years</td>
<td>Renewal survey No.2 Age 5-10 years</td>
<td>Renewal survey No.3 Age 10-15 years</td>
<td>Renewal survey No.4 and subsequent Age &gt;15 years</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------------------------------------</td>
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<td>-----------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>9</td>
<td>Main supporting structure of heavy substructures and equipment. e.g. crane pedestal, drill floor substructure, lifeboat platform and helicopter deck</td>
<td></td>
<td></td>
<td>Representative plates and stiffeners.</td>
<td>Representative plates and stiffeners.</td>
</tr>
<tr>
<td>10</td>
<td>Structural components of Special category other than under 3-9 above. (These areas are normally identified in the IIP)</td>
<td>Representative plates and stiffeners.</td>
<td>Representative plates and stiffeners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Air pipes and ventilators</td>
<td>Selected air pipes and ventilator coamings on exposed main deck.</td>
<td>All air pipes and ventilator coamings on exposed main deck.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1) and 2) if considered necessary by the attending surveyor
3) to 11) mandatory thickness measurements, number and extent of thickness measurement requirements may be modified by the surveyor considering the corrosion protection condition and arrangements.

**Guidance note:**
Sample of structures prone to rapid wastage:
- Areas of columns and bracings without an efficient/intact hard epoxy coating system in way of the splash zone.
- Column and pontoon seawater tanks without an efficient/intact hard epoxy coating system.
- Chain lockers.

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**4.4.2 Inspection area categorisation**
Application categories for structural components to be inspected referred in Table 9, are defined in Sec.3 Table 2.

Special areas for inspection:
- Connections of bulkheads, stiffeners, flats or decks and girders in vertical columns, decks, lower hulls diagonals.
- Portions of deck plating, heavy flanges, and bulkheads within the upper hull or platform which form box or I type supporting structure which receive major concentrated loads.
- External shell structure in way of intersections of vertical columns, decks and lower hulls.
- Major intersections of bracing members.
— Through material used at connections of vertical columns, upper platform decks and upper or lower hulls which are designed to provide proper alignment and adequate load transfer.
— External brackets, portions of bulkheads, and frames which are designed to receive concentrated loads at intersections of major structural members.
— Highly utilised areas supporting anchor line fairleads and winches, crane pedestals, flare etc.

Primary areas for inspection:
— Bulkheads, stiffeners, flats or decks and girders in vertical columns, decks, lower hulls diagonals.
— Deck plating, heavy flanges, and bulkheads within the upper hull or platform which form "box" or "I" type supporting structure which do not receive major concentrated loads.
— External shell structure of vertical columns, lower and upper hulls, and diagonal and horizontal braces.
— Bulkheads, decks, stiffeners and girders which provide local reinforcement or continuity of structure in way of intersections, except areas where the structure is considered for special application.
— Main support structure of heavy substructures and equipment, e.g. anchor line fairleads, cranes, drillfloor substructure, life boat platform, thruster foundation and helicopter deck.

Other areas for inspection:
— Upper platform decks, or decks of upper hulls except areas where the structure is considered as primary or special areas for inspection.
— Bulkheads, stiffeners, flats or decks and girders in vertical columns, decks, lower hulls, diagonal and horizontal bracing, which are not considered as primary or special application.
— Deckhouses.
— Other structures not categorised as special or primary.

4.4.3 Lightweight survey
A lightweight survey or inclining test shall 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 shall be conducted, or the difference in weight shall be placed in an indisputably conservative vertical centre of gravity and approved.
(See MODU code 3.1.5.1)

Interpretation:
A lightweight survey or inclining test, in accordance with an approved procedure, should be carried out in protected waters, and in presence of and to the satisfaction of the attending surveyor. The report, endorsed by the surveyor, shall be submitted for approval immediately after the test.

An indisputably conservative vertical centre of gravity will normally be at the drill floor level.

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4.4.4 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 [2.2.4], 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 shall be completed in accordance with paragraph [4.4.3].
(See MODU code 3.1.5.2)

Guidance note:
This item applies to units constructed in accordance with the IMO MODU Code 2009. The Society may accept, based on a review of the relevant documentation, that the option is also used for units constructed in accordance with earlier versions of the Code and class requirements. It is a provision that the preceding lightweight surveys have documented that the unit was maintaining an effective weight control programme. For more information and guidance with regards to lightweight control is referred to DNVGL-OTG-2 Lightweight monitoring and control during the operational life-cycle.

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4.5 Specific requirements for units of other shape
The requirements for ship-shaped units shall be applied as far as practical.

5 Renewal survey, machinery and systems

5.1 General
Machinery systems and equipment are covered by the renewal survey as described in [5.2] and separate surveys as listed below.
— Tailshaft survey – see Sec.4 [1].
— Propeller connection survey – see Sec.4 [2].
— Survey of Thrusters for main propulsion or dynamic positioning – see Sec.4 [3] and Sec.4 [4]
— Boiler survey, including steam generator, see Sec.4 [5]
— Thermal oil heater, see Sec.4 [6]
The renewal survey may be replaced by alternative survey arrangements as discussed in Sec.7.

5.2 Machinery

5.2.1 Machinery systems shall be examined and tested according to Sec.7 Table 1.

5.2.2 Settling tank and daily service tanks for heavy fuel oil and diesel oil as well as lubrication oil circulation tanks assessed with respect to tank cleanliness.
If inspection and cleaning have been carried out by the crew during the last 12 months and relevant log extracts are provided and confirmed, this may be credited as surveyed at the surveyor's discretion.
Opening up of tanks may be required as found necessary by the surveyor.

5.2.3 Auxiliary thrusters shall be examined and tested as follows:
— oil analysis of gear house oil and oil for the CP mechanism
— examination of gear and bearings through inspection openings or by other means
— examination of external piping systems
— examination of bearings, gear and shafts and other relevant parts if any indications of abnormalities are observed. Satisfactory maintenance according to manufacturer’s recommendations to be documented and considered as a base for extent of possible opening.
Opening to be carried out normally at least every 10 years. Any opening up of a thruster shall be witnessed by a surveyor of the Society
— function testing of sealing arrangements
— function testing of lubrication and hydraulic oil system
— function testing of CP mechanism
— function testing of thruster unit including alarm system.

Guidance note:
It is advised to take oil analysis at regular intervals and always prior to docking in order to ensure that there is no need for opening of the thruster (e.g. water in the oil).

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5.2.4 For units with gas turbine installations the survey shall include verification of records and major overhaul reports onboard.
Major overhaul on gas turbines shall be performed by either the original equipment manufacturer (OEM) or an OEM authorized company.

5.2.5 For non self-propelled units (e.g. semis where the vessel is not intended to do a rig move under its own power) with propellers or thrusters, the renewal survey shall ensure the watertight integrity of the (shaft) sealing of the hull.

5.3 Electrical installations

5.3.1 The survey shall comprise examination of the electrical installations with regard to fire and explosion hazards and injury from accidental touching. The survey is also to include testing of correct functioning of equipment covered by class requirements.

5.3.2 As far as practicable, the following equipment shall be examined for satisfactory condition:

- main and emergency switchboards
- generators
- distribution boards
- motor starters
- electrical motors
- converters (e.g. transformers, rectifiers, chargers)
- cable installations
- enclosures for electrical equipment
- lighting equipment
- heating equipment
- battery installations.

5.3.3 The following tests shall be carried out to the extent deemed necessary by the surveyor to ascertain the proper functioning of the equipment:

- generator full load test
- generator parallel operation
- generator protection relays including non-important load trip, if fitted
- generator remote speed control
- generator synchronising equipment
- power plant interlocking systems
- insulation resistance indicating device
- emergency generator including switchboards
- battery chargers
- mechanical ventilation of battery rooms and lockers
- navigation lights, with controllers including alarms
- electrical motors for essential and important use
- interlocking and/or alarms for pressurised rooms and equipment
- Emergency generator – auto start following loss of main supply.

Protection relays in generator and bus tie circuit breakers shall be tested with secondary current injection, or with suitable apparatus made for testing of the installed protection units.

5.3.4 Records of insulation test shall be shown to the surveyor. This requirement may be waived if:

- testing of all individual motors is included and logged in the planned maintenance system, and
— the insulation monitoring alarms required by DNVGL-OS-D202 Ch.2 Sec.2 are integrated in the machinery alarm.

**Guidance note:**
Megger testing may involve risk of explosion due to sparks. Therefore appropriate procedures for such work should be followed as relevant, e.g. gas free certificate.

Ex equipment should include Ex motors and Ex junction boxes and Ex enclosures.

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5.3.5 Electrical equipment in hazardous areas shall be examined with respect to:
— corrosion
— flameproof enclosure/ingress
— no unauthorised modification
— correct rating of lamps
— earthing (spot check)
— function testing of pressurised equipment and of associated alarms
— testing of insulation resistance of power circuits (Ex p, Ex e and Ex n). Where proper records of testing are maintained consideration may be given to accepting recent readings (maximum 12 months) by the ship's crew
— insulation monitors with alarms shall be function tested, if installed
— for rooms protected by air locks, interlocking with ventilation of electrical supply to non-explosion protected equipment and de-energising of such equipment in case of ventilation failure shall be examined and function tested as applicable.

**Guidance note:**
Megger testing may involve risk of explosion due to sparks. Therefore appropriate procedures for such work should be followed as relevant, e.g. gas free certificate.

Ex equipment to include Ex motors and Ex junction boxes and Ex enclosures.

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5.4 Safety and control systems

5.4.1 Correct functioning of the various parts of the following systems shall, as far as applicable, be verified:
— alarm and safety system
— manual control of machinery
— remote control of propulsion machinery
— remote control of position keeping machinery
— transfer of control to local control stations.

**Guidance note:**
For units with notation **E0** or **ECO**, see Ch.3 Sec.6 [13].

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5.4.2 When cancelling of automatic load reduction and/or automatic stop of engine are provided, these functions shall be demonstrated to the satisfaction of the surveyor.

5.4.3 Emergency switch(es) for all electrical equipment including main and emergency generators, except alarm and communication systems and lighting in vital areas such as escape routes and landing platforms, shall be proved satisfactory (by a combination of testing and review of maintenance records).
(see IACS UR Z15, 2.8.2)
**Guidance note:**
The above implies a complete test of the ESD system in the presence of DNVGL. Approved cause and effect diagrams should be available if possible.

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SECTION 4 MISCELLANEOUS MAIN CLASS SURVEYS

1 Propeller shaft survey

1.1 General

1.1.1 The propeller shaft shall be drawn to permit examination of the shaft and the following parts:
— propeller shaft bearing areas
— stern bushes or bearings
— shaft sealing arrangement, including lubricating oil system
— aft bearing clearances to be measured/calculated and recorded
— oil level monitoring of lubricating oil system.

Guidance note:
Bearing clearances to be measured or calculated from wear down measurements and clearance from new building or last shaft withdrawal.

1.1.2 For oil lubricated propeller shafts with type approved sealing glands, the withdrawal of the propeller shaft may be exempted at alternate surveys, i.e. extended to 10 years intervals, provided the following items have been examined with satisfactory result (reduced scope):
— new oil seals should be fitted
— oil sealing contact surfaces in order
— aft bearing clearances measured/calculated and recorded
— oil level monitoring of lubricating oil system
— oil analysis (not older than 3 months) in order.

Guidance note:
Bearing clearances to be measured or calculated from wear down measurements and clearance from new building or last shaft withdrawal.

In addition to the above, a propeller connection survey in accordance with [2.1.1] shall be carried out for propeller shafts with a keyway.

Guidance note:
The lubricating oil analysis should include the minimum parameters:
— water content
— chlorides content (sodium and magnesium)
— content of bearing metal particles (iron, aluminium, nickel, chromium, copper, tin, and lead)
— content of other particles (silicon)
— oil aging, resistance to oxidation (TAN, TBN)
— oil sample should be taken under service conditions.
2 Propeller connection survey

2.1 General

2.1.1 For arrangements where the propeller is mounted on a keyed taper the following shall be examined after the propeller is backed off:
— propeller shaft threaded end
— propeller shaft taper and keyway
— propeller hub taper and keyway
— key
— NDT of fore part of the shaft taper and shaft keyway by an approved crack detection method.

2.1.2 For arrangements where the propeller is mounted on a keyless taper, or by means of a cylindrical/ conical sleeve the following shall be examined after the propeller is backed off:
— propeller shaft threaded end
— propeller shaft tapered or cylindrical section
— propeller hub taper
— NDT of the fore part of the shaft taper, or shaft cylinder, by an approved crack detection method.

2.1.3 For arrangements where the propeller hub is fitted to a flange coupling or a forged propeller shaft flange the following shall be examined:
— visual inspection of the flange and its fittings
— tightness of bolts or nuts
— NDT of the flange fillet radius, by an approved crack detection method, may be required if the visual examination of the area is not satisfactory.

Guidance note:
For tailshaft condition monitoring see Sec.6 [19.3].

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2.2 Dismantling of propellers

Dismantling of keyed propellers will be required at intervals of maximum 5 years, and keyless propellers every 15 years. The following parts shall be surveyed as applicable:
— propeller nut
— tailshaft threaded end
— key and cone including examination of the keyway and the fore part of the taper by an approved crack detection method.

3 Survey of geared thrusters for main propulsion and positioning

3.1 Definitions

3.1.1 Thrusters for dynamic positioning are thrusters incorporated in systems for dynamic positioning of units, where the unit has been granted the additional class notation DYNPOS or DPS.

3.1.2 Thrusters for position mooring are thrusters incorporated in systems for thruster assisted position mooring of units, where the unit has been granted the additional class notation POSMOOR(TA) or POSMOOR(ATA).
3.1.3 Thrusters for propulsion are defined as thrusters which are intended for propulsion or propulsion and steering of the unit during sea voyage.

3.2 Survey extent
See DNVGL-RU-SHIP Pt.7 Ch.1 Sec.5 [4].

4 Survey of podded thrusters for main propulsion and positioning

4.1 General

4.1.1 The requirements in this sub-section apply to thrusters of podded design, hereafter denoted pods, for propulsion and positioning of the unit.

4.1.2 Pod survey implies a survey of the pod's internal power transmission elements and driving motor enclosed in the pod, strut and steering column.
Pods have two scheduled surveys:
— annual
— complete.
For some pod sizes it will be limited access from inside the unit and annual survey should be done to the extent that is practically possibly. Complete survey might require some dismantling.

4.1.3 Parts of the survey may be replaced by an approved condition monitoring arrangement, see DNVGL-CP-0484 App.B [5].

4.1.4 At each overhaul, all relevant parts of the components made accessible shall be presented for survey by the Society, see DNVGL-RU-SHIP Pt.7 Ch.1 Sec.5 [5.2].
Assembly and mounting on board shall be verified and tested.

4.2 Scheduled surveys
See DNVGL-RU-SHIP Pt.7 Ch.1 Sec.5 [5.2].

5 Boiler survey
Survey of boilers (oil/gas fired, exhaust heated, composite, electric heated and steam generators) shall be carried out according to DNVGL-RU-SHIP Pt.7 Ch.1 Sec.5 [6].
These requirements are also applicable to steam/thermal oil heated steam generators.

6 Thermal oil heater survey
Survey of thermal oil heaters shall be carried out according to DNVGL-RU-SHIP Pt.7 Ch.1 Sec.5 [7].

7 Survey of the unit's bottom and related items

7.1 Schedule

7.1.1 The outside of the unit's bottom and related items shall be examined two times in any five (5) year period, with an interval not exceeding three (3) years between examinations.
(See MODU code 1.6.1.5)

Guidance note:
Non-metallic expansion joints in piping systems, if located in a system which penetrates the unit's side and both the penetration and the non-metallic expansion joint are located below the deepest load waterline, should be inspected as part of the bottom survey and replaced as necessary, or at an interval recommended by the manufacturer (See MODU code 4.11.3).

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7.1.2 Consideration may be given at the discretion of the Society, and with acceptance of the flag, to any special circumstances justifying an extension of the interval.

7.2 Survey planning and record keeping

Plans and procedures for these surveys shall be submitted for review in advance of the survey and made available on board.

Guidance note:
External survey of thrusters, see Sec.4 [3] and Sec.4 [4]
Seachests, overboard valves, see Sec.3 [4.2.14]
Corrosion protection, see Sec.3 [4.2.16]
The Society may consider alternative methods for providing adequate assurance that a unit's bottom is in a satisfactory condition. An example of such a consideration is to carry out the bottom survey afloat. (See Sec.8 [1.3]).
A survey based on such alternative methods is subject to acceptance by the relevant flag administration. (See MODU code 1.6.2.5)
The Society may consider alternative methods for providing adequate assurance that a unit's bottom is in a satisfactory condition for units not subjected to either MODU code or SOLAS requirements.

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7.3 Ship-shaped units (ship or barge type units)

7.3.1 External surfaces of the hull, keel, stem, stern frame, rudder, nozzles, and sea strainers shall be selectively cleaned to the satisfaction of the attending surveyor and examined together with appendages, the propeller, exposed parts of stern bearing assembly, rudder pintle and gudgeon securing arrangements, sea chest and strainers, and their fastenings (as applicable).

7.3.2 Propeller shaft bearing, rudder bearing, and steering nozzle clearances (as applicable) shall be ascertained and reported upon.
(See IACS Z15 4.2.1)

7.4 Column-stabilised units

External surfaces of underwater areas forming part of the buoyant volume when the unit is afloat shall be examined.

7.5 Self-elevating units
See DNVGL-RU-OU 0104 Ch.8 Sec.5.

7.6 Other units

External surfaces of underwater areas forming part of the buoyant volume when the unit is afloat shall be examined.
8 Survey of towing and temporary mooring equipment

8.1 Annual survey
Towing and temporary mooring equipment shall be subject to visual inspection and review of certificates and maintenance records.

8.2 Renewal survey

8.2.1 Towing
Towing equipment shall be subject to visual inspection and review of certificates and maintenance records. NDT may be requested depending on condition and service history.

8.2.2 Temporary mooring
Temporary mooring equipment shall be subject to visual inspection and review of certificates and maintenance records.
Windlass, including piping system and foundations shall be examined.
The anchors and chain cables shall be ranged, examined and the required complement and condition verified.
The anchor shackle or swivel, anchor head, flukes and shank shall undergo close visual inspection. If found necessary, NDT shall be carried out with particular attention to the bolts fitted to certain designs for altering the fluke angle.
The chain lockers, holdfasts, hawse pipes and chain stoppers shall be examined and drainage arrangement of the chain lockers tested.
Function testing of the temporary mooring systems shall be performed.
At the second and subsequent renewal surveys, chain cables shall be gauged. Any length of chain cable shall be renewed if the mean diameter at any cross-section is worn beyond 12% of its original diameter.

Guidance note:
The mean diameter of a cross-section may be taken as the average of the minimum diameter and the diameter measured perpendicular to this.

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SECTION 5 PERIODICAL SURVEY EXTENT FOR ADDITIONAL SERVICE NOTATIONS

1 Introduction
This section presents the specific survey items for the services defined in Ch.1 Sec.3 Table 4. The requirements shall be applied in addition to those for main class notation presented in Sec.3 and Sec.4. The detailed scope is given in the following sub-sections.

2 Drilling units

2.1 Introduction

2.1.1 The requirements in this sub-section apply to units with class notation Drilling.

2.1.2 Scope
Drilling units shall be surveyed with focus on:
— drill floor and superstructure
— cross connections on drilling/well test and safe piping system
— hazardous areas
— shutdown systems.

The surveys do not cover the drilling equipment.

2.1.3 Temporary well test equipment and systems installed on board units with DRILL class notation shall be design approved and surveyed after installation onboard, and before any well test operations commence. See Ch.3 Sec.6 [4.1.6] for details.

Temporary well test equipment and systems installed on board units without DRILL class notation shall be approved with focus on interfaces with main class. See Ch.1 Sec.5 [2.7.3] for guidance.

2.2 Annual survey

2.2.1 The drill floor and substructure shall be surveyed with emphasis on structural integrity and supporting structure for equipment applied in drilling operations.

2.2.2 Where cross connections between piping system for drilling or well testing operation and safe piping system exist, the means for avoiding possible contamination of the safe system with the hazardous medium shall be surveyed.

2.2.3 Owners are required to operate a system for planned inspection and maintenance of highly pressurised equipment related to the drilling plant. The surveyor shall verify the satisfactory implementation of this system.

2.3 Complete survey

2.3.1 The drainage system of hazardous area shall be surveyed.

2.3.2 Systems and equipments included in scope of classification according to Ch.2 Sec.2 [1.2.1] shall be surveyed. Attention shall be paid to fire and other hazards. Thickness checking of pipe work shall be
Carried out and records reviewed by the surveyor, as applicable. Hydrostatic testing may be requested by the surveyor.

**2.3.3** Cement and dry mud pressure tanks shall be tested to 1.2 times the working pressure if found necessary by the surveyor.

### 3 Well intervention units

#### 3.1 Introduction

**3.1.1** The requirements in this sub-section apply to units with the class notation **Well intervention 1** and **Well intervention 2**.

**3.1.2 Scope**

Well intervention units shall be surveyed with focus on:
- supporting structure
- cross connections on well intervention and safe piping system
- hazardous areas
- shutdown systems.

The surveys do not cover the systems and equipment related to well intervention.

**3.1.3** Temporary well test equipment and systems installed on board units without **WELL** notation shall be approved with focus on interfaces with main class. See Ch.1 Sec.5 [2.7.3] for guidance.  

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#### 3.2 Annual survey

**3.2.1** Supporting structures for decks, platforms and equipments shall be surveyed with emphasis on structural integrity.

**3.2.2** Where cross connections between piping system for well intervention operation and safe piping system exist, the means for avoiding possible contamination of the safe system with the hazardous medium shall be surveyed.

**3.2.3** Owners are required to operate a system for planned inspection and maintenance of highly pressurised equipment related to the well intervention system. The surveyor shall verify the satisfactory implementation of this system.

#### 3.3 Complete survey

**3.3.1** The drainage system for hazardous areas shall be surveyed.

**3.3.2** Systems and equipments included in the scope of classification according to Ch.2 Sec.3 [3.1.3], Ch.2 Sec.3 [4.1.2] shall be surveyed with focus on fire and other hazards. Thickness checking of pipe work shall be carried out and records reviewed by the surveyor, as applicable. Hydrostatic testing may be requested by the surveyor.
Pressure vessels according to Ch.2 Sec.3 [3.1.3], Ch.2 Sec.3 [4.1.2] shall be pressure tested if found necessary by the surveyor.

3.3.3 For units arranged for carriage of low flash point liquids the survey shall include examination of heating coils, anodes, tank cleaning apparatus and other equipment in cargo tanks and cofferdams. Heating coils are normally to be pressure tested.

3.3.4 The quick disconnect system shall be tested.

4 Accommodation unit

4.1 Introduction

4.1.1 The requirements in this sub-section apply to units with class notation Accommodation.

4.1.2 Scope
Accommodation units shall be surveyed with respect to the specific details w.r.t:
— structural strength of the accommodation
— connection of the accommodation modules to main structure
— gangways.

4.2 Annual survey

4.2.1 The accommodation shall be surveyed with attention to structural strength. The connections of accommodation modules between the modules and to the main supporting structure shall be surveyed.

4.2.2 Gangways intended for transfer of personnel to/from other installations which are permanently fitted to the unit shall be surveyed with respect to structural integrity and proper functioning.

4.3 Complete survey
There are no additional requirements.

5 Crane unit

5.1 Introduction

5.1.1 The requirements in this sub-section apply to units with class notation Crane.

5.1.2 Scope
In addition to the applicable items of Sec.3 and Sec.4, the supporting structure of the crane shall be surveyed.

5.2 Annual survey
The crane foundation shall be surveyed with emphasis on structural integrity.

5.3 Complete survey
There are no additional requirements.
6 Wind turbine installation units

6.1 Introduction

6.1.1 The requirements in this sub-section applies to vessels with the class notation Wind turbine installation.

6.1.2 Scope
Wind Turbine Installation units shall be surveyed with specific focus to the supporting structure of the crane units.

6.2 Annual survey

6.2.1 The structural strength shall be examined in line with the requirements for ship-shaped units.

6.2.2 The crane foundation shall be surveyed with emphasis on structural integrity.

6.2.3 Loading deck area to be surveyed with respect to possible damages resulting from installation and removal of sea-fastening (welding/flame cutting).

6.3 Complete survey
There are no additional requirements.

7 Offshore support units

7.1 Introduction

7.1.1 The requirements in this sub-section applies to vessels with the class notation Offshore support.

7.1.2 Scope
The unit shall be surveyed in accordance with the parts of:
— drilling vessel
— offshore production vessel
— accommodation vessel
— crane vessel
as far as the unit has the equipment listed in those parts of the rules.
SECTION 6 OPTIONAL CLASS NOTATION SURVEYS

1 Introduction

1.1 General

1.1.1 This section presents the standard extent of surveys for retention of optional class notations applicable to drilling and offshore support units.

1.1.2 Unless otherwise noted, the interval of the complete surveys as listed in this section is 5 years.

2 Position mooring equipment

2.1 Application

2.1.1 The requirements in this sub-section apply to units with class notation ME.

2.1.2 Annual survey consist of documentation review and visual examination to ascertain the general condition of the relevant items. The survey is normally carried out on location with the unit at operational draft and the mooring system in use. No special inspection aids are required and no disruption to the unit’s operation is intended.

2.1.3 Renewal survey will require appropriate cleaning with good access and adequate lighting. The complete mooring system equipment for position keeping on location is subject to comprehensive survey, including function testing, opening up and NDT of selected parts of the mooring equipment installed.

2.1.4 Continuous survey. Alternatively, the owner may opt for a continuous survey of mooring lines by providing an extra mooring line which is regularly inspected in special facilities onshore and exchanged with lines installed on the unit. This arrangement is normally noted by an MO which gives the last/next survey date of each mooring line.

Guidance note:
For acceptance criteria for chain, wire and fibre mooring see App.C.

2.2 Annual survey

2.2.1 Position mooring equipment shall be inspected as follows:
There shall be carried out visual inspection of the accessible part of the mooring lines, on or adjacent to the windlass. Particular attention to be paid to:
— the proper support of links in the pockets, i.e. contact is made at only the four shoulder areas of the link to avoid critical bending stresses in the link
— wear on the chain shoulders in way of the chain stopper and windlass pockets
— condition of wire or fibre rope
— condition of anchors and anchor bolsters
— that no twist is present between fairlead and windlass.
Guidance note:
Twist in chain can severely reduce the capacity of the mooring line, as it locks the chain links and significantly increases the stresses in the most loaded chain link.
As a guidance the twist between the fairlead and windlass should not exceed a 5 degree interlink twist when the fairlead are at maximum skew angle, and under no circumstances shall the interlink twist cause restriction in the movement of chain in windlass and fairlead.

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Where severe damage or neglect of maintenance is observed, e.g. missing studs, worn cable lifters causing damage to the anchor chain, damage to wire or fibre rope, a more extensive survey should be required, ref. renewal survey.
The surveyor shall ascertain if any problems have been experienced in the previous 12 months period with the mooring system, e.g. chain breaks, jumping, mechanical damages, loose joining shackles.
If available, visual inspection of the anchors shall be carried out. If anchors have experienced any problems and/or been replaced, the anchor certificate shall confirm suitability.

2.3 Renewal survey

2.3.1 General
The complete mooring system for position keeping on location is subject to comprehensive survey, including function testing, opening up and NDT of selected parts of the mooring equipment installed.

2.3.2 A documentation review shall be carried out in order to verify that all mooring components have correct certification and that the service history of the mooring components are recorded. Inspection scope level is based on the available service records.

2.3.3 Chain
For chain which is less than 20 years old with proper documentation and service history, and no previous failures the extent of examination shall be:
— 100% visual examination
— 5% NDT on general chain
— 20% NDT on chain which has been in way of fairleads over last 5 years
— 20% NDT on chain which will be in way of fairleads over next 5 years.

2.3.4 If no documentation or history is available, the examination shall be increased to include mechanical testing of each length of chain and NDT increased to cover 20% of the whole chain.

2.3.5 All joining shackles of Kenter or similar design which have been in service for more than five years, shall be dismantled and magnetic particle (MT) or liquid penetrant testing (PT) shall be carried out on all the machined surfaces.

Guidance note:
Abrasive blasting prior to MT or PT. may damage the machined surfaces and should be avoided. Alternative methods of cleaning should be used, e.g. high pressure water washing.

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2.3.6 Background information to be supplied for the renewal survey:
The service history of the chain should be supplied beforehand to the attending surveyor. The following information shall be provided:
— DNV GL chain certificate
For a chain which is more than 20 years old the following apply:

- If all documentation is available, and historical information including previous reports showing no failures and only minor repairs, then survey extent given in [2.3.2] can remain in place.

- If no documentation is available (i.e. no certificates, unable to identify the chain, unable to ascertain orientation of the chain, which parts have been over the fairleads etc.) then the chain shall be subjected to minimum 20% NDT and mechanical testing of all lengths.

- If documentation review reveals history of defects, then NDT shall be increased to 100% in the areas where defects are found.

2.3.8 Steel wire rope
The survey of steel wire ropes consists of a 100% visual control, and the following items shall be covered:

- the nature and number of wire breaks
- wire breaks at the termination
- localised grouping of wire breaks
- fracture of strands
- reduction of rope diameter including breaking of core
- external wear and corrosion
- deformation
- termination area.

**Guidance note:**
Magnetic inductive testing in order to detect possible fracture of strands may be accepted on a case by case basis.

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2.3.9 It is advised that checkpoints are made for every 100 m. If areas of special interest are detected, the distance should be significantly reduced.

2.3.10 Re-certification of stranded wire ropes shall be carried out. It shall be based on a visual examination of the wire rope and a condition assessment and/or a section shall be cut from the end of the rope and inspected.

2.3.11 Fibre rope
On the survey of the fibre ropes consists of a 100% visual examination of the rope covering the following items:

- external wear
- deformation
- termination area.

2.3.12 In addition to [2.3.10] the in-service load history shall be assessed or, if this information is not available, a cut-off section from the end of the rope shall be tested.
2.3.13 Winches and fairleads
The fairleads shall be inspected visually and by ROV as far as possible. All fairleads shall be inspected. Fairlead bearings shall be verified in working order and verified turning freely. Wear in bearings shall be checked.

2.3.14 Visual inspection of windlass and fairlead pockets shall be carried out. Particular attention shall be paid to:
— rate of wear on pockets, including relative rate of wear between links and pockets
— mismatch between links and pockets, including improper support of the links in the pockets.

2.3.15 Special attention shall be given to the holding ability of the windlass. The chain stopper and the resultant load path to the unit’s structure should be inspected and its soundness verified.

2.3.16 Special attention shall be given to the holding ability of the winch and the satisfactory operation of the pawls, ratchets and braking equipment. The soundness of the resultant load path to the unit’s structure shall be verified.

2.3.17 Proper spooling of the wire on the winch drum shall be verified and drums and spooling gear adjustments made if required.

2.3.18 Windlasses and winches and fairleads, including brake torques, shall be function tested.

2.3.19 The system for emergency release of the winch brake shall be tested. The visual and audible alarm shall be confirmed. The activation of the deluge system over the anchor windlasses shall be tested.

3 Position mooring system

3.1 Application

3.1.1 The requirements in this sub-section apply to units with class notation POSMOOR.

3.1.2 The requirements in [3.3] and [3.5] are applicable to units with qualifiers TA or ATA only.

3.1.3 If the unit is in DP mode and not in position mooring mode at time of survey and hence equipment’s functionality related to the POSMOOR notation is not available for survey/testing a reduced survey scope may be accepted. Annual or complete survey depending on time since last survey shall be carried out before the mode is taking into use.

3.2 Annual survey

3.2.1 Accessible and visible parts of the unit’s mooring system for position keeping on location shall be inspected. Requirements in [2.2] with respect to annual survey of equipment under notation ME apply, in addition to below.

3.2.2 The mooring analysis as required in DNVGL-OS-E301 Ch.3 Sec.1 [4.2] to be verified on board. It shall also be verified that the unit operates within the limits stated in the mooring analysis. The operating envelope is described in the appendix to the classification certificate.
3.2.3 The mooring line records shall be reviewed.

Guidance note:
The mooring line record review should include verification that all parts of the mooring line assembly including pre-laid mooring lines hold valid certificates.

3.2.4 The service history of the mooring components shall be reviewed.

Guidance note:
Service history should include logging of position of e.g. chain links over windlass and fairleads. Any damages, as well as records from incidents with damage potential, should be recorded.

3.2.5 The calibration certificates for the load cells to be verified on board, (see DNVGL-OS-E301 Ch.2 Sec.4 [14]).

3.2.6 The length and tension measurements, including alarm settings shall be verified.

3.2.7 Winch control to be verified from all operator stations.

3.2.8 The mooring lines from windlass towards fairleads shall be surveyed. See [2.2.1] with respect to requirements to twist in line.

3.3 Annual survey- thruster assisted systems

3.3.1 System maintenance documentation, including information regarding hardware and software changes, shall be reviewed.

Guidance note:
This requirement includes, in addition to the position mooring control system and other systems necessary for performing position keeping, e.g. thruster control system.

3.3.2 The electrical installation in excess of the main class requirements shall be visually inspected, i.e. installations comprising the position mooring system, e.g. controllers and operating stations for position mooring and references systems, sensors and mode change system.

3.3.3 The technical condition of the position mooring system shall be verified during the survey.
Guidance note:
Verification of the technical condition of the position mooring system denotes testing to verify that the position mooring system is capable of positioning the unit, and thus validating that system functionality is in place. This includes thruster operation, tension and line length indication system and alarm settings.

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3.3.4 If the survey is carried out when the unit is undergoing regular operations, then tests that possibly can introduce unacceptable risks shall not be performed.

3.3.5 Capacity of UPSs and other battery systems serving the position mooring control system, including its peripherals, shall be verified.

3.3.6 The alarm for loss of charging power shall be verified.

Guidance note:
If the survey is carried out during regular operations, then the capacity of the batteries need not be proven by testing.

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3.3.7 Emergency stop of thrusters from the position mooring control center shall be tested. If the survey is carried out when the unit is undergoing regular operations and there is a possibility of introducing unacceptable risks, then testing may be exempted.

3.3.8 The Simulation facility shall be verified as far as possible.

3.3.9 Thruster operation shall be function tested.

3.4 Complete survey

3.4.1 The complete mooring system for position keeping on location shall be subject to a comprehensive survey, including opening up and NDT of selected parts of windlasses and winches and fairleads. The requirements listed under scope for complete survey of the Notation ME in [2.3] applies. In addition the additional requirements under annual POSMOOR survey listed in [3.2] applies.

3.5 Complete survey – thruster assisted systems

3.5.1 With the unit in position mooring mode, a sea trial shall be performed. The complete system shall be tested in all operational modes. The testing shall include simulation of different failure conditions to verify switching of modes, back-up systems and the alarm system.

3.5.2 The different modes of thruster control from the DP control centre(s) shall be tested:
   — manual control
   — joystick control (if installed)
   — position mooring control
   — transfer of control.
   Manual override shall be demonstrated during normal operation and during failure conditions.

3.5.3 Emergency stop of the position mooring thrusters from the position mooring control center to be tested.
3.5.4 All sensors, peripheral equipment and reference systems shall be tested:
— verify correct operation and adequate accuracy
— failure of sensors and reference systems shall be simulated to check the alarm system and the switching logic
— switch-over between reference systems as input to controller shall be carried out to assure that warnings, alarms and information to operator are satisfactory.

Guidance note:
Due to practicalities some reference systems may be unavailable during the tests. In such cases the testing can be performed by the crew as soon as possible after survey. When testing is left to the crew this is be recorded in the survey report, and a condition of class or memo to owner is be issued. The condition of class or memo to owner can be deleted based on a signed test report from the master.

The survey of the thruster unit should be carried out as for thrusters for propulsion and dynamic positioning. Surveys of the thrusters are separate survey elements and these surveys do not need to take place at the same time as the POSMOOR survey.

3.5.5 Alarm for loss of position and heading out of limit shall be demonstrated. Line break alarm shall be tested.

3.5.6 Single failures in thruster control systems including signal wire breaks of thruster command and feedback signals shall be tested in order to verify safe response on the thrust output. Equivalent testing may also be required for rudders controlled by the DP control system.

3.5.7 Overload prevention shall be tested.

Guidance note:
If it is possible to induce overload by setting out thrust command from the DP control system (e.g. by use of joystick function) then the overload protection function (e.g. pitch reduction) should be tested. System configuration and/or available power considerations may lead to this test being omitted.

3.5.8 Capacity of UPSs and other battery systems serving the position mooring control system including its peripherals shall be verified by testing. Alarm for loss of charging power shall also be verified.

3.5.9 For units where the design capacity is dependent on certain thrusters to remain intact after failure, required redundancy shall be documented through an FMEA test. The FMEA report and FMEA test program shall be verified to ensure that they have been updated when alterations have been done.

Guidance note:
The requirement to have an updated FMEA analysis on board is only valid for units with class request after 1. July 2004.

FMEA testing is required for vessels which have redundancy requirements in thruster systems, power systems and/or control systems as part of their mooring analysis. If the vessel also operates in DP mode, the testing carried out as part of the DP FMEA may not need retesting, but FMEA tests specific for position mooring operations need to be completed. This includes tension measurement failures, communication and power failures in the anchor winch control system.

3.5.10 Correct functioning of the consequence analysis facility shall be verified as far as possible.
4 Dynamic positioning systems

4.1 General

4.1.1 These rules do not include verification of requirements or recommendations in regard to the vessels operation or other characteristics.

4.1.2 The requirements in this sub-section apply to units with class notation DYNPOS or DPS.

4.2 Specific requirements

4.2.1 Qualifier (A)
For units with qualifier given as DYNPOS(AUTR, A) or DYNPOS(AUTRO, A) notation, the annual survey shall be carried out in accordance with the requirement for complete survey.

4.2.2 An updated FMEA report with a corresponding FMEA test program shall be kept onboard, and shall be used as basis for the testing.

4.2.3 For units in position mooring
If the unit is in moored position and not in dynamic positioning mode at time of survey and hence the equipment’s or functionality related the dynamic positioning is not available for survey/testing a reduced survey scope may be accepted. Annual or complete survey depending on time since last survey shall be carried out before the mode is taking into use.

4.3 Annual and complete survey
See DNVGL-RU-SHIP Pt.7 Ch.1 Sec.6 [12].

5 Drilling plant

5.1 Application

5.1.1 The requirements in [5.2] and [5.3] apply to units with class notation DRILL.

5.1.2 Well testing equipment survey as described in [5.4] is applicable for units with additional notation DRILL, WELL and WELLTEST.

5.1.3 Additional requirements for the qualifier (N) are given in DNVGL-SI-0166 Ch.3.

5.1.4 Additional requirements for the qualifier (US) are listed in [5.5].

5.1.5 Scope
The systems covered in the survey are in accordance with Ch.2 Sec.7 [6] and include the following:
— drilling structures
— well control systems
— heave compensation and tensioning systems
— hoisting and rotating systems
— drilling and well intervention equipment handling systems
— bulk storage, drilling fluid mixing and circulation, and cementing systems
— well testing systems
— other drilling equipment (winches, gear transmissions, man-riding equipment).

**5.1.6** Where third party equipment (TPE) is used to support the drilling operation it shall be surveyed with regard to its inherent safety and the interface between the rig and the equipment.

*Guidance note:*

The following equipment may fall into this category:

— mud logging
— wireline
— casing running equipment
— measurement/logging while drilling
— ROV.

Further guidance can be found in DNV-OTG-05 Temporary equipment on offshore installations.

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**5.1.7 Well test equipment**

Temporary well test equipment and systems shall be design approved and surveyed after installation onboard and before any well test operations are commenced. For survey requirements see [5.4].

**5.1.8** For well test equipment permanently installed on the unit, the individual items shall be surveyed using the descriptions of [5.4] as annual survey scope.

**5.2 Annual survey**

**5.2.1 Objective**

The intent of the annual survey is to get a sufficient understanding of the condition of the equipment without intrusive interventions, given that the unit is in operation. It is assumed that normal operations are ongoing.

**5.2.2 Scope**

The extent of the annual survey shall be as follows:

— Spot check review of the unit's records of the routine inspections/tests, the planned maintenance system and the repair/overhaul/modification records.
— Review documentation for equipment installed since last survey, including third party equipment.

General visual survey and testing as required. Non-destructive testing may be required, as considered necessary by the surveyor.

Where records are available showing that the items listed below have been recently tested by the crew, these will be considered by the surveyor.

*Guidance note:*

Further guidance can be found in DNVGL-OTG-07 Guidance on DNV GL's DRILL notation.

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**5.2.3 General requirements**

During annual survey it is acceptable that the test pressure to which the BOP and the HP pipelines, choke and kill manifold have been tested to is limited to that appropriate to the well conditions, i.e not maximum working rated pressure.
5.2.4 Any changes to the systems (new equipment and overhauls, repairs and modifications) shall be surveyed and the relevant documentation to be reviewed.

5.2.5 The surveys shall be based on the maker’s recommendations and recognised standards. Any deviations from these shall be justified by technical arguments.

5.2.6 Drilling structures – hydraulic cylinder based (Ramrig™/cylinder hoisting rig) or conventional derrick
A general visual survey shall be carried out with emphasis on the structural condition of footings, bracings and with respect to deformation and loose bolts (if of bolted design). Visual spot check of skids and brackets for lifting purposes in derrick, moonpool and drill floor.

5.2.7 Blowout preventing equipment
BOP systems shall be surveyed visually as far as practicable. Test records for periodical function and pressure testing of the blowout preventer system shall be reviewed.

5.2.8 Blowout preventing, control equipment
Records of the precharge of the accumulators shall be reviewed. Spot check review of calibration certificates for safety valves shall be carried out.

5.2.9 Diverter unit, equipment and control equipment
The diverter system shall be visually surveyed and inspected for corrosion, cracks and wear. Function test records and maintenance records to be reviewed.

5.2.10 Choke & kill equipment and control equipment
High pressure choke, kill and booster piping systems including flexible hoses shall be externally surveyed for corrosion and damage. Thickness measurement records shall be available upon request.

**Guidance note:**
High pressure piping is defined in Chapter IX of ANSI/ASME B31.3 to be piping with a piping class larger than ASME B16.5 CL2500 (PN420) classes. The API piping classes are all high pressure piping. Typical high pressure piping is choke and kill lines.

5.2.11 Test records for periodical function and pressure testing of the choke and kill manifold and piping including HP flexible hoses, shall be reviewed.

5.2.12 Marine riser, equipment and control equipment
Marine riser joints, telescopic joint, ball joint, spider and support ring (as far as accessible) shall be visually surveyed and inspected for leakages, corrosion, cracks and wear.

5.2.13 Heave compensation
All heave compensation systems, including accumulators, mountings, piping and possible insulation shall be visually surveyed during normal operation as far as possible. Spot check review of calibration certificates for safety valves.

5.2.14 Tensioning systems
All tensioning systems, including accumulators, wire ropes, sheaves, cylinders, mountings, piping and possible insulation shall be visually surveyed during normal operation as far as possible. Spot check review of calibration certificates for safety valves.
5.2.15 Hoisting system – hydraulic cylinder based (Ramrig™/cylinder hoisting rig) or conventional
Main hoisting systems shall be surveyed visually during normal operations. Spot checks of safety devices and emergency stop functions shall be carried out. Wire ropes (including end attachments) and sheaves shall be surveyed.

5.2.16 Hoisting and rotating equipment
Visual survey of the drawworks, crown block, travelling block, top drive, dolly, elevators, elevator links and rotary table shall be carried out. Spot check SWL marking on individual components. Review maintenance records on equipment, calibration reports for dead line anchor, crown and travelling block sheave groove measurements and NDT reports (i.e elevator links and load carrying equipment). Review certificates and NDT/inspection records on loose gear (lifting gear).

5.2.17 BOP & x-mas tree handling
BOP and x-mas tree handling systems shall be surveyed visually as far as practicable. Spot checks of safety devices and emergency stop functions shall be carried out.

5.2.18 Pipe, riser handling & miscellaneous lifting appliances
Pipe, riser handling systems and appliances for lifting purposes shall be surveyed visually as far as practicable. Spot checks of safety devices and emergency stop functions shall be carried out.

5.2.19 Bulk storage, drilling fluid circulation & mixing
High pressure piping systems for well circulation systems including flexible hoses shall be externally surveyed for corrosion and damage. Thickness measurement records shall be available upon request. Spot check review of calibration certificates for safety valves shall be carried out.

Guidance note:
High pressure piping is defined in Chapter IX of ANSI/ASME B31.3 to be piping with a piping class larger than ASME B16.5 CL2500 (PN420) classes. The API piping classes are all high pressure piping. Typical high pressure piping is choke and kill lines.

5.2.20 High and low pressure mud pumps and mud return system shall be visually surveyed during normal operation. Spot checks of calibration of tank level indicators, flow meters and alarms shall be carried out.

5.2.21 The maintenance and test records on the Inside BOP valves shall be reviewed.

5.2.22 Cementing
Cement pump and high pressure components, incl. piping system, to be surveyed visually. Review maintenance records, pressure test records and calibration certificates for safety valves. Certificates of cement pump equipment as described in DNVGL-OS-E101 to be reviewed. Emergency stops to be tested (as far as practicable, if not review records).

5.2.23 Manriding equipment
Personnel and utility hoisting equipment; baskets, stabbing boards and winches including wires and sheaves, shall be visually surveyed. Spot checks of safety devices and emergency stop functions shall be carried out. SWL marking shall be confirmed to be legible.

5.2.24 Control systems
At the annual survey a review of documentation of alarm testing of the control systems shall be carried out. In addition, random testing of alarms that can be tested without interfering with operations to be carried out to the surveyors satisfaction.
5.3 Complete survey

5.3.1 Objective
The intent of the complete survey is to confirm that the equipment and systems are fit for operation for another 5 years.

5.3.2 Scope
More intrusive inspections and more rigorous testing will be carried out. Normally items will be tested to their original design limits.

Original certificates for category I equipment and records of the routine inspections/tests and the maintenance/repair/overhaul records shall be presented for review. Review calibration certificates for safety valves. Emergency stops to be tested.

Guidance note:
Further guidance can be found in DNVGL-OTG-07 Guidance on DNV GL’s DRILL notation.

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5.3.3 Drilling structures – hydraulic cylinder based (Ramrig™/cylinder hoisting rig) or conventional
Derrick/guiding tower installations shall be examined. Reports for derrick bolt torque/pre-tension checks shall be presented. Thickness measurements may be required. 100% NDT of derrick/guiding tower footings shall be carried out. The torque of the foundation bolts shall be confirmed. If the derrick has welded foundation, NDT shall be carried out.

Guidance note:
NDT and foundation bolt check may be waived depending on design.

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Skids and brackets for lifting purposes in the derrick, moonpool and drill floor etc. shall be visually surveyed/confirmed to be in order. NDT and/or thickness measurements may be required according to surveyor's satisfaction.

5.3.4 Blowout preventing equipment
Overhaul of the BOP assembly shall be carried out at intervals of 5 years, in accordance with an overhaul plan based on the condition of the BOP. The overhaul plan shall be presented for review prior to the work being carried out. Records of overhaul shall be kept onboard and shall be reviewed. The blow-out preventer system shall be subject to complete strip down, internal visual inspection and dimensional check, reassembly and performance test, including pressure testing of each pipe ram, annular, choke and kill valves, control system and piping systems (low pressure and maximum rated working pressure, as applicable).

25% of the clamps shall be opened and inspected dimensionally and by NDT.

Test stump shall be NDT checked.

Guidance note:
Typically the BOP will be stripped down, internally inspected, dimensionally checked to the OEM’s specification. See also DNVGL-OTG-07, DNV-RP-E101 and DNV-RP-E102 for further guidance especially where the items are overhauled at an onshore facility, and/or where weld repairs are needed.

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5.3.5 Blowout preventing, control equipment
Pressure vessels shall be surveyed internally. If internal survey is not practical, base the examination on thickness measurements as described in [4.3.7]. Pressure vessel related equipment, such as valves, pipes, etc., shall be examined. Pressure testing to the maximum allowable working pressure shall be performed.
5.3.6 All emergency disconnect system (EDS) sequences to be function tested. Test may be done at surface or subsea.

5.3.7 Thickness measurements shall be carried out and compared with the minimum strength thickness. Piping systems including flexible hoses shall be pressure tested to the maximum working pressure.

5.3.8 Capacity test of the pump unit with accumulators shall be carried out. The time to recharge the unit from precharge pressure to normal operating pressure shall be measured using both power systems one at a time (cf API 16D).

5.3.9 All BOP control panels shall be function tested, incl the acoustic panel (where fitted). Capacity test of BOP control system UPS to be carried out. Sample alarms shall be tested, including:
- low accumulator pressure
- loss of power supply
- low levels in the control fluid storage tanks
- loss of communication (multiplex control systems)
- UPS alarms:
  - loss of input power and internal failure
  - loss of battery back-up of BOP.

5.3.10 Where fitted Autoshear and Deadman systems, see API Spec 16D (2nd edition, July 2004) Ch.5 [9], shall be tested on subsea stacks.

5.3.11 On subsea BOPs where Remote Operated intervention capability (ROV) exists it shall be tested.

5.3.12 Diverter unit and control equipment
Liquid penetrant or MPI methods shall be used to investigate critical areas such as for instance connector/main pipe welds for cracks. Thickness measurements of piping and housing to be carried out as found necessary. Full function testing from all diverter panels to be carried out. Test of interlocks to be carried out from all control panels. Verify the response time is within acceptable limits, e.g. API Spec 16 D/DNVGL-OS-E101.

5.3.13 Choke & kill equipment
Thickenss measurements of choke and kill equipment shall be carried out and compared with the minimum strength thickness. NDT to be carried out on critical areas if found necessary. Choke and kill lines, hydraulic lines and booster line, shall be pressure tested to the maximum allowable working pressure.

5.3.14 Choke and kill manifold and piping shall be subject to complete performance test to maximum allowable working pressure of each applicable valve configuration. Pressure test at low pressure and maximum rated working pressure on upstream high-pressure manifold valves. Function testing of remote operated valves and chokes to be carried out. Opening of valves (approx 10%) for internal inspection by the surveyor shall be carried out. All choke valves (manual or remote) to be opened for internal inspection.

5.3.15 Marine riser, equipment and control equipment
Liquid penetrant or MPI methods shall be used to investigate critical areas such as for instance connector/main pipe welds for cracks. Choke and kill lines, hydraulic lines and booster line shall be pressure tested to the maximum allowable working pressure. Thickness measurements shall be carried out and compared with the minimum strength thickness. The riser shall be surveyed with the buoyancy elements removed.
5.3.16 For units where the riser joints are sent ashore routinely for overhaul the records of the overhauls ashore shall be presented.

5.3.17 Slip joint rubber goods and packers shall be replaced following the manufacturer's recommendation. Records to be reviewed shall show that this has been done at the proper intervals. Thickness measurements of the barrel shall be taken and compared with the min. strength thickness. Function test of packers and locking dogs to be carried out. Pressure test of control lines to maximum allowable working pressure.

5.3.18 For a riser joint with fill valve the inspection is as for a standard joint plus NDT of the cut-out for the fill valve. Records of testing of the valve to be reviewed.

5.3.19 On the riser support ring, NDT of high stressed areas shall be carried out and the last overhaul report shall be reviewed.

5.3.20 For the goosenecks on the riser thickness measurements shall be taken and compared with the min. strength thickness.

5.3.21 Ball joint and flex joint shall be stripped down, examined visually, NDT of the critical areas and dimension checks to be carried out and compared with OEM dimensions.

5.3.22 Heave Compensation

Thickness measurements shall be taken and compared with the min. strength thickness. Pressure vessels shall be surveyed internally e.g by borescope. Pressure vessel related equipment, such as valves, pipes, etc., shall be examined. Pressure testing to the maximum allowable working pressure shall be performed. Calibration certificates for all safety valves shall be presented.

5.3.23 Piping systems including flexible hoses shall be thickness measured and compared with the min. strength thickness. Flexible hoses shall be visually surveyed, both internally and externally.

5.3.24 On compensators with chains the chain extension shall be checked, where fitted wires shall be examined.

5.3.25 For active heave compensation systems the overload protection system shall be surveyed.

5.3.26 NDT of the fixation of the foundation shall be carried out.

5.3.27 Where fitted, anti recoil valves (e.g Olmsted/slingshot valves) shall be overhauled and tested.

5.3.28 Sheaves shall be visually surveyed and checked by NDT.

5.3.29 For active heave compensation systems, perform a motion compensation function test, see OEM recommendations.

5.3.30 Check the records of refilling of the hydraulic system to confirm the condition of the system regarding the internal leakage rate.
5.3.31 Tensioning Systems

The tensioner oil analysis results shall be reviewed (for lack of explosive capability), the records of sheave wear measurement shall be reviewed, and the ton mile records for the rope shall be reviewed. The termination of any tensioner ropes shall be surveyed. The foundations of the tensioners shall be surveyed and NDT shall be carried out.

5.3.32 Thickness measurements shall be taken and compared with the min. strength thickness. Pressure vessels shall be surveyed internally e.g by borescope. Pressure vessel related equipment, such as valves, pipes, etc., shall be examined. Pressure testing to the maximum allowable working pressure shall be performed.

Compressors shall be run, tested and the record of overhaul of the relief valves shall be checked.

Where fitted, anti recoil valves (e.g Olmsted/slingshot valves) shall be overhauled and tested.

Tensioning system to be function tested. Pistons shall be fully extended to allow examination of the surface condition of the piston rod.

5.3.33 For cylinder type/direct acting tensioners the foundations shall be NDT checked. Turn down sheaves shall be examined and NDT checked,

5.3.34 The control system shall be tested to prove that riser break and/or riser tensioning cylinder break indicators are in order.

5.3.35 Where a top tension system is fitted (e.g on a self-elevating unit or a floater with a surface BOP) the system shall be surveyed. The hang off support points on the units structure shall be NDT inspected. The hydraulic system shall be surveyed and the control panel checked.

5.3.36 Hoisting system – hydraulic cylinder based (Ramrig™/cylinder hoisting rig) or conventional

NDT of main hoisting system, lifting appliances and deadline anchor shall be carried out.

Thickness measurements may be required. API RP 8B may be used as reference. If hoisting system is of a bolted design, all bolts shall be torque checked over a 5 year period.

Lifting appliances shall be load tested, as specified in DNVGL-OS-E101. Limit switches and safety functions to be tested. NDT to be carried out as deemed necessary. Runway beams to be examined. On the guide track check for wear, bent members, carry out NDT of structural supports and check for wear of rollers on the dolly. Check the centring of the drill pipe into the rotary when the dolly is extended. Review alignment reports.

5.3.37 For main structural parts of main hoisting system and lifting appliances where NDT is normally carried out, this NDT may be omitted if it can be documented that the following conditions are fulfilled:

— Accumulated fatigue damage is less than the calculated fatigue life of the component at the end of the 5 year period, based on logging of actual load cycles.
— Fatigue calculations and logging of load cycles shall be evaluated by DNVGL.
— The fatigue calculations shall comply with DNVGL-OS-C101 Ch.2 Sec.5 Fatigue limit states. The calculations should include the design fatigue factors (DFF) as given in Sec.5 [1.2].
— There is no previous history of cracks in the particular area.
— The remaining fatigue life is sufficient for the period until next complete survey.
— If NDT has been omitted at one complete survey then it will normally have to be done at the next complete survey.

**Guidance note:**

If NDT is to be omitted the logging equipment and the fatigue calculations should be made available for review at the fourth annual survey or earlier.

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5.3.38 Function test hydraulic cylinder based hoisting system. Pressure test pipework and cylinders to maximum allowable working pressure. Thickness measurements shall be taken and compared with the minimum strength thickness. Main control valve blocks shall be overhauled, unless equivalent solution can be documented and accepted.

5.3.39 The failure mode, effect and criticality analysis (FMECA), where applicable, for the drawwork shall be reviewed and inspections carried out based on the info in this document.

5.3.40 The crown saver and floor saver functions shall be tested.

5.3.41 NDT of high stressed areas on the riser spider to be carried out. Review overhaul report.

5.3.42 NDT of the main structural parts of main hoisting system shall be carried out. Thickness measurements may be required. API RP 8B may be used as reference. Any deviations from API RP 8B shall be agreed with the OEM and DNV GL.

5.3.43 Rotating Equipment
The top drive shall be overhauled. The main load path shall be checked by NDT. OEM recommended tolerance measurements shall be taken and compared with the allowable. The top drive gooseneck shall be thickness checked, and the results compared with the min. strength thickness.

5.3.44 Pipe & riser handling
Load testing, function test of limits/safety functions and NDT shall be carried out as required. Runway beams to be surveyed.

5.3.45 Anti collision functions of the pipe handling system with the top drive to be confirmed.

5.3.46 The gripper function/head shall be specially surveyed.

5.3.47 Spot checks of safety devices and emergency stop functions shall be carried out. Emergency manoeuvring system to be tested. Loss of main power battery back-up pipe handling magnets to be tested.

5.3.48 BOP & x-mas tree handling
NDT for main structural parts of main hoisting system and lifting appliances shall be carried out. Thickness measurements may be required. API 7L may be used as guidance.

5.3.49 Lifting appliances shall be load tested, as specified in DNVGL-OS-E101.

5.3.50 Movable lifting appliances for BOP and/or x-mas tree shall be load tested, including travelling the full length of supporting rails (or similar). The hooks shall be NDT checked. The condition of the hoisting and transport system shall be confirmed. NDT may be required on the support structure for the BOP hoist/transport system. However, where the BOP or x-mas tree is supported at its base, i.e skidded handling device without lifting capabilities, these need not be overload tested.

5.3.51 Emergency manoeuvring system to be tested.
5.3.52 Safety features
Safety features (i.e. emergency stop, brakes, slack wire detection, limit switches, etc. as applicable) on winches to be tested. Personnel protection shielding on winches to be surveyed.

5.3.53 Bulk storage
Pressure vessels shall be surveyed internally. If internal survey is not practical, thickness measurements shall be taken and compared with the min. strength thickness. Pressure vessel related equipment, such as valves, pipes, etc., shall be examined. Pressure testing to the maximum allowable working pressure shall be performed. Calibration certificates for all safety valves shall be presented.

5.3.54 Foundations to be visually surveyed and NDT checked as required.

5.3.55 A function test of the bulk control system shall be carried out.

5.3.56 Piping systems for bulk transport including flexible hoses shall be pressure tested to the maximum working pressure. Thickness measurements shall be taken and compared with the min. strength thickness. Flexible hoses shall be visually surveyed internally. The routing of the relief line from the safety valve shall be surveyed. The system for ensuring the relief line is unobstructed shall be checked.

5.3.57 Drilling fluid circulation and mixing
Thickness measurements of the piping systems shall be taken and compared with the min. strength thickness. Flexible hoses shall be visually surveyed internally. Piping systems including flexible hoses and manifolds shall be pressure tested to the maximum allowable working pressure.

5.3.58 The mud pump system maintenance records shall be reviewed with particular attention to the power transmission system from the electrical motor to the pump. The bearing clearances on the crankshaft shall be reviewed. The records of mud pump discharge safety valve testing shall be reviewed. Documentation of replacement mud pump modules shall be reviewed. Where pulsation dampers are welded, NDT shall be carried out of any welding (e.g. circumferential weld on the damper body). Records of pre-charge pressure shall be reviewed.

5.3.59 10% of the standpipe manifold valves shall be opened for inspection, thickness check and NDT of welds. If the standpipe is heat traced then check for corrosion under the tracing.

5.3.60 Records for replacement of the rotary/mud hoses to be reviewed. Thickness measurements of the gooseneck on the standpipe shall be taken and compared with the min. strength thickness.

5.3.61 NDT and pressure testing to max. WP shall be carried out on Kelly cocks and inside BOP valves, and LP testing sealing to be confirmed. The operability of these valves to be confirmed.

5.3.62 Degasser shall be surveyed internally visually. Thickness measurements to be taken as deemed necessary.

5.3.63 Dump valves in the mud return system shall be confirmed operable, thickness checks of mud pits shall be carried out. On the trip and active tank the level alarms shall be confirmed to be in order.

5.3.64 Cementing
Cement pump fluid ends shall be surveyed and checked for cracks in critical areas. Thickness measurements to be carried out. Calibration certificates for all safety valves shall be presented. Safety functions to be
tested, including running the cement system as emergency mud circulation system, where applicable. Where pulsation dampers are welded, NDT shall be carried out of any welding (e.g. circumferential weld on the damper body). Documentation of maintenance of articulated piping shall be reviewed.

5.3.65 Function test to be carried out.

5.3.66 Thickness measurements shall be taken and compared with the min. strength thickness. Flexible hoses shall be visually surveyed internally. Piping systems including flexible hoses shall be pressure tested to the maximum working pressure.

5.3.67 Since cement pumping units are often rented in from specialist third parties the records of the third party’s maintenance shall be reviewed, with attention to safety functions, shut downs etc. The location and arrangement of the discharge of the relief valves shall be surveyed with regard to avoiding danger to people working near the unit. Where the cement unit is also the emergency mud pumping system the independence of the start air system from the unit’s air system shall be confirmed.

5.3.68 The remote control system (if fitted) on the cement pump unit shall be confirmed to be in order.

5.3.69 Manriding and miscellaneous lifting equipment
Personnel hoisting equipment and utility winches for lifting purposes shall be load and function tested as specified in DNVGL-OS-E101 Ch.2 Sec.7. Safety devices described in DNVGL-OS-E101 Ch.2 Sec.5 [10] to be tested. NDT of main load path to be carried out, including foundation of equipment. Adjustment of the regulator for the tension/lifting capacity to be checked. Emergency recovery to safe position within 10 minutes to be confirmed.

5.4 Well test equipment survey

5.4.1 Objective
Permanent or temporary installation covering well testing, production clean-up or any other operation where a hydrocarbon-flow is handled by other systems then the degasser shall be designed and approved according to requirements in DNVGL-OS-E101.

When the installation has been design approved it shall be verified by an occasional well test equipment survey. The intent of the survey is to get a sufficient understanding of the condition of the installation without intrusive interventions. It is assumed that normal operations are ongoing.

5.4.2 Scope
Well test related equipment, structures and systems shall be surveyed, with particular attention to the safe operation, fire or explosion hazards and personnel protection. The extent of the well test equipment survey shall include testing, verification of documentation and visual examination with focus on the following:

— installed equipment and piping systems
— area classification (and EX protection of equipment)
— location assessed in relation to air intakes, lifeboats, control room etc.
— deluge and passive or active fire protection
— drain system
— fire and gas detection system
— ESD/PSD and safety philosophy
— structures and deck loading
— sea fastening of equipment.
Guidance note:
Further guidance can be found in DNVGL-OTG-11 Guidance on Well Test Equipment survey.

--- end of guidance note ---

5.4.3 Documentation
Following to be verified and available on board:
— DNVGL certification for installed well test equipment, see DNVGL-OS-E101 Ch.3 Sec.3.
— Survey statements for installed well test equipment not older than 5 years.
— Test records for pressure vessels and separator safety valves.

Guidance note:
Examination of the well test equipment is applicable for choke manifold, heat exchanger, pressure vessels, separators, chicksans, flexible hoses, air compressors, steam generators, surface test tree, surface safety valve, and control and monitoring systems. Safety valves are normally re-calibrated at max. 12 months intervals.

--- end of guidance note ---

5.4.4 Well test equipment installation
The installation of well testing equipment shall be subject to visual examination to confirm correct installation according to approved documentation. Satisfactory function and pressure testing to be carried out when relevant and found necessary.

Following to be verified:
— sea fastening of the equipment
— deck loading limits
— sufficient bunding and drip trays around the well test area/equipment and drain system to collection tank

Guidance note:
Drains in well test area should have no connections to non-hazardous drain systems or direct to sea. Bunded area and drainage system shall be able to handle flooding due to fire water release. Usually this is verified by a wet test.

--- end of guidance note ---

— layout and equipment installation according to hazardous area zones. Ex-certification for the electrical equipment and cables in compliance with hazardous area
— emergency escape routes from well test area and emergency exit from control station.

5.4.5 Flare boom
The flare boom installations shall be examined, with emphasis on structural condition of footings, bracings and with respect to deformation and loose bolts (if of bolted design). Condition of burner heads and connected piping to be verified. Thickness measurements may be required.

Load test of the flare boom to be carried out to a load corresponding to the weight of the burner head and 1 person with a safety factor of 1.25. Function test of installed water cooling system to be carried out.

Guidance note:
See DNVGL-OS-E101 Ch.2 Sec.6 [4.3.8] for the overload factors.

--- end of guidance note ---

5.4.6 Pressure vessels
Pressure vessels, separators and heat exchangers shall be subjected to visual inspection. Internal inspection or thickness measurements and/or crack detection test, to be performed if deemed necessary. Visual examination of related equipment such as valves, piping and fittings shall be carried out.

Pressure testing to rated working pressure shall be carried out.
Separate steam generators for the well test equipment installation shall be verified.
5.4.7 Piping
Pressure test to be performed to maximum working pressure of the entire piping system, including flexible pipes, shock manifold, heat exchanger, separator etc.
Examination of pipe supports particularly in way of the bends/constrictions. Spot-check of wall thickness in way of bends/fitting/constrictions to be performed if deemed necessary.
Correct setting (set point) of relief valves shall be confirmed.

5.4.8 Fire and gas detection system
Fixed gas detection units for HC and/or H2S in the well test area to be function tested. (Connected to the unit ESD system).
Portable gas detection units for HC and/or H2S to be function tested and last calibration confirmed.
F&G detectors and manual call point(s) related to the well test installation to be function tested.
Any component/unit connected to the well test equipment installation with integrated F&G system to be function tested and connection to the rig (MCC) verified.

5.4.9 Control and monitoring system
PSD system to be function tested. Interface between the PSD and the ESD system to be verified. Blow down (BD) system activation to be tested.

Guidance note:
ESD on the rig should activate total production shutdown (PSD) of the well test equipment installation (plant).

5.4.10 Fire protection
The fixed water protection (cooling) systems in well testing area shall be examined and tested.
Deluge system to be examined and function tested (wet testing), both mounted on components/equipment and permanently installed in the well test area.
Fire monitors covering the well test equipment to be examined and function tested (wet testing), both fixed and temporarily installed.
Temporary or fixed facilities for foam to be function tested.

Guidance note:
Alcohol resistant foam is to be provided if methanol is used during the well test.

5.5 DRILL (US)

5.5.1 Scope
The survey item in this section covers the survey requirement of DRILL(US).

5.5.2 Annual Survey
Verify independent third-party verification has been carried out.

Guidance note:
In order to verify the compliance of BSEE’s requirement 30 CFR part 250, par. 250.416(f).

5.5.3 Confirm there is procedure to follow up the latest update of the BSEE requirements.
5.5.4 Review records of inspections and test in case the blind-shear or casing shear rams have been activated in a well control situation during the past year.

Guidance note:
In order to verify the compliance of BSEE’s requirement 30 CFR part 250 par. 250.451(i)

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5.5.5 Check existence and proper maintenance of a ROV.

Guidance note:
See BSEE’s 30 CFR part 250, par. 250.442(d), 250.442 (e), 250.516(e), 250.616(e).

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5.5.6 Complete survey
Where fitted autoshear and deadman systems should be tested on subsea stacks.

Guidance note:
Autoshear and deadman systems are required for DP rigs, see Ch.2 Sec.7 [5], and should be tested in accordance with BSEE's requirement 30 CFR part 250 par. 449(k), 517(d)(9) and 250.617(h)(2)

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5.5.7 On subsea BOPs where remote operated ROV intervention capability exists it should be tested. The above test shall be performed during stump test covering at least one set of rams during the initial test on the seafloor.

Guidance note:
See BSEE's 30 CFR part 250 par. 449(j), 517(d)(8) and 250.617(h)(1).

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6 Helicopter deck

6.1 Application
The requirements in this sub-section apply to units with class notation HELDK.

For the additional survey requirements for this notation with the qualifier (N) as required by the Norwegian authorities is referred to DNVGL-SI-0166 Ch.3.

6.2 Complete survey
See DNVGL-RU-SHIP Pt.7 Ch.1 Sec.6 [8].

7 Well test

7.1 Application
The requirements in this sub-section apply to units with class notation WELLTEST.

7.2 Annual and complete surveys
Survey requirements given for well testing equipment in [5.4] shall be applied, as applicable.
8 Temporary oil storage

8.1 Application
The requirements in this sub-section apply to units with class notation TEMPSTORE.

8.2 Annual survey

8.2.1 The survey shall include a general examination of:
— cargo tanks, including verification of bulkheads with respect to tightness
— cargo pumping and piping systems
— ventilation system of the cargo pump room
— electrical equipment in gas dangerous zones
— inert gas system, if installed.

8.2.2 The following components of the cargo systems shall be surveyed and tested for correct functioning:
— pressure/vacuum relief valves
— emergency stop of pumps
— quick release of transfer hose
— cargo tanks overflow protection system (i.e. tank high level alarms).

8.3 Complete survey

8.3.1 All storage tanks shall be internally examined. The tanks shall be hydrostatically, hydropneumatically or otherwise pressure tested to their MARVS (Maximum allowable relief valve setting).

8.3.2 If fitted, heating coils, anodes, tank cleaning apparatus and other equipment in cargo tanks and cofferdams shall be surveyed. Heating coils shall normally be pressure tested.

8.3.3 Cargo pumps, pipes, valves, inert gas arrangement, etc. together with the pump’s prime movers shall be surveyed in line with the requirements of Sec.5.

9 Crane

9.1 Application

9.1.1 The requirements in [9.2] and [9.3] apply for vessels with additional class notation Crane-offshore.

9.1.2 Crane-offshore applies to any type of offshore crane intended for cargo handling outside the vessel while at sea and to any type of platform crane intended for cargo handling on the vessel. For a vessel with more than one crane installed, class notation Crane-offshore may be applied to selected cranes only. The selected cranes will be identified in the appendix to the classification certificate.

9.1.3 Additional requirements: DNVGL-ST-0378 Sec.14, Standard for offshore and platform lifting, Testing and test certificates marking.

9.1.4 Additional requirements for the qualifier (N) are given in DNVGL-SI-0166 Ch.3.
9.1.5 Scope
The systems covered are in accordance with Ch.2 Sec.7 [9] and include following:
— structure
— machinery
— control and monitoring systems
— safety systems.

9.2 Annual survey

9.2.1 Objective
The intent of the annual survey is to verify satisfactory condition of the equipment without any intrusive interventions, given that the vessel is in operation. It is assumed that normal operations are on-going.

9.2.2 Scope
The extent of the annual survey shall be as follows:
— Spot check review of the vessel’s records of routine inspections/tests, the planned maintenance system and the repair/overhaul/modification records.
— Review documentation for equipment installed since last survey, including third party equipment.
General Visual survey shall be carried out on all parts of the lifting appliances in order to detect any abnormalities or deviations from the normal conditions
Where records are available showing that relevant items have been recently tested, these can be examined and applied as part of the evaluation.

9.2.3 General requirements
Generally, the visual examination may be carried out without dismantling. However, dismantling shall be performed as considered necessary by the attending surveyor.

9.2.4 Any changes to the systems (new equipment, overhauls, repairs and modifications) shall be surveyed and the relevant documentation to be approved.

9.2.5 Crane condition monitoring shall be carried out in accordance with an approved program if part of the planned maintenance system. See Sec 7 for further details. Crane condition monitoring will normally be approved on a case by case basis.

9.2.6 Preparation
Applicable equipment shall be made available for survey according to scope. Special attention shall also be made to the inspection program, SHE safety measures, safe access and crane cleanliness.

9.2.7 Structure
The structure shall be examined as follows:
— Boom structure
   A general visual examination shall be carried out with emphasis on the structural condition of boom heel, boom top, cradle support area, bracings.
— Main frame (king)
   A general visual examination shall be carried out with emphasis on the slewing ring support structure, boom hinge, winch support, A-frame support.
— Frame structure
A general visual examination shall be carried out with emphasis on the frame foot, wire rope sheave system and frame top.

9.2.8 Machinery
The following be examined for satisfactory condition:
— hook block, hook shaft and hook bearing
— sheaves, shaft and bearings
— wire rope and attachments

Guidance note:
See also ISO 4309 Maintenance, installation, examination and discard.

— winches, rope drum, gear, fixation and frame
— luffing system, winches, rope drum, gear, frame and fixations or cylinder with fixations
— slewing system, machinery
— slewing ring and tightness of bolts. Documentation of the condition of the slewing ring shall be examined, OEM program or other recognized program. The program shall as a minimum include grease testing, gap measurement
— brakes, including function testing and correct adjustment
— couplings main part and bushing, including function testing.

Guidance note:
If the coupling is type gear, tooth or spline, the wear must be specially considered and the coupling considered to be opened for examination.

9.2.9 Control systems
Examination and functional testing shall be carried out as found necessary by the attending surveyor for the following:
— Electric systems
  Resistance measurement of electrical systems, motors, switchboards/cabinets, cables, cables protections, condition of all switches, controllers internal and external.
— Hydraulic systems
  Leakages in hydraulic system, pumps, motors, cylinders, valves, piping, safety valves.

9.2.10 Safety systems
Functional tests shall be carried out for the controls, limiting and indicating devices in order to ensure that they are functioning and calibrated correctly for safe operation.

Guidance note:
Typical functional tests are
— rated capacity limiters and indicators
— motion limiters and indicators
— performance limiters and indicators
— emergency stop function
— AOPS, MOPS, heave comp, ESD, F&G, slack wire rope detection
— failure in control system, failure in safety system, blackout/shut-down.
9.2.11 Testing
Functional tests shall be carried out for all crane motions, (e.g. hoisting, travelling, traversing, telescoping, slewing and luffing) at the rated speeds and without lifting loads, in order to check for any abnormalities and/or defects. Functional testing shall also be performed with a suitable load, not exceeding the safe working load, as considered by the surveyor.

It shall be verified that the load charts are permanently displayed and visible for the crane operator.

9.3 Complete survey (5-yearly, Renewal)

9.3.1 Objective
The intent of the complete survey is to confirm that the equipment and systems are fit for operation for another 5 years.

9.3.2 Scope
More intrusive inspections and more comprehensive testing shall be carried out. Normally the crane will be tested to the original design limits.

Original certificates and records of the routine inspections/tests and the maintenance/repair/overhaul records shall be presented for review.

9.3.3 Load tests shall be carried out on basic crane motions, such as hoisting, travelling, traversing, telescoping, luffing and slewing, while suspending a test load (where permitted), in order to check for any abnormalities and/or defects. The test load should not exceed the rated capacity.

9.3.4 Load testing with overload as described in DNVGL-ST-0378 Sec.14. The overload shall be handled with slow speed. All movements shall be tested.

9.3.5 The following components shall be dismantled and made available for examination by NDE:
— boom foot/heel bearings
— fixed sheaves
— load bearing axle pin/shaft and housing
— gear boxes taking part in the lifting operation
— brakes
— couplings
— hook block.

Guidance note:
An alternative to dismantling items for examination is to perform in place inspection according to OEM recommendation or a safe remaining life assessment according to ISO 12482, in addition to visual and NDE inspection. This assessment shall be verified and accepted by the Society, and can be used as a base for examination of relevant parts of the crane. If the lifespan is near to its expiry, the society shall be consulted, before the lifting appliances can be certified for continued use. See DNV GL guidance note for safe crane condition monitoring on request.

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9.3.6 Structure
An overall examination shall be carried out with particular emphasis on structural condition A-frame, boom structure, crane frame, boom foot/heel and other load bearing connections.
Thicknss measurements of structural parts shall be carried out as far as deemed necessary.
9.3.7 Slewing system.
Slewing bearing ring shall be dismantled (not single ball bearing) and made available for visual examination. Internal fillets, raceway shall be subjected to NDE.

Guidance note:
Exemption to opening-up of a bearing will be granted provided:

— if the crane has an approved securing device (retainer) fitted the opening-up is not required or
— the slewing bearing has been specially adapted and approved by DNV GL for non-destructive crack detection or
— a company is available possessing method, skill and specially trained operators within non-destructive crack detection of bearings in question. The company, operators and qualification tests to be approved by DNV GL in each case or
— a procedure including regular clearance measurements established when the crane was new, grease sampling and fatigue evaluations are adopted in agreement with the crane and slewing bearing manufacturer or
— a safe remaining life assessment according to ISO 12482 has been established, in addition to visual and NDE inspection. This assessment shall be verified and accepted by the society, see also DNV GL guidance note for safe crane condition monitoring on request.

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20% of the holding down bolts taken in the most loaded sector of the crane shall be removed, examined and subject to NDE. If any significant defects are found during this examination another 20% are drawn. If any of this second set is found to be defective then all bolts shall be drawn.

Guidance note:
If the first 20% are found to be acceptable and the examination is stopped, a maintenance schedule should be established for examining the remaining 80% during the 5 years period. An alternative to dismantling is to perform a fastener elongation measurement using ultrasonic (UT).

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Flatness and condition of slew-bearing mounting flanges shall be checked as far as possible.

9.3.8 Brakes
The brake shall be dismantled and examined.

9.3.9 Couplings
Couplings shall be dismantled and examined.

10 Offshore gangways

10.1 General
The requirements in this sub-section apply to ships with class notation Walk2work.

10.2 Surveys
Annual and complete surveys at an interval of 5 years shall be i.a.w. DNVGL-RU-SHIP Pt.7 Ch.1 Sec.6 [39].

10.3 Repairs and modifications
Repairs and modification of the gangway shall follow DNVGL-RU-SHIP Pt.7 Ch.1 Sec.6 [39.5].
11 Diving systems

12 Additional fire protection arrangements

12.1 General
The requirements in this sub-section apply to ships with class notation F.

12.2 Complete survey
Complete surveys at an interval of 2.5 years shall be i.a.w. DNVGL-RU-SHIP Pt.7 Ch.1 Sec.6 [11].

13 Loading computers for damage control

13.1 Application
The requirement in this sub-section applies to units with class notation LCS(DC).

13.2 Annual survey and complete surveys
It shall be checked that the approved in-service test programme for all sensors has been followed.

14 Periodically unattended machinery space and machinery centrally operated

14.1 Application
The requirements in this sub-section apply to units with class notations E0 and ECO.

14.2 Annual and complete surveys
Annual and complete surveys shall be i.a.w. DNVGL-RU-SHIP Pt.7 Ch.1 Sec.6 [25].

15 Well intervention system

15.1 Application

15.1.1 The requirements in [14.2] and [14.3] apply to units with class notation WELL 1 and WELL 2.

15.1.2 Additional requirements for the qualifier (N) are given in DNVGL-SI-0166 Ch.3.

15.1.3 Scope
The systems covered in the survey are in accordance with Ch.2 Sec.7 [15] and include but not limited to the following:
— well intervention structures
— heave compensation and tensioning systems
— hoisting systems
— handling system for well control equipment and pipe handling systems
— hydrocarbon handling system
— bulk storage, well intervention fluid mixing and circulation systems
— other systems (e.g. winches, man riding equipment, skids, carriers)
— wire line systems
— coiled tubing systems
— well testing systems.

15.1.4 Third party equipment is used to support the well intervention operation shall be surveyed with regard to its inherent safety and the interface between the rig and the equipment.

Guidance note:
The following equipment may fall into this category:
— mud logging
— casing running equipment
— measurement/logging equipment
— ROV.

Further guidance can be found in DNV-OTG-05 Temporary Equipment on offshore installations.

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

15.1.5 Well test equipment
Temporary well test equipment and systems shall be design approved and surveyed after installation onboard in line with [5.4], and before any well test operations are commenced.

15.1.6 Well test equipment permanently installed on the unit the individual items shall be surveyed using the descriptions of [5.4] as annual survey scope.

15.2 Annual survey

15.2.1 Objective
The intent of the annual survey is to get a sufficient understanding of the condition of the equipment without intrusive interventions, given that the unit is in operation. It is assumed that normal operations are ongoing.

15.2.2 Scope
The extent of the annual survey shall be as follows:
— Spot check review of the unit’s records of the routine inspections/tests, the planned maintenance system and the repair/overhaul/modification records.
— Review documentation for equipment installed since last survey, including third party equipment.
General visual survey and testing as required. Non-destructive testing may be required, as considered necessary by the surveyor.
Where records are available showing that the items listed below have been recently tested by the crew, these will be considered by the surveyor.

Guidance note:
Further guidance can be found in DNVGL-OTG-07 Guidance on DNV’s DRILL notation.

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

15.2.3 General requirements
During annual survey it is acceptable to document that the latest pressure testing of the Well Control Equipment and the HP pipelines, choke and kill manifold have been carried out to maximum anticipated wellhead pressure, i.e. not to rated maximum working pressure.
15.2.4 Any changes to the systems (new equipment and overhauls, repairs and modifications) shall be surveyed and the relevant documentation reviewed.

15.2.5 The surveys should be based on the maker’s recommendations and recognised standards. Any deviations from these shall be justified by technical arguments.

15.2.6 **Well intervention structures**
A general visual survey shall be carried out with emphasis on the structural condition of footings, bracings and with respect to deformation and loose bolts (if of bolted design). Visual spot check of skids and brackets for lifting purposes.

15.2.7 **Well control equipment**
Well control equipment shall be surveyed visually as far as practicable. Test records for periodical function and pressure testing of the blowout prevention system shall be reviewed. Records of the precharge of the accumulators shall be reviewed. Spot check review of calibration certificates for safety valves shall be carried out.

15.2.8 **Diverter unit, equipment and control equipment**
The diverter system shall be visually surveyed and inspected for corrosion, cracks and wear. Function test records and maintenance records to be reviewed.

15.2.9 **Choke & kill equipment and control equipment**
High pressure choke, kill and booster piping systems including flexible hoses shall be externally surveyed for corrosion and damage.

**Guidance note:**
High pressure piping is defined in Chapter IX of ANSI/ASME B31.3 to be piping with a piping class larger than ASME B16.5 CL2500 (PN420) classes. The API piping classes are all high pressure piping. Typical high pressure piping is choke and kill lines.

Test records for periodical function and pressure testing shall be reviewed.

15.2.10 **Marine riser, equipment and control equipment**
Marine riser joints, telescopic joint, ball joint, spider and support ring (as far as accessible) shall be visually surveyed and inspected for leakages, corrosion, cracks and wear.

15.2.11 **Heave compensation**
All heave compensation systems, including accumulators, mountings, piping and possible insulation shall be visually surveyed during normal operation as far as possible. Spot check review of calibration certificates for safety valves.

15.2.12 **Tensioning systems**
All tensioning systems, including accumulators, wire ropes, sheaves, cylinders, mountings, piping and possible insulation shall be visually surveyed during normal operation as far as possible. Spot check review of calibration certificates for safety valves.

15.2.13 **Hoisting system**
Main hoisting systems shall be surveyed visually during normal operations. Spot checks of safety devices and emergency stop functions shall be carried out. Wire ropes (including end attachments) and sheaves shall be surveyed.
15.2.14 Hydrocarbon handling system
Piping systems, including pressure vessels, manifolds and flexible hoses shall be externally surveyed for corrosion and damage. Test records for periodical function and pressure testing shall be reviewed.

15.2.15 Lifting equipment
Lifting equipment for running in equipment and associated operations shall be surveyed, with particular emphasis on structural integrity. Examination and functional testing shall be carried out as found necessary by the surveyor, for example safety devices and emergency stop function. The marking (SWL) shall be verified as acceptable.

15.2.16 Well control equipment handling system
Well control equipment handling system shall be surveyed visually as far as practicable. Spot checks of safety devices and emergency stop functions shall be carried out.

15.2.17 Pipe, riser handling
Pipe, riser handling systems shall be surveyed visually as far as practicable. Spot checks of safety devices and emergency stop functions shall be carried out.

15.2.18 Bulk storage, well intervention fluid mixing and circulation systems
High pressure piping systems for well circulation systems including flexible hoses shall be externally surveyed for corrosion and damage. Spot check review of calibration certificates for safety valves shall be carried out.

Guidance note:
High pressure piping is defined in Chapter IX of ANSI/ASME B31.3 to be piping with a piping class larger than ASME B16.5 CL2500 (PN420) classes. The API piping classes are all high pressure piping. Typical high pressure piping is choke and kill lines.

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

High and low pressure mud pumps and mud return system shall be visually surveyed during normal operation. Spot checks of calibration of tank level indicators, flow meters and alarms shall be carried out.

15.2.19 Well intervention system
Well intervention systems shall be surveyed visually during normal operations. Spot checks of safety devices and emergency stop functions shall be carried out.

15.2.20 Manriding equipment
Personnel hoisting equipment; baskets, stabbing boards and winches including wires and sheaves, shall be visually surveyed. Spot checks of safety devices and emergency stop functions shall be carried out. SWL marking shall be confirmed to be legible.

15.2.21 Control systems
Review of documentation of alarm testing of the control systems shall be carried out. In addition, random testing of alarms that can be tested without interfering with operations to be carried out to the surveyors satisfaction.

15.2.22 Pressure vessel
Pressure vessels shall be externally surveyed. The general condition of the pressure vessel including mountings, piping and possible insulation shall be ascertained. The surveyor may require opening or internal survey or thickness measurements and/or crack detection test, if found necessary. Safety valves, instrumentation and automation systems shall be surveyed and tested in operating condition as required by the surveyor. Liquid level controls on tanks or separators shall also be tested.
15.3 Complete survey

15.3.1 Objective
The intent of the complete survey shall confirm that the equipment and systems are fit for operation for another 5 years.

15.3.2 Scope
More intrusive inspections and more rigorous testing will be carried out. Normally items will be tested to their original design limits.

Original certificates for category I equipment and records of the routine inspections/tests and the maintenance/repair/overhaul records shall be presented for review. Review calibration certificates for safety valves. Emergency stops to be tested.

Guidance note:
Further guidance can be found in DNVGL-OTG-07 Guidance on DNV’s DRILL notation.

15.3.3 Well intervention structures.
Derrick/guiding tower installations shall be examined. Reports for derrick bolt torque/pre-tension checks shall be presented. Thickness measurements may be required. 25% NDT of derrick/guiding tower footings shall be carried out. The torque of the foundation bolts is to be confirmed. If the derrick has welded foundation, NDT shall be carried out.

Guidance note:
NDT and foundation bolt check may be waived depending on design.

Skids and brackets for lifting purposes in the derrick, moonpool etc. shall be visually surveyed/confirmed to be in order. NDT and/or thickness measurements may be required according to surveyor's satisfaction.

15.3.4 Well control equipment
Overhaul of the well control equipment assemblies shall be carried out at intervals of 5 years, in accordance with an overhaul plan based on the condition of the equipment. The overhaul plan is to be presented for review prior to the work being carried out. Records of overhaul shall be kept onboard and shall be reviewed. The well control equipment shall be subject to complete strip down, internal visual inspection and dimensional check, reassembly and performance test, including pressure testing of each rams, annular, choke and kill valves, control system and piping systems (low pressure and maximum rated working pressure, as applicable).

25% of the clamps shall be opened and inspected dimensionally and by NDT.

Test stump shall be NDT checked.

Guidance note:
Typically the well control equipment will be stripped down, internally inspected, dimensionally checked to the OEM's specification. See also DNV-OTG-07, DNV-RP-E101 and DNVGL-RP-E102 for further guidance especially where the items are overhauled at an onshore facility, and/or where weld repairs are needed.

15.3.5 Well control system
Pressure vessels shall be surveyed internally. If internal survey is not practical, base the examination on thickness measurements as described in [4.3.7]. Pressure vessel related equipment, such as valves, pipes, etc., shall be examined. Pressure testing to the maximum allowable working pressure shall be performed.
15.3.6 All emergency disconnect system (EDS) sequences to be function tested. Test may be done at surface or subsea.

15.3.7 Thickness measurements shall be carried out and compared with the minimum strength thickness. Piping systems including flexible hoses shall be pressure tested to the maximum working pressure.

15.3.8 Capacity test of the pump unit with accumulators shall be carried out. The time to recharge the unit from precharge pressure to normal operating pressure shall be measured using both power systems one at a time (cf. API 16D).

15.3.9 All control panels shall be function tested. Capacity test of control system UPS to be carried out. Sample alarms are to be tested, including:
   — low accumulator pressure
   — loss of power supply
   — low levels in the control fluid storage tanks
   — loss of communication (multiplex control systems)
   — UPS alarms:
     — loss of input power and internal failure
     — loss of battery back-up.

15.3.10 Where remote operated intervention capability (ROV) exists it shall be tested.

15.3.11 Diverter unit and control equipment
Liquid penetrant or MPI methods shall be used to investigate critical areas such as for instance connector/main pipe welds for cracks. Thickness measurements of piping and housing to be carried out as found necessary. Full function testing from all diverter panels to be carried out. Test of interlocks to be carried out from all control panels. Verify the response time is within acceptable limits, e.g. API Spec 16 D/DNVGL-OS-E101.

15.3.12 Choke & kill equipment
Thicknes measurements of choke and kill equipment shall be carried out and compared with the minimum strength thickness. NDT to be carried out on critical areas if found necessary. Choke and kill lines, hydraulic lines and booster line, shall be pressure tested to the maximum allowable working pressure.

15.3.13 Choke and kill manifold and piping shall be subject to complete performance test to maximum allowable working pressure of each applicable valve configuration. Pressure test at low pressure and maximum rated working pressure on upstream high-pressure manifold valves. Function testing of remote operated valves and chokes to be carried out. Opening of valves (approx. 10%) for internal inspection by the surveyor shall be carried out. All choke valves (manual or remote) to be opened for internal inspection.

15.3.14 Marine riser, equipment and control equipment
Liquid penetrant or MPI methods shall be used to investigate critical areas such as for instance connector/main pipe welds for cracks. Choke and kill lines, hydraulic lines and booster line shall be pressure tested to the maximum allowable working pressure. Thickness measurements shall be carried out and compared with the minimum strength thickness. The riser shall be surveyed with the buoyancy elements removed.

15.3.15 For units where the riser joints are sent ashore routinely for overhaul the records of the overhauls ashore shall be presented.
15.3.16 Slip joint rubber goods and packers shall be replaced following the manufacturer's recommendation. Records to be reviewed shall show that this has been done at the proper intervals. Thickness measurements of the barrel shall be taken and compared with the min. strength thickness. Function test of packers and locking dogs to be carried out. Pressure test of control lines to maximum allowable working pressure.

15.3.17 For a riser joint with fill valve the inspection is as for a standard joint plus NDT of the cut-out for the fill valve. Records of testing of the valve to be reviewed.

15.3.18 On the riser support ring, NDT of high stressed areas shall be carried out and the last overhaul report shall be reviewed.

15.3.19 For the goosenecks on the riser thickness measurements shall be taken and compared with the min. strength thickness.

15.3.20 Ball joint and flex joint shall be stripped down, examined visually, NDT of the critical areas and dimension checks to be carried out and compared with OEM dimensions.

15.3.21 Heave Compensation
Thickness measurements shall be taken and compared with the min. strength thickness. Pressure vessels shall be surveyed internally e.g. by borescope. Pressure vessel related equipment, such as valves, pipes, etc., shall be examined. Pressure testing to the maximum allowable working pressure shall be performed. Calibration certificates for all safety valves shall be presented.

15.3.22 Piping systems including flexible hoses shall be thickness measured and compared with the min. strength thickness. Flexible hoses shall be visually surveyed, both internally and externally.

15.3.23 On compensators with chains the chain extension shall be checked where fitted wires shall be examined.

15.3.24 For active heave compensation systems the overload protection system shall be surveyed.

15.3.25 NDT of the fixation of the foundation shall be carried out.

15.3.26 Where fitted, anti-recoil valves (e.g. Olmsted/slingshot valves) are to be overhauled and tested.

15.3.27 Sheaves shall be visually surveyed and checked by NDT.

15.3.28 For active heave compensation systems, perform a motion compensation function test, see OEM recommendations.

15.3.29 Check the records of refilling of the hydraulic system to confirm the condition of the system regarding the internal leakage rate.

15.3.30 Tensioning Systems
The tensioner oil analysis results shall be reviewed (for lack of explosive capability), the records of sheave wear measurement are to be reviewed, and the ton mile records for the rope shall be reviewed. The termination of any tensioner ropes shall be surveyed. The foundations of the tensioners shall be surveyed and NDT shall be carried out.
15.3.31 Thickness measurements shall be taken and compared with the min. strength thickness. Pressure vessels shall be surveyed internally e.g. by boroscope. Pressure vessel related equipment, such as valves, pipes, etc., shall be examined. Pressure testing to the maximum allowable working pressure shall be performed.

Compressors shall be run, tested and the record of overhaul of the relief valves shall be checked. Where fitted, anti-recoil valves (e.g. Olmsted/slingshot valves) shall be overhauled and tested. Tensioning system to be function tested. Pistons shall be fully extended to allow examination of the surface condition of the piston rod.

15.3.32 For cylinder type/direct acting tensioners the foundations shall be NDT checked. Turn down sheaves shall be examined and NDT checked.

15.3.33 The control system shall be tested to prove that riser break and/or riser tensioning cylinder break indicators are in order.

15.3.34 Where a top tension system is fitted (e.g. on a self-elevating unit or a floater with a surface BOP) the system shall be surveyed. The hang off support points on the units structure are to be NDT inspected. The hydraulic system shall be surveyed and the control panel checked.

15.3.35 Hoisting system

NDT of main hoisting system, lifting appliances and deadlock anchor shall be carried out. Thickness measurements may be required. API RP 8B may be used as reference. If hoisting system is of a bolted design, all bolts shall be torque checked over a 5 year period.

Lifting appliances shall be load tested, as specified in DNVGL-OS-E101. Limit switches and safety functions to be tested. NDT to be carried out as deemed necessary. Runway beams to be examined. On the guide track check for wear, bent members, carry out NDT of structural supports and check for wear of rollers on the dolly. Review alignment reports.

15.3.36 For main structural parts of main hoisting system and lifting appliances where NDT is normally carried out, this NDT may be omitted if it can be documented that the following conditions are fulfilled:

— Accumulated fatigue damage is less than the calculated fatigue life of the component at the end of the 5 year period, based on logging of actual load cycles.
— Fatigue calculations and logging of load cycles are evaluated by DNV GL.
— The fatigue calculations shall comply with DNVGL-OS-C101 Ch.2 Sec.5. The calculations should include the design fatigue factors (DFF).
— There is no history of cracks in the particular area.
— The remaining fatigue life is sufficient for the period until next complete survey.

If NDT has been omitted at one complete survey then it normally shall be done at the next complete survey.

Guidance note:

If NDT is to be omitted the logging equipment and the fatigue calculations should be made available for review at the fourth annual survey or earlier.

15.3.37 Function test hydraulic cylinder based hoisting system. Pressure test pipework and cylinders to maximum allowable working pressure. Thickness measurements shall be taken and compared with the minimum strength thickness. Main control valve blocks shall be overhauled, unless equivalent solution can be documented and accepted.
15.3.38 The crown saver and floor saver functions shall be tested.

15.3.39 NDT of high stressed areas on the riser spider to be carried out. Review overhaul report.

15.3.40 NDT of the main structural parts of main hoisting system shall be carried out.
Thickness measurements may be required. API RP 8B shall be used as reference. Any deviations from API RP 8B are to be agreed with the OEM and DNV GL.

15.3.41 Pipe & riser handling
Load testing, function test of limits/safety functions and NDT shall be carried out as required. Runway beams to be surveyed.

15.3.42 Anti-collision functions of the pipe handling system with the top drive to be confirmed.

15.3.43 The gripper function/head shall be specially surveyed.

15.3.44 Spot checks of safety devices and emergency stop functions shall be carried out. Emergency manoeuvring system to be tested. Loss of main power battery back-up pipe handling magnets to be tested.

15.3.45 Well control equipment handling
NDT for main structural parts of main hoisting system and lifting appliances shall be carried out. Thickness measurements may be required. API 7L may be used as guidance.

15.3.46 Lifting appliances shall be load tested, as specified in DNVGL-OS-E101.

15.3.47 Movable lifting appliances for well control equipment handling shall be load tested, including travelling the full length of supporting rails (or similar). The hooks are to be NDT checked. The condition of the hoisting and transport system shall be confirmed. NDT may be required on the support structure for the well control equipment hoist/transport system.
However, where the well control equipment is supported at its base, i.e skidded handling device without lifting capabilities, these need not be overload tested.

15.3.48 Emergency manoeuvring system to be tested.

15.3.49 Safety features
Safety features (i.e. emergency stop, brakes, slack wire detection, limit switches, etc. as applicable) on winches to be tested. Personnel protection shielding on winches to be surveyed.

15.3.50 Hydrocarbon handling systems
NDT to be carried out on critical areas if found necessary. High pressure lines including manifolds shall be pressure tested to the maximum allowable working pressure.

15.3.51 Function testing of remote operated valves and chokes to be carried out. Opening of valves (approx 10%) for internal inspection by the surveyor shall be carried out. All choke valves (manual or remote) to be opened for internal inspection.
15.3.52 Pressure vessels shall be surveyed internally. Pressure vessel related equipment, such as valves, pipes, etc., shall be examined. Pressure testing to the maximum allowable working pressure shall be performed. Calibration certificates for all safety valves shall be presented.

15.3.53 Foundations to be visually surveyed and NDT checked as required.

15.3.54 Bulk storage
Pressure vessels shall be surveyed internally. Pressure vessel related equipment, such as valves, pipes, etc., shall be examined. Pressure testing to the maximum allowable working pressure shall be performed. Calibration certificates for all safety valves shall be presented.

15.3.55 Foundations to be visually surveyed and NDT checked as required.

15.3.56 A function test of the bulk control system shall be carried out.

15.3.57 Piping systems for bulk transport including flexible hoses shall be pressure tested to the maximum working pressure. Thickness measurements shall be taken and compared with the min. strength thickness. Flexible hoses shall be visually surveyed internally. The routing of the relief line from the safety valve shall be surveyed. The system for ensuring the relief line is unobstructed shall be checked.

15.3.58 Bulk storage, well intervention fluid mixing and circulation systems
Thickness measurements of the piping systems shall be taken and compared with the min. strength thickness. Flexible hoses shall be visually surveyed internally. Piping systems including flexible hoses and manifolds shall be pressure tested to the maximum allowable working pressure.

15.3.59 The mud pump system maintenance records shall be reviewed with particular attention to the power transmission system from the electrical motor to the pump. The bearing clearances on the crankshaft shall be reviewed. The records of mud pump discharge safety valve testing shall be reviewed. Documentation of replacement mud pump modules shall be reviewed. Where pulsation dampers are welded, NDT shall be carried out of any welding (e.g. circumferential weld on the damper body). Records of pre-charge pressure shall be reviewed.

15.3.60 10% of the standpipe manifold valves shall be opened for inspection, thickness check and NDT of welds. If the standpipe is heat traced then check for corrosion under the tracing.

15.3.61 Records for replacement of the rotary/mud hoses to be reviewed. Thickness measurements of the gooseneck on the standpipe shall be taken and compared with the min. strength thickness.

15.3.62 Degasser shall be surveyed internally visually. Thickness measurements to be taken as deemed necessary.

15.3.63 Dump valves in the mud return system shall be confirmed operable, thickness checks of mud pits shall be carried out. On the trip and active tank the level alarms shall be confirmed to be in order.

15.3.64 Well intervention system
NDT to be carried out on critical areas if found necessary. Visual inspection by opening up fully or partly as found necessary by the surveyor. Function testing and or pressure testing to be carried out when relevant.
15.3.65 Manriding and miscellaneous lifting equipment

Personnel hoisting equipment and utility winches for lifting purposes shall be load and function tested as specified in DNVGL-OS-E101 Ch.2 Sec.6. Safety devices described in DNVGL-OS-E101 Ch.2 Sec.5 [10] to be tested. Foundation of equipment to be NDT inspected. Adjustment of the regulator for the tension/lifting capacity to be checked. Emergency recovery to safe position within 10 minutes to be confirmed.

16 Hull monitoring system

16.1 Application

The requirements in this sub-section apply to units with class notation HMON.

16.2 Objective

The purpose of the survey is to ensure the maintenance of the hull monitoring system as specified for the class notation.

16.3 Annual survey

See DNVGL-RU-SHIP Pt.7 Ch.1 Sec.6 [14].

17 Noise, vibration and comfort rating

17.1 Application

The requirements in [16.2] and [16.3] apply to units with the class notations VIBR respectively COMF-MOU.

17.2 Vibration

17.2.1 Before the notation can be issued, vibration measurements at the different positions and components, as described in the protocol, shall be carried out. The protocol is a table of positions to be measured worked out prior to the measurements based on a risk evaluation and experience. If minor excessive vibration levels are found for non-critical components or positions, dispensation may be given, which may also include a requirement for new measurements, after a limited period. This will be decided by the Society.

17.2.2 At each Renewal survey complete measurements at the different positions, as described in the protocol, shall be carried out by or under the supervision of a surveyor of the Society.

17.3 Comfort rating

17.3.1 Alterations and modifications

If approved arrangements, equipment or procedures are altered, up dated documentation shall be resubmitted for approval.

17.3.2 Measurements shall be made after any significant modifications on board the installation in the following situations:
   — when changes have been made for the process itself
   — when some of the equipment with impact of the working environment on board is modified.
17.3.3 Renewal survey
The renewal survey shall be based on measurement surveys according to predefined programs.

17.3.4 Logbooks of the inspections and measurements as described in DNVGL-OS-A301 Ch.3 Sec.2 [4] shall be examined.

18 Winterization

18.1 Application
These requirements apply to units with the following class notation Winterized.

18.2 Annual survey

18.2.1 The anti-icing, de-icing and anti-freezing measures applied onboard shall be subject to a general survey to confirm continued satisfactory performance, including the review of the onboard records covering any periods of severe cold climate weather conditions since the last annual survey. The survey shall also assess the effectiveness of the mechanical protection provided against mechanical/water damage for equipment subjected to frequent de-icing activities.

18.2.2 The thermal insulation arrangements relevant to cold climate operations shall be surveyed, with particular attention to the thermal insulation for piping and pressure vessel insulation in areas exposed to weather or deluge. The vessel's corrosion under insulation management program shall be reviewed and reassessed based on the survey findings.

18.2.3 The stability records onboard shall be reviewed to confirm that vessel is adequately monitoring/accounting for potential and actual ice loadings on an ongoing basis.

18.2.4 The fire fighting equipment exposed to cold climate conditions shall be surveyed, with particular attention that the extinguishing agents are appropriate for cold climate conditions.

18.2.5 The electrical heat tracing systems shall be generally surveyed, with particular attention to the insulation resistance values.

18.2.6 The anti-skid coating on exposed deck surfaces shall be surveyed.

18.2.7 The drainage arrangements for meltwater/washdown water on exposed decks shall be surveyed, with particular attention to the anti-freezing arrangements for the drains.

18.2.8 The drying arrangements for the compressed air systems shall be surveyed.

18.2.9 The Personal Lifesaving Appliances shall be subject to general surveyed to confirm that their storage arrangements are suitable for cold-climate conditions.

18.2.10 The information onboard related to snow/ice dropped object incidents/near misses since the last annual survey shall be presented to the attending surveyor for assessment.
18.2.11 The information onboard related to the continuing effectiveness of the lighting (floodlights, emergency lights, navigation lights, helideck lights, helicopter obstacle lighting, ice searchlight) shall be presented to the attending surveyor for assessment.

18.2.12 For units with the qualifier Polar, the ice searchlight shall be function tested.

18.2.13 For units with the qualifier Polar, the annual survey requirements for class notation Clean shall be carried out, as applicable.

18.3 Complete survey
Electrical heat tracing systems shall be examined with particular attention for damage/deterioration to the heat tracing cabling, recent megger-test results shall be presented to attending surveyor.
Heat tracing systems using fluids as the heating medium shall be subject to pressure test to maximum working pressure.

19 Environmental notations

19.1 Ballast water management systems

19.1.1 Application
The requirements in [18.1] apply for vessels with the notation BWM and/or Clean.

19.1.2 Annual, intermediate and complete surveys
Annual, intermediate and complete surveys shall be carried out i.a.w. DNVGL-RU-SHIP Pt.7 Ch.18 Sec.6 [22].

19.2 Clean or Clean Design

19.2.1 Application
The requirements in [18.2] apply to units with class notation Clean.

19.2.2 Annual survey
Annual surveys shall be carried out i.a.w. DNVGL-RU-SHIP Pt.7 Ch.1 Sec.6 [16].

19.3 Recycling

19.3.1 Application
These requirements in this sub-section apply for units with the class notation RECYCLING.

19.3.2 Annual survey
Complete surveys shall be carried out in line with DNVGL-RU-SHIP Pt.7 Ch.1 Sec.6 [35].

19.3.3 At replacement, or significant repair of the structure, equipment, systems, fittings, arrangements and material, the owner may request an occasional survey as described in DNVGL-RU-SHIP Pt.7 Ch.1 Sec.6 [35].

19.4 Vapour control systems (VCS)

19.4.1 Application
These requirements apply for units with the class notation VCS.
19.4.2 Renewal surveys
Renewal surveys shall be carried out i.a.w. DNVGL-RU-SHIP Pt.7 Ch.1 Sec.6 [15].

20 Integrated software dependent systems

20.1 General

20.1.1 Application
The requirements in this sub-section apply to units with the class notation ISDS.

20.1.2 Objective
The purpose of the survey is to ensure the confidence that has been built into the unit is actually maintained.

20.1.3 Modifications
The owner shall inform DNV GL whenever a system with the ISDS notation is modified. For major upgrades or conversions of the unit in operation the full set of requirements in DNVGL-OS-D203 may apply.

20.2 Annual survey

20.2.1 The effective implementation and continuous maintenance of the activities required by DNVGL-OS-D203 phase E, operation, shall be assessed.

20.2.2 Any changes, introduced after the latest assessment, to the systems within ISDS scope shall be addressed. An impact analysis of changes shall be reviewed and confirmed. Any follow up activities shall be agreed.

20.2.3 Updated records shall be kept and made available for review by the attending surveyor i.a.w. DNVGL-OS-D203 Ch.3 Sec.1 [3.2].

20.3 Complete survey
The complete assessment will have a specific focus on identified process areas or activities. These areas or activities shall be selected based on a discussion with owner of specific focus areas and should also be based on important or frequent findings from the annual assessments carried out since the last complete survey.

21 Special feature notations

21.1 Non self-propelled units

21.1.1 The requirements in [21.1] apply to units with special feature notation Non-self-propelled.

21.1.2 Extent of surveys of the following items will be restricted to the main safety facets:
— tailshafts
— thrusters
— motors and other equipment for propulsion
— steering gear.

21.1.3 For these items the scope of classification is to ensure that the equipment does not pose a threat to the unit by its presence onboard when in use. This means the watertightness should be considered and the
safety of the equipment for people working in the vicinity is taken care of. The operation of the equipment is of secondary importance.

21.2 Tailshaft monitoring

21.2.1 Application
The requirements in [21.2] apply to units with class notation TMON.

21.2.2 General
A tailshaft condition monitoring arrangement will be granted for oil lubricated tailshafts that are monitored to ascertain the condition of the tailshaft system during operation, and that fulfils the design requirements in DNVGL-RU-SHIP Pt.6 Ch.9 Sec.5 provided a successful initial survey is carried out.

In such cases DNV GL will not require any specific time interval between propeller shaft withdrawal surveys. Units with more than 3 years since the last propeller shaft withdrawal are normally to carry out a propeller shaft survey in connection with the TMON initial survey as described in DNVGL-RU-SHIP Pt.7 Ch.1 Sec.6 [17.2].

Guidance note:
The requirement for a propeller shaft withdrawal at TMON initial survey may be waived on a case by case basis, provided that documentation showing satisfactory condition of the stern tube arrangement is presented to the Society.

Such documentation, normally covering the last 3 years, should include:
— monthly measurements of stern tube bearing temperatures with corresponding sea water temperatures, oil consumption, water content in oil
— for vessels with alternative water in oil analysis performed by an accredited laboratory, results from 3 monthly analysis can be accepted
— lubricating oil analysis reports from accredited laboratory with conclusion, where available (see [21.3.3] d).

21.2.3 Annual survey
The survey shall include:

a) examination of the TMON record file:
— verification that the on board oil analysis for checking of water content in the stern tube lubricating oil has been performed monthly and recorded in the file by the chief engineer

Guidance note:
As an alternative to the monthly onboard checking of the water content in the oil, submitted lubricating oil samples to an accredited laboratory every 3 months is acceptable (ref. [21.3.3] d) below).

— verification that the stern tube bearing temperatures have been recorded every month with highest and lowest temperatures, with corresponding seawater temperatures
— verification that the consumption of stern tube lubricating oil has been recorded for every month by the chief engineer
— if there are performed any overhauls, complete oil changes or similar, this shall be recorded in the TMON record file on the overhaul page
— verify functionality of tailshaft grounding device, where applicable
— verification that wear down measurements have be taken at every dry-docking.

b) testing of stern tube aft bearing alarm

c) visual inspection of inner and outer shaft seal for leakage, as far as practicable
d) verification that documentation of laboratory analysis is kept on board:
   — at least two oil samples per year shall be submitted to an accredited laboratory for analysis testing of water content, iron, chromium, copper, tin, silicon, Na (sodium) and magnesium
   — the documentation shall contain a conclusion regarding the condition of the oil and its suitability for further use
   — the report from the latest oil analysis shall be less than three months old.
SECTION 7 SURVEY ARRANGEMENTS

1 Introduction
A survey arrangement applies to a specific area (discipline) or type of equipment on a unit. When implemented it will define all roles and responsibilities applicable for that specific area or equipment and how this shall be followed up on the unit during the operations phase. The standard survey arrangement will always be implemented by default, but alternative survey arrangements may also be accepted as an option. Survey arrangements are applicable to periodical surveys for main class and selected optional class notations.

Survey arrangements are defined and available for the following areas:
— machinery equipment, see [2]
— drilling equipment, see [3]
— structure, see [4].

2 Machinery survey arrangements

2.1 General

2.1.1 Introduction
The different machinery survey arrangements are based on the Society’s machinery list in accordance with Table 1 and as specified for the unit. The difference between them is the conditions for obtaining and maintaining the survey arrangement. If a survey arrangement is not specified, the periodical survey requirements as detailed in Sec.3 [5] shall be followed.

2.1.2 Machinery survey arrangements
The following survey arrangements are available for class related machinery items:
— machinery renewal, see Sec.3 [5] (Default)
— machinery continuous (MC) [2.2]
— machinery planned maintenance system (MPMS) [2.3]
— machinery planned maintenance system – reliability centred (MPMS RCM) [2.4]
— offshore condition monitoring (Offshore CM) [2.5].

2.1.3 Machinery and drilling items
Machinery and drilling systems and equipment listed in Table 1 shall be surveyed according to one of the listed survey arrangements if not part of a separate survey.

Table 1 Machinery and drilling plant surveys

<table>
<thead>
<tr>
<th>Item</th>
<th>Machinery renewal and machinery continuous</th>
<th>Machinery PMS</th>
<th>Offshore CM</th>
<th>Machinery PMS RCM</th>
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<td>Main propulsion and DYNPOS</td>
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<tr>
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<td>See Sec.3 [5.2.4]</td>
<td>See Sec.3 [5.2.4]</td>
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<td>Separate survey Sec.4 [3]/Sec.4 [4]</td>
<td>Separate survey Sec.4 [3]/Sec.4 [4]</td>
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<td>Offshore CM</td>
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<td>Machinery renewal and machinery continuous</td>
<td>Machinery PMS</td>
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Offshore drilling and support units
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<th>Machinery PMS RCM</th>
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<td>Hydraulic motors</td>
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<td><strong>Cargo handling</strong></td>
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<td>Machinery renewal and machinery continuous</td>
<td>Machinery PMS</td>
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<td>Instrumentation and automation for units without notation E0 or ECO</td>
<td></td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Drilling plant DRILL

<table>
<thead>
<tr>
<th>Drilling structures</th>
<th>Drilling plant and drilling equipment continuous</th>
<th>Drilling equipment PMS</th>
<th>Drilling equipment condition monitoring</th>
<th>Drilling equipment PMS RCM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>Machinery renewal and machinery continuous</td>
<td>Machinery PMS</td>
<td>Offshore CM</td>
<td>Machinery PMS RCM</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>--------------------------------------------</td>
<td>---------------</td>
<td>-------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Heave compensation and tensioning system</td>
<td>Separate survey Sec.6 [4]</td>
<td>518) 22)</td>
<td>Separate survey Sec.6 [4]</td>
<td>518) 22)</td>
</tr>
<tr>
<td>Hoisting and rotating system</td>
<td>Separate survey Sec.6 [4]</td>
<td>518) 22)</td>
<td>518) 20)</td>
<td>518) 22)</td>
</tr>
<tr>
<td>BOP, riser and pipe handling</td>
<td>Separate survey Sec.6 [4]</td>
<td>518) 22)</td>
<td>518) 20)</td>
<td>518) 22)</td>
</tr>
<tr>
<td>Bulk storage, drilling fluid circulation, mixing and cementing</td>
<td>Separate survey Sec.6 [4]</td>
<td>518) 22)</td>
<td>518) 20)</td>
<td>518) 22)</td>
</tr>
<tr>
<td>Well testing systems</td>
<td>Separate survey Sec.6 [4]</td>
<td>518) 22)</td>
<td>518) 20)</td>
<td>518) 22)</td>
</tr>
<tr>
<td>Other systems (winches, man riding and miscellaneous)</td>
<td>Separate survey Sec.6 [4]</td>
<td>518) 22)</td>
<td>518) 20)</td>
<td>518) 22)</td>
</tr>
</tbody>
</table>
### Notes:

1) The survey methods are defined as follows:
   - Survey method no. 1: Visual inspection by opening up fully or partly. Function testing and or pressure testing to be carried out when relevant and found necessary by the surveyor.
   - Survey method no. 2: Visual inspection without dismantling and performance test to be carried out. Opening up if found necessary. Last overhaul to be verified.
   - Survey method no. 3: Audit of maintenance history in the planned maintenance system and selected spot checks.
   - Survey method no. 4: Audit of condition monitoring results.
   - Survey method no. 5: Verification of maintenance records, assessment of maintenance handling, review of management, safety incidents and continuous improvement processes and fully or partly opening of equipment, if found necessary by surveyor.

2) As an alternative to survey method no. 1, a performance test and a condition analysis may be carried out.

3) Selected bearings shall be examined. Gears and roller bearings may as far as practicable be inspected without dismantling complicated assemblies.

4) Strainers to be opened. Selected pipes and main engine(s) system tanks to be surveyed for sludge.

5) Valves, cocks and strainers to be opened.

6) For steam pipes with temperature 450°C and above: Crack detection and/or thickness examination may be required. Selected pipes to be pressure tested to 1.5 times working pressure. Steam pipes of copper to be pressure tested to 2 times working pressure.

7) To be pressure tested to 1.2 times working pressure if internal survey not possible.

8) For piping systems outside machinery spaces, see [DNVGL-RU-SHIP Pt.7 Ch.1 Sec.4](#) [2.1.14].

9) Settling tank and daily service tanks for both heavy fuel oil and diesel oil as well as lubrication oil circulation tanks shall be internally surveyed for assessment of tank condition and presence of sludge. If inspection and cleaning of above mentioned tanks have been carried out by the crew during the last 12 months and relevant log extracts are provided and confirmed, this may be credited as surveyed at the surveyor’s discretion.

10) Valves where the function in the piping system is not evident shall be adequately and readably marked.

11) Filters to be opened and system oil tanks internally surveyed for presence of sludge, dirt and particles.

12) It is advised to take oil analysis at regular intervals and always prior to docking in order to ensure that there is no need for opening of the thruster (e.g. water in the oil).

13) Survey of gear and bearings through inspection openings or by other means (may be carried out concurrent with bottom survey).

14) Opening up and survey of bearings, gear and shafts and other relevant parts if any indications of abnormalities are observed. Satisfactory maintenance according to manufacturer’s recommendations to be documented and considered as a base for extent of possible opening. Any opening up of a thruster to be witnessed by a surveyor.

15) Hydraulic oil, lubrication oil, alarm and safety systems shall be surveyed as applicable for respective systems.

16) In addition to the annual survey for Offshore CM, a limited internal inspection shall be carried out on main steam turbines. (See [DNVGL-CP-0484 App.B](#) [5].)

17) Fresh water generator (only for steam turbine propulsion).

18) NDT and load testing on load bearing structures/components to be carried out.

19) Pressure test piping, valves, pressure units and other pressure rated equipment to the maximum allowable working pressure as relevant.

20) Test of safety functions to be carried out.

21) For pipe systems with compression couplings with rubber seals the condition of the seals shall be confirmed.

22) Test requirements as specified in Ch.3 Sec.6 [4] and [3.5].
2.2 Machinery continuous

2.2.1 General
Requirements for machinery continuous survey arrangement (MC) are given in DNVGL-RU-SHIP Pt.7 Ch.1 Sec.7 [3.1] and with the additional specifications applicable for MOU’s as listed in this chapter.

A follow-up system covering the Society’s machinery list in accordance with Table 1 shall be established on board the unit.

Half of all machinery component surveys, for components of which there are more than one, can be credited based on documented maintenance history presented by the responsible person/Chief Engineer, every second time they are credited.

The due dates should be distributed with 20% of the surveys each year and the separate surveys shall in all cases be carried out once in each 5 year period of the class certificate.

2.2.2 Responsible person
Manager for the unit shall dedicate a responsible person (Chief Engineer) on board the unit to ensure correct operations and the integrity of the arrangement. Responsible person shall ensure appropriate execution according to the survey arrangement and be responsible for the professional standard of the resources on board to provide sufficient maintenance supportability at all times. The responsible person shall be a qualified professional with documented qualifications and skills related to technical operations and maintenance on all class related machinery items.

Guidance note:
If the a person onboard hold a valid STCW certificate (See IMO Res. 741 (18) ISM Code, 1995 STCW Section A-III/1 as amended) this will be regarded as sufficient documented qualifications. As an alternative it is recommended to apply EN 15628 – Qualification of maintenance personnel or equivalent when establishing requirements and documenting qualifications for the position. This standard gives guidance on required knowledge, minimum skills and competencies applicable for maintenance personnel. Responsible person shall as a minimum typically comply with the requirements of maintenance supervisor and maintenance engineer defined by the standard. Alternatively a solution involving maintenance management onshore as part of the arrangement, can be considered on a case by case basis.

---end---of---guidance---note---

2.3 Machinery planned maintenance system

2.3.1 General
Requirements for machinery planned maintenance survey arrangement (MPMS) are given in DNVGL-RU-SHIP Pt.7 Ch.1 Sec.7 [3.2] and with the additional specifications applicable for MOU’s as listed in this chapter.

MPMS is a survey arrangement based on survey of an approved and implemented computerised maintenance management system (CMMS) onboard the unit. This system shall cover all component surveys in the machinery list in accordance with Table 1 for the unit.

Guidance note:
When developing the maintenance program it is recommended to apply standard maintenance terminology ref. EN 13306: Maintenance terminology, or equivalent.

---end---of---guidance---note---

2.3.2 Responsible person
Manager for the unit shall dedicate a responsible person (Chief Engineer) on board the unit to ensure correct operations and the integrity of the arrangement. Responsible person shall ensure appropriate execution according to the survey arrangement and be responsible for the professional standard of the resources on board to provide sufficient maintenance supportability at all times. The responsible person shall be a qualified professional with documented qualifications and skills related to technical operations and maintenance on all class related machinery items.
Guidance note:
If the a person onboard hold a valid STCW certificate (See IMO Res. 741 (18) ISM Code, 1995 STCW Section A-III/1 as amended) this will be regarded as sufficient documented qualifications. As an alternative it is recommended to apply EN 15628 – Qualification of maintenance personnel or equivalent when establishing requirements and documenting qualifications for the position. This standard gives guidance on required knowledge, minimum skills and competencies applicable for maintenance personnel. Responsible person shall as a minimum typically comply with the requirements of maintenance supervisor and maintenance engineer defined by the standard. Alternatively a solution involving maintenance management onshore as part of the arrangement, can be considered on a case by case basis.

2.3.3 Maintenance tasks and intervals
Maintenance tasks and intervals (maintenance recommendations) shall be applied as specified by the OEM. The maintenance recommendations should normally be confirmed appropriate (by the OEM) for the specific environment and operations of the applicable equipment.

2.3.4 Condition monitoring
If condition monitoring of equipment is carried out as part of the maintenance, this shall be approved as part of a separate survey arrangement. See [2.5] Offshore condition monitoring for further details.

2.3.5 Annual survey
To prolong the validity of the survey arrangement an annual survey of the implemented MPMS system onboard is required. The purpose of this survey is to review and evaluate the previous period's maintenance activities and experience. Opening of machinery for internal inspection or function testing may be required if found necessary by the surveyor.

2.4 Machinery planned maintenance system – reliability centred

2.4.1 General
Requirements for machinery planned maintenance system – reliability centred (MPMS RCM) is based on a proactive maintenance methodology and with a focus on the manager’s ability to provide required maintenance activities when required (maintenance supportability). It is recommended to be operating according to and comply with MPMS (ref. [2.3]) before entering MPMS RCM.

MPMS RCM survey arrangement is applicable to main class machinery items listed in Table 1. For units with DRILL notation it also applies to the drilling systems (DPMS RCM), see [3.4].

2.4.2 Approval process
The approval process includes the following activities:
— maintenance management approval
— maintenance analysis approval
— maintenance programme approval
— initial (implementation) survey onboard the unit.

2.4.3 Maintenance management approval
A maintenance management approval is performed to ensure that the manager of the unit can document satisfactory maintenance supportability in the organisation. The approval shall include a documentation review based of the following:

a) maintenance strategy supporting a MPMS RCM survey arrangement.
b) management to support continuous improvement and the ability to obtain required performance level
c) management with necessary resources required to sufficiently support a MPMS RCM survey arrangement
d) governing documentation (procedures) and working processes related to the MPMS RCM for the unit(s)
e) spare part management
f) quality management system supporting:
   — competence level on involved maintenance personnel
   — supervision and verification of work
   — continuous improvement process.

2.4.4 Maintenance resources
It shall be the responsibility of the manager for the unit to organise, manage, and develop maintenance resources (personnel, materials and equipment) on board to provide sufficient maintenance supportability at all times. The manager shall, based on applicable class related machinery items onboard the unit, ensure sufficient technical competence related to required maintenance level (maintenance task complexity), type and function of the equipment.

   Guidance note:
   Based on the applicable machinery equipment and systems as listed in Table 1 it is recommended to categorise the equipment complexity and associate it to a predefined maintenance level. The maintenance level should reflect the increasing complexity. E.g. maintenance levels as defined in EN 13306:
   — Level 1: Simple actions/Routine
   — Level 2: Basic actions/Preventive/Corrective
   — Level 3: Complex actions (Overhaul) with detailed procedures
   — Level 4: Actions (Overhaul) requiring detailed know how (specialized personnel)
   — Level 5: Actions (Overhaul) requiring knowledge held by the OEM.

   Maintenance personnel should be qualified according to the defined maintenance levels.

2.4.5 Responsible person
Manager for the unit shall dedicate a responsible person on board the unit to ensure correct operations and the integrity of the arrangement. Responsible person shall ensure appropriate execution according to the survey arrangement and be responsible for the professional standard of the resources on board to provide sufficient maintenance supportability at all times. The responsible person shall be a qualified professional with documented qualifications and skills related to technical operations and maintenance of applicable machinery systems and equipment.

   Guidance note:
   If the a person onboard hold a valid STCW certificate (See IMO Res. 741 (18) ISM Code, 1995 STCW Section A-III/1 as amended) this will be regarded as sufficient documented qualifications. As an alternative it is recommended to apply EN 15628 – Qualification of maintenance personnel or equivalent when establishing requirements and documenting qualifications for the position. This standard gives guidance on required knowledge, minimum skills and competencies applicable for maintenance personnel. Responsible person shall as a minimum comply with the requirements of maintenance supervisor and maintenance engineer defined by the standard. Alternatively a solution involving maintenance management onshore as part of the arrangement, can be considered.

2.4.6 Continuous improvement process
A continuous improvement process shall be implemented to verify that the developed maintenance tasks and intervals are performing according to the expectations in the maintenance task analysis. The process shall also ensure that the organisation continuously improve the effectiveness of the maintenance and their maintenance support.

A continuous improvement process shall as a minimum include input from the following elements:
   — analysis of collected maintenance data
   — evaluation of OEM bulletins
   — change proposals made by personnel
   — maintenance performance measurements (KPI’s)
2.4.7 Approval of the maintenance analysis
The maintenance analysis shall evaluate available maintenance data and based on a selected maintenance strategy, assign appropriate preventive maintenance tasks to relevant class items at optimal intervals. The maintenance analysis shall also identify and determine the specific information and required resources for each item that requires maintenance.

Maintenance tasks are identified by one or a combination of the following approaches:
— OEM maintenance recommendations
— operational experience
— RCM analysis.

2.4.8 A procedure shall be established before the maintenance analysis commences. This document shall describe the maintenance strategy and describe the maintenance analysis process for the specific unit(s). This document shall be submitted for approval.

Guidance note:
A typical procedure should include details and descriptions of the following (not limited to): background and motivation for the project, roles and responsibilities, work processes for the total project, collection of applicable documentation, collection and evaluation of maintenance data, qualification criteria's for technical expert personnel, applicable rules and regulations (project boundaries).

2.4.9 OEM maintenance recommendations
Maintenance recommendations (tasks and intervals) shall be applied as specified by the original equipment maker (OEM). OEM maintenance recommendations should normally be confirmed appropriate (by the OEM) for the specific environment and operations of the applicable equipment.

Guidance note:
A unit with maintenance tasks based only on OEM recommendations can apply for MPMS ref. Ch.3 Sec.7 [2.4].

2.4.10 Operational experience
An alternative to OEM maintenance recommendations can be applying operational experience to optimise the existing maintenance (OEM).
Operational experience can be maintenance data collected from past operation with the specific equipment or from same or similar equipment collected under same or similar operational conditions. Operational experience can also be collected from expert judgements.

2.4.11 When optimising maintenance tasks this should follow a structured processes based on a selected maintenance strategy. The main objective of the process is to ensure that all relevant functions and functional failures will be considered (analysed) when existing OEM maintenance recommendations are subject to any proposed change.

The process shall have functions to document and support any decision or change made. This includes a qualitative and quantitative evaluation of available maintenance data to support the change.
Guidance note:
Maintenance data includes failure, condition and performance data, OEM manuals, brochures, bulletins and alerts, international standards, regulatory requirements, historic maintenance tasks and procedures.

The process shall include:
— methodology for selecting equipment relevant for a maintenance optimisation process
— collection and evaluation of available maintenance data
— identification of relevant functions
— identification of functional failures (failure modes)
— evaluation of the functional failures to determine if the failure is relevant for the proposed change
— established decision logic to determine correct and efficient maintenance tasks at optimal intervals.

Guidance note:
Existing FMEA/FMECA may be used to document relevant functions and failures. Alternative to FMEA/FMECA will be to document significant functional failures by sufficient operational experience. Evaluation of functional failures should include risk rating and inclusion of redundancy.

2.4.12 Generic maintenance tasks and intervals (maintenance concepts) can be developed for a group of equipment with same or similar design and same functional failures. When a maintenance concept is used for specific equipment it needs to be confirmed appropriate for the actual installation, operational conditions and equipment function.

2.4.13 RCM analysis
For equipment where OEM recommendations are not specified or suitable for the applicable equipment a structured analysis such as reliability centred maintenance (RCM) should be carried out to determine appropriate maintenance tasks at optimal intervals.

Guidance note:
It is recommended that RCM analysis is performed according to a recognised standard like IEC 60300-3-11 Application guide – Reliability centred maintenance, SAE JA1011 Evaluation Criteria for Reliability Centred Maintenance Process or other equivalent standard.

2.4.14 RCM teams shall consist of experienced people related to the equipment that is analysed. If the equipment analysed is new, the analysis process shall be performed by the use of operational experience from same or similar equipment collected under same or similar operational conditions.
Team members should represent all relevant operational and maintenance disciplines.
It is recommended that an experienced RCM facilitator is used to coordinate the process.

2.4.15 If condition monitoring of equipment is carried out as part of the maintenance, this shall be approved as part of a separate survey arrangement. See [2.5] Offshore condition monitoring for further details.

2.4.16 Approval of maintenance programme
The maintenance program shall include at least the applicable class related machinery items listed in Table 1. All these components shall be identified as class items in the system and have a unique tag number in the system and on the item.
Maintenance tasks and intervals shall be in accordance with the results from the maintenance analysis. Changes shall only be accepted when the continuous improvement process can justify the change. Changes shall be traceable and presented to the attending surveyor at the next survey for acceptance.

Guidance note:
When applying acceptance criteria’s required to perform maintenance this should be obtained from OEM, or otherwise justified by technical evaluation and approved by the Society.

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2.4.17 Implementation in to the computerised maintenance management system (CMMS)
Systems and equipment shall be evaluated according to maintenance level, type and function. Maintenance personnel shall be qualified according to the applicable maintenance task (based on maintenance level, type and function).

All maintenance tasks shall have:

a) detailed task description to the level of detail necessary for a skilled maintenance person
b) maintenance task interval
c) task preparation note describing any preparation necessary
d) maintenance level indicating qualification (competence) level of personnel to perform the task
e) required materials (consumables, spare parts and special tools)
f) applicable documentation (maintenance procedures and service manuals and drawings)
g) information of checks and measurements to be recorded
h) job descriptions in English.

2.4.18 CMMS functionalities
CMMS is subject to approval by the Society, either a type approved system or non-type approved system (case by case approval). See DNVGL-RU-SHIP Pt.7 Ch.1 Sec.7 [3.2] for further details.

CMMS shall have functionalities that makes it able to:

a) record and separate between different type of maintenance
   — scheduled maintenance (preventive maintenance/deferred corrective maintenance)
   — un-scheduled maintenance (immediate corrective maintenance)
b) produce maintenance history reports on maintenance carried out for a specific time period on machinery class items
c) record maintenance data
   — condition before and after maintenance (state)
   — failure mechanism
   — checks and measurements
d) register revisions of maintenance task (traceability)
e) provide verification of class related maintenance tasks/jobs (quality of work and correct/sufficient level of reporting)
f) provide access control to assure that changes to the system cannot be made by unauthorised personnel and any input will be traceable to the individual user
g) back up data and make it possible to restore all data for minimum 5 years.

Guidance note:
To make it possible to collect, exchange and analyse maintenance data based on common viewpoints and enable industry co-operation it is recommended to use a standardisation of maintenance parameters and data ref. EN ISO 14224: Collection and exchange of reliability and maintenance data for equipment (same as API Std 689), or equivalent.

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2.4.19 Initial survey
An initial survey shall be performed to verify that the system has been implemented in accordance with the approved arrangement/documentation and that the system is used as intended. It is recommended that the system has been operated for at least 6 months before the initial survey is carried out. The initial survey is normally split in one offshore part and one on shore part. During the initial survey it shall be verified that:

a) there are sufficient resources available on board the unit and in the organisation to ensure the integrity of the arrangement. Personnel engaged in performing maintenance tasks on class related machinery items have the correct competence based on maintenance level, type and function of the equipment
b) responsible person and other relevant maintenance personnel on board, have sufficient knowledge about the approved maintenance management applicable on board and have access to procedures and documentation to ensure correct operations according to the arrangement
c) responsible person is familiar with the CMMS and is able to demonstrate the different functionalities in the system to the attending surveyor
d) the general condition and maintenance of the equipment and the general maintenance onboard is good
e) the arrangement includes an active continuous improvement process.

Provided the initial survey is carried out with a satisfactory result, the survey arrangement MPMS RCM will be granted and a certificate will be issued stating the system name and conditions for the survey arrangement for the specific unit.

2.4.20 Annual survey
To maintain the validity of the survey arrangement MPMS RCM, an annual survey of the implemented maintenance programme is required, preferably during normal operation. This survey replaces the survey of machinery for components included in the MPMS RCM arrangement. The purpose of this survey is to review and evaluate the previous period's maintenance activities and to ensure that the system is operated correctly according to approved systematics and documentation.

During the annual survey the following will be verified and surveyed by the Society:

a) general assessment of equipment and systems and the general maintenance onboard (rated by the attending surveyor)
b) all maintenance on class related items part of the arrangement is carried out according to the maintenance program
c) any changes to the system (maintenance intervals and task descriptions) shall be documented and presented to the attending surveyor for acceptance. Changes shall only be accepted when the continuous improvement process can justify the change
d) responsible person onboard the unit is familiar with the CMMS and is able to demonstrate the different functionalities in the system to the attending surveyor
e) overdue/postponed (deferred) jobs shall be explained
f) amount of un-scheduled maintenance (immediate corrective maintenance)
g) visual inspection and function testing if found necessary by the attending surveyor as specified in Sec.3 [2.4]. Opening of machinery may be required in special cases
h) all damage/break-downs (if any) on class related items have been reported to the society.

Guidance note:
Damage to machinery systems or equipment covered by classification shall always be reported to the Society and into the planned maintenance system as a corrective action.

2.4.21 Renewal survey
To prolong the validity of the survey arrangement a renewal survey of the implemented MPMS RCM survey arrangement is required. The purpose of the survey is to ensure that the conditions for approval of the
system are still adhered to and that the results of the maintenance work achieve acceptable results. The following will normally be reviewed and verified during the renewal survey:

a) maintenance management (onshore or offshore as applicable)
   — procedures and documentation
   — personnel training
   — responsible person and other relevant maintenance personnel have sufficient knowledge about the approved maintenance management on board (interviews)
   — continuous improvement processes

b) safety incidents related to maintenance

c) visual inspection and function testing as specified in Sec.3 [2.4]

d) verification of critical piping and structures.

2.4.22 The maintenance management of the unit shall be audited during the renewal survey to verify that the basis of the survey arrangement is still intact. This will include review of procedures, verification of personnel training and interviews.

   Guidance note:
   During the implementation of MPMS RCM a review has been made of several parts of the manager’s organisation. During the renewal survey the same topics will normally be covered as spot checks. However major changes of the organisation could give rise to an increase in the survey scope.

2.4.23 Review of safety incidents related to maintenance shall be conducted on a spot check basis. It shall be ensured that identified incidents result in traceable improvement actions and that the maintenance work itself is conducted in a safe manner.

2.4.24 The continuous improvement process shall be evaluated during the renewal survey. It shall be verified that approved and implemented procedures are complied with and that the process actually produces traceable improvements in CMMS (maintenance tasks and/or intervals).

   Guidance note:
   Evaluation of the continuous improvement process includes evaluation of collected information and how this has been processed to achieve improvements to the maintenance and maintenance supportability onboard the unit and in the organisation.

2.4.25 Visual inspection and functional testing is intended to verify the physical results of the maintenance work by observing the function of the equipment. Opening of machinery for internal inspection may be required if found necessary by the surveyor.

2.4.26 Risk based inspection (RBI)

The critical structures are verified by review of NDT survey jobs reported in the maintenance system. However, if the structure inspection program has been generated based on RBI methodology and approved by the society, the standard renewal scope can be substituted with a modified scope and inspection intervals.

   Guidance note:
   For further guidance on RBI see also DNVGL-RP-C210 Probabilistic methods for planning of inspection for fatigue cracks in offshore structures and DNVGL-RP-C302 Risk based corrosion management.
2.4.27 Cancellation of the survey arrangement
If the conditions for the survey arrangement are not complied with or in case of change of technical manager of the unit, the survey arrangement will be automatically cancelled and substituted by survey arrangement MC or machinery renewal as applicable.

2.5 Offshore condition monitoring

2.5.1 General
Offshore condition monitoring (Offshore CM) is a survey arrangement based on use of an approved service supplier (AoSS) for execution of condition monitoring on rotating machinery and drilling equipment to monitor relevant failure mode development. A comprehensive approval process of the AoSS is conducted in order to verify the procedures, competence and resources of the company. When Offshore CM has been implemented successfully on selected equipment on a unit, this will give an alternative to the traditional inspection given by fixed intervals on the equipment. With an approved arrangement the required inspection will be performed according to the condition of the equipment.

The survey arrangement is based on compliance with ISO 17359 Condition monitoring and diagnostics of machines and can be applied to main class machinery items listed in Table 1. For equipment covered by the DRILL notation see DCMSA, see [3.5]. Thrusters for propulsion and/or positioning may be included as part of an Offshore CM arrangement.

2.5.2 Approval of service supplier
The AoSS is granted a general authorisation to carry out condition monitoring in order to cover the scope of annual and renewal survey of machinery and equipment. This authorisation is valid for three years and the approval follows DNV Approval Programme No. 416, see Sec.8.

2.5.3 Conditions
The following conditions shall be fulfilled before the survey arrangement is valid:
— approved service supplier, AoSS (Sec.8)
— successful initial survey [2.5.10]
— approved CMMS. See DNVGL-RU-SHIP Pt.7 Ch.1 Sec.7 [3.2] for further details.

2.5.4 Documentation requirements
Approval of the CM programme is based on submittals of documentation with a description of the following:
a) maintenance strategy
b) monitoring methods including vibration and lubrication (see [2.5.9])
c) implementation of condition monitoring in the planned maintenance system onboard the unit:
   — maintenance tasks for vibration measurements
   — maintenance tasks for lubrication oil sampling and consumption monitoring
   — maintenance tasks for follow up of measurements and AoSS recommendations
      Guidance note:
      Generally it is necessary to comply with ISO17359 or similarly recognised standard.

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d) training programme for involved crew. The operator carrying out vibration measurements and lubrication sampling shall have sufficient competence and documented training for their scope of work.
Guidance note:
Sufficient competence and experience should be documented in accordance with ISO 18436-2 (Vibration measurement) and ISO 18436-4 (Field lubricant analysis). Alternatively the responsible AoSS can supply specialised training to the required technical level and approved by the Society. Requirement for competence and training (vibration measurements) will not apply to a unit with a CM system based on online vibration measurement.

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e) name and address of the appointed AoSS and oil analysis laboratory

f) information about the CM installation including:
   — who performed the installation (ISO 18436-2 Cat.1)
   — who verified the installation (ISO 18436-2 Cat.2)
   — condition of the applicable machinery and equipment including baseline measurements
   — acceptance criteria’s for applicable machinery and equipment (limits)
   — a list of the machinery systems and equipment included in the arrangement

g) drawings that show the measuring and sampling points on applicable equipment

h) measuring points shall be clearly marked on the equipment with unique ID

i) communication plan that outlines the owner’s communication with the Society and the AoSS

j) list of equipment to be used. Ex-certificates shall be provided if equipment is installed in hazardous areas.

2.5.5 Lubrication and hydraulic oil analysis
The basic requirements to the lubrication/hydraulic oil samples are as follows:

a) Oil samples shall be submitted for analysis on a regular basis as recommended by the AoSS.

b) Laboratory analysis reports and documentation of follow-up of recommended actions shall be available.

c) The oil sampling point should be clearly identified and positioned to ensure that the sample is taken at the same position each time.

d) If possible, samples should be acquired from the return flow, usually this will mean immediately downstream from the component in question.

e) Oil samples are always to be acquired while the equipment is operating and the oil is circulating.

f) Before sampling, a sufficient draining is required to ensure representative oil samples.

g) Wherever samples intended for particle counting are acquired, special ultra-clean particle free equipment and bottles shall be used. Both the sampling point and the procedure shall be designed so as to minimize the risk of contamination.

h) Lubrication and hydraulic oil samples shall be submitted to the delivering oil company or an independent accredited oil analysis laboratory.

i) For lubricating oils the scope of work should, as a minimum, be:
   — water content
   — sodium content (salt)
   — flash point.
   — wear particles
   — viscosity
   — insoluble material.

j) For hydraulic oils the scope of work should, as a minimum, be:
   — water content
   — viscosity
   — wear particles
   — acid number.
For hydraulic systems with high cleanliness demands specified by manufacturer, particle counting should be performed.

**Guidance note:**

Oil laboratories performing the oil analysis need to have a quality system and correct resources to provide a satisfactory service. The quality system should comply with ISO/IEC 17025 or similarly recognised standard. Competence of personnel performing oil analysis should be certified according to ISO 18436-5 or similar recognised standard.

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### 2.5.6 Language

All applicable CM documentation including CM programme, procedures and reports shall be in English.

### 2.5.7 Initial survey

An initial survey shall be carried out on board in order to verify that the system has been implemented in accordance with the approved documentation.

It is recommended that the programme has been operated for at least 6 months before the initial survey is carried out.

Provided the initial survey is carried out with satisfactory results, the survey arrangement will be granted and a certificate will be issued stating conditions of the survey arrangement for the specific unit.

**Guidance note:**

The survey normally consists of an offshore part and an onshore part. Based on similar and recent survey with the same manager, parts of the survey may be omitted.

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### 2.5.8 Annual survey

An annual survey shall be carried out on board in order to verify that the conditions for maintaining the survey arrangement are complied with.

This survey replaces the annual and renewal survey of machinery and components included in the condition monitoring scheme. The purpose of this survey is to ensure that the system is operated correctly and that the safety integrity level of the unit is kept intact. Where more than one unit (same manager) follow the same scheme, the annual survey can be based on spot checks of a representative selection of units.

**Guidance note:**

On units with an approved online vibration measurement system, part of the survey can be performed at the manager’s facilities onshore.

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### 2.5.9 The annual survey shall consist of examination of:

- condition monitoring records
- maintenance records
- CM handling onboard (collection of data and response to recommendations from service supplier)
- reports and maintenance records from breakdowns.

If it is not properly demonstrated that the system is correctly operated and that it serves to ensure the technical integrity level of the unit, opening or testing of machinery may be required.

### 2.5.10 Damages

Damage to machinery systems or equipment covered by classification shall always be reported to the Society and into the CMMS as a corrective (un-scheduled) maintenance task.
2.5.11 Cancellation of the survey arrangement
If the conditions for the survey arrangement are not complied with or in case of change of technical manager of the unit, the survey arrangement will be cancelled and substituted by survey arrangement MC or MPMS. The arrangement is also cancelled if the AoSS have their approval cancelled.

3 Drilling equipment survey arrangements

3.1 General

3.1.1 This subsection is applicable for units with the notation DRILL.

3.1.2 The different drilling survey arrangements are based on the Society’s drilling item list in accordance with Table 1 and as specified for the unit. The difference between them is the conditions for obtaining and maintaining the survey arrangement. If a survey arrangement is not specified, the periodical survey requirements as detailed in Sec.6 [4] shall be followed.

The following survey arrangements is available for drilling items covered by the DRILL notation:
- drilling equipment renewal (default), see Sec.6 [4]
- drilling equipment continuous (DCSA), see [3.2]
- drilling equipment planned maintenance (DPMS), see [3.3]
- drilling equipment planned maintenance – reliability centred (DPMS RCM), see [3.4]
- drilling equipment condition monitoring (DCMSA), see [3.5].

3.2 Drilling equipment continuous

3.2.1 General
Drilling equipment continuous (DCSA) is a survey arrangement where the components in the drilling item list established for the unit are subject to separate surveys with survey interval 5 years. The survey scope for each component remains the same as for periodical survey requirements as detailed in Sec.6 [4].

The equipment surveys can be distributed with 20% of the surveys each year and the separate surveys shall in all cases be carried out once in each 5 year period of the class certificate.

The time window for surveys to be carried out are generally set as 6 months before the due dates as distributed.

3.2.2 A follow-up system covering the society’s drilling item list in accordance with Table 1 shall be established on board the unit.

3.2.3 Annual survey
Annual survey of the drilling systems shall be carried out according to Sec.6 [4].

3.2.4 Complete survey
Complete survey of the drilling systems shall be carried out according to Sec.6 [4].

3.3 Drilling equipment planned maintenance system

3.3.1 General
Drilling equipment planned maintenance system (DPMS) is a survey arrangement applicable for units with DRILL notation and it applies only to equipment part of the drilling items listed in Table 1.

The DPMS is based on approval of the company management and the implemented planned maintenance system onboard.
3.3.2 It is normally required to comply with the machinery planned maintenance system, MPMS ref. Ch.3 Sec.7 [2.4] before entering DPMS.

3.3.3 All damage/break-downs on class related drilling items shall be reported to the society.

3.3.4 It shall be the responsibility of the unit manager to organise, manage and develop the maintenance resources (personnel, materials and equipment) on board to provide sufficient maintenance supportability at all times. The owner shall, based on the drilling equipment and systems as listed in Table 1 and on board the unit, ensure sufficient technical competence related to required maintenance level (maintenance task categorisation by complexity) according to type and function of the equipment.

**Guidance note:**

Based on the applicable drilling equipment and systems as listed in Table 1 it is recommended to categorize the equipment on board and associate it to a predefined maintenance level. The maintenance level should reflect the increasing complexity. E.g. maintenance levels as defined in EN 13306:

- Level 1: Simple actions/Routine
- Level 2: Basic actions/Preventive/Corrective
- Level 3: Complex actions (Overhaul) with detailed procedures
- Level 4: Actions (Overhaul) requiring detailed know how (specialized personnel)
- Level 5: Actions (Overhaul) requiring knowledge held by the OEM.

Maintenance personnel should be qualified according to the defined maintenance levels.

---end of guidance note---

3.3.5 The unit manager shall dedicate a responsible person (supervisor) on board the unit to ensure the integrity of the arrangement. Responsible person shall ensure appropriate execution according to the survey arrangement and be responsible for the professional standard of the resources on board to provide sufficient maintenance supportability at all times. The responsible person shall be a qualified professional with documented qualifications and skills related to technical operations and maintenance of applicable drilling systems and equipment.

**Guidance note:**

It is recommended to apply EN 15628 – Qualification of maintenance personnel or equivalent when establishing requirements and documenting qualifications for the position. This standard gives guidance on required knowledge, minimum skills and competencies applicable for maintenance personnel. Responsible person should as a minimum typically comply with the requirements of maintenance supervisor and maintenance engineer defined by the standard. Alternatively a solution involving maintenance management onshore as part of the arrangement, can be considered on a case by case basis.

---end of guidance note---

3.3.6 If the conditions for the survey arrangement are not complied with, or in case of change of technical management of the unit, the survey arrangement DPMS will be cancelled and substituted by survey arrangement drill continuous or survey arrangement drilling equipment renewal, as applicable.

3.3.7 Approval process for DPMS

The approval process is a two-step process: The first step management approval is a review of the planned maintenance program and maintenance arrangement prior to the second step initial survey [3.3.12] onboard.

3.3.8 Maintenance management approval

A maintenance management approval is performed to ensure that the manager of the unit can document satisfactory maintenance supportability in the organisation. The approval shall include a documentation review based of the following:

a) maintenance strategy supporting a DPMS survey arrangement
b) management with necessary resources required to sufficiently support a DPMS survey arrangement
c) governing documentation (procedures) and working processes related to the DPMS for the unit(s)
d) quality management system supporting:
   — competence level on involved maintenance personnel
   — supervision and verification of work
   — continuous improvement process.

3.3.9 Approval of the drilling equipment planned maintenance program

The following requirements apply for the approval:

1) The maintenance program shall include at least the applicable drilling items listed in Table 1. All these components shall be identified as class items in the system.

2) Maintenance tasks and intervals shall be based on original equipment makers (OEM)'s recommendations. OEM maintenance recommendations should be applied as specified by the OEM but tasks and interval should normally be confirmed appropriate for the specific environment and operations of the applicable equipment.

3) CMMS is subject to approval by the Society, either a type approved system or non-type approved system (case by case approval). See DNVGL-RU-SHIP Pt.7 Ch.1 Sec.7 [3.2] for further details.

4) CMMS shall have functionalities that makes it able to:
   — record and separate between different type of maintenance like
     1) scheduled maintenance (preventive maintenance/deferred corrective maintenance)
     2) un-scheduled maintenance (immediate corrective maintenance)
   — produce maintenance history reports on maintenance carried out for a specific time period on machinery class items
   — register revisions of maintenance task (traceability)
   — provide verification of class related maintenance tasks/jobs (quality of work and correct/sufficient level of reporting)
   — provide access control to assure that changes to the system cannot be made by unauthorised personnel and any input will be traceable to the individual user
   — back up data and make it possible to restore all data for minimum 5 years.

5) Systems and equipment shall be evaluated according to maintenance level, type and function. Maintenance personnel shall be qualified according to the applicable maintenance task (based on maintenance level, type and function).

6) All maintenance tasks shall have a:
   — detailed task description to the level of detail necessary for a skilled maintenance person
   — maintenance task interval
   — task preparation note describing any preparation necessary
   — maintenance level indicating qualification level of personnel to perform the task
   — required materials (consumables, spare parts and special tools)
   — applicable documentation (maintenance procedures and service manuals and drawings) listed ready available onboard.
   — checks and measurements to be made
   — The job descriptions and maintenance history shall be in English.

Guidance note:

It is recommended to apply EN 13306 – Maintenance terminology, or equivalent in development of a maintenance system.
3.3.10 If condition monitoring of equipment shall be carried out as part of the DPMS, this shall be in accordance with an approved program. See offshore CM [3.5] for further details. Condition monitoring of equipment will normally be approved on an item by item basis.

3.3.11 Initial survey
An initial survey shall be carried out onboard the unit in order to verify that the system has been implemented in accordance with the approved documentation [3.3.9] and that the system is used as intended. It is recommended that the system has been operated for at least 6 months before the initial survey is carried out and that the initial survey is commenced no longer than 1 year after the management approval has concluded. During the initial survey, it will be verified that:

— There are sufficient resources available on board the unit to ensure the integrity of the arrangement. Personnel engaged in performing maintenance tasks on the equipment have the correct competence based on maintenance level, type and function of the equipment.
— Responsible person on board have the sufficient knowledge and access to applicable procedures and documentation to ensure correct operations according to the arrangement.
— The responsible person is familiar with the CMMS and is able to demonstrate the different functionalities in the system to the attending surveyor.
— The general condition and maintenance of the drilling equipment and systems is good.

Provided the initial survey is carried out with a satisfactory result, the survey arrangement DPMS will be granted and a certificate will be issued stating system name and conditions for the survey arrangement for the specific unit.

**Guidance note:**
Prior to the initial survey onboard, the [3.3.8] Maintenance management approval and [3.3.9] Approval of the drilling equipment planned maintenance program may be carried out in the owner/manager office, if found convenient both to the Society and owner/manager. This requires that all applicable documentation and the onboard database are available in subject office.

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3.3.12 Annual survey
To maintain the validity of the survey arrangement DPMS, an annual survey of the implemented planned maintenance system is required. This survey replaces the annual and complete survey of drilling equipment included in the DRILL notation applicable for the unit. The purpose of this survey is to review and evaluate the previous period's maintenance activities and to ensure that the arrangement is working as intended.

3.3.13 During the annual survey the following shall be verified:
— all maintenance on class related drilling items is carried out according to the maintenance program
— unit DPMS certificate is valid for present management
— responsible person onboard the unit is familiar with the CMMS and is able to demonstrate the different functionalities in the system to the attending surveyor
— verification of maintenance records (reporting)
— overdue/postponed (deferred) jobs shall be explained
— changes to the system (maintenance intervals and job descriptions made by OEM) shall be documented and presented to the attending surveyor for acceptance
— visual inspection, load testing and function testing as specified in Ch.3 Sec.6 [4.2] and Ch.3 Sec.6 [4.3].
— final testing of BOP and well control safety systems at intervals as specified in Ch.3 Sec.6 [4.2] and Ch.3 Sec.6 [4.3].
— verification of certification for category 1 equipment (see DNVGL-OS-E101 Ch.3 Sec.3 Table 3-1) available on board
— general condition and maintenance of the drilling equipment to be evaluated (rated).
Guidance note:
Changes to the OEM maintenance recommendations may be accepted when documented operational experience can justify the change and be supported by the OEM. Changes shall be traceable and presented to the attending surveyor at the next annual survey for acceptance. Documented experience will typically be service letters (bulletins) from the OEM, maintenance reports, wear measurements and maintenance history.

---end-of-guidance-note---

3.3.14 It shall be verified that the unit have a working continuous improvement function. Continuous improvement should utilize input from safety reports, feedback from maintenance personnel and information given by the OEM. Furthermore the results of the improvement actions should be evaluated by the owner in order to ensure that real improvements are achieved.

3.3.15 The surveyor can, if found necessary, require a re-survey including opening or testing of items reported by the responsible person on board.

3.3.16 Critical structures are verified by review of NDT survey jobs reported in the maintenance system. However, if the structure inspection program has been generated based on RBI methodology (reliability approach) and approved by the society, the standard renewal scope can be substituted with modified scope and inspection intervals.

Guidance note:
For further guidance on RBI see also DNVGL-RP-C210 Probabilistic methods for planning of inspection for fatigue cracks in offshore structures and DNVGL-RP-C302 Risk based corrosion management.

---end-of-guidance-note---

3.3.17 Work survey
When category 1 equipment (see DNVGL-OS-E101 Ch.3 Sec.3 Table 3-1) is overhauled the attending surveyor should be contacted in order to agree the extent of his participation during the work.

3.3.18 Damages
Damage to drilling equipment and systems covered by classification shall always be reported to the Society and into the CMMS as a corrective (un-scheduled) maintenance task.

3.3.19 Cancellation of the survey arrangement
If the conditions for the survey arrangement are not complied with or in case of change of technical manager of the unit, the survey arrangement will be cancelled and substituted by survey arrangement DCSA or drilling equipment renewal (default).

3.4 Drilling equipment planned maintenance system – reliability centred

3.4.1 For units with a DPMS RCM survey arrangement and DRILL notation, the survey scope of [3.2] is replaced with the scope outlined in [2.4] for MPMS RCM and applied as for drilling equipment.

Drilling systems and equipment with corresponding survey method for this arrangement see applicable drilling items listed in Table 1.

3.4.2 Responsible person
Manager for the unit shall dedicate a responsible person on board the unit to ensure correct operations and the integrity of the arrangement. Responsible person shall ensure appropriate execution according to the survey arrangement and be responsible for the professional standard of the resources on board to provide sufficient maintenance supportability at all times. The responsible person shall be a qualified professional with documented qualifications and skills related to technical operations and maintenance of applicable machinery systems and equipment.
Guidance note:
It is recommended to apply EN 15628 – Qualification of maintenance personnel or equivalent when establishing requirements and documenting qualifications for the position. This standard gives guidance on required knowledge, minimum skills and competencies applicable for maintenance personnel. Responsible person should typically fulfill the requirements of maintenance supervisor and maintenance engineer defined by the standard. Alternatively a solution involving maintenance management onshore as part of the arrangement, can be considered.

---end---of---guidance---note---

3.4.3 Annual survey
To maintain the validity of the survey arrangement DPMS RCM, an annual survey of the implemented maintenance programme is required, preferably during normal operation. This survey replaces the annual and complete surveys of drilling systems and equipment included in the DPMS RCM arrangement. The purpose of this survey is to review and evaluate the previous period’s maintenance activities and to ensure that the system is operated correctly according to approved systematics and documentation.

3.4.4 During the annual survey and in addition to the scope detailed in [2.4] a visual inspection and function testing as specified in Ch.3 Sec.6 [4.2] will be verified and surveyed by the society.

3.4.5 Renewal survey
To prolong the validity of the survey arrangement a renewal survey of the implemented DPMS 2 survey arrangement is required. The purpose of the survey is to ensure that the conditions for approval of the system are still adhered to and that the maintenance work achieve acceptable results.
During the renewal survey and in addition to the scope detailed in [2.4] the following will be verified and surveyed by the society:
— visual inspection, load testing and function testing as specified in Ch.3 Sec.6 [4.3]
— final testing of BOP and well control safety systems
— verification of certification for category 1 equipment (see DNVGL-OS-E101 Ch.3 Sec.3 Table 1) available on board.

3.4.6 Work survey
When category 1 equipment is overhauled the Society should be contacted in order to agree the extent of its participation during the work.

3.5 Drilling equipment condition monitoring
For units with an approved drilling equipment condition monitoring survey arrangement (DCMSA), condition monitoring replaces the relevant survey requirements of Sec.6 [4.2] and Sec.6 [4.3], for applicable equipment and failure modes. The arrangement shall be approved in accordance with offshore CM, see [2.5]. The attending surveyor shall update the drilling item list at every annual survey.

Guidance note:
Condition monitoring will not replace load testing and the NDT scope on load carrying equipment as required in Sec.6 [4]. If the structure inspection program has been developed based on RBI methodology (reliability approach) and approved by the Society, the standard renewal scope can be substituted with a modified scope and inspection intervals. For further guidance on RBI see also DNVGL-RP-C210 Probabilistic methods for planning of inspection for fatigue cracks in offshore structures and DNVGL-RP-C302 Risk based corrosion management.

---end---of---guidance---note---
4 Structural survey arrangements

4.1 General
The structural survey arrangements are based on the IIP Ch.3 Sec 3 [1.2] in accordance with type of unit. The difference between the arrangements is the conditions for obtaining and maintaining the survey arrangement. If a survey arrangement is not specified, the periodical survey requirements as detailed in Sec.4 shall be followed.
The following survey arrangements are available:
— renewal, see [4.2] (default)
— structural continuous survey arrangement (SC), see [4.3]
— structural integrity management (SIM), see [4.4].

4.2 Renewal (periodic)
4.2.1 The renewal survey arrangement will if no other agreement is made be applied as basis for the survey plan and scope for the unit.

4.2.2 Periodical surveys belong to one of the following categories according to the level of survey requirements:
— annual survey
— intermediate survey
— complete survey.
The survey required in conjunction with issuance of a new class certificate is denoted renewal survey. See Sec.1 for further information.

4.3 Structural continuous
4.3.1 Structural continuous (SU) is a survey arrangement whereby the survey items in the structure (hull) list established for the unit are subject to separate surveys with interval 5 years. The arrangement shall provide for survey of approximately 20% of the total number of survey items during each year of the five-year class period.

4.3.2 Applicable survey requirements as detailed in Sec.2 [2] to Sec.2 [4].

4.4 Structural integrity management
4.4.1 Structural integrity management (SIM) is a survey arrangement offered as an integral part for the in-service inspection program, implemented for classification compliance. The continuous survey arrangement shall be applied in combination with the SIM in order to obtain the intended benefit for the owner. The SIM performance will be reviewed based on the owners reporting in the system (SIM-tool) and by verifying the condition of the structure and maintenance on board the unit.

4.4.2 SIM survey arrangement allows for up to half of the structural items, covered by the units structural inspection program, to be inspected by owners qualified personnel. The parts to be inspected by the owner will be decided based on inspection history and current structural condition. Critical areas, areas with poor condition and/or substantial corrosion are normally not included in owners scope.
4.4.3 A survey plan shall be developed identifying areas that will be surveyed by class and owner. The plan will be continuously monitored during the class period and adjusted based on inspection results and accumulated knowledge.

4.4.4 Approval of the arrangement shall include a documentation review covering a description of the following:
— inspection responsibilities and functions
— SIM tool for inspection reporting
— SIM responsible person on board
— training programme/plan for involved personnel
— inspection manual/instruction including reporting, ratings and acceptance criteria
— communications plan that outlines the owner’s information sharing with the Society.

4.4.5 Inspection by the owner shall be performed by qualified personnel. Qualified personnel shall successfully have attended and completed:
— SIM training course arranged by the society
— tutored survey on board covering relevant inspection techniques/areas.

Guidance note:
NS 415-1 certification or certification based on equivalent standard may be applied partly to document sufficient qualifications. Personnel qualifications will usually be linked to a specific owner or unit manager.

4.4.6 The following conditions shall be complied with before the survey arrangement is valid:
— approved inspection program and reporting system (SIM-tool database reporting mandatory)
— qualified inspection personnel
— successful initial (implementation) survey, (see [4.3.8]).

4.4.7 Initial survey
An initial survey shall be carried out on board the unit in order to verify that the system has been implemented in accordance with the approved documentation and that the system is used as intended. It is required that the SIM system has been operated for at least 6 months and/or minimum 3 inspections have been performed before the initial survey is carried out.

4.4.8 The initial survey will include verification of the following:
— responsible person have sufficient knowledge in line with approved arrangement
— correct use according to approved inspection program and reporting system
— inspection performed only by qualified inspection personnel
— inspection responsibilities and functions
— training programme/plan for involved personnel
— inspection manual/instruction on board and that involved personnel is familiar with the system.
— communications between owner and the Society.

Upon successful approval of the arrangement (document review) and completion of the initial survey; a SIM survey arrangement certificate will be issued to the unit.
4.4.9 Annual survey
To maintain the validity of the SIM survey arrangement, an annual survey of the arrangement has to be performed by the Society. The purpose of this survey is to ensure proper use of the arrangement and to verify the general condition and maintenance level with special attention to the hull and structure.

4.4.10 The survey will include the following:
— structural inspections inside class scope
— NDT of critical structures
— verification of owners inspections
— verification of proper use of the SIM survey arrangement.
The attending surveyor may if found necessary, require a re-survey of any structural item inspected by the owner.

4.4.11 Damages (major findings)
Damage and findings related to structural items shall always be reported to the Society according to approved procedure and into the SIM-tool database as a finding.

4.4.12 Cancellation of the survey arrangement
In case of change of manager/owner of the unit, the survey arrangement is usually cancelled. The arrangement may also be cancelled if it is evident that the conditions of the arrangement (procedure, and reporting) are not complied with. Any changes to the arrangement shall be subject to class approval.
SECTION 8 SURVEYS PERFORMED BY APPROVED COMPANIES

1 Surveys by approved companies

1.1 General

Parts of the periodical surveys may be carried out by companies approved by DNV GL. The following survey parts may be performed by such companies:

— thickness measurements
— bottom survey afloat
— general NDT
— mooring line survey
— condition monitoring (CM).

1.2 Thickness measurements

1.2.1 Thickness measurements as part of the periodical surveys shall be carried out by a qualified company approved by the Society.

1.2.2 Thickness measurements shall normally be carried out by means of ultrasonic test equipment. The accuracy of the equipment shall be proven to the surveyor as required.

1.2.3 A thickness measurement report shall be prepared. The report shall give the location of the measurements, the thickness measured and the corresponding original thickness. Furthermore, the report shall give the date when the measurements were carried out, type of measuring equipment, names of personnel and their qualifications. The report shall be signed by the operator.

Guidance note:

---end---of---guidance---note---

1.3 Bottom survey afloat

An approved company shall be used. The survey shall be witnessed by a surveyor of the Society. The diver shall use pictorial equipment of such quality that the surveyor is fully satisfied with the information relayed.

Guidance note:

---end---of---guidance---note---

1.4 Non-destructive testing

Non-destructive testing as part of the periodical surveys shall be carried out by a qualified company approved by the Society.

Guidance note:
For more information, see DNVGL-CP-0484 App.B [4] Firms engaged in non-destructive testing (NDT) on offshore projects and offshore units/components.

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1.5 Mooring chain inspections
Dry inspection of mooring lines as part of the periodical surveys shall be carried out by a qualified company approved by the Society.

**Guidance note:**

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1.6 Condition monitoring
Condition monitoring as part of DNV GL's periodical surveys of machinery components and equipment incl. drilling and production equipment, can be carried out by a company approved by the Society.

**Guidance note:**

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Appendix A

APPENDIX A - TERMS AND CONDITIONS

1 Definitions and General

"Affiliate" – shall mean any subsidiary, parent, ultimate holding company or a subsidiary of such parent or ultimate holding company. For the purpose of this definition, "subsidiary" and "holding company" shall have the meaning ascribed to them under the Companies Act relevant to the applicable law set out in Clause 17 herein;

"Contract" – shall mean the contract entered into between the Customer and DNV GL including these General Terms and Conditions and the DNV GL Rules. The above listed documents shall be interpreted as one agreement and in case of any ambiguities or contradictions between the various documents, the documents shall take precedence in the order they are listed above;

"Claim" or "Claims" - shall mean any and all claims, losses (including pure economic losses), demands, taxes, liens, liabilities, judgments, awards, provisional injunctions, remedies, debts, damages, injuries, costs, legal and other expenses, or damages or action of whatever nature, and in whatever jurisdiction the foregoing may arise;

"Consequential Loss" - shall mean loss and/or deferral of production, loss productivity (disruptions), loss of product, loss of use, loss of time to any vessel or loss of hire, loss of business opportunities and contracts, loss of goodwill, loss of data, loss of revenue, profit or anticipated profit (if any), losses arising from liabilities or indemnities under other contracts, in each case whether direct or indirect and whether or not foreseeable at the commencement of the Work;

"Customer" – shall mean the person and/or company which has requested DNV GL’s service and has entered into a contract/agreement for services;

"Customer Group" – shall mean (i) the Customer and its Affiliates; (ii) the Customer’s other contractors (other than DNV GL), suppliers and subcontractors (of any tier) and their respective Affiliates; and (iii) the respective directors, officers, managers, agents, employees (including agency personnel) and representatives of the persons and entities mentioned under (i) and (ii) above as well as any other person or entity acting on its/their behalf;

"Deliverable" – the deliverable(s) which is(are) to be provided to the Customer by DNV GL according to the Contract;

"DNV GL" – shall mean for the purposes of these General Terms and Conditions, the company with which the Customer has entered into the Contract being DNV GL AS or any of its branches and subsidiaries (as the case may be);

"DNV GL Group" – shall mean (i) DNV GL, all its direct and indirect owners and its Affiliates; (ii) DNV GL’s subcontractors (of any tier) and their Affiliates; and (iii) the respective directors, officers, managers, agents, employees (including agency personnel) and representatives of the persons and entities mentioned under (i) and (ii) above as well as any other person or entity acting on its/their behalf;

"DNV GL Rules" – shall mean all provisions and/or requirements adopted by DNV GL as the basis for Classification at any point in time;

"Variation" – additional work to the Work originally agreed in the Contract;

"Work" – the services provided to Customer by DNV GL which are expressly set out in the Contract including any Variation and any Deliverable.

These General Terms and Conditions shall be incorporated in all Contracts and shall override and exclude any terms and conditions sought to be imposed by the Customer. No amendment and/or variation to these General Terms and Conditions and no additional terms put forward by the Customer shall be considered binding or valid unless set out in writing and duly signed by the authorised representatives of both parties.

The respective latest version of the General Terms and Conditions as well as the applicable DNV GL Rules, as made available on www.dnvgl.com shall apply to all work rendered by DNV GL, including those rendered within the scope of DNV GL`s statutory functions as recognised organisation or similar, even if no written Contract was concluded.

2 The Work and execution of Work

2.1 The Work shall be carried out in accordance with the Contract, the provisions of these General Terms and Conditions, the DNV GL Rules, the international conventions and/or EU regulations applicable to the relevant Work and/or flag administration requirements. The same shall apply in the absence of a written agreement between the parties. The Work performed by DNV GL is performed under the basic assumption that other parties involved, including but not limited to the Customer’s other contractors and suppliers, fulfill their individual obligations and provide correct and complete information. DNV GL shall, upon completion of the relevant certification process and the Work, but subject to any relevant findings from its assessment of the deliverables, issue the Deliverable, provided always that DNV GL in its sole professional discretion finds that the applicable requirements are fulfilled.

2.2 When providing services DNV GL does not assess compliance with any standard other than the applicable DNV GL Rules, international conventions, EU Regulations and/or flag administration requirements and other standards, to the extent agreed in writing.

2.3 Any terms, conditions, duties or warranties otherwise incorporated or implied by law are hereby expressly excluded in full or to the fullest extent permitted by the applicable law. The remedies set forth in Clause 6 shall therefore be the sole remedies for any discrepancies, errors or omissions whatsoever regarding the Work.

2.4 DNV GL will provide suitably qualified personnel to carry out the Work. Unless otherwise agreed, DNV GL may at any time substitute personnel assigned to the Work, provided that any replacement personnel are suitably qualified.

2.5 A confirmation given or certificate issued by DNV GL shall not substitute the role of and/or release the Customer Group or any other parties involved from its contractual or legal obligations towards any third parties and/or the Customer (as the case may be). Maintenance of the validity of such confirmation or certificate, for example through the process of regular surveys in the case of ship classification, is the responsibility of the Customer.

2.6 DNV GL may, without prejudice to any other rights available to DNV GL, at any time recall, suspend, withhold, withdraw and/or reissue any Deliverable with immediate effect, suspend or withdraw any vessel from class and/or suspend further performance of any services if in DNV GL’s sole and un fettered opinion: (i) Customer fails to provide any necessary information or documentation for the purpose of maintaining the Deliverable and/or class; or (ii) Customer fails to comply in due time with conditions or instructions issued by DNV GL; or (iii) Customer fails to pay any fees or other sums due to DNV GL; or (iv) any relevant discrepancies, errors or omissions in the basis for the Deliverable is detected; or (v) Customer misrepresents DNV GL’s business name, trademark or Deliverable on which such name or trademark is used.

2.7 DNV GL may retain or withhold any service, certificate or other deliverable to the Customer in respect of all outstanding payments (whether related or not) arising out of the entire business relationship with the Customer, regardless of whether one or more vessels owned or managed by the Customer are affected.
3 General Obligations

3.1 Customer agrees that DNV GL’s performance of the Work requires DNV GL to be granted access to and the right to inspect all relevant sites, equipment, machinery and facilities and all relevant, correct and complete documents and information. For this purpose, Customer shall in a timely manner, without conditions, make all necessary arrangements and provide DNV GL with all reasonably necessary access to the above mentioned information and sites. Unless it is explicitly agreed as part of the Work to identify discrepancies, errors, inconsistences or omissions in the information provided by the Customer Group, Customer shall be responsible for the correctness of the information it provides and DNV GL is entitled to rely on the accuracy and completeness of such information for the performance of the Work.

All Deliverables provided by DNV GL are based on the information, documentation and/or physical items made available by Customer to DNV GL up to the date of issuance of the Deliverable, and Customer acknowledges and agrees that any statement made by DNV GL in the Deliverable is a statement reflecting the situation at the time of issuance only.

3.2 Should the Customer fail to provide DNV GL with the required access or information at the agreed times, DNV GL may suspend the performance of the Work pending receipt of the Customer’s instructions for access and/or necessary information. DNV GL shall have no liability as a consequence of any such suspension and the Customer will be responsible for DNV GL’s fees and other wasted costs and expenses incurred by DNV GL.

3.3 Customer acknowledges and agrees that it has read and understood the requirements in the applicable DNV GL Rules or other relevant conventions, EU Regulations and/or flag administration requirements and other standards applicable to the Contract and agrees to abide by them.

3.4 Any failure by Customer in fulfilling its obligations set out in this Section 3 is to be considered a material breach of this Contract.

4 Health, Safety and Environment (HSE)

4.1 Both DNV GL and the Customer shall employ reasonable standards for promoting safety, health and environmental protection and for ensuring safe working environments for their personnel.

4.2 Customer shall inform DNV GL without undue delay of: (i) any actual or potential HSE risk which Customer is aware of and which is reasonably relevant to the performance of the Work; and (ii) any of Customer’s implemented or planned measures against such risks that Customer requires DNV GL’s personnel to adhere to.

4.3 Whenever DNV GL’s performance of the Work involves visits to or work on Customer controlled facilities or sites, Customer is responsible for the adequacy, stability, safety and legal compliance of the working environment, including reasonable measures to mitigate or control relevant risks. DNV GL or its personnel is entitled to refuse to carry out any activity, or visit any area or site, if DNV GL or its personnel in their sole discretion consider that relevant risks are unacceptable or not adequately addressed, contained or otherwise mitigated. Any such decision shall suspend both parties’ obligations under the Contract without any liability or penalties until the parties have agreed on how to proceed.

5 Variations to the Work

Customer may in writing request DNV GL to perform a Variation. DNV GL shall not be obliged to execute any Variations until a written agreement with the Customer regarding the remuneration and the potential schedule impact of the Variation has been signed, which shall be an integral part of this Contract.

6 Re-performance

Any documented error or defect in the Work will be rectified by DNV GL within a reasonable period of time at DNV GL’s sole cost. DNV GL shall not be liable for or defects not attributable to Customer or Customer Group and DNV GL is duly notified of said error or defects within twelve (12) months after delivery or completion of the Work, whichever occurs first.

7 Taxes and Remuneration

7.1 Each party is solely responsible for paying any and all taxes, duties or similar government charges to the competent public authority wherever such charges are levied and/or imposed on the activities of the party.

Any and all prices, fees, rates or remuneration are agreed as stated exclusive of any form of sales taxes, value added tax, goods and services tax and/or any other similar taxes including any surcharges levied thereon which may be applicable.

7.2 Customer shall effect payment as agreed in the Contract to DNV GL for the Work, including any Variations, to DNV GL’s bank account stated on the invoice within thirty (30) days of the date of the invoice.

Work performed by DNV GL shall be invoiced in accordance with the tariffs of DNV GL or on the basis of the price quoted in the offer or in the Contract. In addition thereto, DNV GL will charge any extra expenses incurred in connection with the services rendered (e.g. travelling or other expenses and, where applicable, any value added/turnover tax).

Customer accepts invoices sent by electronic means.

Additional expenses which are incurred by DNV GL in connection with the performance of the Work, and for which DNV GL is not responsible, for instance, as a result of poor organisation on the part of the Customer or of repetition of tests and extra time spent, will be charged separately at the respective current cost rates.

7.3 In case of late payments, DNV GL is, in addition to the remedies set forth in Clause 2.6, entitled to charge a late payment interest according to the applicable law of this Contract, or 8% per annum pro rata, whichever is the higher.

7.4 All payments shall, subject to Clause 7.5, be made in cleared funds, without any deduction or set-off and free and clear of and without deduction for or on account of any taxes, levies, imports, duties, charges, fees and withholdings of any nature now or hereafter imposed by any governmental, fiscal or other authority save as required by law.

7.5 If and to the extent Customer has to withhold taxes or other government charges according to mandatory laws, Customer shall withhold and deduct such amounts from payments to DNV GL and pay the amount to the competent tax authority or any other relevant governmental body, as the case may be, within the time allowed and in the minimum amount required by law. Customer shall indemnify and hold DNV GL harmless from any and all financial responsibility or sums found to be due arising out of the non-payment, late-payment or payment to the non-tax competent tax authority or any relevant governmental body.

Customer shall inform DNV GL about such withholding, any change in the rate or the basis of the withholding and the availability of any formal procedure resulting in an authorisation to make a payment without a withholding prior to making the payment. Customer and DNV GL shall cooperate in completing any procedural formalities necessary for the Customer to obtain authorisation to make payment without a withholding.

Within ten days of making either the withholding or any payment required in connection with that withholding, the Customer shall deliver to DNV GL a withholding tax certificate, official receipt or evidence reasonable to DNV GL that payment has been made to the competent tax authority or any other competent governmental body. Customer shall cooperate with DNV GL and shall use reasonable efforts, at no cost to DNV GL, in seeking any double tax treaty relief, other exemptions and refunds available following from such withholdings.

7.6 Section 7.1 to 7.5 shall apply accordingly in case an Affiliate provides the Work.

7.7 No disputes arising between DNV GL and the Customer shall interfere with prompt payment of invoices by the Customer. Any rights of lien or retention in favour of the Customer, statutory or otherwise, are hereby excluded. The Customer shall have no right to set-off any sums including sums in respect of counter-claims, unless such counter-claim is undisputed or has been finally adjudicated upon by the courts.

8 Confidentiality

8.1 Each party as recipient agrees to keep confidential any information it receives from the other party as disclosing
party in the course of the Contract which, by denotation or reasonable circumstances, is considered confidential to the disclosing party. The recipient shall treat such received information with reasonable care and diligence, not disseminating or disclosing it to third parties without the disclosing party’s prior written consent, provided however that each party may share such information with its officers, employees, affiliates, subsidiaries, subcontractors, suppliers or professional advisors who are subject to confidentiality obligations reflecting the principles herein.

8.2 The obligations set forth in Clause 8.1 shall not apply to any information which: (i) is or becomes known to the recipient from a third party without any confidentiality obligation to the disclosing party; (ii) is or becomes generally available in the public domain through no act or failure to act on the part of the recipient; (iii) has demonstrably been developed by the recipient independently from this Contract; (iv) is requested to be disclosed by any competent court, governmental agency, flag state administration, other relevant public authority in accordance with applicable law, court order or other public regulation; (v) is disclosed to the registered owner and/or ultimate owning company of a vessel without changing the general nature of confidentiality of such information if such information is vessel-related or (vi) is required to be disclosed by the applicable stipulations of the International Association of Classification Societies (IACS).

8.3 Customer acknowledges that DNV GL is bound by an obligation to give the EU Commission or anyone acting on its behalf, access to information in accordance with applicable EU requirements, and that Customer shall give the EU Commission unrestricted access to ships for the purpose of inspection.

8.4 DNV GL Group shall have the right to use for statistical, analytical and internal training purposes, any material, information or know-how generated in the course of the Work.

8.5 The obligations in this section shall survive the completion of the Work or termination of this Contract and shall continue for as long as the relevant information remains confidential.

9 Assignment and Subcontracting

9.1 This Contract, including any Deliverable issued as a result hereof, is specifically related to the Customer and no rights, obligations, interest, claim, benefit or Deliverable deriving herefrom shall extend to any other (third) party without the prior written consent of DNV GL. Customer is not entitled to grant to any third party any right of use in respect of any Deliverable without the prior written consent of DNV GL. The Contracts (Rights of Third Parties) Act 1999 shall not apply to this Contract.

9.2 DNV GL may at its discretion subcontract parts of or the whole of the Work to any other company within the DNV GL Group. The DNV GL Group shall have the benefit of, and shall be entitled to enforce against the Customer the rights, exclusions, limitations of liability and indemnities set out in the Contract.

9.3 DNV GL is only responsible for the Work it has performed directly or through its subcontractors.

10 Intellectual Property Rights

10.1 For the purpose of this Contract, each party shall remain the sole owner of any of its intellectual property and rights therein prior to the date of this Contract and, except as explicitly set out in this Contract, nothing herein shall imply any transfer or grant of rights to any such intellectual property or rights thereto.

10.2 Customer shall hold a restricted, global and royalty free license to use the Deliverables or the results of the Work for their agreed or ordinary purpose, including the right to use and/or sell certificates or similar documents in accordance with the applicable requirements.

10.3 Subject to the confidentiality obligations set out in Clause 8 above, all intellectual property rights in the information and data created in connection with this Contract shall vest in DNV GL. In particular, DNV GL shall hold the copyright to all certificates and similar documents issued under this Contract. Nothing herein shall be deemed to limit DNV GL Group rights according to Clause 8.4.

10.4 The Customer warrants that it holds all necessary rights to material and information submitted for the purpose of the Work. The Customer shall indemnify and hold harmless DNV GL from any Claim DNV GL might suffer or receive as a consequence of any infringement of third party rights.

10.5 DNV GL is continuously improving its services to the industry to safeguard life, property and the environment. The customer acknowledges that DNV GL shall hold a right to use and process any information, data or databases generated or collected throughout the Work in an anonymized form, for its own competence building, research or business purposes.

11 Force Majeure

11.1 Neither party shall be in breach of this Contract, nor liable for any failure or delay in performance hereunder if the cause of such failure or delay is attributable to events beyond the reasonable control of the affected party, including but not limited to armed conflict, terrorist attack, civil war, riots, toxic hazards, epidemics, natural disasters, extreme weather, fire, explosion, failure of utility service, labour disputes, breakdown of infrastructure, transport delays, or any public restrictions following any of the incidents above, or any other force majeure occurrence.

11.2 In the event of a force majeure occurrence, the affected party shall notify the other party without undue delay of the particulars of the situation and the estimated duration. Either party shall be entitled to terminate the Contract with immediate effect should the force majeure occurrence endure for more than thirty (30) days.

12 Indemnifications

12.1 Each party shall indemnify and hold harmless the other party from and against all Claims arising while carrying out the Work in respect of: (i) bodily injury, disease, or death of any of its employees or other representatives; and (ii) loss or damage to the property. This provision shall apply whether or not the Claim is caused or contributed to by the negligence of the other party. Both parties shall maintain insurances for such liabilities, cf. Clause 14, to make this knock-for-knock provision effective.

12.2 The Work including any advice and information provided by DNV GL to the Customer as a part of the Work, shall be for the Customer only. The Customer shall ensure that any other member of the Customer Group and/or any third party are aware that the Work is intended for the Customer only and is understood and agreed that nothing expressed herein is intended or caused to be strung to give any person, firm or corporation, other than the signatories hereto any right, remedy or claim hereunder or under any provisions herein contained. The Customer shall indemnify and hold harmless the DNV GL Group from and against Claims brought by the Customer Group (other than the Customer) in connection with the Work or any advice and information, in whatever form it may be given, which has been provided by DNV GL to the Customer.

12.3 The Customer shall be responsible for and shall save, indemnify, defend and hold harmless the DNV GL Group from and against all Claims in respect of pollution or contamination emanating from the assets, equipment, facilities or property of Customer Group whether owned, hired, leased or otherwise provided by the Customer Group and arising from, relating to or in connection with the performance or non-performance of the Work, irrespective of cause and whether or not resulting from or contributed to by any negligence, breach of duty (statutory or otherwise), breach of contract, breach of warranty and/or strict liability of any member of the DNV GL Group.

12.4 Customer shall indemnify and hold harmless DNV GL from and against any Claims in respect of: (i) Customer’s breach of Section 3 (General Obligations); (ii) any abuse of the Deliverable issued under this Contract.

12.5 The Customer’s obligations to indemnify DNV GL Group set out above in Clause 12.2, 12.3 and 12.4 shall apply in respect of any Claims regardless whether such Claims against DNV GL Group are based on breach of contract, direct action, breach of duty (statutory or otherwise), tort (including negligence), breach of warranty, or any other ground of liability.

Appendix A

Appendix A


Offshore drilling and support units

11. In accordance with DNV GL’s (i) act or omission with the intent to cause damage or injury; (ii) act or omission in gross disregard of a known or obvious risk which made it highly probable that harm would follow.

12.6 Each party shall notify the other party without undue delay upon becoming aware of any incident likely to give rise to a Claim against the other party in relation to this Contract.

12.7 The Customer agrees that any Claim with respect to the Work shall be brought solely against DNV GL, and the Customer shall indemnify and hold harmless DNV GL Group from any Claim brought against DNV GL Group by any other party as a consequence of the Customer’s breach of this Clause 12.7.

13 Limitation of Liability

13.1 Except for the re-performance of the Work as provided in Clause 6 and DNV GL’s indemnification obligations set out in Clause 12.1 above, DNV GL shall not be liable for any Claim incurred by Customer and/or Customer Group arising from, relating to, or in connection with the performance or non-performance of the Work by DNV GL, whether or not resulting from or contributed to by any negligence (in whatever form on whatever organization level), breach of duty (statutory or otherwise), breach of contract, breach of warranty and/or strict liability of any member of the DNV GL Group, except to the extent set out below.

DNV GL’s liability for all Claims arising out of or in connection with this Contract shall be limited to an aggregate total of 10 (ten) times the net fees (excluding any expenses and disbursements) payable to DNV GL for the Work, never exceeding a maximum aggregate sum of USD 4 (four) million.

In case the Customer pays the fees periodically, e.g. under a Periodical Service Agreement or similar fee arrangement, DNV GL’s liability for all Claims arising out of or in connection with this Contract shall be limited to an aggregate total of 10 (ten) times the annual net fee (excluding any expenses or disbursements), never exceeding a maximum aggregate sum of USD 4 (four) million.

13.2 Any limitations and exclusions of DNV GL’s liability shall extend to:

(i) the other members of the DNV GL Group; and

(ii) the relevant maritime administration of a vessel’s country of registry (the “Flag Administration”) for any services provided hereunder on behalf of such Flag Administration, and the Customer accepts that the other members of the DNV GL Group and the Flag Administration shall be entitled to invoke such limitations and exclusions of liability directly towards any claim from the Customer Group.

13.3 Notwithstanding any provision to the contrary elsewhere in these General Terms and Conditions and irrespective of cause and whether or not resulting from or contributed to by any negligence (whichever form and whatsoever organization level), breach of duty (statutory or otherwise), breach of contract, breach of warranty and/or strict liability, the Customer shall be responsible for and shall save, indemnify, defend and hold harmless the DNV GL Group from the Customer Group’s own Consequential Loss and DNV GL shall be responsible for and shall save, indemnify, defend and hold harmless the Customer Group from the DNV GL Group’s own Consequential Loss.

13.4 Any Claim against DNV GL Group by the Customer shall be deemed to be irrevocably waived and time barred upon the expiry of twelve (12) months from the date of completion of the relevant Work.

A later issuance of class certificate or confirmation of vessel basis shall not result in the commencement of a new 12 (twelve) months’ time period, except for services provided in addition to the initial Work.

14 Insurance

14.1 Both parties shall maintain adequate insurance coverage for general and professional liabilities and their relevant personnel under the Contract, for such amounts and on such terms as are standard in their respective industries and with underwriters who are in good standing. Such insurances must contain a waiver of subrogation.

15 Fair Business Practice, Anti-bribery and Compliance

15.1 The parties shall conduct their respective business activities in a fair, ethical, and lawful manner in accordance with all applicable laws and generally accepted codes of conduct (including but not limited to the DNV GL code of conduct), avoiding any unacceptable activities, including but not limited to acceptance of or acquiescence in extortion, bribery, use of child labour, breach of human rights, or the imposition of unreasonable work conditions.

15.2 Customer shall indemnify and hold harmless DNV GL from any breach of Clause 15.1.

15.3 Both parties may terminate this Contract with immediate effect, without any liability or penalties, if a member of DNV GL Group or Customer Group are or become subject to sanctions or penalties imposed by a national government, the United Nations, the European Union or similar organizations related to the Work which is provided hereunder, or if the Work could be considered to be illegal or in conflict with applicable law for the respective party, its subcontractors and/or its subcontractor’s parent companies.

16 Term and Termination

16.1 This Contract shall remain in full force and effect until all Deliverables are delivered, or the Work is otherwise completed and paid for in full unless terminated earlier by mutual agreement or in accordance with Clause 15.3 or Clause 16.2 below.

16.2 Each party may terminate this Contract by written notice to the other party under the following circumstances:

(i) if the other party commits a material breach of this Contract and fails to rectify such breach within 10 (ten) working days after receipt of the other party’s written notice;

(ii) if the other party becomes insolvent, is unable to pay its debts as they fall due, or is subject to bankruptcy proceedings, administration, receivership, dissolution, liquidation, winding-up or otherwise discontinues its business; or

(iii) for convenience after serving the other party a written notice 30 (thirty) days prior to termination.

16.3 In the event the Contract is terminated by the Customer in accordance with 16.2 (iii) prior to completion of the Work, irrespective of cause, DNV GL shall be entitled to: (i) the agreed remuneration for the Work rendered up to the date of termination; (ii) all costs incurred by DNV GL up to and including the termination date; and (iii) 10% of the remuneration agreed in respect of Work which has not been provided. In the event of termination, DNV GL shall be entitled to retain any payment, deposit or advance of any fees made by the Customer prior to the date of termination up to the amount to which DNV GL is entitled.

16.4 In the event of termination of the Contract, the rights and obligations of DNV GL and the Customer included in Clauses 1, 3, 6, 7, 8, 10, 11, 12, 13, 17 and 18 shall remain in full force and effect.

17 Law and Jurisdiction

17.1 This Contract shall be governed by and construed exclusively in accordance with the laws of Norway, without regard to principles of conflicts of law.

17.2 The parties shall use their reasonable efforts to resolve any claim or dispute arising in relation to this Contract by negotiations within a reasonable time. Should the parties fail to resolve any claim or dispute by negotiations, the dispute shall be exclusively subject to the jurisdiction of the courts of Oslo, Norway.

18 Severability

Should any provision of these General Terms and Conditions be held to be invalid or unenforceable, such shall not affect the validity or enforceability of any other part or provision of these General Terms and Conditions. Such provision shall be amended to the extent necessary to make the provision valid and enforceable, while keeping as strictly and closely as possible to the original wording and purpose of the provision.
APPENDIX B INTRODUCTION TO OFFSHORE CLASSIFICATION

1 Introduction
This appendix is informative and should not be understood as rule requirements. The appendix explains the system of classification, how it works, conditions of validity, and its interaction with statutory control. This information is to a large extent implied by the rules, but a brief clarification of the essential points in one place is considered useful.

2 The classification system
2.1 The classification process and its limitations
2.1.1 Classification is a system for safeguarding life and property at sea, and the environment due to operational consequences. It implies a process of verifying offshore objects against a set of requirements. The requirements are laid down in the rules and standards established by DNV GL. Classification has gained worldwide recognition as an adequate level of safety and quality.

2.1.2 Classification implies an activity, in which a unit is surveyed during construction based on design approval, tested before being taken into service, and surveyed regularly during its whole operational life until it is scrapped. The aim is to verify that the required rule standard is built in, observed and maintained.

2.1.3 Classification is not performed as a substitute for the customer's own quality and safety control and related duties, or the customer's obligations to third parties, nor to relieve the customer of any consequences of default. Classification implies that rule requirements are verified at regular intervals. It is the owner's responsibility to maintain the unit so as to comply with the rules at all times.

2.1.4 DNV GL keeps complete files on all classed ships and units covering the documentation required by the rules. Reports will not be disclosed to any party, apart from the national authorities involved, without the owner's consent. DNV GL also undertakes all reporting to national authorities required in connection with the safety certificates.

2.2 Who needs classification?
Classification serves as verification system for a number of parties who have special interest in the safety and quality of units, such as:
— National authorities, who accept units for registry, or let units into their territorial waters, need assurance that they are safe and represent a minimum hazard to their surroundings.
— Insurance underwriters require units to be classed in order to give insurance.
— Owners, who need the technical standard of the rules as basis for building contracts and to document the unit's standard when seeking insurance or financing, or when hiring out or selling the unit.
— Building yards and sub-contractors use the rules as a tool for design and construction, as required by their customer.
— Finance institutions use classification as a documented indicator of the unit's value.
— Charterers require confirmation of the unit's standard before hire.

2.3 Recognition of DNV GL
DNV GL is recognised as an international classification society by virtue of its position in the marine industry, founded on the following criteria:
Independence
— By classing a substantial share of the world fleet and through high equity and financial independence, the economic basis for independent decisions in classification matters is ensured.

High technical competence
— Extensive research and development in class related fields sustain a process where the rules and standards are continuously extended and improved in pace with new technology and experience gained. Research and development also contributes to a high level of staff competence.
— Continuous monitoring of a large classed fleet ensures valuable feedback from casualties, damage incidents and operational experience in general. Analyses of these data are one important source of improvements of the rules.
— DNV GL runs a scheme for training and qualification of its technical personnel to ensure correct, uniform quality of approval and survey work throughout the organisation.

Worldwide survey station network
— DNV GL operates survey stations all over the world. Efficient reporting and information systems support the operations, and provide service to customers and national authorities.

2.4 Responsibility for safety at sea

2.4.1 National law institutes national authorities' responsibility for the total safety control of units flying the national flag. Classification cannot in any way relieve the national authorities of that responsibility.

2.4.2 National authorities may use the classification system and DNV GL's worldwide survey station network as their executive branch for safety control. The convenience of this arrangement is proved by the fact that DNV GL has been delegated extensive authorisation to work and certify on behalf of the majority of the maritime nations of the world.

2.4.3 The classification system applied to delegated, statutory work offers the national authorities regular monitoring of survey and certificate status of units flying their flag. Verification of DNV GL's work process and quality systems may also be carried out. In this way, national control is retained at the discretion of the authority involved.

2.5 Classification of newbuildings

2.5.1 The builder initiates the process by submitting a request for classification to DNV GL. In response to a list of documentation issued by DNV GL for the specific class notations requested, the builder and sub-suppliers submit drawings, specifications, related technical descriptions and data, including specification of materials as required by class, for approval.

2.5.2 After examining the above documents, DNV GL informs the builder and sub-supplier whether the design and arrangement of structure, machinery and equipment is acceptable. If not, DNV GL may propose modifications needed to meet the classification requirements.

2.5.3 During the building period DNV GL carries out surveys at the building yard and its suppliers. To assess compliance with the rules the Society may require additional documentation and carry out an assessment of yard's processes, systems and personnel related to classification projects. The results of the assessment should be used as a basis to decide on the extent of the involvement of surveyors of the Society. They should be clearly reflected in the QSP.

2.5.4 The purpose of the surveys is to verify that the construction, components and equipment satisfy the rule requirements and are in accordance with the approved plans, that required materials are used, and that functional tests are carried out as prescribed by the rules.
2.5.5 When DNV GL is satisfied that the requirements specified for the unit in question have been met, the appropriate class notation will be assigned and confirmed by the issuance of a classification certificate. Provided the requirements for retention of class are complied with, the certificate will normally have a validity of five years.

2.6 Classification in the operational phase

2.6.1 Compliance with the rule requirements in the operational phase is verified by DNV GL through a system of periodical surveys. The most comprehensive survey is the one carried out in connection with the renewal of the five-yearly classification certificate. During the five year period the unit undergoes annual and intermediate surveys covering various parts, equipment and systems, depending on the class assigned.

2.6.2 In order to confirm retained validity of class, DNV GL evaluates the extent of possible sustained damage and verifies ensuing repairs. Deferred repairs may be accepted by DNV GL, but always associated with a maximum time limit.

2.6.3 The rules allow periodical surveys to contain an element of sampling. This sampling must be sufficient to enable the surveyor to obtain a proper assessment of the condition of the unit. This assessment is based amongst other things on type, age and technical history of the unit.

2.6.4 Results of the surveys are reported to the owners and to DNV GL's central office for updating records. Special findings are also recorded and used as basis for updating and development of the rules.

2.6.5 The register of vessels classed with DNV GL is available for supplying information on ship's and unit's main particulars and details of their classification.

2.7 Owner's duties

2.7.1 In order to maintain valid class the classification system specifies the following to be observed by the owner:
— The unit has to be competently handled in accordance with the rules.
— The unit has to be maintained to rule standard at all times. Any conditions of class have to be carried out as specified.
— The unit has to undergo prescribed periodical and renewal surveys, as well as surveys of damage, repairs, conversions and alterations.
— DNV GL must be furnished with all information that may influence its decisions in connection with classification.

2.7.2 Failure to meet any of these requirements may lead to termination of valid class and withdrawal of all class and statutory certificates.

2.7.3 To assist the owner in this regard DNV GL supplies regular status reports on certificates, surveys carried out and becoming due, and possible conditions of class.

3 Remuneration

Remuneration is normally based on a fee system, in which DNV GL invoices each type of survey according to a basic scale of fees. The basic scale of fees is developed by taking into consideration the amount of work needed to execute, process and follow up the survey in question, as well as the items surveyed. The fees also cover investment and development costs of the rules as well as maintenance of a worldwide survey network,
central service support system, etc. Price level and costs vary from country to country and are therefore reflected in the fees charged.

4 Classification support

4.1 General

4.1.1 The staff of DNV GL represents a significant accumulation of knowledge and practical experience in offshore-related technical fields. This is an asset often drawn on by the industry in matters related to classification.

4.1.2 The expertise of DNV GL is available to the owner at any time when needed in connection with operating problems, damage and casualties.

4.2 Pre-contract support

Co-operation with DNV GL early in the design stage, before classification is requested and any contract is signed, is usually very beneficial to both yard and owner. Different technical solutions may be evaluated, thus contributing to a more efficient unit, and ensuring that all safety aspects as specified by the rules are taken care of. In this way, expensive changes late in a project may be avoided.

4.3 In-service support

Similar services are given in connection with units in operation. Alternative ways of repairs may be indicated, acceptable distributions of crude cargo and ballast to alleviate overstressing may be computed in case of damage, stability may be investigated, etc. These are typical examples.

4.4 Limitations

Two main restrictions prevail on DNV GL when undertaking classification support work:

— DNV GL does not carry out complete, conceptual design of units. In cases where DNV GL has been involved in design support, the plans and calculations must still be independently evaluated by DNV GL before being accepted for classification purposes.
— Information received from customers in connection with assignment of class is not disclosed and used in classification support work.
APPENDIX C MOORING EQUIPMENT ACCEPTANCE STANDARD GUIDANCE

1 General
The following acceptance/rejection criteria the following standards may be used as guideline:
— for wire rope: ISO Standard 4309-2004 (E), API RP 2I
— for fibre rope: DNVGL-RP-E304
— for chain: as stated in [2.4].

2 Anchor chains; renewal survey examination guide

2.1 General

2.1.1 Magnetic particle testing (MT) shall basically cover the whole link, but concentrate on the following areas:
— shoulders of link where mechanical damage may occur
— flash butt weld for defects in way of weld
— ends of stud for cracks propagating into main part of link
— inner bend region where adjacent links bear on each other stud less chain: outer bend region at the crown and inner surfaces where the links start to bend
— any other area where there have been chain breaks or mechanical damage.

2.1.2 The diameter in way of the bend region and any area with excessive wear or gouging shall be measured on approximately 1% of the links distributed through the working length. The links are selected by the attending surveyor based on the findings of the visual inspection. The percentage may be increased or decreased if the visual inspection indicates excessive or minimal deterioration.

2.1.3 The length over five links should be measured approximately once every 100 m. However, measurements can be waived by the attending surveyor provided:
— it is confirmed that there have been no in-service problems with chain twisting/jumping or mismatch between links and windlass/fairlead pockets
— no indications of stretched links observed during the visual inspection.

2.1.4 Supplementary requirements for MT and diameter measurements shall be applied to those lengths of each chain, which have been in contact with the windlass and fairleads when the mooring system was in operation.

2.1.5 MT shall be carried out on approximately 20% of the links and the diameter shall be measured on approximately 3% of the links distributed through the 150 m length.

2.1.6 Appropriate identification marks shall be placed on the surveyed lengths of chains. The identification marks shall:
— uniquely identify each individual length of chain
— identify the common links which are fitted adjacent to joining shackles.
Alternatively, accurate reliable records equivalent to the above markings shall be available onboard. Anchor chains; acceptance criteria and repair.
2.2 Diameter loss due to abrasion and corrosion

2.2.1 Temporary mooring equipment: Links or joining shackles with minimum cross-sectional area less than 81% of the original nominal area shall be rejected. The equivalent reduction in diameter is 10%. Two perpendicular measurements shall be taken and the average compared to the allowable 10% reduction.

2.2.2 Position mooring equipment: Links or joining shackles with minimum cross-sectional area less than 90% of the original nominal area shall be rejected. The equivalent reduction in diameter is 5%. Two perpendicular measurements shall be taken and the average compared to the allowable 5% reduction. Lengths over five links should be 23.25 D as a maximum.

— Missing studs
Missing studs on stud link chains are not acceptable. Links shall be removed or studs shall be refitted, using an approved procedure.

— Corroded studs
As guidance, if the measured stud cross-sectional area is less than 40% of the nominal link (bar) cross-sectional area, links should be removed or studs should be refitted using an approved procedure.

— Studs secured by fillet welds
Grade 3 chains are sometimes fitted with studs secured by fillet welds. In service the welds may crack. The following applies:
— any axial or lateral movement is unacceptable. Links are be removed or studs shall be re-welded using an approved procedure
— links with intact fillet welds but with gaps exceeding 3 mm between the stud and the link should be removed or repaired using an approved procedure. This because the stud welds will eventually crack due to vibrations when chain is running over fairlead at speed during anchor handling
— existing links which are found to have the stud fillet welded at both ends are subject to special consideration.
— studs secured by press fitting and mechanical locking.
With this design of stud there is little prospect of the stud falling out even if it is loose. However, loose studs have caused fatigue at the edge of imprints. The following applies:
— axial stud movement up to 1 mm is acceptable
— axial stud movement greater than 2 mm is unacceptable. Links shall be removed or studs shall be pressed using an approved procedure
— acceptance of axial stud movement from 1 to 2 mm shall be evaluated based on the environmental conditions of the unit’s location and expected period of time before the chain is again available for inspection
— lateral movement up to 4 mm is acceptable provided there is no realistic prospect of the stud falling out
— welding of studs is not acceptable.

2.2.3 Cracks, gouges, and other surface defects
Defects may be removed by grinding to a depth of 7% of original nominal diameter provided the resulting cross-sectional area is at least 81% (90% for position mooring equipment) of the original nominal area. The resulting grooves shall have a length along the link of approximately six times the depth and a bottom radius of approximately three times the depth. Grooves shall be blended into the surrounding surface to avoid any sharp contours.
Complete elimination of defects shall be verified by MT or PT.
2.2.4 Gross-distortion
Links showing distortion/miss-shape shall be rejected.

2.3 Joining shackle defects and repair

2.3.1 Experience has shown a number of anchors and chains lost due to joining shackle failure. Joining shackle shall be rejected if cracks and other defects are found on the machined surfaces. In addition, all joining shackles on that chain which are of the same design and which have an equal or greater service life are also to be considered carefully with a view to rejection. Cracks and other defects on the remaining surface may be removed by grinding.

2.3.2 Distortion
Shackles showing distortion/miss-shape shall be rejected.

2.3.3 Tapered pins
Tapered pins holding the parts of joining shackles together shall make good contact at both ends and the recess of counter-bore at the large end of the pin holder should be solidly plugged with a peened lead slug to prevent the pin from working out.

2.3.4 Replacement of links and joining shackles
Links or shackles beyond repair shall be replaced with joining shackles in compliance with current rules and guided by the following good marine practice:
— joining shackles should pass through fairleads and windlasses in the horizontal plane
— since joining shackles have much lower fatigue lives than ordinary chain links as few as possible should be used
— if a large number of links meet the discard criteria and these links are distributed in the whole length, the chain should be replaced with new chain.

Any other type of replacement links are subject to special approval.

2.4 Anchors acceptance criteria and repair

2.4.1 The anchor shackle pin shall be renewed if excessively worn or bent.

2.4.2 Bent flukes or shanks may be heated and jacked back in place according to an approved procedure, followed by magnetic particle testing.

2.4.3 If swivels are fitted to the anchor, the threads engaging the swivel nut shall be examined. If significant corrosion is found, the swivel should be removed or replaced.
Main changes April 2016

- **General**
  - Clarification of the status of (top-side) modules and other subcontracted parts for new builds from a class service point of view
  - Further development of the unit specific In-service Inspection programme, defining three levels with possibilities of further inspection scope depending on available documentation/performed analysis
  - Correction of some minor issues improving efficiency and quality of IO-surveys
  - Clarification of the classification involvement for position mooring equipment with regard to CMC and in-operation surveys by introduction of a new notation ME and collecting all in operation survey requirements in dedicated sub-sections.
  - Restructured newbuilding requirements for well intervention units to improve readability
  - Clarified scope for notations WELL(1) and WELL(2)
  - Corrected survey requirements related to Drilling and Well intervention units
  - Further detailed the survey requirements for well testing equipment
  - Introducing the new notation Crane-offshore replacing the earlier notation Crane together with specific descriptions on new build and in operation survey requirements.
  - Introducing the new notation COMF-MOU replacing the earlier COMF
  - Further development of alternative survey schemes for machinery, including among other a description for a reliability centred maintenance approach
  - Further clarified the class requirements for bottom surveys.

- **Ch.1 Sec.1 Introduction**
  - [2.2] Updated definition on CMC
  - Tables 3, Table 6 and Table 7 further completed.

- **Ch.1 Sec.3 Classification scope and notations**
  - Table 5 and Table 8 updated with new notations
  - [2.9.1] New guidance note on service restrictions for self-elevating units.

- **Ch.1 Sec.4 Assignment of class**
  - [1.5.1] Updated guidance note.

- **Ch.1 Sec.6 Certification of materials and components**
  - [1.1.2] Included new guidance note.

- **Ch.2 Sec.1 Design and construction requirements for 1A main class**
  - [5.1.2] Included new clause to clarify use of rules for ships with regards to fabrication standards
  - [7.1] Updated sub-section in line with the introduction of the notation ME
  - [8.1.1] Removed anchoring and mooring equipment from listing.

- **Ch.2 Sec.3 Supplementary requirements for well intervention units**
Changes - historic

— [1.1] Former clause [1.1.5] on use of rules for ships included in clause [1.1.2]
— [1.1.3] Text updated for clarification
— [2.1.1] Clause updated and guidance note included to clarify application of rules for ships
— [3.1.3] New clause to clarify the scope of class
— [3.2] Former clause [3.2.5] on exhaust outlets deleted
— [3.2.3] Added clause for liquid cargo in bulk with flash point below 60ºC
— [4.1.1] Updated clause.

• Ch.2 Sec.5 Supplementary requirements for crane units

• Ch.2 Sec.7 Optional class notations
— [3] New sub-section covering new notation ME
— [6.1.2] Updated clause
— [10] Updated section in line with new Crane-offshore notation and completing requirement descriptions
— [15.1] Updated scope descriptions on WELL(1) and WELL(2)
— [15.2.2] New clause
— [18] Updated in line with the introduction of the new notation COMF-MOU
— [24] Updated Table 19 in line with notation updates.

• Ch.3 Sec.1 General provisions
— [1.1.5] Clause updated with added explanation
— [1.2.1] Updated clause
— [2.4.5] Bottom survey requirement and plan modified
— [2.5.1] Table 1 updated in line with notation changes.

• Ch.3 Sec.2 General requirements for structure and machinery surveys
— Replaced former clause [2.2.4] by updated present clause [2.2.4]
— Updated clauses [2.2.6] and [2.2.7].

• Ch.3 Sec.3 Periodical survey extent for main class
— [1.2] Updated descriptions on in-service inspection programme by including new clause [1.2.2] and guidance note, and removing former clauses [1.2.3] and [1.2.4] on basis scope
— Table 3 modified with regards to scope of Leg & spudcan survey
— [2.2] Removed former clause [2.2.5] on deck house examination
— [2.2] Completed descriptions by adding clauses [2.2.7], [2.2.9], [2.2.10] and [2.2.11] and updated clauses [2.2.5] and [2.2.18]
— [2.4.6] and [2.4.7] updated clauses
— [2.4.12] Completed listed items
— Removed former clauses [2.2.12], [3.2.1], [4.2.11] and [4.2.12] on mooring systems as covered under Sec.4 [8] and Sec.6
— Included new clauses [3.2.1] and [3.2.2]
— [4.2.3] Updated clause and moved former Table 5 to guidance note
— [4.2.4] Rewritten clause
— [4.2.9] Updated clause and moved former Table 7 to guidance note
— [4.4.4] Updated guidance note.
Changes - historic

Ch.3 Sec.4 Miscellaneous main class surveys
- [7] Section re-written. Bottom survey split between MODU req. and Main Class survey req.
- [8] Complete section re-written in line with new MS notation, moving original content related to position mooring to Ch.3 Sec.6 [2].

Ch.3 Sec.5 Periodical survey extent for additional service notations
- [2.3.2] Updated wording
- Former clause [2.2.3] and [3.2.3] deleted as replaced by requirements in Ch.3 Sec.3
- Former clause [2.3.4] on piping systems deleted
- [3.1.1] Clause updated, making section applicable for units with Well Intervention 1 notation
- [3.1.2] Changed wording and include supporting structure
- [3.1.3] Update clause in referring to the applicable WELL notation and included new guidance note
- [3.2.1] Updated clause specifying specific structural items
- [3.2.2] New clause on specific survey items.

Ch.3 Sec.6 Optional class notation surveys
- [2] New sub-section covering new class notation ME, including the applicable content as previous in Sec.4 [8]
- [3.2.3] and [3.3.3] added requirements to documentation review
- [5.4] New sub-section on (occasional) well test survey completing further requirements as previously were given in former [4.1] and [4.2]
- [9] Updated section including definition of survey requirements following new in line with new Crane-offshore notation
- [16] Updated section in line with introduction of COMF-MOU.

Ch.3 Sec.7 Survey arrangement
- [1] Updated clause and restructured together with [2]
- [2.2] Restructured sub-section and added new guidance note on competence responsible person
- [2.3] Brought in line with changes made in DNVGL-RU-SHIP Pt.7 Ch.1 Sec.7 and added new guidance note on competence responsible person in [2.3.2]
- [2.4] Rewritten sub-section including:
  - Added requirement for spare part management
  - More detailed requirements for continuous improvement
  - Replaced "Reliability Centred Maintenance" with "maintenance" analysis
  - More focus on maintenance supportability in the organisation
  - Options specified to use OEM maintenance recommendations, operational experience and/or RCM (IEC 60300-3-11 only as guidance)
  - More detailed requirements for implementation and functionalities in CMMS
  - More detailed survey requirements in general
- [2.5] Updated sub-section with more detailed requirements for the CM programme, including
  - Guidance note on recommended competence level for oil laboratories added
  - Requirement for approved MPMS/DPMS removed, only approved CMMS will be applicable
  - Specified requirements for documentation related to the implementation of the arrangement
  - Removed case by case approval of thrusters for propulsion/positioning.
- [3.3] Updated sub-section with information about cancellation and new requirements for CMMS functionalities
— [4.4] Updated subsection including
  — Updated qualifications requirements according to NS 415-1 to guidance note
  — Specified requirement for tutored inspection training with DNV GL.

July 2015 edition

Main changes July 2015

• General
  General Main changes July 2015, entering into force 1 January 2016 The revision of this document is part of
  the DNV GL merger, updating the previous DNV service specification 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.

• Ch.1 Sec.1 Introduction
  — Definition of offshore installations has been updated.

• Ch.1 Sec.2 Classification principles
  — Cylindrical unit has been included as Structural Design notation.

• Ch.2 Sec.1 Design and construction requirements for 1A main class
  — Cylindrical unit has been included as Structural Design notation.

• Ch.3 Sec.1 General provisions
  — Table 1 and Table 2 have been corrected in line with Class systematics.

• Ch.3 Sec.2 General requirements for structure and machinery surveys
  — [4.3.9]: Description of follow up inspections for units FUI>1 has been updated.

• Ch.3 Sec.3 Periodical survey extent for main class
  — Table 1 and Table 3 have been aligned with Table 2.
  — Table 5: Second row has been updated to ‘All other units’ to make it more general applicable.
  — [2.4.4] has been updated to align with IACS UR Z15 2.8.2.
  — In [2.2] and [4.2] previous [2.2.5] on tank level measurements has been removed.
  — In [3.2] previous [3.2.3] on thickness measurements for renewal survey has been removed.
  — In [3.2] and [4.2] previous [3.2.5] and [4.2.17] on extension of thickness measurements have been
    removed.
  — [4.2.4]: Description has been updated in line with general systematics.
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