RULES FOR

CONDITIONS OF CLASSIFICATION - OFFSHORE UNITS AND STRUCTURES
JULY 2019

PART 1
Foreword (2018)

For the 2017 edition, the Classification requirements for specific types of units, installations, vessels or systems in offshore service, previously contained in supplements within each individual Rule or Guide, were brought into these Rules for Conditions of Classification – Offshore Units and Structures (Part 1) as new Chapters.

Accordingly, the subject booklet, Rules for Conditions of Classification – Offshore Units and Structures (Part 1), is to be considered, for example, as being applicable to and comprising a “Part” of the following ABS Rules and Guides:

- Rules for Building and Classing Mobile Offshore Units (MOU Rules) – (Chapters 1 and 2)
- Rules for Building and Classing Offshore Installations (Offshore Installations Rules) – (Chapters 1 and 3)
- Rules for Building and Classing Single Point Moorings (SPM Rules) – (Chapters 1 and 4)
- Rules for Building and Classing Floating Production Installations (FPI Rules) – (Chapters 1 and 5)
- Rules for Building and Classing Facilities on Offshore Installations (Facilities Rules) – (Chapters 1 and 6)
- Guide for Building and Classing Liftboats (Liftboat Guide) – (Chapters 1 and 7)
- Guide for Building and Classing Subsea Pipeline Systems (Pipeline Guide) – (Chapters 1 and 8)
- Guide for Building and Classing Subsea Riser Systems (Riser Guide) – (Chapters 1 and 9)
- Guide for Building and Classing Floating Offshore Liquefied Gas Terminals (FLGT Guide) – (Chapters 1 and 10)
- Guide for Building and Classing Gravity-Based Offshore LNG Terminals (GBLNGT Guide) – (Chapters 1 and 11)
- Guide for Building and Classing Bottom-Founded Offshore Wind Turbine Installations (BFOWTI Guide) – (Chapters 1 and 12)
- Guide for Building and Classing Floating Offshore Wind Turbine Installations (FOWTI Guide) – (Chapters 1 and 13)

A separate Part 1 booklet, entitled Rules for Conditions of Classification (Part 1), consolidates the classification requirements for non-offshore services.
## CONTENTS

### CHAPTER 1

- **Scope and Conditions of Classification**
  - Section 1: Classification ........................................... 1
  - Section 2: Suspension and Cancellation of Classification (1998) .... 4
  - Section 3: Classification Symbols and Notations (2018) ............ 7
  - Section 4: Rules for Classification .................................. 11
  - Section 5: Other Regulations ......................................... 12
  - Section 6: IACS Audit (1 April 2010) .................................. 19
  - Section 7: Plans and Design Data to be Submitted .................. 21
  - Section 8: Conditions for Surveys After Construction ............... 22
  - Section 9: Fees .......................................................... 23
  - Section 10: Disagreement ............................................. 25
  - Section 11: Limitation of Liability (1 November 2004) .............. 26
  - Section 12: Hold Harmless (1 November 2004) ...................... 27
  - Appendix 1: Classification Symbols and Notations .................. 28
  - Appendix 2: ABS Type Approval Program ............................ 29
  - Appendix 3: Tiers of Approval (2014) ................................ 30

### CHAPTER 2

- **Classification Requirements for Mobile Offshore Units** ............ 47
  - Section 1: Classification (1 January 2008) .......................... 49
  - Section 2: Classification Symbols and Notations (2018) .......... 50
  - Section 3: Rules for Classification (1 January 2008) ............... 54
  - Section 4: Plans and Design Data to be Submitted (2012) .......... 55
  - Section 5: Operating Manual ........................................... 56

### CHAPTER 3

- **Classification Requirements for Offshore Installations** .......... 58
  - Section 1: Classification (1 January 2008) .......................... 59
  - Section 2: Classification Symbols and Notations (2018) .......... 60
  - Section 3: Rules for Classification (1 January 2008) ............... 61
  - Section 4: Plans and Design Data to be Submitted .................. 62

### CHAPTER 4

- **Classification Requirements for Single Point Moorings** .......... 64
  - Section 1: Classification (1 January 2008) .......................... 65
  - Section 2: Classification Symbols and Notations (2018) .......... 66
  - Section 3: Rules for Classification (1 January 2008) ............... 68
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Plans and Design Data to be Submitted</td>
<td>69</td>
</tr>
<tr>
<td>5</td>
<td>Information Booklet and Maintenance Manual</td>
<td>72</td>
</tr>
</tbody>
</table>

**CHAPTER 5**

Classification Requirements for Floating Production Installations

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Classification (1 January 2008)</td>
<td>73</td>
</tr>
<tr>
<td>2</td>
<td>System Classification, Symbols and Notations (1 January 2008)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Rules and the Criteria Presented for Classification (1 January 2008)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Submission of Plans, Data and Calculations</td>
<td></td>
</tr>
</tbody>
</table>

**CHAPTER 6**

Classification Requirements for Facilities on Offshore Installations

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Classification (1 January 2008)</td>
<td>94</td>
</tr>
<tr>
<td>2</td>
<td>Application, System Classification Boundaries, Symbols, and Notations (2018)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Rules for Classification (1 January 2008)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Recognition of Risk Based Techniques to Justify Alternatives</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Submission of Plans, Data, and Calculations</td>
<td></td>
</tr>
</tbody>
</table>

**CHAPTER 7**

Classification Requirements for Liftboats

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Classification (1 January 2008)</td>
<td>104</td>
</tr>
<tr>
<td>2</td>
<td>Classification Symbols and Notations (2018)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Rules for Classification (1 January 2008)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Plans and Design Data to be Submitted</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Operating Manual</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Construction Booklet</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Requirements for Building and Classing Liftboats Intended for Service in Domestic Waters</td>
<td></td>
</tr>
</tbody>
</table>

**CHAPTER 8**

Classification Requirements for Subsea Pipeline Systems

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Classification (2018)</td>
<td>116</td>
</tr>
<tr>
<td>2</td>
<td>Classification Symbols and Notations (2018)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Rules for Classification (1 January 2008)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Documents to be Submitted</td>
<td></td>
</tr>
</tbody>
</table>

**CHAPTER 9**

Classification Requirements for Subsea Riser Systems

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Classification (2018)</td>
<td>125</td>
</tr>
<tr>
<td>2</td>
<td>Classification Symbols and Notations (2018)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Rules for Classification (1 January 2008)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Documents to be Submitted</td>
<td></td>
</tr>
</tbody>
</table>
# PART 1

## CHAPTER 1 Scope and Conditions of Classification

### CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>1 Classification</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Process (1 November 2004)</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Certificates and Reports (1 January 1996)</td>
<td>4</td>
</tr>
<tr>
<td>3.1</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>3.3</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>3.5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>3.7</td>
<td>(2003)</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Representations as to Classification (1 August 2011)</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>Scope of Classification (1 March 2017)</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECTION</th>
<th>2 Suspension and Cancellation of Classification (1998)</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General (1 November 2004)</td>
<td>7</td>
</tr>
<tr>
<td>1.1</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>1.3</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>Notice of Surveys</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>Special Notations</td>
<td>7</td>
</tr>
<tr>
<td>7</td>
<td>Suspension of Class</td>
<td>7</td>
</tr>
<tr>
<td>7.1</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>7.3</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>7.5</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>7.7</td>
<td>(1 October 2007)</td>
<td>8</td>
</tr>
<tr>
<td>7.9</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>7.11</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>Lifting of Suspension</td>
<td>9</td>
</tr>
<tr>
<td>9.1</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>9.3</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>9.5</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>11</td>
<td>Cancellation of Class</td>
<td>10</td>
</tr>
<tr>
<td>11.1</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>11.3</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>11.5</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>11.7</td>
<td>(1 August 2016)</td>
<td>10</td>
</tr>
<tr>
<td>11.9</td>
<td>(1 August 2016)</td>
<td>10</td>
</tr>
<tr>
<td>13</td>
<td>Alternative Procedures</td>
<td>10</td>
</tr>
</tbody>
</table>
SECTION 3 Classification Symbols and Notations (2018) ........................................ 11
1 Offshore Units or Structures Built Under Survey ........................................ 11
3 Offshore Units or Structures Not Built Under Survey ................................ 11
5 Dynamic Positioning Systems (1994) .......................................................... 11
7 Ice Strengthening ......................................................................................... 11

SECTION 4 Rules for Classification ..................................................................... 12
1 Application of Rules ................................................................................. 12
1.1 General ................................................................................................. 12
1.3 Application ......................................................................................... 12
3 Effective Date of Rule Change ................................................................. 13
3.1 Effective Date (1 May 2017) ................................................................. 13
3.3 Implementation of Rule Changes ......................................................... 13
5 Other Conditions ....................................................................................... 14
7 Installations Not Covered by the Rules ...................................................... 14
9 Alternatives ............................................................................................... 14
9.1 General ................................................................................................. 14
9.3 National Standards ................................................................................ 14
9.5 Other Rules .......................................................................................... 14
9.7 ABS Type Approval Program (2003) .................................................... 14
11 Novel Features ......................................................................................... 18
13 Risk Evaluations for Alternative Arrangements and Novel Features .... 18

SECTION 5 Other Regulations ............................................................................ 19
1 Governmental and Other Regulations ...................................................... 19
3 Other International Conventions or Codes (1994) .................................... 19
5 Governmental Regulations (31 July 2009) ............................................... 19
5.1 Governmental Authorization ................................................................. 19
5.3 European Commission ......................................................................... 19

SECTION 6 IACS Audit (1 April 2010) ................................................................. 21

SECTION 7 Plans and Design Data to be Submitted ........................................... 22
1 Hull and Design Data (1992) .................................................................... 22
3 Machinery Plans (1 July 2013) ................................................................. 22
5 Additional Plans ....................................................................................... 22
7 Submission of Plans (1 March 2017) ......................................................... 22

SECTION 8 Conditions for Surveys After Construction ...................................... 23
1 Damage, Failure and Repair (1 January 1996) ............................................ 23
1.1 Examination and Repair .................................................. 23
1.3 Repairs (1 September 2011) ............................................ 23
1.5 Suspension of Classification (1 September 2011) ........... 23
1.7 Representation .......................................................... 23
3 Notification and Availability for Survey (1 April 2010) ........ 23
5 Attendance at Port State Request (1 January 1996) .......... 24

SECTION 9 Fees..................................................................................................... 25

SECTION 10 Disagreement.......................................................... 26
1 Rules....................................................................................... 26
3 Surveyors.............................................................................. 26

SECTION 11 Limitation of Liability (1 November 2004) ....... 27

SECTION 12 Hold Harmless (1 November 2004) ................. 28

SECTION 13 Time Bar to Legal Action (1 November 2004) ... 29

SECTION 14 Arbitration (1 November 2004) ......................... 30

APPENDIX 1 Classification Symbols and Notations.................. 31

APPENDIX 2 ABS Type Approval Program............................ 32
1 General (2014)................................................................. 32
3 Limitations (2014)............................................................ 33
5 Process (2003)................................................................. 33
5.1 Product Design Assessment (PDA) Tier 2 (2014).......... 33
5.3 Manufacturing Assessment (MA) (2003)...................... 35
5.5 Product Quality Assurance Certification (PQA) Tier 4
(IACS UR Z26 Alternative Certification Scheme)............. 36
5.7 Certificates (2003).......................................................... 37
5.9 Terms and Conditions of the Request for Product
Type Approval and Agreement (2010) .............................. 39

FIGURE 1 Process of the Type Approval Program (2014) ....... 43

APPENDIX 3 Tiers of Approval (2014)......................................... 45
PART 1

CHAPTER 1 Scope and Conditions of Classification

SECTION 1 Classification

1 Process (1 November 2004)

The Classification process consists of

a) The development of Rules, Guides, standards and other criteria for the design and construction of offshore units and structures, for materials, equipment, and machinery, and
b) The review of design and survey during and after construction to verify compliance with such Rules, Guides, standards or other criteria, and
c) The assignment and registration of class when such compliance has been verified, and
d) The issuance of a renewable Classification certificate, with annual endorsements, valid for five years.

The Rules, Guides, and standards are, in general, developed by the International Association of Classification Societies and by ABS staff, and passed upon by committees made up of naval architects, ocean and marine engineers, shipbuilders, engine builders, steel makers and by other technical, operating and scientific personnel associated with the worldwide maritime industries. Theoretical research and development, established engineering disciplines, as well as satisfactory service experience are utilized in their development and promulgation. ABS and its committees can act only upon such theoretical and practical considerations in developing Rules and standards.

Surveyors apply normally accepted examination and testing standards to those items specified for each survey by the Rules; construction procedures, safety procedures and construction supervision remain the responsibility of the shipyard, the offshore unitor structures repairer, manufacturer, Owner or other client.

For classification, the offshore units or structures are to comply with the requirements of the applicable Rules and/or Guides.

3 Certificates and Reports (1 January 1996)

3.1 Plan review and surveys during and after construction are conducted by ABS to verify to itself and its committees that an offshore unit, structure, item of material, equipment or machinery is in compliance with the Rules, Guides, standards, or other criteria of ABS and to the satisfaction of the attending Surveyor. All reports and certificates are issued solely for the use of ABS, its committees, its clients and other authorized entities.

3.3 ABS will release information from reports and certificates to the cognizant authorities, e.g., Coastal State or Port State to assist in rectification of deficiencies during port state control intervention. Such information includes text of conditions of classification, survey due dates and certificate expiration dates. The Owner will be advised of any request and/or release of information.
3.5 ABS will release certain information to the offshore unit or structure's underwriters and P&I clubs for underwriting purposes. Such information includes text of overdue conditions of classification, survey due dates and certificate expiration dates. The Owners will be advised of any request and/or release of information. In the case of overdue conditions of classification, the Owners will be given the opportunity to verify the accuracy of the information prior to release.

3.7 (2003) ABS may release an offshore unit or structure specific information related to the classification and statutory certification status. This information may be published on the ABS web site or by other media and may include the an offshore unit or structure classification, any operating restrictions noted in ABS’s Record, the names, dates and locations of all surveys performed by ABS, the expiration date of all class and statutory certificates issued by ABS, survey due dates, the text of conditions of classification (also known as outstanding recommendations), transfers, suspensions, withdrawals, cancellations and reinstatements of class, and other related information as may be required.

5 Representations as to Classification (1 August 2011) Classification is a representation by ABS as to the compliance with applicable requirements of the Rules, Guides, and standards. The Rules, Guides, and standards of the American Bureau of Shipping are not meant as a substitute for the independent judgment of professional designers, naval architects, marine engineers, Owners, Operators, masters and crew nor as a substitute for the quality control procedures of offshore units or structures builders, engine builders, steel makers, suppliers, manufacturers and sellers of units, materials, machinery or equipment. ABS, being a technical society, can only act through Surveyors or others who are believed by it to be knowledgeable and competent.

ABS represents solely to the Owner of the offshore unit or structure or other client of ABS that when assigning class, it will use due diligence in the development of Rules, Guides, and standards, and in using normally applied testing standards, procedures and techniques as called for by the Rules, Guides, standards or other criteria of ABS for the purpose of assigning and maintaining a class. ABS further represents to the Owner of the offshore unit or structure or other client of ABS that its certificates and reports evidence compliance only with one or more of the Rules, Guides, standards, or other criteria of ABS, in accordance with the terms of such certificate or report. Under no circumstances whatsoever are these representations to be deemed to relate to any third party.

The user of this document is responsible for ensuring compliance with all applicable laws, regulations and other government directives and orders related to an offshore unit or structure, its machinery and equipment, or their operation. Nothing contained in any Rule, Guide, standard, certificate or report issued by ABS shall be deemed to relieve any other entity of its duty or responsibility to comply with all applicable laws, including those related to the environment.

7 Scope of Classification (1 March 2017) Nothing contained in any certificate or report is to be deemed to relieve any designer, builder, Owner, manufacturer, seller, supplier, repairer, operator, insurer, or other entity or person of any duty to inspect or any other duty or warranty express or implied. Any certificate or report evidences only that at the time of survey the offshore unit or structure, item of material, equipment or machinery, or any other item covered by a certificate or report complied with one or more of the Rules, Guides, standards, or other criteria of the American Bureau of Shipping and is issued solely for the use of ABS, its committees, its clients or other authorized entities. Nothing contained in any certificate, report, plan or document review or approval is to be deemed to be in any way a representation or statement beyond those contained in 1-1-1/5. ABS is not an insurer or guarantor of the integrity or safety of an offshore unit or structure, or of any of its equipment or machinery. The validity, applicability, and interpretation of any certificate, report, plan or document review or approval are governed by the Rules, Guides, and standards of the American Bureau of Shipping who shall remain the sole judge thereof. ABS is not responsible for the consequences arising from the use by
other parties of the Rules, Guides, standards or other criteria of the American Bureau of Shipping, without review, plan approval and survey by ABS.

The term “approved” shall be interpreted to mean that the plans, reports or documents have been reviewed for compliance with one or more of the Rules, Guides, standards, or other criteria of ABS.

The Rules and Guides are published in the understanding that responsibility for stability and trim; for reasonable handling and loading; as well as for avoidance of distributions of weight which are likely to set up abnormally severe stresses in an offshore unit or structure does not rest upon ABS.
PART 1

CHAPTER 1 Scope and Conditions of Classification

SECTION 2 Suspension and Cancellation of Classification (1998)

1 General (1 November 2004)

The continuance of the classification of any offshore unit or structure is conditional upon the Rule or Guide requirements for periodical, damage, and other surveys being duly carried out. The Committee reserves the right to reconsider, withhold, suspend, or cancel the class of any offshore unit or structure, or any part of the machinery or equipment for noncompliance with the Rules or Guides, for defects or damages which are not reported to ABS for defects reported by the Surveyors which have not been rectified in accordance with their recommendations, or for nonpayment of fees which are due on account of Classification, Statutory, Lifting Appliances, or other Surveys. Suspension or cancellation of class may take effect immediately or after a specified period of time.

1.1 ABS reserves the right to perform unscheduled surveys of the hull, equipment, or machinery when ABS has reasonable cause to believe that the Rule requirements for periodical, damage and other surveys are not being complied with.

1.3 Failure to permit the unscheduled surveys referred to in 1-1-2/1.1 above shall result in the suspension or cancellation of class.

3 Notice of Surveys

It is the responsibility of the Owner to ensure that all surveys necessary for the maintenance of class are carried out at the proper time. ABS will notify an Owner of upcoming surveys and outstanding recommendations. This may be done by means of a letter or other communication. The non-receipt of such notice, however, does not absolve the Owner from the responsibility to comply with survey requirements for maintenance of class.

5 Special Notations

If the survey requirements related to maintenance of special notations are not carried out as required, the suspension or cancellation may be limited to those special notations only.

7 Suspension of Class

7.1 Suspension of classification is a withdrawal of all representations by ABS as to an offshore unit or structure.

7.3 Class will be suspended and the Certificate of Classification will become invalid from the date of any use, operation, loading condition or other application of any offshore unit or structure for which it has not been
approved and which affects or may affect classification or the structural integrity, quality or fitness for a particular use or service.

7.5

Class will be suspended and the Certificate of Classification will become invalid in any of the following circumstances:

i) If Continuous Survey items which are due or overdue at the time of Annual Survey are not completed and no extension has been granted,

ii) If the other surveys required for maintenance of class, other than Annual, Intermediate, or Special Periodical Surveys, are not carried out by the due date and no Rule allowed extension has been granted, or

iii) If any damage, failure, deterioration or repair has not been completed as recommended.

7.7 (1 October 2007)

Class will be subject to a suspension procedure if recommendations issued by the Surveyor are not carried out by their due dates and no extension has been granted.

7.9

Classification may be suspended, in which case the Certificate of Classification will become invalid, upon failure to submit any damage, failure, deterioration, or repairs for examination upon the first opportunity or, if proposed repairs, as referred to in 7-2-1/7 of the ABS Rules for Building and Classing Mobile Offshore Units (MOU Rules), have not been submitted to ABS and agreed upon prior to commencement, as referred to in 7-2-1/7.

7.11

Class is automatically suspended and the Certificate of Classification is invalid in any of the following circumstances:

i) If the Annual Survey is not completed by the date which is three (3) months after the due date, unless the offshore unit or structure is under attendance for completion of the Annual Survey, or

ii) If the Intermediate Survey is not completed by the date which is three (3) months after the due date of the third Annual Survey of the five (5) year periodic survey cycle, unless the offshore unit or structure is under attendance for completion of the Intermediate Survey, or

iii) If the Special Periodical Survey is not completed by the due date, unless the offshore unit or structure is under attendance for completion prior to resuming operation.

Under “exceptional circumstances” (limited to such cases as unavailability of drydocking facilities; unavailability of repair facilities; unavailability of essential materials, equipment or spare parts; or delays incurred by action taken to avoid severe weather conditions), consideration may be given for an extension of the Special Periodical Survey not exceeding three (3) months provided an offshore unit or structure is attended and the attending Surveyor(s) so recommend(s) after the following has been carried out:

- Annual Survey; and
- Re-examination of recommendations; and
- Progression of the Special Periodical Survey as far as practicable.

7.13

When an offshore unit or structure is intended for a demolition operation with any periodical survey overdue, the offshore unit’s or structure’s class suspension may be held in abeyance and consideration may be given to allow the offshore unit or structure to proceed on a single direct ballast voyage from the lay-up...
or final facility to the demolition yard. In such cases, a short term Class Certificate with conditions for the voyage noted may be issued provided the attending Surveyor finds the offshore unit or structure in satisfactory condition to proceed for the intended operation.

7.15

If due to circumstances reasonably beyond the Owner’s or ABS’s control (limited to such cases as damage to the offshore unit or structure, unforeseen inability of ABS to attend the offshore unit or structure due to the governmental restrictions on right of access or movement of personnel, unforeseeable delays in port due to unusually lengthy periods of severe weather, strikes, civil strife, acts of war, or other cases of force majeure) the offshore unit or structure is not in a port where the overdue surveys can be completed at the expiry of the periods allowed above, ABS may allow the an offshore unit or structure to sail, in class, directly to an agreed facility and, if necessary, hence, in ballast, to an agreed facility at which the survey will be completed, provided that ABS:

i) Examines the offshore unit or structure’s records; and

ii) Carries out the due and/or overdue surveys and examination of recommendations at the first port of call when there is an unforeseen inability of ABS to attend the offshore unit or structure in the present port, and

iii) Has satisfied itself that the offshore unit or structure is in a condition to sail for one trip to a facility and subsequent ballast voyage to a repair facility if necessary. (Where there is unforeseen inability of ABS to attend the offshore unit or structure in the present port, the master is to confirm that the offshore unit or structure is in condition to sail to the nearest port of call.)

If class has already been automatically suspended in such cases, it may be reinstated subject to the conditions presented in this Paragraph.

7.17 (1 February 2013)

When an offshore unit or structure is intended for a single voyage from laid-up position to repair yard with any periodical survey overdue, the offshore unit’s or structure’s class suspension may be held in abeyance and consideration may be given to allow the offshore unit or structure to proceed on a single direct ballast voyage from the site of lay up to the repair yard, upon agreement with the Flag Administration, provided ABS finds the offshore unit or structure in satisfactory condition after surveys, the extent of which are to be based on surveys overdue and duration of lay-up. A short term Class Certificate with conditions for the intended voyage may be issued. This is not applicable to offshore units or structures whose class was already suspended prior to being laid-up.

9 Lifting of Suspension

9.1

Class will be reinstated after suspension for overdue surveys upon satisfactory completion of the overdue surveys. Such surveys will be credited as of the original due date. However, the offshore unit or structure is removed from class from the date of suspension until the date class is reinstated.

9.3

Class will be reinstated after suspension for overdue recommendations upon satisfactory completion of the overdue recommendation. However, the offshore unit or structure is removed from class from the date of suspension until the date class is reinstated.

9.5

Class will be reinstated after suspension for overdue Continuous Survey items upon satisfactory completion of the overdue items.
11 Cancellation of Class

11.1 If the circumstances leading to suspension of class are not corrected within the time specified, the offshore unit or structure’s class will be canceled.

11.3 An offshore unit or structure’s class is canceled immediately when an offshore unit or structure proceeds to operate without having completed recommendations which were required to be dealt with before leaving port or resuming operations.

11.5 When class has been suspended for a period of three (3) months due to overdue Annual, Intermediate, Special Periodical, or other surveys required for maintenance of class; overdue Continuous Survey items; or overdue outstanding recommendations, class will be canceled. A longer suspension period may be granted for offshore units or structures which are either laid up, awaiting disposition of a casualty or under attendance for reinstatement.

11.7 (1 August 2016) Any attempt by Client to subcontract, assign, delegate, sublet or transfer the Classification agreement without prior written notice to ABS shall, at ABS’ option, render the Classification agreement null and void. ABS may deem the Classification of any offshore unit or structure cancelled upon the offshore unit or structure’s sale or transfer without prior written notice to ABS.

11.9 (1 August 2016) For offshore units or structures sold or transferred during layup, the new Owners are to advise ABS in writing within 90 days, irrespective of any written notification provided by previous Owners as noted in 1-1-2/11.7, of their request for continued maintenance of the offshore unit or structure’s Classification under the new Ownership. Failure to submit the request to continue Classification will result in Class cancellation.

13 Alternative Procedures

Alternatives to 1-1-2/7.11 procedures for automatic suspension of class and 1-1-2/11.5 procedures for cancellation of class may be applied to mobile offshore drilling units, or laid-up liftboats.
PART 1

CHAPTER 1  Scope and Conditions of Classification

SECTION 3  Classification Symbols and Notations (2018)

Note:
A listing of Classification Symbols and Notations available to the Owners of vessels, offshore drilling and production units, and other marine structures and systems may be viewed and downloaded from the ABS website “http://www.eagle.org”. This Section introduces the fundamental classification symbols and notations. Additional and/or optional classification symbols and notations are described in the Rules and Guides governing the specific offshore unit or structure.

1  Offshore Units or Structures Built Under Survey

Offshore units or structures which have been built to the satisfaction of the ABS Surveyor, to the applicable requirements of these Rules or their equivalent, where approved by the Committee, may be classed and distinguished in the Record by the symbols ✠A1 followed by the notation to the type of unit or structure as given in the following Chapters.

3  Offshore Units or Structures Not Built Under Survey

Offshore units or structures which have not been built under survey to ABS, but which are submitted for classification will be subject to a special classification survey. Where found satisfactory and thereafter approved by the Committee, they will be classed and distinguished in the Record by the symbols and notations as described in 1-1-3/1, and the following Chapters, but the symbol ✠ signifying survey during construction will be omitted.


Dynamic positioning systems complying with the requirements of the ABS Guide for Dynamic Positioning Systems, manufactured and installed under ABS survey and found satisfactory after trials, will be distinguished in the Record by the notation ✠DPS-0, ✠DPS-1, ✠DPS-2 or ✠DPS-3, as appropriate.

7  Ice Strengthening

A notation Ice Strengthening will be added in the Record for offshore units that comply with 3-2-A1 of the MOU Rules.
PART 1

CHAPTER 1 Scope and Conditions of Classification

SECTION 4 Rules for Classification

1 Application of Rules

1.1 General
The requirements of the following Rules and Guides are applicable to those features that are permanent in nature and can be verified by plan review, calculation, physical survey or other appropriate means. Any statement in the Rules and Guides regarding other features is to be considered as guidance to the designer, builder, manufacturer, Owner, operator or other client.

Where reference is made herein to the Rules or Guides, the latest edition of those Rules or Guides is intended.

- Rules for Building and Classing Mobile Offshore Units
- Rules for Building and Classing Offshore Installations
- Rules for Building and Classing Single Point Moorings
- Rules for Building and Classing Floating Production Installations
- Rules for Building and Classing Facilities on Offshore Installations
- Guide for Building and Classing Liftboats
- Guide for Building and Classing Subsea Pipeline Systems
- Guide for Building and Classing Subsea Riser Systems
- Guide for Building and Classing Floating Offshore Liquefied Gas Terminals
- Guide for Building and Classing Gravity-Based Offshore LNG Terminals
- Guide for Building and Classing Bottom-Founded Offshore Wind Turbine Installations
- Guide for Building and Classing Floating Offshore Wind Turbine Installations

1.3 Application
The application of the Rules and Guides is, in general, based on the contract date for construction between the shipbuilder and the prospective Owner. (e.g., Rules which became effective on 1 July 2004 are not applicable to an offshore unit or structure for which the contract for construction was signed on 30 June 2004.) See also 1-1-4/3.

The requirements in these Rules are the common requirements for conditions of classification of offshore units and structures. Any unique requirements for a specific type of offshore unit or structure are specified in the supplement to these Rules in each of the following Chapters. These Rules are to be used together with the applicable supplemental Rules for the specific type of unit or structure.
3  Effective Date of Rule Change

3.1  Effective Date (1 May 2017)

Changes to the Rules are to become effective on the date specified by ABS. In general, the effective date is not less than six months from the date on which the ABS Rules Committee approves them. However, ABS may bring into force individual changes before that date if necessary or appropriate. The effective date of changes to the Rules can be found in the Introduction to ABS publication, “Notices and General Information”, that is published with the respective Rules or Guides.

Guides and subsequent changes to Guides are to become effective on the date specified by ABS.

3.3  Implementation of Rule Changes

3.3.1  General (2005)

In general, until the effective date, plan approval for designs will follow prior practice unless review under the latest Rules or Guide is specifically requested by the party signatory to the application for classification.

3.3.2  Date of Contract for Construction (1 February 2007)

The date of "contract for construction" of an offshore unit or structure is the date on which the contract to build the offshore unit or structure is signed between the prospective Owner and the shipbuilder. The date and the construction numbers (i.e., hull numbers) of all the offshore units or structures included in the contract are required to be indicated on the form, "Application of Request for Classification".

If the signed contract for construction is amended to change the offshore unit or structure type, the date of "contract for construction" of this modified offshore unit or structure, or offshore units or structures, is the date on which the revised contract or a new contract is signed between the Owner, or Owners, and the shipbuilder.

3.3.3  Series of Units and Optional Units (21 June 2007)

The date of “contract for construction” as defined 1-1-4/3.3.2 of a series of offshore units or structures, including specified optional offshore units or structures 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 shipbuilder.

Offshore units or structures built under a single contract for construction are considered a “series of offshore units” (or structures) if they are built to the same approved plans for classification purposes. However, the offshore units or structures within a series may have design alterations from the original design provided:

i)  Such alterations do not affect matters related to classification, or
ii)  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 shipbuilder 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 ABS for approval.

The “optional offshore units” (or structures) will be considered part of the same series of offshore units or structures if the option is exercised not later than one year after the contract to build the series was signed.

3.3.4  Additional Optional Units (2005)

If a contract for construction is later amended to include additional offshore units or structures or additional options, the date of “contract for construction” for such offshore units or structures is
the date on which the amendment to the contract is signed between the prospective Owner and the shipbuilder. The amendment to the contract is to be considered as a “new contract” to which 1-1-4/3.3.2 and 1-1-4/3.3.3 above apply.

Where designs for one or more offshore units or structures comply with the Rules applicable at the time of approval, no retroactive application of later Rule changes to such offshore units or structures will be required unless necessary or appropriate.

5 Other Conditions

The Committee reserves the right to refuse classification of any offshore unit or structure where items for which there are Rule requirements are not in accordance with them.

7 Installations Not Covered by the Rules

These Rules do not apply to the structure of industrial equipment used exclusively in drilling, offshore maintenance and construction, or related operations, except insofar as their installation may affect the structural integrity and stability of the offshore unit or structure. Determination of the adequacy of sea bed bearing capacity, resistance to possible sliding and anchor holding capability is not covered by these Rules. The assessment of the required holding capacity, arrangement, and operation of position mooring equipment and dynamic positioning equipment used for station keeping is the responsibility of the Owner and is not covered by these Rules.

9 Alternatives

9.1 General

The Committee is at all times ready to consider alternative arrangements, designs, and scantlings which can be shown, through either satisfactory service experience or a systematic analysis based on sound engineering principles, to meet the overall safety, serviceability, and long-term strength standards of the Rules and Guides.

9.3 National Standards

The Committee will consider special arrangements or details of hull, equipment, or machinery which can be shown to comply with standards recognized in the country in which the offshore unit or structure is registered or built, provided they are not less effective.

9.5 Other Rules

The Committee will consider hull, equipment or machinery built to the satisfaction of the ABS Surveyors in accordance with the plans that have been approved to the Rules of another recognized classification society with verification of compliance by ABS. A record comment will be entered in the Record indicating that classification has incorporated the provisions of this Paragraph. Submission of plans is to be in accordance with Section 1-1-7.

9.7 ABS Type Approval Program (2003)

9.7.1 Type Approval

Products that can be consistently manufactured to the same design and specification may be Type Approved under the ABS Type Approval Program. The ABS Type Approval Program is a voluntary option for the demonstration of compliance of a product with the Rules or other recognized standards. It may be applied at the request of the designer or manufacturer. The ABS Type Approval Program generally covers Product Type Approval (1-1-4/9.7.3), but is also applicable for a more expeditious procedure towards Unit-Certification as specified in 1-1-4/9.7.2.
9.7.2 Unit-Certification

Unit-Certification is a review of individual materials, components, products and systems for compliance with ABS Rules, Guides or other recognized standards. This allows these items to be placed on a unit, marine structure or system to become eligible for classification. Certification is a “one-time” review. The process is:

i) A technical evaluation of drawings or prototype tests of a material, component, product or system for compliance with the ABS Rules, Guides or other recognized standards,

ii) A survey during manufacture for compliance with the ABS Rules, Guides, or other recognized standards and results of the technical evaluation,

iii) Alternatively, a Confirmation of Type Approval (see below) will expedite the requirements of i) and ii) above,

iv) Products found in compliance are issued “Individual Unit Certification”,

v) There is no requirement for subsequent reviews or surveys.

9.7.3 Product Type Approval

Product Type Approval is a voluntary program used to prove eligibility for certification by demonstrating a product manufacturer’s conformance to a specific standard or specification. Manufacturers who can demonstrate the ability to produce consistent products in compliance with these standards are issued “Confirmations of Type Approval” (see 1-1-A2/5.3). The Confirmation of Type Approval is neither an alternative to nor an equivalent to an Individual Unit Certificate. In order to remain valid, the Confirmation of Type Approval requires routine audits of the manufacturer and continued compliance of the product with existing or new specifications.

9.7.4 Approval on Behalf of Administrations

ABS has also been authorized and/or notified to type approve certain equipment on behalf of Administrations. The list of authorizations and notifications are maintained at each ABS Technical Office.

9.7.5 Applicable uses of Type Approved Products (1 August 2011)

i) When a product is at a stage suitable for testing and/or for use in a classed unit, and unit certification is required, the manufacturer is to present the product to an attending Surveyor for witnessing of all required Rule testing. Unless specified in the Design Assessment, technical evaluation would not normally be required.

ii) When a product is at a stage suitable for use in a classed unit, and unit certification is not required, the product may be installed, to the satisfaction of the attending Surveyor, without the need for technical evaluation.

iii) Where a component or product has been manufactured under an ABS Type Approved manufacturing process but unit certification has not been obtained at the place of manufacture, and unit certification is required or desired at a subsequent assembly stage, consideration will be given to unit certification provided:

   a) The ABS Type Approved manufacturer provides a declaration of conformity stating compliance with the Product Design assessment, and

   b) The declaration of conformity is accompanied by and confirms the accuracy of all reports for material and factory acceptance tests that would have been witnessed by a Surveyor if a Surveyor had attended during manufacture.

Final acceptance and testing of the components and products will be to the satisfaction of the attending Surveyor and will be at least as stringent as the factory nondestructive acceptance test required for the original manufacture of such component or product.
9.7.6 Definitions

Audit. A systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve the stated objectives.

General Audit. An audit that addresses the general operation of a site, and addresses applicable sections of the Quality and Environmental System Manual, quality and environmental system procedures, and operating procedures and process instructions.

Surveillance Audit. An audit that addresses specific areas within the operation at a site, and addresses selected sections of the Quality and Environmental System Manual, quality and environmental system procedures, and operating procedures and process instructions.

Audit Checklist. A listing of specific items within a given area that are to be audited.


Component. Parts/members of a product or system formed from material.

Finding. A statement of fact supported by objective evidence about a process whose performance characteristics meet the definition of non-conformance or observation.

Manufacturing Process. The process is the steps that one takes to produce (manufacture) a product.

Manufacturing System. The system is bigger than the manufacturing process, since it considers all of the factors that affect the process. This includes control of the process inputs, process controlling factors (such as competency of personnel, procedures, facilities and equipment, training, etc.) process outputs and measurements of quality, process and product for continual improvement, etc.

Material. Goods used that will require further forming or manufacturing before becoming a new component or product.

Non-conformance. Non-fulfillment of a specified requirement.

Observation. A detected weakness that, if not corrected, may result in the degradation of product or service quality or potential negative impact of the environment.

Original Equipment Manufacturer (OEM). The OEM is the person or legal entity that has the legal or patent rights to produce the material, component, product or system.

Product. Result of the manufacturing process.

Production Testing. This is the destructive and nondestructive testing of the materials and components used in the manufacture of a product and its final testing that is recorded in Unit Certification. The waiving of witnessed testing during production testing may only be allowed as defined in 1-1-A2/3 “Limitations” and 1-1-A2/5.5 “Product Quality Assurance Certification (PQA) Tier 4”.

Prototype Testing. This is the destructive and nondestructive testing of the materials and components presented for evaluation of the original design of a product. If a Surveyor’s witness is required, this may not be waived under any section of this Guide, unless it is done by a recognized third party.
Recognized Third Party. Is a member of the International Association of Classification Societies, a Flag Administration, a Nationally Certified testing Laboratories and others who may be presented to ABS for special consideration.

Type Testing. This is the destructive and nondestructive testing of the materials and components of the first article of a product manufactured. If a Surveyor’s witness is required, this may not be waived under any section of the Rules.

9.7.7 The Terms and Conditions for use of ABS Type Approved Product Logo (1 August 2011)

When a manufacturer's product has received a Product Design Assessment (PDA), the manufacturer is eligible to use the "Design Assessed" logo.

When a manufacturer has a PDA and has completed a satisfactory Manufacturing Assessment (MA), the product is then eligible for a Confirmation of Type Approval and the manufacturer may use the Type Approved Product Logo.

When a product is eligible for a Product Design Assessment (1-1-A2/5.1) or a Confirmation of Type Approval (1-1-A2/5.3.4), the Logos may be used with the understanding that they are copyrighted and use must be controlled as follows:

i) Both logos are not to be used at the same time. The Type Approved Product logo takes precedence and is to be used whenever the manufacturer has a valid PDA + MA. Otherwise, in the absence of an MA, only the Design Assessed logo may be used when the manufacturer has a valid PDA.

ii) Any advertisement or other use of the logo is to be presented to the Manager of ABS Programs for review prior to use

iii) The logo may only be used on correspondence, advertising and promotional material and must not be used except in connection with those goods or services described in the scope and conditions of the Product Design Assessment Certificate.

iv) The logo may be used only on those materials (i.e., Internet site, letterhead, marketing literature, advertising, invoice stock forms, packaging, etc.) relating to the particular facility and process/product lines included within the Confirmation of Type Approval.

v) The logo may not, under any circumstances, be used directly on or closely associated with products in such a way as to imply that the products themselves are “Unit – certified” by ABS.

vi) If used with other logos, ABS may ask that the manufacturer discontinue any use of other logos that are unacceptable to ABS and any form of statement that, in the opinion of ABS, might be misleading.

vii) Upon the termination of certification, for whatever reason, the manufacturer must undertake to immediately discontinue all use of the logo and to destroy all stocks of material on which they appear.

viii) When advertising the product as ABS Type Approved, the manufacturer’s name, if different from the parent company, is to be used in conjunction with this logo. Any use should be specific to the process/product line covered and not represented as a blanket approval of the company.

ix) The logo may be scaled uniformly to any size necessary. The color of the logo shall be either black or blue (reflex blue or PMS 294 blue).

x) Logos are available by e-mail from absta-programs@eagle.org.

xi) See the ABS Design Assessed and Type Approved Product Logo, as follows:
11 Novel Features

Offshore units or structures which contain novel features of design with respect to buoyancy, elevating arrangements, structural arrangements, machinery, equipment, etc. to which the Rules or Guides are not directly applicable, may be classed when approved by the Committee on the basis that the Rules or Guides, insofar as applicable, have been complied with and that special consideration has been given to the novel features, based on the best information available at the time.

13 Risk Evaluations for Alternative Arrangements and Novel Features

Risk evaluations for the justification of alternative arrangements or novel features may be applicable either to the offshore unit or structure as a whole, or to individual systems, subsystems, equipment, or components. ABS will consider the application of risk evaluations for alternative arrangements and novel features in the design, verification Surveys during construction, and Surveys for Maintenance of Class.

When applied, risk assessment techniques should demonstrate that alternatives and novel features provide acceptable levels of safety in line with current offshore and marine industry practice. The ABS Guide for Risk Evaluations for the Classification of Marine-Related Facilities provides guidance to ABS clients on how to prepare a risk evaluation to demonstrate equivalency or acceptability for a proposed design.
PART 1

CHAPTER 1 Scope and Conditions of Classification

SECTION 5 Other Regulations

1 Governmental and Other Regulations

While these Rules or Guides cover the requirements for the classification of new and existing offshore units or structures, the attention of Owners, builders, and designers is directed to the regulations of international, governmental, canal and other authorities dealing with requirements in addition to or over and above the classification requirements, including stability, structural, machinery and electrical features, particularly in hazardous areas where gas may be present or accumulate. Other considerations may include the arrangement and extent of watertight bulkheads and decks, fire-retarding bulkheads, the acceptability of watertight doors, ventilation systems, lifesaving appliances and means of escape.

3 Other International Conventions or Codes (1994)

Where authorized by the Administration of a country signatory thereto and upon request of the Owners of a classed offshore units or structures, or one intended to be classed, ABS will survey a new or existing offshore unit or structure for compliance with the provisions of applicable International Conventions and Codes, including the following, and certify thereto in the manner prescribed in the Convention or Code.

- International Convention for the Safety of Life at Sea, 1974, as amended.
- Code for the Construction and Equipment of Mobile Offshore Drilling Units, 1979 (1979 MODU Code)

5 Governmental Regulations (31 July 2009)

5.1 Governmental Authorization

Where authorized by a government agency and upon request of the Owners of a classed offshore unit or structure or one intended to be classed, ABS will survey and certify a new or existing offshore unit or structure for compliance with particular regulations of that government on their behalf.

All work performed on behalf of governments shall be governed by the terms and conditions of these Rules unless the government specifies otherwise.

Owners of a classed offshore unit or structure are required to notify ABS when an offshore unit or structure changes flag so that appropriate action can be determined with respect to the scope of ABS’s authorization by the new flag Administration.

5.3 European Commission

Notwithstanding the general duty of confidentiality owed by ABS to its clients in accordance with the ABS Rules, as a condition of classification, all offshore units or structures, owners, operators and offshore unit or structure personnel shall authorize ABS to permit the European Commission and its agents to have
access to all offshore units or structures, equipment, activities and records for purposes of assessing ABS compliance with Regulation (EC) No. 391/2009 on "Common rules and standards for ship inspection and survey organizations".


In addition to 1-1-1/1 and 1-1-8/3, it is the responsibility of the shipyard, ship repairer, manufacturer, Owner or their representatives or other client to have established safety procedures in accordance with any governmental and/or local regulatory administrations.

ABS Surveyors will conduct surveys, provided that the client’s established safety procedures are not less effective than those contained in the ABS Occupational Health and Safety Management Systems (OHSMS) Manual and its associated procedures.

If ABS Surveyors encounter conditions or procedures that may compromise the safety of the Surveyors, they may stop their survey immediately until corrective actions are taken.

Nothing in the latest revision of the ABS OHSMS Manual (including its associated procedures) is intended to replace or supersede any governmental or local authority's regulations or requirements for the implementation of or content of a premises safety plan, provided such plan is not less effective than the safety policies contained in the ABS Safety Manual.
The International Association of Classification Societies (IACS) requires audits of processes followed by all of its member societies to assess the degree of compliance with the IACS Quality System Certification Scheme requirements. For this purpose, auditors from IACS and/or an independent Accredited Certification Body (ACB) selected by ABS may accompany ABS personnel at any stage of the classification or statutory work which may necessitate the auditors having access to the offshore unit or structure, or access to the premises of the manufacturer or shipbuilder.

In such instances, prior authorization for the auditor’s access will be sought by the local ABS office.
PART 1

CHAPTER 1  Scope and Conditions of Classification

SECTION 7  Plans and Design Data to be Submitted

1  Hull and Design Data (1992)

Plans showing the scantlings, arrangements and details of the principal parts of the structure of each offshore unit or structure to be built under survey are to be submitted for review and approved before the work of construction are commenced. These plans are to clearly indicate the scantlings, joint details and welding, or other methods of connection as described in the relevant Rules or Guide are to be submitted and approved before proceeding with the work.

3  Machinery Plans (1 July 2013)

Equipment List (listing of all items that are to be fitted on the offshore unit or structure, including the item label, model/type, and manufacturer) is to be submitted.

Plans showing the arrangements and details of all propulsion and auxiliary machinery, steering gear, boilers and pressure vessels, electrical systems, jacking or other self-elevating systems, bilge and ballast systems, fire extinguishing systems, and other pumps and piping systems as described in the relevant Rules or Guide are to be submitted and approved before proceeding with the work.

Where electrical cables, hydraulic lines, etc., penetrate watertight or fire rated bulkheads by the use of standardized penetration kits, a schedule is to be provided indicating the location, number, manufacturer, model number and type of Bulkhead Penetration Devices provided to maintain the bulkhead integrity.

5  Additional Plans

Where certification under the other regulation described in Section 1-1-5 is requested, submission of additional plans and calculations may be required.

7  Submission of Plans (1 March 2017)

Plans from designers and builders should generally be submitted electronically to ABS. However, hard copies will also be accepted.

The party requesting ABS’s review or approval of plans or information represents and warrants that (a) it owns all rights, title and interest in and to any submitted material and all intellectual property rights corresponding thereto or that (b) it has the authority to disclose the submitted material and all intellectual property rights corresponding thereto on behalf of the owner(s) of the submitted material.
CHAPTER 1 Scope and Conditions of Classification

SECTION 8 Conditions for Surveys After Construction

1 Damage, Failure and Repair (1 January 1996)

1.1 Examination and Repair
Damage, failure, deterioration or repair to the hull, legs, columns or other structures, machinery or equipment of a offshore unit or structure, which affects or may affect classification, is to be submitted by the Owners or their representatives for examination by a Surveyor at first opportunity. All repairs found necessary by the Surveyor are to be carried out to the Surveyor’s satisfaction.

1.3 Repairs (1 September 2011)
Where repairs to the hull, legs, columns or other structures, machinery or equipment of offshore unit or structure, which affect or may affect classification, are planned in advance to be carried out, a complete repair procedure, including the extent of proposed repair and the need for Surveyor’s attendance, is to be submitted to and agreed upon by ABS reasonably in advance.

Note:
The above applies also to repairs during voyage or on site.

The above is not intended to include maintenance and overhaul to hull, other structures, machinery and equipment in accordance with the recommended manufacturer’s procedures and established marine and offshore practice and which does not require ABS approval. However, any repair as a result of such maintenance and overhauls which affects or may affect classification is to be noted in the unit’s log and submitted to the Surveyor, as required by 1-1-8/1.1.

1.5 Suspension of Classification (1 September 2011)
Failure to submit a damage, failure, deterioration, or repair governed by 1-1-8/1.1 to a Surveyor for examination at first opportunity, or failure to notify ABS in advance of the repairs contemplated by 1-1-8/1.3, may result in suspension of the offshore unit or structure’s classification from the date of arrival at the first port of call after the initial damage, failure, deterioration, or repair until such time as the damage, failure, or deterioration is repaired to the Surveyor’s satisfaction, or the repair is redone or evidence submitted to satisfy the Surveyor that the repair was properly carried out.

1.7 Representation
Nothing contained in this Section or in a rule or regulation of any government or other administration, or the issuance of any report or certificate pursuant to this Section or such a rule or regulation, is to be deemed to enlarge upon the representations expressed in Section 1-1-1 hereof and the issuance and use of any such reports or certificates are to be governed in all respects by Section 1-1-1 thereof.

3 Notification and Availability for Survey (1 April 2010)
The Surveyors are to have access to classed offshore units or structures at all reasonable times. For the purpose of Surveyor Monitoring, monitoring Surveyors shall also have access to classed offshore units or structures at all reasonable times. Such access may include attendance at the same time as the assigned Surveyor or during a subsequent visit without the assigned Surveyor. Auditors from an independent
Accredited Certification Body (ACB) selected by ABS, International Association of Classification Societies (IACS), and/or Flag Administration shall also be granted access when requested by ABS and accompanied by ABS personnel. The Owners or their representatives are to notify the Surveyors on all occasions when an offshore unit or structure can be examined in dry dock or on a slipway; parts of pipelines or risers not ordinarily accessible are to be examined.

The Surveyors are to undertake, with adequate notification, all surveys on classed offshore units or structures upon request of the Owners or their representatives and are to report thereon to the Committee. Should the Surveyors find occasion during any survey, to recommend repairs or further examination, notification is to be given immediately to the Owners or their representatives in order that appropriate action may be taken. The Surveyors are to avail themselves for every convenient opportunity for carrying out periodical surveys in conjunction with surveys of damages and repairs in order to avoid duplication of work.

The Owners or their representatives are responsible for establishing and maintaining safe working conditions in accordance with applicable safety standards and for providing Surveyors with safe access to sites and assistance during construction, repairs, testing and trials. Surveyors shall comply with Owner’s safety procedures to the extent such procedures are communicated to them. If the Surveyors feel the proposed working conditions are unsafe they may refuse to attend the work site.

5 **Attendance at Port State Request (1 January 1996)**

It is recognized that Port State authorities legally may have access to an offshore unit or structure. In cooperation with Port States, ABS Surveyors will attend onboard a classed offshore unit or structure when so requested by a Port State and upon concurrence by the offshore unit or structure’s master will carry out a survey in order to facilitate the rectification of reported deficiencies or other discrepancies that affect or may affect classification. ABS Surveyors will also cooperate with Port States by providing inspectors with background information, if requested. Such information includes text of conditions of class, survey due dates and certificate expiration dates.

Where appropriate, the offshore unit or structure’s flag state will be notified of such attendance and survey.

7 **Safety Management System (2003)**

It is recognized that a Safety Management System is a positive mechanism for managing maintenance of compliance with classification requirements on vessels subject to compliance with the International Safety Management (ISM) Code, as defined in SOLAS IX/1.1. If during any survey the attending ABS Surveyor finds evidence that the required safety management system is not in operation or functioning as required by the Code, this will be communicated to the relevant flag administration or the organization which issued the safety management certificate on behalf of the flag administration for their consideration and action.
Fees in accordance with normal ABS practice will be charged for all services rendered by ABS. Expenses incurred by ABS in connection with these services will be charged in addition to the fees. Fees and expenses will be billed to the party requesting that particular service.
PART 1

CHAPTER 1  Scope and Conditions of Classification

SECTION 10  Disagreement

1  Rules

Any disagreement regarding either the proper interpretation of the Rules and Guides or translation of the Rules and Guides from the English language edition is to be referred to ABS for resolution.

3  Surveyors

In case of disagreement between the Owners or builders and the Surveyors regarding the material, workmanship, extent of repairs or application of the Rules and Guides relating to any unit classed or proposed to be classed by ABS, an appeal may be made in writing to the Committee, who will order a special survey to be held. Should the opinion of the Surveyor be confirmed, the expense of this special survey is to be paid by the party appealing.
The combined liability of American Bureau of Shipping, its committees, officers, employees, agents or subcontractors for any loss, claim or damage arising from its negligent performance or nonperformance of any of its services or from breach of any implied or express warranty of workmanlike performance in connection with those services, or from any other reason, to any person, corporation, partnership, business entity, sovereign, country or nation, will be limited to the greater of a) $100,000 or b) an amount equal to ten times the sum actually paid for the services alleged to be deficient.

The limitation of liability may be increased up to an amount twenty-five times that sum paid for services upon receipt of Client’s written request at or before the time of performance of services and upon payment by Client of an additional fee of $10.00 for every $1,000.00 increase in the limitation.

Under no circumstances shall American Bureau of Shipping be liable for indirect or consequential loss or damage (including, but without limitation, loss of profit, loss of contract, or loss of use) suffered by any person as a result of any failure by ABS in the performance of its obligations under these Rules. Under no circumstances whatsoever shall any individual who may have personally caused the loss, damage or expense be held personally liable.
PART 1

CHAPTER 1 Scope and Conditions of Classification

SECTION 12 Hold Harmless (1 November 2004)

The party requesting services hereunder, or his assignee or successor in interest, agrees to release ABS and to indemnify and hold harmless ABS from and against any and all claims, demands, lawsuits or actions for damages, including legal fees, to persons and/or property, tangible, intangible or otherwise which may be brought against ABS incidental to, arising out of or in connection with this Agreement, the work to be done, services to be performed or material to be furnished hereunder, except for those claims caused solely and completely by the negligence of ABS, its agents, employees, officers, directors or subcontractors. The parties agree that for the purposes of the Convention on Limitation of Liability for Maritime Claims, 1976, ABS is a person for whose acts the shipowner is responsible.

Any other individual, corporation, partnership or other entity who is a party hereto or who in any way participates in, is engaged in connection with or is a beneficiary of, any portion of the services described herein shall also release ABS and shall indemnify and hold ABS harmless from and against all claims, demands, lawsuits or actions for damages, including legal fees, to persons and/or property, tangible, intangible or otherwise, which may be brought against ABS by any person or entity as a result of the services performed pursuant to this Agreement, except for those claims caused solely and completely by the negligence of ABS, its agents, employees, officers, directors or subcontractors.
Any statutes of limitation notwithstanding, Owner’s right to bring or to assert against ABS any and all claims, demands or proceedings whether in arbitration or otherwise shall be waived unless (a) notice is received by ABS within ninety (90) days after Owner had notice of or should reasonably have been expected to have had notice of the basis for such claims; and (b) arbitration or legal proceedings, if any, based on such claims or demands of whatever nature are commenced within one (1) year of the date of such notice to ABS.
Any and all differences and disputes of whatsoever nature arising out of services under these Rules shall be put to arbitration in the City of New York pursuant to the laws relating to arbitration there in force, before a board of three persons, consisting of one arbitrator to be appointed by ABS, one by the Client, and one by the two so chosen. The decision of any two of the three on any point or points shall be final. Until such time as the arbitrators finally close the hearings either party shall have the right by written notice served on the arbitrators and on an officer of the other party to specify further disputes or differences under these Rules for hearing and determination. The arbitration is to be conducted in accordance with the rules of the Society of Maritime Arbitrators, Inc. in the English language. The governing law shall be the law of the State of New York, U.S.A. The arbitrators may grant any relief other than punitive damages which they, or a majority of them, deem within the scope of the agreement of the parties, including, but not limited to, specific performance. Awards made in pursuance to this clause may include costs including a reasonable allowance for attorney’s fees and judgment may be entered upon any award made hereunder in any court having jurisdiction.
PART 1

CHAPTER 1  Scope and Conditions of Classification

APPENDIX 1  Classification Symbols and Notations

The listing of Classification Symbols and Notations previously contained in this Appendix may be viewed and downloaded from the ABS website “http://www.eagle.org”.
PART 1

CHAPTER 1 Scope and Conditions of Classification

APPENDIX 2 ABS Type Approval Program

1 General (2014)

When Type Approval is desired, applicants are required to submit a signed Request for Product Type Approval, identifying all adopted standards by the year of their last issuance. The Type Approval Program is made up of two components, Design Assessment and Manufacturing Assessment:

Design Assessment, which is approval of the product design, consists of:

i) Design evaluation, and

ii) Survey and/or testing of a prototype or a production unit (as appropriate)

Manufacturing Assessment, which is approval of the manufacturer, consists of:

i) Management Assessment. Evaluating the quality assurance and quality control system of the manufacturing facilities in order to assess and verify their capability to meet the manufacturer’s specified level of product quality consistently and satisfy the requirements of the Rules, as applicable. Two categories of quality assurance and quality control are in the Program:

- Recognized Quality System (RQS) is a system that is certified to be in compliance with a recognized standard at least to ISO 9000 series or equivalent and so certified by a recognized certification body. Equivalency will be determined on a case by case basis.
- Product Quality Assurance (PQA) is a system meeting the requirements for RQS and having additional approved procedures to allow a manufacturer to carry out tests and surveys as required by the Rules to be witnessed by a Surveyor.

ii) Production Assessment. Evaluating the product specific manufacturing process of the manufacturer in order to assess and verify that manufacture and inspections of the products are established to provide the manufacturer’s specified level of quality control, and to satisfy the requirements of the Rules.

The Design Assessment portion of the Type Approval Program is to be done with a signed Request for Type Approval. The request for Type Approval must be submitted for both the original and revised Design Assessments. If Manufacturing Assessment is required, as with Products being manufactured under PQA or using a PDA-DUP, it must also be requested on the application for Type Approval. The application of the Manufacturing Assessment portion can be done only in conjunction with Design Assessment.

The purposes of the Type Approval Program are:

i) To avoid repeated evaluation of identical designs,

ii) To allow acceptance of the product based on periodic surveillance of the manufacturer’s quality assurance program and, where applicable, selective inspection and tests in lieu of surveying and testing individual units at the manufacturer’s facility, (see 1-1-A2/5.3 and 1-1-A2/5.5) and

iii) To maintain a list of approvals and the type of approvals as defined in the Type Approval Program. These listings will be maintained on the ABS website so that the information is verifiable and available to the industry.
3 Limitations (2014)

The application of the Type Approval Program to a specific product is at the discretion of ABS. Those products that may not be type approved under the Type Approval Program are identified in the appropriate Sections of the Rules. For reference purposes, Tables in the applicable Sections of Part 6 of the MOU Rules and 4-2-1/15.11 TABLE 1 of the Marine Vessel Rules contain examples of the limitations of the program for machinery and equipment.

ABS will continue to require witnessed testing for products type approved under the Recognized Quality System (RQS) that require unit certification. Where Product Quality Assurance Certificate (PQA) is granted to Tier 4 products, Surveyor witnessed testing during the manufacture of the product, as required by the Rules, may be delegated to a manufacturer as per the approved Manufacturing Assessment.

Where the product is manufactured to an Administration standard, any request to waive witnessed testing must be approved by the Administration.


The process of the Type Approval Program is shown schematically in 1-1-A2/5.9.11 FIGURE 1. Each step in the process will be described in the following.

5.1 Product Design Assessment (PDA) Tier 2 (2014)

5.1.1 Design Evaluation

Plans showing details of construction, and documentation such as product specifications, performance data, standard of compliance, engineering analyses, etc., as applicable, are to be submitted for evaluation. Prior to further consideration for ABS Type Approval, the design must first show compliance with the applicable requirements of the Rules or an alternative standard as may be permitted by the Rules. Products for which there are no specific standards in the Rules may be evaluated based on recognized industry standards or, in the absence of applicable Rules or industry criteria, the manufacturer’s standard or specifications and/or engineering analyses may be considered. The basis of design evaluation will be stated in ABS’s documentation concerning the product. The design evaluation is intended to fulfill the requirements of the first element of the Type Approval Program, as described in 1-1-A2/1. It is the first step in determining that, provided that all other Rule requirements are complied with and subject to completion of manufacture and testing to the satisfaction of the attending Surveyor, the product may be used onboard a vessel, MODU or a facility classed by ABS.

A Product Design Assessment (PDA) may only be issued to the Designer or the Original Equipment Manufacturer (OEM). This is the entity that has legal or patent rights to produce the material, component, product or system. ABS will consider the Designer or the OEM to be responsible for the continued compliance of the PDA as assessed. A designer or OEM obtaining a PDA with the intent of having the product Type Approved must then request a Manufacturing Assessment. When and where the product may be manufactured is at the discretion of the owner of the PDA. If the Designer or OEM decides to license or allow the manufacture of the product by a secondary entity, then that secondary entity may receive a Duplicated Product Design Assessment (PDA-DUP). See 1-1-A2/5.1.5.

5.1.2 Survey and/or Testing of Prototype or Production Units

Where applicable, and as deemed to be a necessary part of the evaluation process, the manufacturer is to carry out, in the presence of a Surveyor, performance, nondestructive, destructive, environmental, or other tests on the product as may be specified in the Rules, in the applicable standard, or in the manufacturer’s specifications. If the required testing has been or is done in a recognized independent testing facility or in the manufacturer's facility that is certified to ISO 9001 and 1-1-A2/5.3.1(b) of these Rules, that is acceptable to ABS; consideration will be given to acceptance of test results obtained without a Surveyor present. Each ABS Technical Office will maintain a list of recognized testing facilities.
5.1.3 Product Design Assessment Certificate

Products evaluated in accordance with 1-1-A2/5.1.1 and 1-1-A2/5.1.2 and found to be in conformance with the applicable provisions of the Rules, standards, or specifications will be issued a Product Design Assessment Certificate. Designs so approved will be eligible for listing on the ABS website under the Product Design Assessment (PDA) index. They will remain in this index until a Manufacturing Assessment Certificate (MA) is issued at which point the product will be eligible for listing under the Type Approved Product (PTA) index.

A Product Design Assessment Certificate, by itself, does not reflect that the product is type approved. For that purpose, manufacturing assessment is to be carried out in accordance with 1-1-A2/5.3 or 1-1-A2/5.5.

5.1.4 Product Design Assessment, Limited

When a Product Design Assessment Certificate expires or is otherwise nullified by a Rule or specification change, the option of maintaining the listing in the category of Product Design Assessment, Limited (PDA Ltd.) index is available. There will be three categories in this PDA Ltd index:

i) A product whose certificate has expired and that is pending renewal but requires technical revalidation prior to issuance of a new certificate. The term of validity will be one year from the date of expiration of the PDA.

ii) A product that will be listed as in compliance with a previous Rule and remains valid only for vessels, MODUs, or facilities contracted for, on or before the effective date of the Rule. The effective date will be included in the service restrictions of the product. The term of validity will be five years subject to continued compliance with the applicable Rule.

iii) A system, the components of which have been evaluated, as a unit, and found in compliance with the Rules; however, final approval will be contingent upon the evaluation of the proposed on board installation.

5.1.5 Duplicate Product Design Assessment (2018)

If the Designer or OEM chooses to license or allow the manufacture of the product by a secondary entity, then that secondary entity will receive a Duplicated Product Design Assessment (PDA-DUP) as follows:

i) The Designer or OEM responsible for the original PDA must confirm in writing to the secondary manufacturer that they may use the OEM's PDA and approval documentation (Intellectual Property), unless the application for the Duplicate PDA is submitted by the Designer or OEM company (i.e., the designer or OEM give consent to issue Duplicate PDA to the secondary manufacturer).

ii) An application is to be submitted by the secondary manufacturer to the local ABS Technical Office along with evidence of the OEM's approval. The OEM's approval is to be submitted by the secondary manufacturer, unless the application for the Duplicate PDA is submitted by the OEM. The application is also to contain all the necessary drawings and data the OEM submitted to ABS as part of the original Design Assessment. The drawings may be already approved drawings that are the property of the OEM and have been passed on as an extension of approval to the secondary manufacturer as part of the intellectual property transfer. The OEM must agree that the ABS electronic copies of the approved drawings may be duplicated into the PDA-DUP.

iii) Each PDA-DUP certificate issued to a secondary manufacturer will use the original’s PDA number with the addition of “-DUP”. As an example, the numbering will be 01-LD123456-PDA-DUP. The issue date of the PDA-DUP will be the date it is created. The expiration date of the PDA-DUP must be the same as the original PDA.
iv) Each manufacturer or secondary manufacturer will be responsible for the product marketed under his PDA-DUP certificate.

v) ABS must approve any variations from the original approved product in consultation with the OEM.

vi) The terms and conditions of the Duplicated PDA will be outlined to the secondary manufacturer in the approval letter.

vii) It is mandatory that in order to have products covered by a PDA-DUP the secondary manufacturer must also hold a valid MA. Each secondary manufacturer is responsible for arranging mandatory Manufacturing Assessments as required by the Rules or standards. PDA-DUPs that do not have a valid MA 91 days after the anniversary date of the issue of the PDA-DUP will be prevented from publishing as ABS Type Approved.

viii) If the MA annual audits are not done within 91 days, the PDA-DUPs will be prevented from publishing.

ix) If the MA expires, the PDA-DUPs will be prevented from publishing.

5.3 Manufacturing Assessment (MA) (2003)

5.3.1 Quality Assurance Standard

5.3.1(a) Manufacturer’s Procedure (2014).

Prior to commencement of audit, the manufacturer is to submit to the Surveyor a copy of their certified ISO9001 certificate, or recognized equivalent, and a quality plan setting out the applicable controls that are planned to be performed on the material, component, product or system for compliance with the Rules, Guides or other standards. The plan is not to be limited to the following:

- Issuance of material specifications for purchasing
- Receiving inspection of materials
- Receiving inspection of finished components and parts
- Dimensional and functional checks on finished components and parts
- Edge preparation and fit-up tolerances
- Welding procedure qualification
- Welder qualification
- Weld inspection plan
- Welding defect tracking
- NDT written procedures and qualification documentation
- NDT plan
- Casting and weld defect resolutions
- Assembly and fit specifications
- Subassembly inspection: alignment and dimension checks, functional tests
- Testing of safety devices
- Hydrostatic testing plan
- Factory Acceptance Test Plan

5.3.1(b) Recognized Quality Standard (RQS) (2014).
The manufacturer is to have in place an effective quality assurance system certified by an internationally recognized certification body as complying with a recognized quality standard at least equivalent to the ISO 9000 series. Equivalency will be determined on a case by case basis. Such certification is to be valid at least during the validity of Manufacturing Assessment Certificate. In addition, the Manufacturing Procedure, see 1-1-A2/5.3.1(a), as implemented by the manufacturer is to be acceptable to ABS. For that purpose, a confirmatory evaluation will be conducted by the Surveyor, which will involve initial, annual and renewal audits of the quality system, in accordance with the provisions of the applicable quality assurance standard. Where considered necessary by the attending Surveyor, more frequent surveillance may be required to maintain the certification.

5.3.1(c) Quality Manual. The manufacturer is to maintain a quality manual as may be required by the standard. Where a recognized certification body has approved the Quality Manual, ABS will not require them to be submitted for ABS’s approval.

5.3.2 Quality Control
Typical quality plans describing methods of assuring and controlling quality during production as may be required by the product specifications or standard will be subject to evaluation by ABS. In particular, quality plans are to reflect specific surveys, tests, etc. wherever required by the Rules. The manufacturer is to present a sample or specimen of the product, representative of the “type” to be approved, to the Surveyor for the purpose of verifying that the “type” has been manufactured in conformance with the design documents.

5.3.3 Manufacturing Assessment Certificate (MA)
Manufacturing facilities that are successfully audited in accordance with 1-1-A2/5.3.1 and 1-1-A2/5.3.2 and are found to:

i) Have undergone a satisfactory product design evaluation, and

ii) Comply with a quality assurance standard, and

iii) Have manufacturing quality control that meets the applicable provisions of the Rules, or of the applicable product standard, or the manufacturer’s specifications,

will be issued a Manufacturing Assessment Certificate (MA) by the attending Surveyors. Manufacturers so assessed will be eligible for listing on the ABS website under the Type Approved Product (PTA) index together with the PDA Certificate data, as appropriate.

5.3.4 Confirmation of Type Approval (CTA) (2005)
Those products with both a valid Design Assessment Certificate (1-1-A2/5.1.3) and a valid Manufacturing Assessment Certificate (1-1-A2/5.3.3) are eligible for a Confirmation of Type Approval. This certificate may be printed from the ABS website only when all parts of the Type Approval Program remain current. (See also 1-1-A2/5.7.3) The Confirmation of Type Approval represents the information recorded by ABS on the product as of the date and time the certificate is printed.

5.5 Product Quality Assurance Certification (PQA) Tier 4 (IACS UR Z26 Alternative Certification Scheme) (1 December 2018)
A Product Quality Assurance Certificate (PQA) will be issued to a manufacturer who has requested that Rule-required surveys and tests be conducted without an ABS Surveyor in attendance. The manufacturer also has the option to place products not requiring unit certification into this program. Products that do not require unit certification are to follow the requirements of 1-1-A2/5.7 for unit certified products; national standards or client specifications may be used when no ABS requirement is available. For that purpose, the manufacturer is to meet the requirements for Type Approval as described in 1-1-A2/5.3 and, in addition, is to have a quality assurance system in operation that is at least as effective as the Surveyor’s attendance at
those surveys and tests. The scope of manufacturing assessment will be expanded to include a confirmatory evaluation, including at least initial, semi-annual, annual, and renewal audits of the quality system, in accordance with the provisions of the applicable quality assurance standard and ABS own criteria. When requested by the manufacturer, consideration will be given to crediting a semi-annual audit based on a Surveyor’s recommendation after attendance for Unit Certification or a surveillance visit on or about the due date of the semi-annual audit. The semi-annual audit will have a window of 30 days before and 30 days after the midpoint between annual audits.

The issuance of a Product Quality Assurance Certificate is contingent upon the recommendation by the attending Surveyor, seconded by the Surveyor in Charge and final approval by the Manager of the Type Approval Program. During the manufacture of the product, the Product Quality Assurance certification will provide an alternative to the requirements for witnessed testing by a Surveyor. This is not a relaxation of the Rule requirement for production testing, but rather allows such testing to be conducted without a Surveyor being present. In order to ensure continued compliance with the Rules, Guides or standards, a batch inspection verification system is to be agreed between the Surveyors and the manufacturer that will allow a random individual certification of production.

Where conditions justify the need for increased surveillance, the PQA does not preclude the Surveyor in Charge from expanding the scope of surveillance. Where the situation (e.g., frequency of ABS Unit Certification, batch test results, etc.) warrants such action, ABS may require a closer interval of surveillance surveys. In such instances, the requirement for a renewal audit will be specially considered. See 1-1-A2/5.7.4. ABS also reserves the right to conduct unscheduled surveillance surveys.

Manufacturers receiving a Product Quality Assurance Certificate will be distinguished on the ABS website by an added notation (PQA)/Tier 4.

5.7 Certificates (2003)

5.7.1 Unit-Certification (2014)

When a Type Approved Product is proposed for use onboard a vessel, MODU, or facility, it is to comply with all applicable requirements in the Rules, including 1-1-A2/5.7.3 hereunder. Where required by the ABS Rules, Unit Certification may also be completed as follows:

5.7.1(a) Products Covered by Product Quality Assurance (1-1-A2/5.5) Tier 4.

Products requiring unit-certification for use on a vessel, MODU, or facility classed with ABS will be unit-certified by the ABS office having jurisdiction over the manufacturer. The manufacturer will be responsible to advise the ABS office of deliveries of products and to supply the ABS office with all documentation required for unit-certification of the product and a “Declaration of Conformity with Approved Type”. The following form of declaration will be accepted if printed on each shipping document report with the name of the firm and initialed by the authorized representative of the manufacturer:

“We hereby certify that the product described herein has been manufactured to the applicable ABS Rules dated yyyy. The product has been tested in accordance with the requirements of the American Bureau of Shipping Rules.”

At the request of manufacturers, consideration may be given to modifications in the form of the declaration, provided it correspondingly indicates compliance with the requirements of the Rules to no less degree than indicated in the foregoing statement.

5.7.1(b) Products with Manufacturing Assessment (1-1-A2/5.3) Requiring Unit Certification Tier 5.

Where the Rules require attendance of the ABS Surveyor during any stage of manufacturing, including but not limited to any testing, the unit certification will be issued by the attending
Surveyor upon completion of all required surveys and tests. Where the attendance of the Surveyor is not required by the Rules, no unit certification is required.

At the discretion of the Surveyor, a unit-certification of this category may be credited to the annual audit, when conducted on or about its due date.

5.7.2 Issuance and Updating of Certificates (2014)

5.7.2(a) Issuance of Certificates (2017).

The certificates indicated in 1-1-A2/5.1.3, 1-1-A2/5.3.3 and 1-1-A2/5.5 will be issued initially for five years.

These certificates are renewable for another five-year period (from the expiry date of the previous certificate), subject to assessment of design and manufacturing in accordance with 1-1-A2/5.7.4. Failure for renewal of the manufacturing assessment certificate will cause invalidation of type approval certification at the end of the five-year period. Where for a practical reason the renewal process of any certificate cannot be completed before expiry of the five-year period, a short-term extension may be considered upon application. When the certificate is renewed within 90 days prior to its expiration date, the new certificate is to be valid from the expiration of the previous certificate.

These certificates will be updated in accordance with 1-1-A2/5.7.2(b) or 1-1-A2/5.7.2(c) where the design, Rules or Regulations used for certification is changed during the five years period. The updated certificate will be issued for five years from the date of the updating.

In addition, the following requirements will apply.

5.7.2(b) Changes to Design, Procedures and Regulations other than ABS Rules.

At any time, where there is a change in the design, procedures or the applicable standards (other than ABS Rules), the manufacturer is to endeavor to notify ABS of those changes with an application either for incorporation of the change for record purposes, or for re-assessment of the product, procedures and/or regulations, as the case may be. Failure to notify ABS about those changes may invalidate the certificate.

Unless the product is found or placed in compliance with the new requirement as a result of reassessment and where a specific implementation date is indicated in the change(s) to the Regulation adopted for the product, the certification will become invalid effective on the implementation date of the new regulation or the end of the five year period whichever comes first, unless the product is found or placed in compliance with the new requirement as a result of reassessment.

The foregoing requirements on changes to other regulations will generally apply to the changes to ABS Rules shown on the Design Assessment Certificate.

The listing on the ABS website will be replaced by the new listing upon completion of the updating, which is to be effected within the five year period shown on the certificate.

Unless the product is found or placed in compliance with the new requirement as a result of reassessment and where a retroactive application of the change(s) to ABS Rules is required and their implementation date is specified, the certification will become invalid effective on the specified implementation date or the end of the five year period whichever comes first.

5.7.2(c) Website Entry.
When the Product Type Approval becomes invalid due to overdue manufacturing audits, the products on the ABS website will be removed from the PTA index and placed on the PDA index provided that the design assessment certification is still valid.

When the design assessment certification is withdrawn or expired, all related entries on the ABS website will be deleted at that point.

5.7.3 Acceptability of Type Approved Products

Unless a specific implementation date is indicated in the adopted Regulation [see 1-1-A2/5.7.2(b)] or a retroactive application of the Rule change is required [see 1-1-A2/5.7.2(c)], a type approved product may be accepted for use on a vessel, MODU, or facility classed or to be classed with ABS provided its type approval is valid at the time of the new construction contract of the vessel, MODU, or facility.

If the implementation of change to Rules or Regulation is based on the keel laying date, then a type approved product with type approval valid at the time of keel laying of the vessel, MODU, or facility will be acceptable.

5.7.4 Renewal

For renewal of certificates, the manufacturer is to inform ABS of any change to the product design, and the following are to be conducted, as appropriate:

i) Re-evaluate the product design in accordance with 1-1-A2/5.1, to update and verify if there is a design or specification change or a change to the applicable Rules or standards; and

ii) Re-audit the quality plan in accordance with 1-1-A2/5.3.3 or 1-1-A2/5.5; and

iii) Verify by survey that a valid quality assurance system has been maintained in accordance with 1-1-A2/5.3 or 1-1-A2/5.5.

Where the manufacturer is on semi-annual or closer audit, the renewal audit for Manufacturing Assessment Certificate may be specially considered.

5.7.5 Overdue Audit (2014)

When a periodic (renewal, annual or closer) audit is not completed within 90 days after the anniversary date of the Manufacturing Assessment Certificate (for renewal or annual audit) or within 90 days after the due date (where a closer interval is specified), the entry in the ABS website will be removed from the PTA index and placed on the PDA index if the PDA is still valid and, therefore, the Confirmation of Type Approval is deemed suspended.

5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

5.9.1 Agreement (2014)

Unless otherwise agreed in writing, all services rendered and certificates issued in connection with Type Approval are governed by the terms and conditions of this section (1-1-A2/5.9) and of the “Request for Product Type Approval and Agreement” (together the “Agreement”). The Product Design Assessment of record will be the English version published on the ABS website www.typeapproval.org. By requesting product type approval, the Client agrees to be bound by these terms and conditions, and the Client accepts that the details of the product, which may contain commercially relevant data, will be published on the ABS web site and the Client understands and agrees to the publishing.
5.9.2 Representation as to Product Type Approval (2014)
A Confirmation of Product Type Approval represents that the product design meets the ABS Rules or Guides, statutory, industrial or manufacturer's standard described on the Design Assessment Certificate and that the manufacturer has established a systematic quality monitoring system sufficient to show its capacity to consistently manufacture a product which meets the designated standards. ABS is not a substitute for the independent judgment of professional designers or engineers nor a substitute for the quality control procedures of constructors, steel makers, suppliers, manufacturers and vendors of marine structures, materials, machinery or equipment. ABS represents solely to the manufacturer or other client of ABS that it will use due diligence in developing Rules, Guides and standards and in using normally applied testing standards, procedures and techniques in surveying the manufacturing facility or construction site as called for by ABS criteria for type approval.

5.9.3 Suspension of Certification (2014)
Any of the following events will cause immediate suspension of the certificate of product type approval unless the change is submitted to ABS for a new review and audit.

a) Redesign of the product or products covered by a Design Assessment certificate;
b) Change in production methods;
c) Substantial change in management organization;
d) Substantial change in frequency or curriculum for personnel training;
e) Refusing access to ABS personnel for periodic or renewal audits;
f) Failure to correct a non-compliance identified during an audit or in service;
g) Failure to maintain ISO certification, or equivalent, for the facility(ies) for Manufacturing Assessment

h) Failure to pay ABS fees.

5.9.4 Validity (2014)
The validity, applicability and interpretation of a certificate issued under the terms of or in contemplation of ABS Type Approval are governed by the Rules, Guides and standards of ABS which shall remain the sole judge thereof. Nothing contained in a Design Assessment or Manufacturing Assessment Certificate or in any report issued in contemplation of such a Certificate shall be deemed to relieve any designer, builder, owner, manufacturer, seller, supplier, repairer, operator, insurer, or other entity of any duty to inspect or any other duty or warranty express or implied, nor create any interest, right, claim or benefit in any third party. Nothing expressed herein or in any Certificate or report issued under these Rules is intended or shall be construed to give any person, firm or corporation other than the parties hereto, any right, remedy, or claim hereunder or under any provisions herein contained; all provisions hereof are for the sole and exclusive benefit of the parties hereto.

5.9.5 Disagreement
Any disagreement regarding either the proper interpretation of the Rules or translation of the Rules from the English language edition is to be referred to ABS for resolution.

5.9.6 Limitation (2014)
ABS makes no representations beyond those contained herein and in the provisions of the Agreement regarding its reports, statements, plan review, surveys, certificates or other services. Except as otherwise specifically set out in this Agreement, neither ABS nor any of its officers, committees, directors, employees, subcontractors, or agents shall be liable for any loss, damage, or expense of whatever type or kind sustained by any person due to any act, omission or error of any nature caused by ABS, its officers, committees, directors, employees, subcontractors, or agents, or due to any inaccuracy of any nature, even if held to amount to a breach of warranty.
5.9.7 Hold Harmless (2014)
Client, or its assignee or successor in interest, agree to release ABS and all ABS officers, directors, employees, subcontractors and agents (collectively “ABS Representatives”), and to indemnify and hold harmless ABS and ABS Representatives against any and all claims, demands, lawsuits, or actions for damages, including legal fees, to persons and/or property, tangible, intangible, or otherwise which may be brought against ABS or ABS Representatives incidental to, arising out of or in connection with the Agreement, the work to be done, the services to be provided or material to be furnished under ABS certificates, except for those claims caused solely and completely by the negligence of ABS or ABS Representatives.

Any other individual, corporation, partnership, limited liability company, or other entity who in any way participates in, is engaged in connection with or is a beneficiary of, any portion of the services described herein shall also release ABS and all ABS Representatives and shall indemnify and hold ABS and all ABS Representatives harmless from and against all claims, demands, lawsuits or actions for damages, including legal fees, to persons and/or property, tangible, intangible or otherwise, which may be brought against ABS or ABS Representatives by any person or entity as a result of the services performed pursuant to this Agreement, except for those claims caused solely and completely by the negligence of ABS or ABS Representatives.

5.9.8 Arbitration (2014)
Any and all differences and disputes of whatsoever nature arising out of this Agreement shall be put to arbitration in the City of New York pursuant to the laws relating to the arbitration there in force, before a board of three persons, consisting of one arbitrator to be appointed by ABS, one by Client, and one by the two so chosen. The decision of any two of the three on any point or points shall be final. Subject to 1-1-A2/5.9.9 until such time as the arbitrators finally close the hearings either party shall have the right by written notice served on the arbitrators and on an officer of the other party to specify further disputes or difference under this Agreement for hearing and determination. The arbitration is to be conducted in accordance with the rules of the Society of Maritime Arbitrators, Inc. in the English language. The governing law shall be the law of the State of New York, U.S.A. The arbitrators may grant any relief which they, or a majority of them, deem within the scope of the agreement of the parties, including, but not limited to, specific performance. Awards made in pursuance to this clause may include costs including a reasonable allowance for attorney's fees and judgment may be entered upon any award made hereunder in any court having jurisdiction. ABS and Client hereby mutually waive any and all claims to punitive damages in any forum.

Client shall be required to notify ABS within thirty (30) days of the commencement of any arbitration or any other legal proceeding between it and third parties which may concern ABS's work in connection with this Agreement and shall afford ABS an opportunity, at ABS’s sole option, to participate in the arbitration or legal proceeding.

5.9.9 Time Bar to Legal Action (2014)
Any statutes of limitation notwithstanding, Client expressly agrees that its right to bring or to assert against ABS any and all claims, demands or proceedings whether in arbitration or otherwise shall be waived unless (a) notice is received by ABS within ninety (90) days after Client had notice of or should reasonably have been expected to have had notice of the basis for such claims; and (b) arbitration or legal proceedings, if any, based on such claims or demands of whatever nature are commenced within one (1) year of the date of such notice to ABS.

5.9.10 Limitation of Liability (2014)
If Client, any licensee, subcontractor or anyone claiming through, or in the name of Client relies on any information or advice given by ABS or ABS Representatives and suffers loss, damage or expense directly thereby which is proven to have been caused by the negligent act, omission or error of ABS, ABS Representatives or from any breach of any implied or express warranty of workmanlike performance in connection with the services, or from any other reason, then the
combined liability of ABS or ABS Representatives to Client or any other person, corporation, partnership, business entity, sovereign, country or nation, will be limited to the greater of a) $100,000 or b) an amount equal to ten (10) times the sum actually paid for the services alleged to be deficient.

The limitation of liability may be increased up to an amount twenty-five (25) times that sum paid for services alleged to be deficient upon receipt of Client's written request at or before the time of performance of those services and upon payment by Client of an additional fee of $10 for every $1,000 increase in the aggregate limitation of liability for all services.

Neither ABS nor ABS Representatives shall in any circumstances be liable for indirect or consequential loss or damage (including, but without limitation, loss of profit, loss of contract, or loss of use) suffered by any person including Client from any failure by ABS in the performance of its obligations under this Agreement. Under no circumstances whatsoever shall any individual who may have personally caused the loss, damage or expense be held personally liable.

5.9.11 Scope of Certification

Nothing contained in any certificate, design assessment, manufacturing assessment, confirmation of type approval, or report is to be deemed to relieve any designer, builder, owner, manufacturer, seller, supplier, repairer, operator, insurer or other entity or person of any duty to inspect or any other duty or warranty, expressed or implied. Any certificate, design assessment, manufacturing assessment, confirmation of type approval or report evidences only that at the time of the review or audit the material, component, product or system, or any other item covered by a certificate, design assessment, manufacturing assessment, or report complied with one or more of the Rules, Guides, standards or other criteria of ABS, or, where there is no ABS standard, complied with the industry or manufacturer’s standard specified in the Type Approval listing on the ABS Type Approval website. Any listing or certificate is issued solely for the use of ABS, its committees, its clients or other authorized entities. Nothing contained in any listing, certificate, design assessment, manufacturing assessment, confirmation of type approval or report is to be deemed in any way a representation or statement beyond those contained in 1-1-A2/5.9.2 above. ABS is not an insurer or guarantor of the integrity, safety or suitability of a vessel or of the material, components, products, systems, equipment, machinery and other items incorporated in it. The validity, applicability and interpretation of any certificate, report, plan or document review or approval are governed by the Rules, Guides, standards or other criteria of ABS who shall remain the sole judge thereof. ABS is not responsible for the consequences arising from the use by other parties of the Rules, Guides, standards or other criteria of ABS, without review, plan approval and survey by ABS.

The term “approved” shall be interpreted to mean that the plans, reports or documents have been reviewed for compliance with one or more of the Rules, Guides, standards or other criteria acceptable to ABS.
FIGURE 1
Process of the Type Approval Program (2014)

Type Approval Program, 1-1-4/9.7

Design Assessment Phase
1-1-A2/5.1

Evaluation

Design Evaluation
1-1-A2/5.1.1

(As required)

Prototype Exam/Test
1-1-A2/5.1.2

Certificate

PDA, 1-1-A2/5.1.3

Design Assessment Certificate
(Prepared by the Design Assessing Engineering Office)

Type Approval Department Overview and Acceptance for Listing of PDA

Issuance of PDA by Engineering Design Assessment Office

Type Approval Certification requested?

Yes

Manufacturing Assessment Phase
(See Next Figure)
Tiers 3 and Above

No

Public Information on ABS Website (Downloadable)

Design particulars of the product are listed (No Type Approval) Tier 2
Type Approval Program (continued), 1-1-4/9.7

Manufacturing Assessment Phase
1-1-A2/5.3 & 1-1-A2/5.5

DA Certificate has been issued and Type Approval Certificate is requested
(Continued from DA Phase, 1-1-A2/5.1)

ISO 9001 or Recognized Equivalent certified?

Yes

Self-Inspection requested?

Yes [see Note 2]

No [see Note 1]

Evaluation

RQS, 1-1-A2/5.3.1(b)

Audit of manufacturer’s facilities, QA and QC systems by Surveyor to ISO 9001 or approved recognized equivalent.

Tier 3

PQA, 1-1-A2/5.5

Audit of manufacturer’s facilities, QA and QC systems by Surveyor to a degree at least as comprehensive as for RQS with additional verification of capability to carry out tests and surveys as required by the Rules. Tier 4

MA, 1-1-A2/5.3.3

Manufacturing Assessment Certification
(Issued by the Surveyor)

Certificate

Public Information on ABS Website
(Downloadable)

Confirmation of Type Approval
[See Note 1]

Confirmation of Type Approval
[See Note 2]

Note 1: If Surveyor witnessing is required by the Rules, the Surveyor is responsible to witness the manufacture of product and issue the unit certificate.

Note 2: The manufacturer will be responsible to advise the ABS office of deliveries of products and to supply the ABS office with all documentation required for certification of the product.

Note 3: For approval to Equivalent Standards, approval by ABS Type Approval is required.
Tiers 1 – 5 will be used to categorize those materials, components, products and systems normally found in the construction of vessels, MODUs and facilities classed by ABS. The tiers segregate the requirements of machinery Unit Certification based on the basic requirements of the Rules for machinery. Tables in the applicable Sections of Part 6 of the MOU Rules and 4-2-1/15.11 TABLE 1 of the Marine Vessel Rules also provide the applicability of the Type Approval Program for each of these items.

**Tier 1 – Manufacturer’s Certification (MC)**
- Rules Require Manufacturer’s Certification
- Self-Certification to a Recognized Standard
- No ABS Plan Review
- No On-site Surveyor Involvement
- No ABS Certificate Issued

**Tier 2 – Product Design Assessment (PDA)**
- Plan Review to Manufacturer’s Standard and/or ABS Rules
- No On-Site Surveyor Involvement
- ABS PDA Certificate Issued

**Tier 3 – Type Approval (TA) (see the note)**
- Product Design Assessment
  - Plan Review to ABS Rules and/or Statutory Requirements
  - And/or evaluation against recognized standard
  - PDA Certificate issued
- ABS Manufacturing Assessment
  - ISO 9001 Certification, or recognized equivalent, is mandatory
  - ABS Approved Manufacturing Procedure
  - Initial and Annual Audit of Plant by Surveyor
    - Manufacturing Assessment Certificate Issued
    - Confirmation of Type Approval Certificate Issued
- No on site Surveyor involvement during manufacture

*Note:*
Normally required for Life Saving and Fire Fighting Protection as detailed in SOLAS and other Flag Standards and Laws

**Tier 4 – Product Certification via Product Quality Assurance (PQA)**
Applicable to Mass Produced Products
- Product Design Assessment
- Plan Review to ABS Rules
  - May include evaluation against recognized standard
  - PDA Certificate issued
- ABS Manufacturing Assessment
  - ISO 9001 Certification, or recognized equivalent, is mandatory
  - ABS Approved Manufacturing Procedure
  - Initial and Semi-Annual Audits by Surveyor
    - Manufacturing Assessment Certificate Issued
    - Confirmation of Type Approval Certificate Issued
- Manufacturer provides necessary documents and issues declaration of conformity
  - Batch Inspection as necessary
- Individual Certificate and/or vendor report issued

**Tier 5 – Unit Certification via Survey During Fabrication (UC)**
- Product Design Assessment
  - Plan Review to ABS Rules
    - May also include evaluation against recognized standard
  - PDA Certificate issued or a design approval letter issued for applications limited to a specific vessel/unit
- ABS Approved Manufacturing Procedure
  - Surveyor Attendance During Fabrication
  - Witness Inspections/Material Testing Per Requirements
  - Individual Certificate and/or vendor report Issued
CHAPTER 2 Classification Requirements for Mobile Offshore Units

CONTENTS

SECTION 1 Classification (1 January 2008) ................................................................. 49

SECTION 2 Classification Symbols and Notations (2018) ........................................... 50

1 Non-Drilling Units Built Under Survey............................................................. 50
   1.1 Self-Elevating Units................................................................................ 50
   1.3 Column-Stabilized Units...................................................................... 50
   1.5 Specific Unit Types (1 May 2010)...................................................... 50

3 Drilling Units Built Under Survey.................................................................. 50
   3.1 Self-Elevating Drilling Units............................................................... 50
   3.3 Column-Stabilized Drilling Units....................................................... 50
   3.5 Surface Type Drilling Units................................................................ 51
   3.7 Other Types of Drilling Units............................................................. 51
   3.9 Drilling Systems (2012)...................................................................... 51

5 Special Purpose Units.................................................................................... 51

7 Service Limitations (1 October 2015)............................................................... 51

9 Anchoring (Temporary Mooring) Equipment (2012)...................................... 51
   9.1 Symbol ☞ for Anchoring (Temporary Mooring) Equipment.............. 51

11 Position Mooring Equipment and Systems (2012)......................................... 52
   11.1 Symbol ☮ for Position Mooring Equipment................................... 52
   11.3 Symbol ☨ for Position Mooring System........................................ 52

13 Propulsion Machinery (1 January 2011)......................................................... 52

15 Thrusters (1994)......................................................................................... 52

17 Automatic or Remote Control and Monitoring Systems............................. 52
   17.1 * ACC or * ACCU Notations......................................................... 52
   17.3 * AMCC or * AMCCU Notations.................................................. 52

SECTION 3 Rules for Classification (1 January 2008).......................................... 54

1 Application of Rules (2018)........................................................................... 54

SECTION 4 Plans and Design Data to be Submitted (2012)................................. 55

1 Hull and Design Data..................................................................................... 55

3 Machinery Plans............................................................................................ 55

5 Calculations (2017)....................................................................................... 55

7 Additional Plans............................................................................................. 55

9 Submissions.................................................................................................... 55
<table>
<thead>
<tr>
<th>SECTION</th>
<th>5</th>
<th>Operating Manual</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>.................................</td>
<td>56</td>
</tr>
<tr>
<td>1.1</td>
<td></td>
<td>.................................</td>
<td>56</td>
</tr>
<tr>
<td>1.3</td>
<td></td>
<td>.................................</td>
<td>56</td>
</tr>
<tr>
<td>1.5</td>
<td></td>
<td>.................................</td>
<td>56</td>
</tr>
<tr>
<td>1.7</td>
<td></td>
<td>.................................</td>
<td>57</td>
</tr>
<tr>
<td>1.9</td>
<td></td>
<td>.................................</td>
<td>57</td>
</tr>
<tr>
<td>1.11</td>
<td></td>
<td>.................................</td>
<td>57</td>
</tr>
<tr>
<td>1.13</td>
<td></td>
<td>(1 February 2014)</td>
<td>57</td>
</tr>
<tr>
<td>1.15</td>
<td></td>
<td>.................................</td>
<td>57</td>
</tr>
<tr>
<td>1.17</td>
<td></td>
<td>(2018)</td>
<td>57</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>.................................</td>
<td>57</td>
</tr>
</tbody>
</table>
The general requirements for conditions of classification are contained in Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1).

Additional requirements specific to mobile offshore drilling units are contained in the following Sections of this Chapter.
PART 1

CHAPTER 2 Classification Requirements for Mobile Offshore Units

SECTION 2 Classification Symbols and Notations (2018)

A listing of Classification Symbols and Notations available to the Owners of vessels, offshore drilling and production units and other marine structures and systems, “List of ABS Notations and Symbols” is available from the ABS website “http://www.eagle.org”.

The following notations are specific to mobile offshore units.

1 Non-Drilling Units Built Under Survey

Mobile Offshore Units which have been built to the satisfaction of the ABS Surveyor, to the full requirements of the applicable Rules and the MOU Rules or their equivalent, where approved by the Committee, will be classed and distinguished in the Record by the symbols ✠A1 followed by the notation to the type of unit as follows.

1.1 Self-Elevating Units

Units of this type, as described in 3-1-1/3.1 of the MOU Rules will be assigned a notation of Self-Elevating Unit.

1.3 Column-Stabilized Units

Units of this type, as described in 3-1-1/3.3 of the MOU Rules, will be assigned a notation of Column-Stabilized Unit.

1.5 Specific Unit Types (1 May 2010)

Notations for specific types of units are given in the relevant Sections of Part 8 of the MOU Rules.

3 Drilling Units Built Under Survey

(1 August 2011) Drilling units which have been built to the satisfaction of the ABS Surveyor, to the applicable requirements of these Rules or their equivalent, where approved by the Committee, may be classed and distinguished in the Record by the symbols ✠A1 followed by the notation to the type of unit as follows.

3.1 Self-Elevating Drilling Units

Units of this type, as described in 3-1-1/3.1 of the MOU Rules, will be assigned a notation of Self-Elevating Drilling Unit.

3.3 Column-Stabilized Drilling Units

Units of this type, as described in 3-1-1/3.3 of the MOU Rules, will be assigned a notation of Column-Stabilized Drilling Unit.
3.5 Surface Type Drilling Units

3.5.1 Ship-Type Drilling Units (2009)

Units of this type, as described in 3-1-1/3.5.1 of the MOU Rules, will be assigned a notation of Drillship.

3.5.2 Barge-Type Drilling Units

Units of this type, as described in 3-1-1/3.5.2 of the MOU Rules, will be assigned a notation of Barge Drilling Unit.

3.7 Other Types of Drilling Units

Units which are designed as mobile offshore drilling units which do not fall into the above categories will be treated on an individual basis and be assigned an appropriate classification designation.

3.9 Drilling Systems (2012)

A notation ✠CDS will be added in the Record for drilling units whose drilling systems and equipment comply with the requirements of the ABS Guide for the Classification of Drilling Systems, manufactured and installed under ABS survey and found satisfactory after tests.

A notation ✠CDS (N) will be added in the Record for drilling units whose drilling systems and equipment that comply with the ABS Guide for the Classification of Drilling Systems and the additional requirements for operation on the Norwegian Continental Shelf contained in the ABS Guide for Mobile Offshore Units Operating on Norwegian Continental Shelf; N-Notation.

5 Special Purpose Units

Special purpose units, which are similar in configuration and operation to mobile offshore units, may be considered for classification on the basis of these Rules, as applicable, and assigned an appropriate class designation.

7 Service Limitations (1 October 2015)

The MOU Rules are intended for units designed for unrestricted service. See 1-2-5/1 of these Rules and 3-1-3/1.3, 3-1-4/1.9 and 4-1-1/7.7 of the MOU Rules.

Units which are not designed to meet the full criteria for unrestricted service will be classed with a notation Restricted Service – Elevated Condition or Restricted Service – Afloat Condition. For each mode of operation, the limiting environmental conditions specified by the Owner and used in the design of the unit will not require the notation Restricted Service, provided that the criteria of 3-1-3/1.3, 3-1-4/1.9 and 4-1-1/7.7 of the MOU Rules for unrestricted service are met. The Owner is responsible to operate the unit within the limiting environmental conditions specified in the Operating Manual.

The notation Restricted Service will not be applied to site-specific offshore units or installations (e.g., FPSO, FSO, FPS, TLP, Spar, fixed platform) when the notation includes the geographical description of the site of installation. The name of the field, identification of the block or the geographical coordinates may be acceptable means to identify the site in the class notation.

9 Anchoring (Temporary Mooring) Equipment (2012)

Temporary mooring is intended for release at anchor or in an emergency while the unit is in the transit mode.

9.1 Symbol Ⓡ for Anchoring (Temporary Mooring) Equipment

The symbol Ⓡ will be placed after the symbols of classification to signify that the equipment for anchoring (temporary mooring) of the unit is in compliance with 3-4-1/3 of the MOU Rules or applicable portions of other Rules or Guides.
For self-propelled units, symbol ⒫ is mandatory and all anchoring (temporary mooring) equipment is to be fabricated and tested in presence of and to the satisfaction of the attending Surveyor, and certified in accordance with 6-1-10/7 TABLE 1 of the MOU Rules.

For non-propelled units fitted with anchoring (temporary mooring) equipment, if the optional symbol ⒫ is requested, equipment is to be fabricated and tested in presence of and to the satisfaction of the attending Surveyor, and certified in accordance with 6-1-10/7 TABLE 1 of the MOU Rules.


Position mooring is intended for maintaining position during the operation of the unit.

11.1 Symbol ⒫ for Position Mooring Equipment

The symbol ⒫ will be placed after the symbols of classification, provided the position mooring equipment, certified by ABS in accordance with the optional class service requested by the Owner, at least complies with 3-4-1/5 of the MOU Rules and with requirements of the Owner’s specification.

11.3 Symbol ⒬ for Position Mooring System (1 July 2019)

The symbol ⒬ will be placed after the symbols of classification to signify that the position mooring systems, certified by ABS in accordance with the optional class service requested by the Owner, are in compliance with 3-4-1/7 of the MOU Rules and with requirements of the Owner’s specification.

13 Propulsion Machinery (1 January 2011)

Propulsion machinery and boilers which are required for propulsion and which have been constructed and installed to the satisfaction of the Surveyor, to the full requirements of the MOU Rules or their equivalent, when found satisfactory after a trial and approved by the Committee, will be classed and distinguished in the Record by the notation ⒸAMS. This notation is mandatory for classification of self-propelled commercial units built under ABS survey, classed and distinguished in the Record by the notation ⒸA1. See also 3-1-1/1.5 and 3-1-1/1.7 of the MOU Rules.

Machinery and systems for non-self-propelled units are to comply with the applicable requirements of Part 4 of the MOU Rules or their equivalent. Propulsion machinery and systems used for short field moves of non-self-propelled units and complying with the requirements of the MOU Rules as applied to self-propelled units, manufactured and installed under ABS survey and found satisfactory after trials, will be distinguished in the Record by the notation ⒸAMS-NP, as appropriate.

15 Thrusters (1994)

Thruster machinery for propulsion assist or athwartship thrust complying with the applicable requirements of Section 4-3-5 of the ABS Rules for Building and Classing Marine Vessels (Marine Vessel Rules), manufactured and installed under ABS survey and found satisfactory after trials, will be distinguished in the Record by the notation ⒸPAS or ⒸAPS, as appropriate.

17 Automatic or Remote Control and Monitoring Systems

17.1 ⒸACC or ⒸACCU Notations

For automatic or remote control and monitoring systems of the propulsion machinery, ABS will consider additional classifications with symbols ⒸACC or ⒸACCU, as appropriate, provided that the applicable requirements of Part 4, Chapter 9 of the Marine Vessel Rules are satisfied.

17.3 ⒸAMCC or ⒸAMCCU Notations

For automatic or remote control and monitoring systems of the machinery other than the propulsion machinery as referenced in 1/1 of the ABS Guide for Automatic or Remote Control and Monitoring for
Machinery and Systems (other than Propulsion) on Offshore Installations, ABS will consider additional classifications with symbols AMCC or AMCCU, as appropriate, provided that the applicable requirements of the ABS Guide for Automatic or Remote Control and Monitoring for Machinery and Systems (other than Propulsion) on Offshore Installations are satisfied.
CHAPTER 2  Classification Requirements for Mobile Offshore Units

SECTION 3  Rules for Classification (1 January 2008)

1 Application of Rules (2018)

The ABS Rules for Building and Classing Mobile Offshore Units (MOU Rules) are applicable to Mobile Offshore Units intended for unrestricted ocean service, except where specifically mentioned otherwise.

These requirements are applicable to those features that are permanent in nature and can be verified by plan review, calculation, physical survey or other appropriate means. Any statement in the Rules regarding other features is to be considered as a guidance to the designer, builder, Owner, et al.
PART 1

CHAPTER 2 Classification Requirements for Mobile Offshore Units

SECTION 4 Plans and Design Data to be Submitted (2012)

1 Hull and Design Data
Plans showing the scantlings, arrangements and details of the principal parts of the structure of each unit to be built under survey and supporting analyses and calculations, as described in Section 3-1-2 of the MOU Rules, are to be submitted for review and approved before the work of construction is commenced.

3 Machinery Plans
Plans are to be submitted showing the arrangements and details of all propulsion and auxiliary machinery, steering gear, boilers and pressure vessels, electrical systems, jacking or other self-elevating systems, bilge and ballast systems, fire extinguishing systems, and other pumps and piping systems as described in 4-1-1/5, 4-1-2/7, 4-2-1/7, 4-3-1/5 and 5-2-1/3 of the MOU Rules.

5 Calculations (2017)
Design support calculations are to be submitted as described in 3-1-2/3 of the MOU Rules.

7 Additional Plans
Where additional class notations or certification under the other Rules, Guides or regulations, as described in Section 1-1-5, are requested, submission of additional plans and calculations may be required.

9 Submissions
Plans from designers and builders should generally be submitted electronically to ABS. However, hard copies will also be accepted.

All plan submissions originating from manufacturers are understood to have been made with the cognizance of the builder.
PART 1

CHAPTER 2 Classification Requirements for Mobile Offshore Units

SECTION 5 Operating Manual

1

(1 October 2015) An operating manual which is consistent with the information and criteria upon which classification is based is to be placed aboard the unit for the guidance of the operating personnel. The primary language of the Operating Manual is to be English. Units not meeting the criteria of 3-1-3/1.3 and 4-1-1/7.7 of the MOU Rules for unrestricted service are to have the notation Restricted Service – Elevated Condition or Restricted Service – Afloat Condition and details of the service restrictions are to be placed in the Operating Manual. Insofar as classification is concerned, the operating manual is to include, as appropriate, the following information:

1.1 A general description of the unit, including major dimensions, lightship characteristics;

1.3

Summaries of approved modes of operation (See 3-1-1/17 of the MOU Rules), including for each mode of operation:

i) (2012) Limiting environmental conditions, including wave height and period, wind velocity, current velocity, service temperature of the unit (see 3-1-1/25 of the MOU Rules), minimum expected sea temperature, sea bed penetration, spud can-soil stiffness, air gap, and water depth;

ii) Design deck loadings, mooring loads, icing loads, variable load, total elevated load, cantilever load, rated capacities of derricks (if applicable), cranes and elevating systems and types of helicopter for which the helideck is designed;

iii) Draft or draft range, leg length, spud can position and whether buoyant or non-buoyant, disposition of movable equipment (See 3-3-2/3.1 of the MOU Rules) such as cantilevers, drilling masts (if applicable), crane booms, etc.;

iv) Maximum allowable KG versus draft curves or equivalent and associated limitations or assumptions upon which the allowable KG is based;

v) Disposition (open or closed) of watertight and weathertight closures (See 3-3-2/5 of the MOU Rules);

vi) (1 October 2015) Identification of “Restricted Service” conditions.

1.5

Information showing:

i) General arrangements;

ii) Preload capacity (See 3-1-3/1.11 and 3-2-3/5.7 of the MOU Rules);

iii) Watertight and weathertight boundaries, location of unprotected openings, and watertight and weathertight closures;

iv) Type, location and quantities of permanent ballast;
v) Allowable deck loadings (See 3-1-3/1.11 of the MOU Rules);

vi) Capacity, centers of gravity and free surface correction for each tank;

vii) Capacity and centers of gravity of each void provided with sounding arrangements but not provided with means of draining [See 3-3-2/1.3.4(a) of the MOU Rules];

viii) Location and means of draining voids, as specified in 4-2-4/3.3 of the MOU Rules;

ix) Hydrostatic curves or equivalent;

x) Hazardous areas (See 4-3-6 of the MOU Rules);

xi) (2003) Simplified electrical one line diagrams of main power and emergency power systems;

xii) Schematic diagrams of the bilge, ballast and ballast control system;

1.7 Ballasting procedure as specified in 4-2-4/13.1 of the MOU Rules;

1.9 Recommended sequence of emergency shut-downs as specified in 4-3-5/7 of the MOU Rules;

1.11 Procedure for elevating and preloading;

1.13 (1 February 2014) Loading and KG work sheets, sample calculations for each mode of operation and instructions for their use. Work sheets and instructions are to include guidance for the routine recording of lightweight alterations.

1.15 A description of the specific locations on the unit where equipment brought onboard for the purpose of conducting well test operations may be placed and any action that need be taken to safely accommodate this equipment.

1.17 (2018) Procedures and/or arrangements for confirming engagement and full disengagement status of fixation system, where such systems are used.

3 The Operating Manual is to be submitted for review by ABS solely to verify the presence of the above information which is to be consistent with the design information and limitations considered in the unit’s classification. ABS is not responsible for the operation of the unit.

The Operating Manual required by this section does not need to be in addition to that required by flag and coastal Administrations. These administrations may require that additional information be included in the Operating Manual.
# PART 1

## CHAPTER 3 Classification Requirements for Offshore Installations

<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>SECTION</th>
<th>Classification (1 January 2008)</th>
<th>59</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION</td>
<td>1</td>
<td>Classification (1 January 2008)</td>
<td>59</td>
</tr>
<tr>
<td>SECTION</td>
<td>2</td>
<td>Classification Symbols and Notations (2018)</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 Offshore Installations Built Under Survey</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 Classification Data</td>
<td>60</td>
</tr>
<tr>
<td>SECTION</td>
<td>3</td>
<td>Rules for Classification (1 January 2008)</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 Application of Rules</td>
<td>61</td>
</tr>
<tr>
<td>SECTION</td>
<td>4</td>
<td>Plans and Design Data to be Submitted</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 Submission of Site Condition Reports</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 Submission of Design Data and Calculations</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 Submission of Plans and Specifications</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 Information Memorandum</td>
<td>62</td>
</tr>
</tbody>
</table>
The general requirements for conditions of classification are contained in Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1).

Additional requirements specific to offshore installations are contained in the following Sections of this Chapter.
Chapter 3 Classification Requirements for Offshore Installations

Section 2 Classification Symbols and Notations (2018)

A listing of Classification Symbols and Notations available to the Owners of vessels, offshore drilling and production units and other marine structures and systems, “List of ABS Notations and Symbols” is available from the ABS website “http://www.eagle.org”.

1 Offshore Installations Built Under Survey

Offshore Installations which have been built under the supervision of the ABS Surveyors to the requirements of the Offshore Installations Rules or to their equivalent, where approved by the Classification Committee, will be classed and distinguished in the Record by the symbols ☰ A1 Offshore Installation.

Offshore Installations which have been built to the satisfaction of the ABS Surveyors, to the requirements as contained in the ABS Guide for Building and Classing Facilities on Offshore Installations and/or ABS Guide for Building and Classing Subsea Pipeline Systems and/or ABS Guide for Building and Classing Subsea Riser Systems, and which are approved by the Committee will be classed and distinguished in the Record by the symbols ☰ A1 Offshore Installation followed by the appropriate notation:

- ☰ A1 Offshore Installation – Hydrocarbon Processing
- ☰ A1 Offshore Installation – Hydrocarbon Production
- ☰ A1 Offshore Installation – Electric Generating Plant (electric generating plant – export load)
- ☰ A1 Offshore Installation – Undersea Pipeline
- ☰ A1 Offshore Installation – Chemical Processing
- ☰ A1 Offshore Installation – Metals/Ore Processing

3 Classification Data

Data on offshore installations will be published in the Record as to the latitude and longitude of the location of the structure, structure type, structural dimensions and the depth of water at the site.
Chapter 3 Classification Requirements for Offshore Installations

Section 3 Rules for Classification (1 January 2008)

1 Application of Rules

The ABS Rules for Building and Classing Offshore Installations (Offshore Installations Rules) are applicable to offshore installations as defined in 3-1-1/1.13 of the Offshore Installations Rules and are generally intended to remain at a particular site for support of offshore facilities.

The Offshore Installations Rules are applicable to those features of the system that are permanent in nature and can be verified by plan review, calculation, physical survey or other appropriate means. Any statement in the Rules regarding other features is to be considered as a guidance to the designer, builder, owner, et al.
PART 1

CHAPTER 3  Classification Requirements for Offshore Installations

SECTION 4  Plans and Design Data to be Submitted

1 Submission of Site Condition Reports

As required in subsequent sections of the Offshore Installations Rules, site condition reports are to be submitted. The principal purpose of these reports is to demonstrate that site conditions have been evaluated in establishing design criteria. Among the items to be discussed are:

i) Environmental conditions of waves, winds, currents, tides, water depth, air and sea temperature and ice;

ii) Seabed topography, stability, and pertinent geotechnical data; Seismic conditions;

iii) Where appropriate, data established for a previous installation in the vicinity of the installation proposed for classification may be utilized if acceptable in the opinion of ABS.

3 Submission of Design Data and Calculations

Information is to be submitted for the offshore installation which describes the methods of design and analysis which were employed to establish its design. The estimated design service life of an offshore installation is also to be stated. Where model testing is used as a basis for a design, the applicability of the test results will depend on the demonstration of the adequacy of the methods employed, including enumeration of possible sources of error, limits of applicability, and methods of extrapolation to full scale data. Preferably, procedures are to be reviewed and agreed upon before model testing is done.

As required in subsequent sections, calculations are to be submitted to demonstrate the sufficiency of the proposed design. Such calculations are to be presented in a logical and well-referenced fashion employing a consistent system of units. Where the calculations are in the form of computer analysis, the submitted is to provide input and output data with computer generated plots for the structural model. A program description (not listings), user manuals, and the results of program verification sample problems may be required to be submitted.

5 Submission of Plans and Specifications

Plans or specifications depicting or describing the arrangements and details of the major items of the offshore installation are to be submitted for review or approval in a timely manner.

Where deemed appropriate, and when requested by the Owner, a schedule for information submittal and plan approval can be jointly established by the Owner and ABS. This schedule, which ABS will adhere to as far as reasonably possible, is to reflect the construction schedule and the complexity of the platform as it affects the time required for review of the submitted data.

7 Information Memorandum

An information memorandum on the offshore installation is to be prepared and submitted to ABS. ABS will review the contents of the memorandum to establish consistency with other data submitted for the purpose of obtaining classification. ABS will not review the contents of the memorandum for their accuracy or the features described in the memorandum for their adequacy.
An information memorandum is to contain, as appropriate to the installation, the following:

i) Site plan indicating the general features at the site and the exact location of the installation

ii) Environmental design criteria, including the recurrence interval used to assess environmental phenomena (see 3-1-2/5.1 of the Offshore Installations Rules)

iii) Plans showing the general arrangement of the offshore installation

iv) Description of the safety and protective systems provided

v) The number of personnel to be normally stationed at the installation

vi) Listing of governmental authorities having cognizance over the installation

vii) Listing of any novel features

viii) Brief description of any monitoring proposed for use on the installation

ix) Description of transportation and installation procedures
PART 1

CHAPTER 4 Classification Requirements for Single Point Moorings

CONTENTS

SECTION 1 Classification (1 January 2008) ........................................................ 65

SECTION 2 Classification Symbols and Notations (2018) .................................. 66
  1 Single Point Moorings Built Under Survey (2014) .................................... 66
     1.1 General .................................................................................. 66
     1.3 Modified Scope to Exclude PLEM ......................................... 66
     1.5 Unconventional Designs ...................................................... 66
  3 Single Point Mooring as a Part of a Floating Production System (2011) .... 67
  5 Classification Data .............................................................................. 67

SECTION 3 Rules for Classification (1 January 2008) ...................................... 68
  1 Application of Rules ........................................................................... 68

SECTION 4 Plans and Design Data to be Submitted ....................................... 69
  1 Plans .............................................................................................. 69
  3 Site Chart ....................................................................................... 70
  5 Site Condition Reports .................................................................... 70
  7 Model Tests ................................................................................... 70
  9 Calculations .................................................................................. 70
 11 Additional Plans ............................................................................ 71
 13 Submissions (2011) ....................................................................... 71

SECTION 5 Information Booklet and Maintenance Manual .............................. 72
  1 Items Included in Information Booklet and Maintenance Manual .......... 72
The general requirements for conditions of classification are contained in Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1).

Additional requirements specific to single point moorings are contained in the following Sections of this Chapter.
PART 1

CHAPTER 4 Classification Requirements for Single Point Moorings

SECTION 2 Classification Symbols and Notations (2018)

A listing of Classification Symbols and Notations available to the Owners of vessels, offshore drilling and production units and other marine structures and systems, “List of ABS Notations and Symbols” is available from the ABS website “http://www.eagle.org”.

1 Single Point Moorings Built Under Survey (2014)

1.1 General

SPM’s which have been built under the supervision of the ABS Surveyors to the requirements of these Rules or to their equivalent, where approved by the Classification Committee, will be classed and distinguished in the Record by the symbols ★A1 Single Point Mooring. This document is mainly applicable to SPM systems which are designed for temporarily moored vessels. For vessels which will be permanently moored to a SPM, the ABS Rules for Building and Classing Floating Production Installations (FPI Rules) applies. Data as described in 1-4-2/5 will be indicated in the Record.

1.3 Modified Scope to Exclude PLEM

When requested by the Owner and agreed to by ABS; the Pipeline End Manifold, PLEM, (or similar equipment) associated with the SPM may be exempted from the scope of Classification. The manner used to control the flow of fluid between a subsea pipeline and the visiting vessel is to be fully described in documentation provided to ABS when requesting this exemption. As appropriate, the Classification Designation used when the PLEM is excluded from the scope of classification is Single Point Mooring (excl. PLEM). The following portions of the SPM Rules will not apply when the PLEM is excluded from the scope of classification: 3-2-2/17, 4-1-4/9 and items pertinent to the PLEM in 5-1-1/11.3 TABLE 2. It is the Owner’s responsibility to verify that the exclusion of the PLEM from ABS design review and survey is acceptable to the governmental authority having jurisdiction over the SPM.

1.5 Unconventional Designs

The SPM Rules apply to conventional SPM designs. A conventional SPM provides temporary offshore mooring to a variety of visiting vessels by means of a hawser or yoke from the buoy or fixed tower. Fluid transfer between the visiting vessel and a sea floor pipeline is performed by an underbuoy hose or riser, and a hose between the buoy or tower and the visiting vessel.

An example of a mooring system design that differs from the above concept is one characterized as a detachable turret-type system. In this case the visiting vessel has a unique mating assembly used to join the buoy and the vessel. The mating assembly may be located inside the hull of the visiting vessel, or the assembly may be mounted externally at an end of the vessel. Fluid flow may occur through jumper hoses or piping between the buoy and vessel. The applicability of the SPM Rules to an unconventional design will be decided by ABS on a case-by-case basis. In such a case, the criteria in the SPM Rules may need to be supplemented or replaced by criteria in the FPI Rules.
3 Single Point Mooring as a Part of a Floating Production System (2011)

SPM’s built under survey for use as part of the mooring system for a classed floating production system do not require a separate classification under the SPM Rules. Requirements for mooring systems of floating production systems are found in the FPI Rules.

5 Classification Data

Data on single point moorings will be published in the Record as to the latitude and longitude of the location of the mooring, the length overall and displacement of the ship it is designed to moor, the depth of water at the site, maximum hawser tension where applicable, and general types of cargo and other fluids which the mooring is designed to handle.
PART 1
CHAPTER 4 Classification Requirements for Single Point Moorings
SECTION 3 Rules for Classification (1 January 2008)

1 Application of Rules

The ABS Rules for Building and Classing Single Point Moorings (SPM Rules) are applicable to unmanned SPM's as defined in 3-1-1 of the SPM Rules and are generally intended for temporary moored vessels.

The SPM Rules are applicable to those features of the system that are permanent in nature and can be verified by plan review, calculation, physical survey or other appropriate means. Any statement in the SPM Rules regarding other features is to be considered as a guidance to the designer, builder, owner, et al.
Chapter 4 Classification Requirements for Single Point Moorings

Section 4 Plans and Design Data to be Submitted

1 Plans

Plans showing the scantlings, arrangements, and details of the principal parts of the structure, associated piping and equipment of each SPM to be built under survey are to be submitted for review and approved before construction is commenced. These plans are to clearly indicate the scantlings, joint details and welding, or other methods of connection. The number of copies to be submitted is to be in accordance with 1-4-4/11 and 1-4-4/13. In general, plans are to include the following where applicable.

- General arrangement
- An arrangement plan of watertight compartmentation, including the location, type and disposition of watertight and weathertight closures
- Structural arrangement showing shell plating, framing, bulkheads, flats, main and bracing members, joint details, as applicable
- Details of watertight doors and hatches
- Welding details and procedures
- Corrosion control arrangements
- Type, location and amount of permanent ballast, if any
- Bilge, sounding and venting arrangements
- Hazardous areas
- Electrical system one line diagrams
- Location of fire safety equipment
- Mooring arrangement
- Mooring components including anchor legs, associated hardware, hawser(s), and hawser load-deflection characteristics
- Foundations for mooring components, industrial equipment, etc. showing attachments to hull structure
- Anchoring system showing the size of anchor, holding capacity of piles, pile sizes, and capacity, etc.
- Pipe Line End Manifold (PLEM) as applicable
- SPM main bearing
- Cargo or product swivel including swivel driving mechanism, swivel bearings, and electrical swivel details
- Product or cargo system piping schematic drawing with bill of materials
- Design data of equipment, piping and related components including minimum and maximum design pressure and temperature
- Ancillary piping systems schematic drawings with bills of material
- Floating and underbuoy hoses/flexible risers
- Telemetry/Control system
- Navigation aids
- Methods and locations for nondestructive testing (NDT)
- Plans for conducting underwater inspections in lieu of drydocking
- Test and inspection plan for all major load carrying or pressure retaining components including cargo or product swivel, electrical swivel, bearings.
- Test Procedures

3 Site Chart

To demonstrate that navigational considerations have been taken into account in establishing the mooring location, a site chart of the mooring area is to be submitted in accordance with Section 3-1-2 of the *SPM Rules* which shows the location of the mooring, potential navigation hazards and existing and planned navigation aids, bottom contour elevations, maneuvering area and swing circle.

5 Site Condition Reports

To demonstrate that site conditions have been ascertained and taken into consideration in establishing design criteria, reports on subjects including the following are to be submitted in accordance with Section 3-1-2 of the *SPM Rules*.

i) Environmental conditions of wind, waves, current, seiche, tide, visibility, temperature, and ice.

ii) Water depth, at berth and throughout the maneuvering area, bottom soil conditions, and subsurface hazards.

7 Model Tests

When model tests are used to determine the design loads or to demonstrate that the established design loads have been based on the results of physical dynamic model tests, a report is to be submitted describing the design loads, calculations, description of model test facilities and procedures, and a summary of the results. It is recommended that the designer consult with ABS concerning model testing, procedures, methods and data analysis to ensure the investigation is adequate.

9 Calculations

In general, where applicable, the following calculations are to be submitted:

i) Structural design in accordance with Section 3-2-2 of the *SPM Rules*

ii) Stability calculations in accordance with Section 3-2-2 of the *SPM Rules*

iii) Mooring and anchorage in accordance with Section 3-4-1 of the *SPM Rules*

iv) Piping in accordance with Part 4, Chapters 1 and 2 of the *SPM Rules*

v) Calculations for all pressure retaining and load bearing components in accordance with Part 4 of the *SPM Rules*

vi) Swivel stack static and dynamic analysis in accordance with Part 4 of the *SPM Rules*

Calculations when submitted are to be footnoted indicating references.
11 Additional Plans

Where certification under the other regulations described in Section 1-1-5 is requested, submission of additional plans and calculations may be required.

13 Submissions (2011)

Plans should generally be submitted electronically to ABS. However, hard copies will also be accepted.

Additional copies may be required when the required attendance of the Surveyor is anticipated at multiple locations.

All plan submissions originating from manufacturers are understood to have been made with the cognizance of the builder.
CHAPTER 4 Classification Requirements for Single Point Moorings

SECTION 5 Information Booklet and Maintenance Manual

For each SPM, a document is to be submitted. This document is to include recommendations regarding operation and maintenance of the SPM facility, the design criteria for the SPM, information regarding the mooring area, and the components of the SPM.

1 Items Included in Information Booklet and Maintenance Manual

The document is to include the following information.

i) Site chart as described in 1-4-4/3
ii) Design vessel data, including deadweight, length, draft and distance from bow to manifold.
iii) Environmental design criteria with various sizes of vessels, including the operating wind, wave, current and tides.
iv) Design cargo transfer criteria, including type of cargo and design maximum working pressure, temperature, flow rate, and minimum valve closing times including the vessel’s manifold valves.
v) Plans showing the general arrangement of the single point mooring components and details of those components required to be handled during operation or inspected during maintenance, including details of access to these components.
vi) Description of navigation aids and safety features.
vii) Recommended procedure for the mooring and disconnecting a vessel at the SPM.
viii) Recommended procedure for connecting and disconnecting floating hose to a tanker’s manifold.
ix) Recommended maintenance schedule and procedures for the SPM facilities, including a check list of items recommended for periodic inspection. Where applicable, procedures for adjusting anchor leg tension, removal and reinstallation of hoses, inspection of flexible risers, adjustment of buoyancy tanks, and replacement of seals in the cargo swivel are to be included.
x) Recommended cargo system pressure testing.

The Information Booklet and Maintenance Manual is to be submitted for review by ABS solely to ensure the presence of the above information which is to be consistent with the design information and limitations considered in the SPM’s classification. ABS is not responsible for the operation of the SPM.

The Information Booklet & Maintenance Manual required by the SPM Rules may contain information required by flag and coastal Administrations. These Administrations may require that additional information be included in the Operation & Maintenance Manual.
## 5 Classification Requirements for Floating Production Installations

### CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>1</th>
<th>Classification (1 January 2008)</th>
<th>.................................................................</th>
<th>75</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION</td>
<td>2</td>
<td>System Classification, Symbols and Notations (1 January 2008)</td>
<td>.................................................................</td>
<td>76</td>
</tr>
<tr>
<td>1</td>
<td>Classification Boundaries (1 July 2012)</td>
<td>.................................................................</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Classification Symbols and Notations (1 July 2012)</td>
<td>.................................................................</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>New Construction</td>
<td>.................................................................</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Conversion to FPI</td>
<td>.................................................................</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td>Floating Offshore Installation</td>
<td>.................................................................</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Additional Class Notations</td>
<td>.................................................................</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Disconnectable System</td>
<td>.................................................................</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>5.3</td>
<td>Classification of Dynamic Positioning Systems (1 July 2012)</td>
<td>.................................................................</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>5.5</td>
<td>Classification of Additional Equipment and Systems (1 July 2012)</td>
<td>.................................................................</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>5.7</td>
<td>Dynamic Loading Approach (DLA) (2017)</td>
<td>.................................................................</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>5.9</td>
<td>Strength Criteria for Ship-Type Installations (1 July 2012)</td>
<td>.................................................................</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>5.11</td>
<td>Strength Criteria for Other Installation Types (1 July 2012)</td>
<td>.................................................................</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>5.13</td>
<td>Design Life and Design Fatigue Life (1 July 2012)</td>
<td>.................................................................</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>5.15</td>
<td>Spectral Fatigue Analysis (2017)</td>
<td>.................................................................</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>5.17</td>
<td>Additional Corrosion Margin (1 March 2006)</td>
<td>.................................................................</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>5.19</td>
<td>Hull Construction Monitoring Program (1 July 2012)</td>
<td>.................................................................</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>✠ AMS Notation (2017)</td>
<td>.................................................................</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Notations for Automatic or Remote Control and Monitoring Systems</td>
<td>.................................................................</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>9.1</td>
<td>✠ ACC or ✠ ACCU Notations (October 2001)</td>
<td>.................................................................</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>9.3</td>
<td>✠ AMCC or ✠ AMCCU Notations (March 2003)</td>
<td>.................................................................</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Temporary Mooring Equipment Symbol</td>
<td>.................................................................</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Conversion of Existing Vessels or Floating Structures</td>
<td>.................................................................</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Significant Change of Operating Conditions Affecting Safety of Unit or Personnel (1 July 2012)</td>
<td>.................................................................</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>SECTION</td>
<td>3</td>
<td>Rules and the Criteria Presented for Classification (1 January 2008)</td>
<td>.................................................................</td>
<td>87</td>
</tr>
<tr>
<td>1</td>
<td>Application</td>
<td>.................................................................</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>General (1 July 2009)</td>
<td>.................................................................</td>
<td>87</td>
<td></td>
</tr>
</tbody>
</table>
### SECTION 4 Submission of Plans, Data and Calculations

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design Plans and Data (1 March 2006)</td>
</tr>
<tr>
<td>3</td>
<td>Position Mooring System Design Documentation</td>
</tr>
<tr>
<td>5</td>
<td>Production Facilities and Production Support Facilities (1 July 2012)</td>
</tr>
<tr>
<td>7</td>
<td>Marine Systems and Machinery Plans (1 July 2012)</td>
</tr>
<tr>
<td>9</td>
<td>Additional Plans</td>
</tr>
<tr>
<td>11</td>
<td>Manuals and Procedures</td>
</tr>
<tr>
<td>11.1</td>
<td>Operations Manual</td>
</tr>
<tr>
<td>11.3</td>
<td>Procedures (1 July 2017)</td>
</tr>
</tbody>
</table>
PART 1

CHAPTER 5 Classification Requirements for Floating Production Installations

SECTION 1 Classification (1 January 2008)

The general requirements for conditions of classification are contained in Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1).

Additional requirements specific to floating production installations are contained in the following Sections of this Chapter.
PART 1

CHAPTER 5 Classification Requirements for Floating Production Installations

SECTION 2 System Classification, Symbols and Notations (1 January 2008)

A listing of Classification Symbols and Notations available to the Owners of vessels, offshore drilling and production units and other marine structures and systems, “List of ABS Notations and Symbols” is available from the ABS website “http://www.eagle.org”.

The following classification boundaries, symbols and notations are specific to floating production installations.

1 Classification Boundaries (1 July 2012)

The classification of a Floating Production Installation (FPI) includes three major items: the installation, its position mooring system, and its production facilities.

Classification of additional equipment and systems may be offered if requested by the Owner. (See 3-1-1/3 of the FPI Rules.)

Where Import and or Export Risers provide substantial mooring restraint, the design, construction and classification of the Riser(s) providing restraint and their connection to the seabed will require special consideration.

3 Classification Symbols and Notations (1 July 2012)

The Maltese Cross, ✠, symbol is assigned to Floating Production Installations for which the hull construction and/or the manufacture and installation of its machinery and components and any associated required testing, as applicable, and the on-site installation (for site specific FPIs) and commissioning tests and trials of the FPI is carried out under ABS survey. For FPIs constructed under survey of another recognized Classification Society or Authority, the Maltese Cross, ✠, symbol will be omitted from the applicable classification notations.

A1 is a classification symbol that, together with the Maltese Cross ✠ symbol, indicates compliance with the hull requirements of the ABS Rules, Guides, or their equivalent for service and survey by ABS during construction of the vessel. The symbols ✠A1 may be followed by appropriate FPI type notation such as the notations shown in 1-5-2/3.1.

3.1 New Construction

Systems that have been built, installed and commissioned to the requirements of the Rules and to the satisfaction of the ABS Surveyors, where approved by ABS for service for the specified design environmental conditions, are to be classed and distinguished in the ABS Record by the symbol ✠A1, followed by the appropriate notation for the intended service and hull type given below:

Floating Production, Storage and Offloading System (hull type)

Floating Production (and Offloading) System (hull type)
Floating Storage and Offloading System (hull type)

The above class notations cover the following components:

i) Floating Production Installation, including its hull structure, applicable marine systems and associated equipment and machinery, safety systems and associated equipment, life saving appliances machinery under one of the above notations, subject to the requirements of the FPI Rules.

ii) Position Mooring System according to the requirements of the FPI Rules.

iii) Topside Production Facilities according to the requirements of the ABS Rules for Building and Classing Facilities on Offshore Installations (Facilities Rules) and the FPI Rules.

The service notation will be appended by one of the following (Ship-Type), (Column-Stabilized), (TLP), or (Spar) to indicate the hull type. The hull structural configurations of these installations are described in Section 3-1-2 of the FPI Rules.

Examples of notations for installations are:

Floating Production, Storage and Offloading System (Ship-Type)
Floating Production (and Offloading) System (Ship-Type)
Floating Offshore Installation (Spar)
Floating Production (and Offloading) System (TLP)
Floating Offshore Installation (Column Stabilized)

3.3 Conversion to FPI

3.3.1 Conversion of Existing Vessel

An existing vessel is a vessel that has been issued a Certificate of Classification. When an existing vessel is converted to an FPI, and is classed under the provisions of 5A-2-1 of the FPI Rules, it will be distinguished in the ABS Record by the symbol A1, followed by the appropriate notation for the intended service, the notation (Ship-Type) and the qualifier (CI). If the existing vessel being converted is currently in ABS class with ⚫, then the ⚫ would be maintained for the converted FPI. Examples of notations are:

⚫ Floating Production, Storage and Offloading System (Ship-Type) (CI)

3.3.2 Conversion of Vessel Design or Vessel Under Construction

3.3.2(a) A vessel's design that has been approved by ABS or another IACS member and is to be converted to an FPI, can either be classed under the provisions of 1-5-2/3.3.1 of these Rules and 5A-2-1 of the FPI Rules as an FPI conversion, or it can be classed as a new build FPI under the provisions of 1-5-2/3.1.

3.3.2(b) A vessel under construction that has not been issued a Certificate of Classification, and its design has been approved by ABS or another IACS member, can either be classed under the provisions of 1-5-2/3.3.1 of these Rules and 5A-2-1 of the FPI Rules as an FPI conversion, or it can be classed as a new build FPI under the provisions of 1-5-2/3.1
3.5 Floating Offshore Installation

Where an installation is fitted with production facilities, but the optional classification of the topside production facilities is not requested, the installation will be classed and distinguished in the ABS Record by the symbol ✠A1, followed by the notation Floating Offshore Installation (hull type), provided the installation and its position mooring system comply with the applicable requirements. On a Floating Offshore Installation (FOI), certain systems and equipment for the production facilities are to be in compliance with 4-1-1/3 of the FPI Rules.

Where an installation is fitted with production facilities, but the optional classification of the topside production facilities is not requested, but the essential safety features of the production facilities in compliance with 4-1-1/5 of the FPI Rules are approved by ABS, the installation will be classed and distinguished in the ABS Record by the symbol ✠A1, followed by the notation Floating Offshore Installation(hull type). “Production Facilities” will be indicated in the Record. Compliance with the applicable requirements for the installation and position mooring system is required.

In either case, the scope of classification for an FOI includes the shipboard systems, including the electrical system circuit protection for the production facilities and production fire fighting equipment. In addition, topside structures and modules are to comply with 5A-1-5, 5B-1-2/1.3, 5B-3-3/5.3, 5B-2-3/5.1 or 5B-2-3/5.3 of the FPI Rules as appropriate.

5 Additional Class Notations

5.1 Disconnectable System

A floating installation system that has a propulsion system and a means of disengaging the installation from its mooring and riser systems to allow the installation to ride out severe weather or seek refuge under its own power for a specified design environmental condition will be classed with the above designations and with notations (Disconnectable) ✠AMS at the end. One example of such class designation is:

✠A1 Floating Production, Storage and Offloading System (Ship-Type) (Disconnectable), ✠AMS

See 1-5-2/7 for ✠AMS notation.

5.3 Classification of Dynamic Positioning Systems (1 July 2012)

Dynamic positioning systems installed for station keeping purposes, will be denoted by the notation DPS (see the ABS Guide for Dynamic Positioning Systems).

5.5 Classification of Additional Equipment and Systems (1 July 2012)

Additional equipment and systems, such as the subsea template, Import (or Export) PLEM and the Export (or Export) system may be considered at the Owner’s request. Where the import and export systems are built in full compliance with the requirements of Part 4, Chapter 2 of the FPI Rules, the installation will be classed and distinguished in the Record by the notation IMP-EXP. The notations IMP or EXP will be applied to the installation when only the import system or the export system, respectively, is built in full compliance with the requirements of Part 4, Chapter 2 of the FPI Rules. These notations for import and export systems are optional.

5.7 Dynamic Loading Approach (DLA) (2017)

Where the system’s hull structure has been built to plans reviewed in accordance with the procedure and criteria in the ABS Guide for “Dynamic Loading Approach” for Floating Production, Storage and Offloading (FPSO) Systems for calculating and evaluating the behavior of hull structures under dynamic loading conditions, in addition to compliance with other requirements of the Rules, the installation will be classed and distinguished in the Record by the notation DLA. The DLA notation will be placed after the appropriate hull classification notation. The application of the dynamic loading approach is optional except for the installation over 350 meters (1148 feet) in length as indicated in 5A-1-1/1.
The dynamic load components considered in the evaluation of the hull structure are to include the external hydrodynamic pressure loads, internal dynamic loads (fluids stored onboard, ballast, major equipment items, etc.) and inertial loads of the hull structure. The magnitude of the load components and their combinations are to be determined from appropriate ship motion response calculations for loading conditions that represent the envelope of maximum dynamically-induced stresses in the installation. The adequacy of the hull structure for all combinations of the dynamic loadings is to be evaluated using an acceptable finite element analysis method. In no case are the structural scantlings to be less than those obtained from other requirements in the FPI Rules.

The basic notation DLA is applied when the hydrodynamic loads have been determined using the wave environment of the North Atlantic as if the installation is a trading vessel with a 20- to 25-year service life. If the wave environment of the intended site is used during the analysis, the notation will include an S qualifier, followed by the design return period at the defined site. For example, if the 100-year return period was used, the following may apply: DLA (S100). Transit conditions to the intended site are also to be included in the DLA evaluation.

5.9 Strength Criteria for Ship-Type Installations (1 July 2012)

Ship-type installations of 150 meters (492 feet) or more in length that are designed and built to the requirements of Part 5A of the FPI Rules and Section 5C-1-7 of the Marine Vessel Rules will be identified in the Record by the notation as given in 1-5-2/3.

The basic notation of 1-5-2/3 is applied when the dynamic loads have been determined using the wave environment representative of unrestricted service, i.e., for North Atlantic exposure as if the installation is a trading vessel with a 20- to 25-year service life. There are several additional qualifiers, described in the following sub sections, covering site-specific wave environment, definition of the site and whether the installation has been converted from an existing vessel.

5.9.1 New Construction

For new-build ship-type installations where transit condition and site-specific environmental data have been used per the FPI Rules in lieu of North Atlantic data, the basic notation is to be followed by the (S) qualifier. This qualifier will then be followed by the definition of the site. For example, (S) Brazil Santos Basin.

5.9.2 Conversion of Existing Vessel to FPI

For a converted installation where the trading vessel and site-specific environmental data have been used per the FPI Rules the basic notation is followed by the qualifier (CI). The (CI) qualifier will be followed by the definition of the site. For example, (CI) Brazil Santos Basin.

5.9.3 Relocation of FPI (1 July 2017)

As site specific units, FPIs are designed and classed taking into consideration the location where they will operate and the intended period of operation. When the FPI is relocated to a new site, either within the same field or in a different operating area, or when the intended period of operation is extended, the strength of the unit is to be reassessed to satisfy that the unit will remain in compliance with applicable requirements as described below.

5.9.3(a) Relocation within the Same Field.

When an FPI is relocated within the same field or the same operating area, the environmental conditions are expected to remain identical to those considered during the original classification process for the current site.

If the environmental conditions for the field or operating area have been revised since the original approval due to new environmental data or changing environmental conditions (e.g., new environmental data in the Gulf of Mexico after hurricanes Rita and Katrina), the Coastal State may...
require the use of new environmental conditions for the relocation, in which case the same requirements as relocation to a different operating area will apply.

The expected operating life in the new location may be within the originally considered design life or otherwise, it may extend beyond the original design life period. In the latter case, in addition to the requirements for relocation, the requirements for life extension will apply.

It is expected that relocation within the same field will require at least a new position mooring and anchoring system for the new site and probably, modifications to the process facilities.

For the relocation within the same field, without exceeding the original design life of the unit, the following actions will be required:

- Design review and surveys related to the new position mooring system and anchoring.
- Design review and surveys related to the modifications to the process facilities, if applicable.
- Design review and surveys related to any other modifications affecting class items.
- Drydocking survey, including gauging, with steel renewals as necessary to bring the unit to a satisfactory condition to complete the remaining design life at the specific site.

Structural strength analysis and fatigue life re-evaluation for the hull structure, turret, module structures, etc. will not be required, unless structural modifications are performed or current environmental conditions are harsher than the environmental conditions considered in the original design.

For structures, systems or equipment not modified and maintained per original design, design review is to be based on the design codes used in the original design with current environmental data.

For added or modified structures, systems or equipment, design review is to be based on the design codes at the time of the contract for the relocation with current environmental data.

Surveys are to be based on the current rule requirements, see Part 7 of the FPI Rules.

5.9.3(b) Relocation to a Different Operating Area.

When an FPI is relocated to an operating area where the environmental conditions are different than those at the original site, the structural strength and fatigue life of the unit will need to be reassessed for the new conditions. However, if the new location has milder environmental conditions than the current site, the reassessment may not need to be performed provided that the unit is kept under the same structural condition as in the original site and the design fatigue life of the unit is not extended.

Relocation to a different operating area will require a new position mooring and anchoring system for the new site and most probably, extensive modifications to the process facilities.

For the relocation to a different operating area, the following actions will be required:

- Structural strength analysis and fatigue life re-evaluation for the hull structure, turret, module structures, etc. (except as noted above).
- Design review and surveys related to the new position mooring system and anchoring.
- Design review and surveys related to the modifications to the process facilities.
- Design review and surveys related to any other modifications affecting class items.
Drydocking survey, including gauging, with steel renewals as necessary to bring the unit to a satisfactory condition to complete the remaining design life at the specific site.

For structures, systems or equipment not modified and maintained per original design, design review is to be based on the design codes used in the original design with current environmental data.

For added or modified structures, systems or equipment, design review is to be based on the design codes at the time of the contract for the relocation with current environmental data.

Surveys are to be based on the current rule requirements, see Part 7 of the FPI Rules.

5.11 *Strength Criteria for Other Installation Types (1 July 2012)*

Installations (other than ship-type, see 1-1-2/5.9 above) that are designed and built to the requirements of Part 5B of the FPI Rules will be identified in the Record by the notation as given in 1-5-2/3 followed by additional qualifiers, described in the following Subparagraphs, covering site-specific wave environment and definition of the site.

5.11.1 New Construction

Site-specific environmental data will be indicated by the (S) qualifier following the basic notation of 1-5-2/3. This qualifier will then to be followed by the definition of the site. For example, ✠ A1 Floating Offshore Installation (Spar) (S) in Mississippi Canyon Block 779.

5.11.2 Relocation of FPI

As site specific units, FPIs are designed and classed taking into consideration the location where they will be operated and the intended period of operation. When the FPI is relocated to a new site, either within the same field or in a different operating area, or when the intended period of operation is extended, the strength of the unit is to be reassessed to satisfy that the unit will remain in compliance with applicable requirements.

5.13 *Design Life and Design Fatigue Life (1 July 2012)*

5.13.1 Design Life – New Construction

Floating installations designed and built to the requirements in the FPI Rules and maintained in accordance with the applicable ABS requirements are intended to have a structural design life of not less than 20 years for a new build hull structure. Where the structural design life is greater than 20 years and the floating installation is designed for uninterrupted operation on-site without any drydocking, the nominal design corrosion values (NDCV) of the hull structure are to be increased in accordance with 5A-3-1/1.7 of the FPI Rules for ship-type installations or an acceptable equivalent criteria for non-ship-type installations. When the design life is greater than 20 years (in 5-year increments) the increased life will be identified in the Record by the notation HL(number of years). The (number of years) refers to a design life different than 20 years.

5.13.2 Design Fatigue Life – New Construction

Where a floating installation’s design calls for a minimum design fatigue life of 20 years or in excess of the minimum design life of 20 years, the design fatigue life is to be verified to be in compliance with the fatigue criteria in the FPI Rules. The “design fatigue life” refers to the target value set by the owner or designer, not the value calculated in the analysis.

The required fatigue strength analysis of critical details and welded joints in floating installations is to be in accordance with the criteria in 5A-3-A2 of the FPI Rules for ship-type installations or an acceptable equivalent criteria for non-ship-type installations.

Only one design fatigue life value notation is to be assigned and published in the Record for the hull, hull interface structure, position mooring system and components. The hull interface
structural requirements for ship-type installations are described in 5A-1-4 of the FPI Rules and the position mooring system requirements in Part 6 of the FPI Rules. When only the required fatigue analysis of 5A-3-A2 of the FPI Rules for ship-type installations or 5B-1-2/5,5B-2-3/5 or 5B-3-3/5 of the FPI Rules for non-ship-type installations is performed for either unrestricted service wave environment or the transit and site specific wave environment, the class notation FL(number of years) and the Year of maturation of fatigue life in the defined site location is assigned. The fatigue life will be identified in the Record by the notation FL(number of years),Year; for example, FL(30), 2041 for an FPI built in 2011 if the minimum design fatigue life specified is 30 years.

If in addition, spectral fatigue analysis (see 1-5-2/5.15) is requested by the owner or designer, only the design fatigue life notation, SFA(number of years),Year will be assigned and published in the Record for the hull and hull interface structural system. Although only the SFA notation is assigned, and not the FL notation for ship-type installations, the required fatigue analysis of 5A-3-A2 is to be performed and the calculated fatigue life is to satisfy the design fatigue life.

The (number of years) refers to the design fatigue life equal to 20 years or more (in 5-year increments), as specified by the applicant. Where different design fatigue life values are specified for different structural elements within the installation, such as hull structure components, hull interface structures and position mooring system components, the (number of years) refers to the least of the target values. In the case when spectral fatigue analysis is also applied the least of the fatigue life values calculated by the required fatigue strength analysis for the FL notation and the spectral fatigue analysis must satisfy the design fatigue life. The “design fatigue life” refers to the target value set by the applicant, not the value calculated in the analysis.

For example if the design fatigue life is specified as 25 years, the fatigue calculations of hull structural components must satisfy a fatigue life of 25 years. The fatigue calculations of the position mooring hull interface structures and hull mounted equipment interface structures, and position mooring system must also satisfy fatigue lives of (25 × FDF) years, where FDF are the fatigue safety factors specified in 5A-1-4/7.5.1 TABLE 1, 5B-1-2/5.1.6(c) TABLE 2,5B-2-3/5.1.6(c) TABLE 2 or 5B-3-3/5.1.6(c) TABLE 2 of the FPI Rules, as applicable, for hull interface structures and in 6-1-1/5 TABLE 1 of the FPI Rules for mooring lines.

5.13.3 Conversion of Existing Vessel to FPSO, FPS or FSO (2016)

When an existing vessel is converted to an FPSO, FPS or FSO in the process referred to as an FPI vessel conversion, and the ship-shaped FPSO, FPS or FSO is classed under the provisions of 5A-2-1 of the FPI Rules, the expected minimum remaining fatigue life of the structure is to be assessed according to 5A-2-3 of the FPI Rules and documented by recording its value in the Record. The RFL notation will be followed by the value of the expected minimum remaining fatigue life in years, and the year of maturation of fatigue life in the defined site location in accordance with 1-5-2/5.9.2. For example, RFL(15), 2018 indicates that the expected minimum remaining fatigue life of the structure is 15 years, which will be reached in the year 2018. The RFL(number of years), Year notation as applied to an FPI vessel conversion is mandatory.

When an existing vessel is converted to a FPSO, FPS or FSO and is intended to be used at marginal field and the unit will be drydocking every 5 years, the RFL notation may be omitted. A notation MARGINAL FIELD (site) will be added after CI to indicate the intended use for 5 years for the site. For a marginal field FPI without RFL notation, the following actions will be required:

- Verification of the existing vessel’s original fatigue life. If the remaining fatigue life as unrestricted vessel is not less than 5 years and Alpha factors for the intended site is greater than 1, the fatigue analysis for the hull structure is not mandatory. However, the hull interface structures for process modules, flare tower, mooring structure, riser porch or balcony are to be evaluated for compliance with 5A-1-4/3 of the FPI Rules, based on FEM models and
including fatigue analysis. The analysis is to apply the most critical combination of topsides or mooring loads and hull girder loads.

- If the remaining fatigue life as unrestricted vessel is less than 5 years, or if the Alpha factors for the intended site is not greater than 1, the fatigue analysis for the hull is mandatory for a fatigue life of 10 years. The fatigue analysis of the hull structure is to comply with 5A-2-1/5.7 of the FPI Rules. The hull interface structures for process modules, flare tower, mooring structure, riser porch or balcony are to be evaluated for compliance with 5A-1-4/3 of the FPI Rules, based on FEM models and including fatigue analysis. The analysis is to apply the most critical combination of topsides or mooring loads and hull girder loads.

- Mooring system is to be designed for compliance with Part 6 of the FPI Rules for a fatigue life not less than 10 years.

- Survey of the FPI hull structure after conversion is to comply with Chapter 1 of the ABS Rules for Survey After Construction (Part 7) for an unrestricted vessel.

- If the FPI intends to be relocated to a new site or extend the life at current site after 5 years, the FPI is to be assessed in accordance with 1-5-2/5.13.4 and 1-5-2/5.13.5 with consideration of the above actions.

5.13.4 Relocation of FPI

When an FPI is relocated to a new site, either within the same field or in a different operating area, the fatigue life of the unit is to be reassessed to satisfy that the unit’s remaining fatigue life for the new operating conditions is within the design fatigue life of the unit. The position mooring system including chain and other mooring components is also subject to reassessment if it is to be used at the new site.

5.13.5 Life Extension of FPI on the Same Site (1 July 2017)

When an FPI exceeds the design fatigue life specified in the FL (number of years), Year or RFL (number of years), Year notation for which it was classed, an evaluation is to be made and appropriate actions are to be taken to extend the fatigue life up to the new operating life of the unit under the site-specific environmental conditions.

For conversions, the design fatigue life will depend on the minimum remaining fatigue life expected from the time of the conversion. For conversions before October 2001, the remaining fatigue life is only documented in the original calculations submitted at the time of the conversion. For conversions on or after October 2001, the remaining fatigue life is indicated with the FL notation (before July 2003) or the RFL notation (on or after July 2003).

For both original build FPIs and conversions, the remaining fatigue life of the unit may be extended during the operating life of the FPI by renewals or modifications of those structural details with lower fatigue life.

For the life extension of the unit remaining in the same location, the following actions will be required:

- Verification from the original fatigue analysis that the actual fatigue values of all the structural elements of the unit are still higher than the proposed extended fatigue life; or

- New fatigue analysis covering all the structural elements (hull, turret, hull interfaces, position mooring system) in accordance with SFA, FL or RFL requirements, as applicable. Risers (if classed) are also to be analyzed for the extended fatigue life.

- Identification of structural elements or details with a fatigue life below the new intended design fatigue life of the unit and proposed actions to increase the fatigue life of those elements or details.
Design review and surveys of structural modifications proposed as a consequence of the fatigue analysis.

Enhanced survey program to monitor those structural elements or details with lower fatigue life which cannot be modified or renewed on site.

Special survey, including Underwater Inspection, to determine the structural condition of the unit at the time of the life extension.

For structures, systems or equipment not modified and maintained per original design, the new fatigue analysis and related design review, when necessary, is to be based on the design codes used in the original design with current environmental data.

For added or modified structures, systems or equipment, the new fatigue analysis and related design review are to be based on the design codes at the time of the life extension with current environmental data.

Surveys are to be based on the current rule requirements, see Part 7 of the FPI Rules.

Once the life extension is approved, the existing SFA, FL or RFL notation with year of maturation is to be updated accordingly.

When a fatigue notation is requested, and where none of the above notations was previously assigned to the unit, the most appropriate fatigue notation for the unit is to be assigned.

For the first life extension up to 5 years, upon agreement with operator/owner, a new notation LE (number of years) year can be granted instead of RFL or FL without performing new fatigue analysis as required in this section. To be granted the LE Notation, the following conditions are to be satisfied:

- Any modifications to the structure have class approval.
- Critical areas of the original design have been re-examined using NDT techniques and verified to be satisfactory by ABS Surveyor.
- Additional items to be determined on a case-by-case basis during the life extension process have been resolved.

5.15 Spectral Fatigue Analysis (2017)
5.15.1 Design Fatigue Life – New Construction

Where more extensive use of Spectral Fatigue Analysis is performed in accordance with criteria established in Part 5A, Chapter 1 of the FPI Rules and the ABS Guide for the Fatigue Assessment of Offshore Structures, the installation is to be identified in the Record by the notation SFA (number of years), Year. The fatigue analysis is performed for either unrestricted service wave environment or the transit and site specific wave environment in accordance with 1-5-2/5.9. The (number of years) refers to the design fatigue life equal to 20 years or more (in 5-year increments), as specified by the applicant. The Year is the year of maturation of fatigue. For example, SFA (30), 2041 if the design fatigue life specified is 30 years, and the FPI is built in 2011. Only one minimum design fatigue life value is applied to the entire structural system. For a structural location required to have an additional factor applied to the minimum design fatigue life (say, due to safety critical function or relative difficulty of inspection, see for example, 6-2-1/13 of the FPI Rules), the required minimum fatigue life for such a location is the minimum design fatigue life being applied in the project multiplied by the additional factor. The ‘design fatigue life’ refers to the target value set by the designer and not the value calculated in the analysis. The calculated values are usually much higher than the target value specified for design. The application of spectral fatigue analysis is optional except for the installation over 350 meters (1148 feet) in length as indicated in 5A-1-1/1.
5.15.2 Conversion of Existing Vessel to FPSO, FPS or FSO

When spectral fatigue analysis is applied to an existing vessel that is converted to an FPSO, FPS or FSO, the expected minimum remaining fatigue life of the structure is to be assessed according to 5A-2-3/3 of the \textit{FPI Rules} and documented by recording its value in the \textit{Record}. The SFA notation will be followed by the value of the expected minimum remaining fatigue life in years preceded by the letter R, and the year of maturation of fatigue life in the defined site location in accordance with 1-5-2/5.9.2. For example, \textit{SFA (R15), 2018} indicates that the expected minimum remaining fatigue life of the structure is 15 years, which will is to be reached in the year 2018 at the defined site location. The application of spectral fatigue analysis for FPI conversions is optional except for the installation over 350 meters (1148 feet) in length as indicated in 5A-1-1/1.

5.17 Additional Corrosion Margin (1 March 2006)

Where the installation incorporates additional plate thicknesses above the required scantlings, the installation will be identified in the \textit{Record} by the notation AT, followed by the description of the major hull girder component(s) that has the additional thickness. This notation will also include a number to indicate the magnitude of the additional thickness (rounded down to the nearest 0.5 mm) that has been applied, i.e., \textit{AT(DK+0.5)}. In order to apply the notation AT, the additional thickness must be applied to the complete structural element throughout the tank area of the installation. This notation documents major areas of the structure that have an additional “as-built” margin on thickness to address areas subject to significant corrosion or areas where it may be desirable to increase normal corrosion margins to extend a structural member’s anticipated service life. This notation is optional and is only available to new construction FPIs.

The major structural components are defined as follows:

- **DK** Upper deck (including stringer plate)
- **BS** Bottom shell (including bilge)
- **IB** Inner-bottom
- **SS** Side shell (including shear strake)
- **IS** Inner skin (including “hopper” sloping plating)
- **LB** Longitudinal bulkheads other than the inner skin
- **TB** Transverse Bulkhead

5.19 Hull Construction Monitoring Program (1 July 2012)

Ship-type installations designed and reviewed to the \textit{FPI Rules} are to comply with the requirements of the Offshore Hull Construction Monitoring Program in 5A-3-A5 of the \textit{FPI Rules} and have the notation OHCM.

7 AMS Notation (2017)

Machinery and boilers for self-propulsion which have been constructed and installed to the satisfaction of the Surveyors to ABS’s Rule requirements, when found satisfactory after trial and approved by ABS, will be classed and distinguished in the \textit{Record} by the notation \textit{AMS}. This notation is mandatory for classification of self-propelled floating production installations.

Where machinery and boilers are not satisfying the dynamic inclination requirements in 4-1-1/7.1 \textbf{TABLE 1} of the \textit{MOU Rules} and 4-1-1/9 \textbf{TABLE 7} of the Marine Vessel \textit{Rules}, assigning of the AMS notation for one voyage only to the installation site may be considered, provided the following conditions are satisfied:

\begin{itemize}
  \item[i)] The maximum dynamic inclinations obtained from the seakeeping analysis for the routes taken during the transit voyage considering wind velocity and significant wave height of 10-year return
\end{itemize}
period storm, are to satisfy the inclination requirements of the MOU Rules and Marine Vessel Rules for static inclination on surface units.

\[ \text{ii) The voyage is to be planned using weather routing to avoid heavy seas.} \]

\[ \text{iii) Concurrence of the flag Administration is required.} \]

9 Notations for Automatic or Remote Control and Monitoring Systems

9.1 ✠ ACC or ✠ ACCU Notations (October 2001)

For automatic or remote control and monitoring systems of the propulsion machinery, ABS will consider additional classifications with symbols ✠ ACC or ✠ ACCU, as appropriate, provided that the applicable requirements of Part 4, Chapter 9 of the Marine Vessel Rules are satisfied.

9.3 ✠ AMCC or ✠ AMCCU Notations (March 2003)

For automatic or remote control and monitoring systems of the machinery other than the propulsion machinery as referenced in 1/1 of the ABS Guide for Remote Control and Monitoring for Auxiliary Machinery and Systems (other than Propulsion) on Offshore Installations, ABS will consider additional classifications with symbols ✠ AMCC or ✠ AMCCU, as appropriate, provided that the applicable requirements of the ABS Guide for Remote Control and Monitoring for Auxiliary Machinery and Systems (other than Propulsion) on Offshore Installations are satisfied.

11 Temporary Mooring Equipment Symbol

The symbol Ⓡ will be placed after the symbols of classification to signify that the equipment for temporary mooring of the floating installation complies with 3-4-1/3 of the MOU Rules or Part 3, Chapter 5 of the Marine Vessel Rules.

13 Conversion of Existing Vessels or Floating Structures

Modifications of existing vessels or floating structures intended for classification as Floating Installations are to be converted under ABS design review and survey.

15 Significant Change of Operating Conditions Affecting Safety of Unit or Personnel (1 July 2012)

In a few occasions, the operating conditions of the FPI initially considered during the classification of the unit change with time. For example, the composition of the oil coming from the well may turn sour (high concentration of hydrogen sulfide, H₂S). If these changes affect the safety of the unit or the personnel on board, the owner/operator needs to approach ABS as the changes may have an effect in the compliance with the applicable Rules and Guides and therefore, in the maintenance of class.

If it is confirmed that the changes are affecting the compliance with the applicable Rules and Guides, there are two options:

- To identify the Rule requirements that the unit has to comply with in order to maintain classification and to verify compliance by design review and survey, as applicable; or
- To perform a risk assessment with ABS participation in order to analyze the new hazards due to the changes and determine the mitigation actions required to bring the unit to an equivalent level of safety to the applicable Rules and Guides.
Classification Requirements for Floating Production Installations

Rules and the Criteria Presented for Classification (1 January 2008)

Application

1.1 General (1 July 2009)

The ABS Rules for Building and Classing Floating Production Installations (FPI Rules) are applicable to Floating Production, Storage and Offloading installations (FPSOs), as defined in Section 3-1-1 of the FPI Rules. The criteria are also applicable to Floating Production Systems (FPSs), as defined in 3-1-1/3 of the FPI Rules, Floating Storage and Offloading systems (FSOs), as defined in 3-1-1/3 of the FPI Rules, or Floating Offshore Installation (FOI), as defined in 3-1-1/3 of the FPI Rules, with corresponding classification notation, as indicated in Section 1-5-2.

The application of the criteria to systems other than the above will be considered on a case-by-case basis.

The criteria are applicable to those features that are permanent and can be verified by plan review, calculation, physical survey or other appropriate means. Any statement in the Rules and the criteria in this document regarding other features are to be considered as guidance to the designer, builder, Owner, et al.

1.3 Application (1 July 2009)

The FPI Rules have an effective date of 1 July 2009. The application of the FPI Rules is, in general, based on the contract date for construction or conversion between the shipbuilder and the prospective owner (e.g., Rules which became effective on 1 July 2009 are not applicable to a floating production installation for which the contract for construction was signed on 30 June 2009). See also 1-1-4/3.

In the case of conversions, structures other than hull structures (such as deckhouses), machinery equipment and/or marine systems which will remain unchanged or with minor modifications during the conversion will be considered on the basis of the original Rules used for the vessel construction as well as the safety features of the converted unit.

Reference Standards

Reference is made in the FPI Rules to ABS Rules and other criteria issued by ABS and other organizations. 3-A1-2 of the FPI Rules contains a listing of such Reference Standards.

Risk Evaluations for Alternative Arrangements and Novel Features (April 2004)

Risk assessment techniques may be used to demonstrate that alternatives and novel features provide acceptable levels of safety in line with current offshore and marine industry practice. The ABS Guide for Risk Evaluations for the Classification of Marine-Related Facilities provides guidance to ABS clients on how to prepare a risk evaluation to demonstrate equivalency or acceptability for a proposed Floating Production Installation.
Risk evaluations for the justification of alternative arrangements or novel features may be applicable either to the installation as a whole, or to individual systems, subsystems or components. ABS will consider the application of risk evaluations for alternative arrangements and novel features in the design of the floating production installations, Verification Surveys during construction, and Surveys for Maintenance of Class.

Portions of the floating production installation or any of its components thereof not explicitly included in the risk evaluation submitted to ABS are to comply with any applicable part of the ABS Rules and Guides. If any proposed alternative arrangement or novel feature affects any applicable requirements of Flag and Coastal State, it is the responsibility of the Owner to discuss with the applicable authorities the acceptance of alternatives based on risk evaluations.
PART 1

CHAPTER 5  Classification Requirements for Floating Production Installations

SECTION 4  Submission of Plans, Data and Calculations

1  Design Plans and Data (1 March 2006)

Plans showing the scantlings, arrangements and details of the principal parts of the hull structure of each installation to be built under survey are to be submitted and approved before the work of construction has commenced. These plans are to clearly indicate the scantlings, joint details and welding, or other methods of connection. In general, plans are to be submitted that include the following, where applicable:

i) General Arrangement

ii) Body Plan, lines, offsets, curves of form, inboard and outboard profile

iii) Wind heeling moment curves of equivalent data

iv) (1 July 2012) Arrangement plan of watertight, firetight and gastight compartmentation

v) Diagrams showing the extent to which the watertight and weathertight integrity is intended to be maintained, the location, type and disposition of watertight and weathertight closures

vi) Capacity plan and tank sounding tables

vii) Summary of distributions of weights (fixed, variable, ballast, etc.) for various conditions

viii) Type, location and quantities of permanent ballast, if any

ix) Loadings for all decks

x) Transverse section showing scantlings

xi) Longitudinal sections showing scantlings

xii) Decks, including helicopter deck

xiii) Framing, shell plating, watertight bulkheads and flats, structural bulkheads and flats, tank bulkheads and flats with location of overflows and air pipes

xiv) Pillars, girders, diagonals and struts

xv) Stability columns, intermediate columns, hulls, pontoons, superstructure and deck houses

xvi) (1 July 2012) Arrangement and details of watertight and weathertight doors and hatches

xvii) Foundations for anchoring equipment, industrial equipment, process, and process support modules, etc., where attached to hull structure, superstructures or deckhouses

xviii) Mooring turrets and yoke arms, including mechanical details

xix) Corrosion control arrangements

xx) (1 July 2012) Methods and locations for nondestructive testing (submitted to attending Surveyor for review and agreement)

xxi) The plans listed in 5B-1-4/11 of the FPI Rules for column-stabilized units

xxii) (1 March 2006) Plans and calculations/analyses for the module structures to support production facilities
3 Position Mooring System Design Documentation

The design documentation for the mooring system is to include the following, when applicable:

i) Mooring Arrangement or Pattern.
ii) Details of winching equipment.
iii) Details of anchoring system.
iv) Details of mooring line segments.
v) Connections at anchors and between mooring line segments.
vii) Details of buoy for CALM system.
ix) Details of Turret System to show turret structure, swivel, turntable and disconnecting device.
x) Details of yoke (hard or soft) connecting the installation and CALM/SALM structure.
xii) Environmental Report.
xv) (2016) Details of arrangements and procedures for the crew to periodically verify that mooring lines have not failed. (See 6-1-1/15 of the FPI Rules)

5 Production Facilities and Production Support Facilities (1 July 2012)

The following design documentation of a floating production and installation is required to be submitted, as applicable, depending on the classification notation:

i) General Arrangements showing arrangements and locations of storage tanks, machinery, equipment, living quarters, fire walls, emergency shutdown (ESD) stations, control stations, crude loading and discharge stations and the flare (see 4-1-7/3 of the FPI Rules).
ii) Hazardous Area Classification Plans, as defined in 3-1-3/7 of the FPI Rules.
iii) Details of Storage Tank Venting and Inerting indicating arrangements for storage tank venting and inerting.
iv) Arrangements for Use of Produced Gas as Fuel showing piping and control arrangements for use of produced gas as fuel showing details of double wall or ducting arrangements for the pipe runs in way of the safe space.
v) A design specification that is to include design parameters (environmental conditions, geographical location of the unit, external loads, pressures, temperatures, etc.), standards and codes adopted throughout the design, construction and testing stages and the process description.
vi) A description of the field development plan, including well fluid properties, production rates, gas oil ratios, processing scheme, well shut-in pressures.

vii) Process flow sheets showing major process equipment components, process piping, material balance, normal pressures and temperatures at the inlet and outlet of each major component.

viii) Piping and Instrumentation Diagrams (P&IDs) indicating location of all sensing and controlling elements on the process and production support systems, sizing and material specification of piping and the associated components, maximum design pressure and temperature ratings, piping strength and flow calculations.

ix) List of electrical equipment located in hazardous areas together with the certificates issued by an independent testing laboratory to show suitability of their use in the intended location.

x) Electrical one line diagram showing ratings of all generators, motors, transformers, type and size of wires and cables. Types and rating of circuit breakers with the setting, interrupting capacity of circuit breakers and fuses.

xi) Short circuit current calculations and coordination data giving the maximum calculated short circuit current available at the main bus bars and at each point in the distribution system in order to determine the adequacy of the interrupting capacities of the protective device. A system coordination study is to be included.


xiii) Emergency shutdown system (ESD) relating to all sensing devices, shutdown valves, shutdown devices and emergency support system to their functions and showing ESD logic for the complete process and the subsea valves system.

xiv) Emergency backup and uninterrupted power source, supply and the consumers.

xv) Pressure vessel (fired and unfired) and heat exchangers, design dimensional drawings, design calculations, material specifications, pressure and temperature ratings, together with weld details and the details of their support.

xvi) Pressure relief and depressurization vent systems showing arrangements sizing of the lines, capacities of the relief valve, materials, design capacity, calculations for the relief valves, knock out drums, anticipated noise levels and gas dispersion analyses.

xvii) Complete details of flares, including pilots, igniters and water seal and design calculations, including stability and radiant heat analyses.

xviii) Schematic plans for the production support systems, including the size, wall thicknesses, maximum design working pressure and temperature and materials for all pipes and the type, size and material of valves and fittings.

xix) Compressors, pumps selection and control arrangements, including specification data sheet.

xx) Fire and gas detection system showing the location and detailed description of all power sources, sensors, annunciation and indication, set point for the alarm system.

xxi) Passive and active fire protection system indicating locations of fire walls, fire pumps and their capacities, main and backup power supply, fixed and portable fire extinguishing, and fire fighting systems and equipment. In this regard, supportive calculations are to be submitted to show the basis of capacities and quantities of fire extinguishing equipment.

xxii) Escape route plan showing escape routes to abandonment stations and survival embarkation areas.

xxiii) (1 July 2012) Startup and commissioning procedures detailing sequence of events for inspection, testing and startup and commissioning of equipment and system (submitted to attending Surveyor for review and agreement).

xxiv) (1 July 2012) Installation, Hook-up and Commissioning Procedures (submitted to attending Surveyor for review and agreement, also See Part 3, Chapter 4 of the FPI Rules.)
Above items i), ii), ix), xii), xx), and xxii), are required to be submitted for any type of a floating production installation that is classed with or without its topsides production facilities.

7 Marine Systems and Machinery Plans (1 July 2012)

Plans showing marine piping systems, electrical systems, fire fighting systems and equipment, and machinery and equipment not associated with the process facilities are to be submitted (see 5A-1-6, 5B-1-4, 5B-2-6 or 5B-3-6 of the FPI Rules depending on the type of installation).

Where applicable, machinery plans listed in Part 4 of the Marine Vessel Rules or MOU Rules are to be submitted. Machinery general arrangements, installation and equipment plans, are also to be submitted and approved before proceeding with the work.

9 Additional Plans

Submission of additional plans and calculations may be required when additional classification designations or certifications are requested:

- Additional classification designations under 1-5-2/5, 1-5-2/9, 1-5-2/11, 1-5-2/13 of these Rules or Part 4, Chapter 2 of the FPI Rules. (See 4-2-2 of the FPI Rules for import/export system submission requirements.)
- Certifications under 1-5-2/5, 1-5-2/9, 1-5-2/11 or 1-5-2/13 or 1-1-5/3 or 1-1-5/5.

11 Manuals and Procedures

11.1 Operations Manual

The Operations Manual is to be submitted, providing guidance information for operating personnel regarding the following, when applicable:

<table>
<thead>
<tr>
<th>Subject</th>
<th>References in the FPI Rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loading Manual</td>
<td>3-3-1/7, 5B-1-1/5</td>
</tr>
<tr>
<td>Trim and Stability</td>
<td>3-3-1/9, 3-3-1/11, 5B-1-3/1</td>
</tr>
</tbody>
</table>

11.3 Procedures (1 July 2017)

Procedures are to be submitted for the following:

<table>
<thead>
<tr>
<th>Subject</th>
<th>References in the FPI Rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disconnecting Procedure, if applicable</td>
<td>3-4-1/13</td>
</tr>
<tr>
<td>Drydocking Procedure*</td>
<td>7-2-7</td>
</tr>
<tr>
<td>Hook Up Procedures</td>
<td>3-4-7</td>
</tr>
<tr>
<td>Installation Procedures</td>
<td>3-4-1</td>
</tr>
<tr>
<td>Installation Manual</td>
<td>3-4-1/11</td>
</tr>
<tr>
<td>Import/Export System</td>
<td>4-2-4/7, 3-4-1/11</td>
</tr>
<tr>
<td>Lay-up and Reactivation, if applicable*</td>
<td>7-2-1/21</td>
</tr>
<tr>
<td>Startup and Commissioning Procedures*</td>
<td>3-4-3</td>
</tr>
</tbody>
</table>
In-Service Inspection Program (ISIP) 7-2-1/3.27 & 7-2-3

Procedure for periodic verification by the crew that mooring lines have not parted (See 6-1-1/15)
* Submitted to attending Surveyor for review and agreement
# Classification Requirements for Facilities on Offshore Installations

## CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>1</th>
<th>Classification <em>(1 January 2008)</em></th>
<th>95</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION</td>
<td>2</td>
<td>Application, System Classification Boundaries, Symbols, and Notations <em>(2018)</em></td>
<td>96</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Scope <em>(1 July 2012)</em></td>
<td>96</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Classification Boundaries <em>(1 July 2012)</em></td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Classification Symbols</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>5.1</td>
<td>Floating Installations</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>5.3</td>
<td>Fixed Installations</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Conversion of Existing Vessels</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Conversion of Existing Structures</td>
<td>98</td>
</tr>
<tr>
<td>SECTION</td>
<td>3</td>
<td>Rules for Classification <em>(1 January 2008)</em></td>
<td>99</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Application</td>
<td>99</td>
</tr>
<tr>
<td>SECTION</td>
<td>4</td>
<td>Recognition of Risk Based Techniques to Justify Alternatives</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>General <em>(1 July 2012)</em></td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Application <em>(1 July 2012)</em></td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Submittals <em>(1 July 2012)</em></td>
<td>101</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Risk Evaluation Methodology <em>(1 July 2012)</em></td>
<td>101</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Identification of Hazards</td>
<td>101</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Other Requirements</td>
<td>102</td>
</tr>
<tr>
<td>SECTION</td>
<td>5</td>
<td>Submission of Plans, Data, and Calculations</td>
<td>103</td>
</tr>
</tbody>
</table>
PART 1

CHAPTER 6 Classification Requirements for Facilities on Offshore Installations

SECTION 1 Classification (1 January 2008)

The general requirements for conditions of classification are contained in Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1).

Additional requirements specific to facilities on offshore installations are contained in the following Sections of this Chapter.
PART 1

CHAPTER 6 Classification Requirements for Facilities on Offshore Installations

SECTION 2 Application, System Classification Boundaries, Symbols, and Notations (2018)

A listing of Classification Symbols and Notations available to the Owners of vessels, offshore drilling and production units and other marine structures and systems, “List of ABS Notations and Symbols” is available from the ABS website “http://www.eagle.org.”

The following classification boundaries, symbols and notations are specific to facilities on offshore installations.

1 Scope (1 July 2012)

The requirements in the Facilities Rules are applicable to hydrocarbon production and/or processing facilities located on floating or fixed offshore installations, and apply to the following systems and associated equipment:

- Hydrocarbon Production
- Hydrocarbon Processing
- Process Support
- Process Control
- Marine Support
- Electrical
- Instrumentation and Control
- Fire Protection and Personnel Safety

The following ABS Rules, latest edition, are applicable as referenced therein for systems or services other than for the hydrocarbon production and processing facilities.

i) FPI Rules ABS Rules for Building and Classing Floating Production Installations

ii) Offshore Installations Rules ABS Rules for Building and Classing Offshore Installations

iii) Marine Vessel Rules ABS Rules for Building and Classing Marine Vessels

iv) MOU Rules ABS Rules for Building and Classing Mobile Offshore Units

Appropriate flag state and port state authorities are to be consulted for their specific requirements.

- Chapter 2 of the Facilities Rules provides definitions, references, abbreviations and acronyms associated with the Facilities Rules.
- Chapter 3 of the Facilities Rules covers requirements for hydrocarbon production and processing facilities on floating installations.
3 Classification Boundaries (1 July 2012)

The boundaries for classification where a hydrocarbon production and/or processing facility is installed on an offshore installation are defined to include the following major items:

i) For floating installations:
   a) Vessel, including hull structure, equipment, and marine machinery, subject to the requirements of the FPI Rules.
   b) Position Mooring System, according to the requirements of the FPI Rules.
   c) Hydrocarbon Production and/or Processing Facilities (topside), according to the requirements of the Facilities Rules.

ii) For fixed installations:
   a) Structure, subject to the requirements of the Offshore Installations Rules.
   b) Hydrocarbon Production and/or Processing Facilities (topside), according to the requirements of the Facilities Rules.

iii) Classification of additional equipment and systems can be provided if requested by the owner.

5 Classification Symbols

5.1 Floating Installations

For floating installations, systems which have been designed, built, installed, and commissioned in accordance with approved plans to the satisfaction of the ABS surveyors, and which are deemed to meet the full requirements of the applicable ABS Rules and Guides, or their equivalent, where approved by the Committee, for service in specified design environmental conditions, will be classed and distinguished in the ABS Record by the symbols ★A1 followed by the appropriate notation for the system’s intended service:

- Floating Production, Storage and Offloading System (FPSO)
- Floating Production (and Offloading) System (FPS)
- Floating Storage and Offloading System (FSO)

5.3 Fixed Installations

For fixed installations, systems which have been designed, built, installed, and commissioned in accordance with approved plans to the satisfaction of the ABS surveyors, and which are deemed to meet the full requirements of the applicable ABS Rules and Guides, or their equivalent, where approved by the Committee for service in specified design environmental conditions, will be classed and distinguished in the ABS Record by the symbols ★A1 followed by the appropriate notation for the system’s intended service:

- Offshore Installation – Hydrocarbon Processing
- Offshore Installation – Hydrocarbon Production

Note:
The mark ✠ (Maltese Cross) signifies that the system was built, installed, and commissioned to the satisfaction of the ABS Surveyors.

7 Conversion of Existing Vessels

Modifications of existing floating structures intended for classification as Floating Installations are required to be converted under ABS design review and survey.

9 Conversion of Existing Structures

Modifications of existing structures intended for classification as Fixed Installations are required to be converted under ABS design review and survey.
CHAPTER 3 Rules for Classification (1 January 2008)

1 Application

The ABS Rules for Building and Classing Facilities on Offshore Installations (Facilities Rules) are applicable to features that are permanent in nature and can be verified by plan review, calculation, physical survey or other appropriate means. Any statement in the Rules regarding other features is to be considered as guidance to the designer, builder, owner, etc.
CHAPTER 6  Classification Requirements for Facilities on Offshore Installations

SECTION 4  Recognition of Risk Based Techniques to Justify Alternatives

1  General (1 July 2012)

The requirements detailed herein provide an alternative route for an owner to obtain and maintain ABS Class. Any alternatives to the requirements of the Facilities Rules may be specially considered by ABS on the basis of a risk assessment submitted for review.

i) In case of such alternatives, ABS approval will be contingent upon a demonstration of fitness for purpose and equivalent level of safety in accordance with the principles of ABS Guides and Rules, as well as recognized codes and standards.

ii) Risk acceptance criteria are to be developed in line with the principles of the ABS Rules and will be subject to ABS approval. In instances where a direct alternative recognized code or standard is used, ABS verification of compliance with the standard will be considered demonstration of fitness for purpose.

iii) The ABS publication, Guidance Notes on Risk Assessment Application for the Marine and Offshore Oil and Gas Industries, provides an overview of risk assessment techniques and additional information.

3  Application (1 July 2012)

A risk-based approach may be applicable either to the installation as a whole or to individual systems, subsystems, equipment or components.

i) The boundaries of the components and systems of the installation to which a risk-based assessment is applied are to be logical.

ii) As appropriate, account must be given to remote hazards outside the bounds of the system under consideration. Such account is to include incidents relating to remote hazards impacting on or being influenced by the system under consideration.

iii) ABS will consider the application of risk-based techniques in the design of the installation, surveys during construction, and surveys for maintenance of class.

iv) Portions of the installation not included in the risk assessment are to comply with the applicable parts of the ABS Rules and Guides.

v) The following are the responsibility of the owner/operator:

   a) Proposed Risk acceptance criteria
   b) Hazard identification
   c) Risk assessment
   d) Risk mitigation and management
   e) Compliance of the system under consideration with the applicable requirements of Flag and Coastal State
5 Submittals (1 July 2012)

As a minimum, the following documents are to be submitted to ABS for review and approval for classification purpose:

i) Proposed Risk Acceptance Criteria

ii) Methodology for risk assessment

iii) Details of risk assessment

iv) Risk mitigation and/or management measures, wherever applicable

7 Risk Evaluation Methodology (1 July 2012)

The risk assessment is to consider the installation in all anticipated operating modes.

The designer or owner is to apply a structured and systematic risk assessment process to identify all foreseeable incidents specific to his installation, making full consideration of the likelihood of occurrence of the incidents and their consequence.

ABS review and approval of the methodology selected by the designer or owner is required.

While various techniques/methods may be applied, the Owner is to justify the suitability and appropriateness of the particular method(s) selected. Some typical methods include:

i) Hazard and Operability Study (HAZOP)

ii) Failure Mode and Effects Analysis (FMEA)

iii) Failure Mode, Effects and Criticality Analysis (FMECA)

iv) Process Hazards Analysis (PHA)

v) Safety Reviews

vi) Checklists

vii) Experience from previous analyses

Where risk assessment techniques are used to cover only part of an installation, the designer or owner is to clearly define the boundary or extent of the item(s) being considered. The extent of the boundary is to subject to review and approval by ABS.

9 Identification of Hazards

The Owner is to identify and consider all hazards that may affect his Installation or any part thereof. The Owner is to apply a systematic process to identify such situations where a combination or sequence of events could lead to an Incident, with consideration given to all foreseeable causes (initiating events).

The risk assessments are to consider, at a minimum, the following:

i) Fire and Explosion

ii) Hydrocarbon Release

iii) Blow-out

iv) Structural Failure

v) Loss of Stability

vi) Loss of Station Keeping/Mooring

vii) Loss of Electrical Power

viii) Toxicity
Where it is intended that risk-based techniques are used as a basis for compliance with Flag and Coastal State requirements, the owner is directed to contact the Administration, either directly or through ABS, to obtain an understanding as to the extent to which the Administration is prepared to consider alternatives to such requirements. The Administration may require additional hazards to be considered.
A generic list of plans and data to be submitted for facilities on floating installations is included in 3-2 of the Facilities Rules.

A generic list of plans and data to be submitted for facilities on fixed installations is included in 4-2 of the Facilities Rules.

It should be noted that due to the varying configurations of offshore facilities, all or portions of these requirements may be applicable to a given installation.
3 Requirements Replaced with National Regulations
3.1 Basic Construction
3.3 Machinery and Equipment
PART

CHAPTER 7 Classification Requirements for Liftboats

SECTION 1 Classification (1 January 2008)

1 Scope (1 February 2014)

In accordance with 1-7-2, the classification A1 Liftboat AMS is to be assigned to liftboats meeting the requirements of the Liftboat Guide.

A liftboat is a self-propelled, self-elevating vessel with a relatively large open deck capable of carrying equipment and supplies in support of various offshore mineral exploration and production or offshore construction activities. A liftboat also has the capability of rapidly raising its hull clear of the water on its own legs so as to provide a stable platform from which maintenance and construction work may be conducted.

Liftboats with an overall hull length of 61 meters (200 feet) and above or with leg length greater than 91.44 meters (300 feet) are to comply with the ABS Guide for Building and Classing Mobile Offshore Units.

3 Classification (1 January 2008)

The general requirements for conditions of classification are contained in Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1).

Additional requirements specific to liftboats are contained in the following Sections of this Chapter.
1 Classification Requirements for Liftboats

2 Classification Symbols and Notations (2018)

A listing of Classification Symbols and Notations available to the Owners of vessels, offshore drilling and production units and other marine structures and systems, “List of ABS Notations and Symbols” is available from the ABS website “http://www.eagle.org”.

The following classification boundaries, symbols and notations are specific to liftboats.

1 Liftboats Built Under Survey

Liftboats which have been built to the satisfaction of the ABS Surveyor, to the full requirements of the Liftboat Guide or the equivalent, where approved by the Committee, will be classed and distinguished in the Record by the classification notation ✠A1Liftboat ✠AMS where ✠A1 indicates compliance with the hull requirements of the Liftboat Guide and ✠AMS indicates compliance with the machinery requirements for self-propelled liftboats.

3 Service Limitations (1 October 2015)

The Liftboat Guide is intended for liftboats designed for unrestricted service. Liftboats which are not designed to meet the full criteria for unrestricted service and are subject to geographical limitations, will be classed with a notation Restricted Service – Elevated Condition or Restricted Service – Afloat Condition. See also 1-7-5.

5 Temporary Mooring Equipment Symbol

The symbol Ⓖ will be placed after the symbols of classification to signify that the equipment for temporary mooring of the liftboat is in compliance with 3-5-1/1 of the Liftboat Guide.

7 Propulsion Machinery (29 November 2007)

Machinery which is required for propulsion and which has been constructed and installed to the satisfaction of the Surveyor, to the full requirements of the Liftboat Guide or their equivalent when found satisfactory after trial and approved by the Committee, will be classed and distinguished in the Record by the notation ✠AMS. This notation is mandatory for classification of self-propelled commercial vessels built under ABS survey, classed and distinguished in the Record by the symbol ✠A1.

9 Thrusters

Thruster machinery for propulsion assist or athwartship thrust complying with the applicable requirements of Section 4-3-5 of the ABS Rules for Building and Classing Marine Vessels, manufactured and installed under ABS survey and found satisfactory after trials, will be distinguished in the Record by the notation ✠PAS or ✠APS as appropriate.

11 Geographical Limitations

Liftboats which have been built to the satisfaction of the ABS Surveyors to special modified requirements for a restricted service, where approved by the Committee for that particular service will be classed and distinguished in the Record by the symbols and notations as described in 1-7-2/1, 1-1-2/3, 1-7-2/5, 1-7-2/7
and 1-7-2/9 above but the symbols and notations will either be followed by or have included in them the appropriate restricted service, e.g., Gulf of Mexico, etc. See Appendix 1-7-A1.

13 **Centralized or Automatic Control Systems**

Where, in addition to the individual liftboat controls, it is proposed to provide remote, centralized, or automatic control systems for propulsion units, essential auxiliaries, or for cargo handling, relevant data is to be submitted to permit the assessment of the effect of such systems on the safety of the liftboat. All controls necessary for the safe operation of the liftboats are to be provided to the Surveyor’s satisfaction. The automatic and remote control system are to be in accordance with the applicable requirements of Part 4, Chapter 9 of the ABS *Rules for Building and Classing Marine Vessels*.
PART 1

CHAPTER 7  Classification Requirements for Liftboats

SECTION 3  Rules for Classification (1 January 2008)

1  Application of Rules (2018)

The ABS Guide for Building and Classing Liftboats (Liftboat Guide) is applicable to self-propelled steel liftboats intended for unrestricted service, except where specifically mentioned otherwise.

Where reference is made herein to the ABS Rules for Building and Classing Marine Vessels (Marine Vessel Rules) or the ABS Rules for Building and Classing Mobile Offshore Unit (MOU Rules), the latest edition of those Rules is intended.

These requirements are applicable to those features that are permanent in nature and can be verified by plan review, calculation, physical survey or other appropriate means. Any statement in the Rules or Guides regarding other features is to be considered as guidance to the designer, builder, owner, et al.
CHAPTER 7  Classification Requirements for Liftboats

SECTION 4  Plans and Design Data to be Submitted

1  Hull and Design Data (2011)

Plans showing the scantlings, arrangements, and details of the principal parts of the structure of each liftboat to be built under survey are to be submitted for review and approved before the work of construction is commenced. These plans are to clearly indicate the scantlings, joint details and welding, or other methods of connection.

Plans should generally be submitted electronically to ABS. However, hard copies will also be accepted. In general, these plans are to include the following where applicable:

- General arrangement
- Inboard and outboard profile
- An arrangement plan of watertight compartmentation
- Diagrams showing the extents to which the watertight and weathertight integrity is intended to be maintained, including the location, type and disposition of watertight and weathertight closures.
- Summary of distributions of fixed and variable weights for each reviewed condition
- Type, location and quantities of permanent ballast.
- Loading for all decks
- Transverse sections showing scantlings
- Longitudinal sections showing scantlings
- Decks
- Helicopter deck with helicopter particulars (See 3-2-11/5 of the Liftboat Guide)
- Framing
- Shell plating
- Watertight bulkheads and flats
- Structural bulkheads and flats
- Tank bulkheads and flats with level of top of overflows and air pipes
- Pillars and girders
- Diagonals and struts
- Legs
- Structure in way of jacking or other elevating arrangements
- Footings, spudcans, pads, or mats
- Superstructures and deck houses
- Arrangement and details of watertight doors and hatches
Foundations for anchoring equipment, industrial equipment, etc., where attached to hull structure, superstructures or deckhouses

- Welding details and procedures
- Lines and offsets
- Curves of form or equivalent data
- Wind heeling moment curves or equivalent data
- Capacity plan
- Tank sounding tables
- Corrosion control arrangements
- Methods and locations for nondestructive testing
- Description of environmental conditions including minimum anticipated atmospheric and sea temperatures, for each mode of operation

3 **Machinery Plans**

Plans are to be submitted showing the arrangements and details of all propulsion and auxiliary machinery, steering gear, boilers and pressure vessels, electrical systems, jacking or other self-elevating systems, bilge and ballast systems, fire extinguishing systems, and other pumps and piping systems as described in 4-1-1/7 of the *Liftboat Guide*.

5 **Calculations**

The following calculations are to be submitted.

- Structural analysis including fatigue analysis
- Resultant forces and moments from wind, waves, current, mooring and other environmental loading
- Effects of icing on structural loading and stability, and upon wind resistance area of exposed structural elements, where appropriate, based on the intended geographic area of operation.
- Stability calculations, both intact and damaged
- Calculations substantiating adequacy of structure to transmit forces between legs and hull through the jacking or other self-elevating system
- Evaluation of the liftboat’s ability to resist overturning while bearing on the sea bed
- Submitted calculations are to be suitably referenced.
- Results from model tests or dynamic response calculations may be submitted as alternatives or a substantiation for required calculations.

7 **Additional Plans**

Where certification under the other regulation described in 1-1-5, is requested, submission of additional plans and calculations may be required.

9 **Submissions (2011)**

Plans from designers and builders are generally to be submitted electronically to ABS. However, hard copies will also be accepted.

All plan submissions originating from manufacturers are understood to have been made with the cognizance of the builder.
1 (1 October 2015) An operating manual which is consistent with the information and criteria upon which classification is based is to be placed aboard the liftboat for the guidance of the operating personnel. The primary language of the Operating Manual is to be English. Liftboats not meeting the criteria for unrestricted service are to have the notation Restricted Service – Elevated Condition or Restricted Service – Afloat Condition and details of the service restrictions are to be placed in the Operating Manual. Insofar as classification is concerned, the operating manual is to include, as appropriate, the following information:

1.1 A general description of the liftboat including major dimensions, lightship characteristics – including a lightship weight changes log, etc.

1.3 Summaries of approved modes of operation (See 3-1-1/1.7 of the Liftboat Guide) including, for each mode of operation:

i) Limiting environmental conditions including wave height and period, wind velocity, current velocity, minimum air and sea temperatures, soil penetration, air gap, and water depth

ii) Design deck loadings, icing loads, variable load, total elevated load, rated capacities of cranes and elevating systems, and types of helicopter for which the helideck is designed

iii) Draft or draft range, leg length, leg/footing position and whether buoyant or non-buoyant, disposition of movable equipment such as crane booms, limitations on the usage of cranes, etc.

iv) Maximum allowable KG versus draft curves or equivalent and associated limitations or assumptions, including damage and subdivision standards upon which the allowable KG is based

v) Disposition (open or closed) of watertight and weathertight closures

vi) (1 October 2015) Identification of “Restricted Service” conditions

1.5 Information showing:

i) General arrangements

ii) Preload capacity

iii) Watertight and weathertight boundaries, location of unprotected openings, and watertight and weathertight closures

iv) Type, location and quantities of permanent ballast

v) Allowable deck loadings

vi) Capacity, center of gravity, and free surface correction for each tank

vii) Capacity and center of gravity of each void
viii) Location and means of draining voids

ix) Description of the propulsion equipment; type and model of the engines and reduction gear, shaft line arrangement, bearings and seals, gear and propeller

x) Hydrostatic table or curves

xi) Simplified electrical one line diagrams of main power and emergency power systems

xii) Schematic diagrams of the bilge and preload system

1.7

Procedure for elevating, preloading, and lowering including preload requirements and maximum draft before elevating, and maximum deadweight onboard, before lowering, to not immerse the load line. Loading and KG work sheets, sample calculations for, transit at maximum draft, elevating, preload, elevated, storm survival afloat and elevated. Blank loading forms and instructions for their use are also to be included.

1.9

Procedures regarding cargo loading and securing, and limitations on height and weight.

3

The Operating Manual is to be submitted for review by ABS solely to ensure the presence of the above information which is to be consistent with the design information and limitations considered in the liftboat’s classification. ABS is not responsible for the operation of the liftboat.

The Operating Manual required by this section does not need to be in addition to that required by flag and coastal Administrations. These administrations may require that additional information be included in the Operating Manual.
A set of plans showing the location and extent of different grades and strengths of structural materials, together with a description of the material and welding procedures employed, should be placed aboard the liftboat.
PART 1

CHAPTER 7  Classification Requirements for Liftboats

APPENDIX 1 Requirements for Building and Classing Liftboats Intended for Service in Domestic Waters

Note:
This Appendix is prepared to make provision for users of the Liftboat Guide to design, build and operate liftboats intended solely for restricted service in domestic waters. It is recommended that any liftboat which may possibly change its service area from domestic to international at a future date should at least comply with the requirements listed in 1-7-A1/3.1, as applicable, so that the upgrading work for compliance with SOLAS, etc. will avoid essential conversion of the liftboat’s structural arrangements.

1 General
For a liftboat intended for service in domestic waters ABS will consider the flag Administration’s Ships Safety Regulations as an alternative in satisfying specific areas of the Liftboat Guide.

Where approved by the Committee for a particular service, the vessel will be classed and distinguished in the Record by the symbols A1 followed by class notation, if applicable, and the restricted service area (e.g., A1Liftboat, U.S. Domestic Restricted Service, etc.).

3 Requirements Replaced with National Regulations
The following requirements in the Liftboat Guide may be replaced with the Regulations of the flag Administration for those liftboats intended solely for service in domestic waters:

3.1 Basic Construction

<table>
<thead>
<tr>
<th>Section/Paragraph</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-2-6/1</td>
<td>Double Bottom</td>
</tr>
<tr>
<td>3-2-9/5</td>
<td>Watertight Bulkhead</td>
</tr>
<tr>
<td>3-1-3/1</td>
<td>Structural Fire Protection</td>
</tr>
<tr>
<td>4-6-2/9</td>
<td>Fixed Fire Fighting System in Engine Room</td>
</tr>
<tr>
<td>4-7-2/5</td>
<td>Emergency Generator Room</td>
</tr>
</tbody>
</table>

3.3 Machinery and Equipment

<table>
<thead>
<tr>
<th>Section/Paragraph</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-2-1/3.3, 4-2-1/9.7, 4-2-1/11.7</td>
<td>Spare Pumps</td>
</tr>
<tr>
<td>4-7-2/5</td>
<td>Emergency Power</td>
</tr>
<tr>
<td>4-7-2/5.9</td>
<td>Emergency Switchboard</td>
</tr>
<tr>
<td>4-6-2/5.3</td>
<td>Emergency (Second) Fire Pump</td>
</tr>
</tbody>
</table>
## CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>Classification (2018)</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Classification (2018)</td>
<td>117</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECTION</th>
<th>Classification Symbols and Notations (2018)</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Classification Symbols and Notations (2018)</td>
<td>118</td>
</tr>
<tr>
<td></td>
<td>Pipelines Built under Survey</td>
<td>118</td>
</tr>
<tr>
<td></td>
<td>Classification Data</td>
<td>118</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECTION</th>
<th>Rules for Classification (1 January 2008)</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Rules for Classification (1 January 2008)</td>
<td>119</td>
</tr>
<tr>
<td></td>
<td>Application</td>
<td>119</td>
</tr>
<tr>
<td></td>
<td>Risk Evaluations for Alternative Arrangements and Novel Features</td>
<td>119</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECTION</th>
<th>Documents to be Submitted</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Documents to be Submitted</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>General</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>Plans and Specifications</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>Information Memorandum</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>Site-specific Conditions</td>
<td>121</td>
</tr>
<tr>
<td></td>
<td>Material Specifications</td>
<td>121</td>
</tr>
<tr>
<td></td>
<td>Design Data and Calculations</td>
<td>121</td>
</tr>
<tr>
<td></td>
<td>Structural Strength and On-bottom Stability Analysis</td>
<td>121</td>
</tr>
<tr>
<td></td>
<td>Installation Analysis</td>
<td>122</td>
</tr>
<tr>
<td></td>
<td>Safety Devices</td>
<td>122</td>
</tr>
<tr>
<td></td>
<td>Installation Manual</td>
<td>122</td>
</tr>
<tr>
<td></td>
<td>Pressure Test Report</td>
<td>123</td>
</tr>
<tr>
<td></td>
<td>Operations Manual</td>
<td>123</td>
</tr>
<tr>
<td></td>
<td>Maintenance Manual</td>
<td>123</td>
</tr>
<tr>
<td></td>
<td>As-built Documents</td>
<td>124</td>
</tr>
</tbody>
</table>
PART 1

CHAPTER 8   Classification Requirements for Subsea Pipeline Systems

SECTION 1   Classification (2018)

The general requirements for conditions of classification are contained in Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1).

Additional requirements specific to subsea pipeline systems are contained in the following Sections of this Chapter.
CHAPTER 8  Classification Requirements for Subsea Pipeline Systems

SECTION 2  Classification Symbols and Notations (2018)

A listing of Classification Symbols and Notations available to the Owners of vessels, offshore drilling and production units and other marine structures and systems, “List of ABS Notations and Symbols” is available from the ABS website “http://www.eagle.org”.

The following notations are specific to subsea pipeline systems.

1  Pipelines Built under Survey

Pipelines which have been built, installed, tested and commissioned to the satisfaction of the ABS Surveyors to the full requirements of the Pipeline Guide or to its equivalent, where approved by the Committee, will be classed and distinguished in the Record by:

✠ A1 Offshore Installation – Offshore Pipelines

3  Classification Data

Data on the pipeline will be published in the Record as to the latitude and longitude of its location, type, dimensions and depth of water at the site.
1 Application

The ABS Guide for Building and Classing Subsea Pipeline Systems (Pipeline Guide) is applicable to those features that are permanent in nature and can be verified by plan review, calculation, physical survey or other appropriate means. Any statement in the Guide regarding other features is to be considered as guidance to the designer, builder, Owner, et al.

3 Risk Evaluations for Alternative Arrangements and Novel Features

Risk assessment techniques may be used to demonstrate that alternatives and novel features provide acceptable levels of safety in line with current offshore and marine industry practice. The ABS Guide for Risk Evaluations for the Classification of Marine-Related Facilities provides guidance on how to prepare a risk evaluation to demonstrate equivalency or acceptability for a proposed design.

Risk evaluations for the justification of alternative arrangements or novel features may be applicable either to the installation as a whole, or to individual systems, subsystems or components. ABS will consider the application of risk evaluations for alternative arrangements and novel features for subsea pipeline systems.

Portions of the subsea pipeline system or any of its components thereof not explicitly included in the risk evaluation submitted to ABS are to comply with any applicable part of the ABS Rules and Guides. If any proposed alternative arrangement or novel feature affects any applicable requirements of Flag and Coastal State, it is the responsibility of the Owner to discuss with the applicable authorities the acceptance of alternatives based on risk evaluations.

For new or novel concepts, (i.e., applications or processes that have no previous experience in the environment being proposed), the guidance encompassed in the class Rules may not be directly applicable to them. The ABS Guidance Notes on Review and Approval of Novel Concepts offer ABS clients a methodology for requesting classification of a novel concept. The process described in this guidance document draws upon engineering, testing and risk assessments in order to determine if the concept provides acceptable levels of safety in line with current industry practices.
**PART 1**

**CHAPTER 8** Classification Requirements for Subsea Pipeline Systems

**SECTION 4** Documents to be Submitted

1 **General**
   
   For classing pipelines according to the Pipeline Guide, the documentation submitted to ABS is to include reports, calculations, drawings and other documentation necessary to demonstrate the adequacy of the design of the pipelines. Specifically, required documentation is to include the items listed in this Chapter.

3 **Plans and Specifications**
   
   Plans and specifications depicting or describing the arrangements and details of the major items of pipelines are to be submitted for review or approval in a timely manner. These include:
   
   - Site plan indicating bathymetric features along the proposed route, the location of obstructions to be removed, the location of permanent man-made structures, the portions of the pipe to be buried and other important features related to the characteristics of the sea floor
   - Structural plans and specifications for pipelines, their supports and coating
   - Schedules of nondestructive testing and quality control procedures
   - Flow diagram indicating temperature and pressure profiles
   - Specifications and plans for instrumentation and control systems and safety devices

   When requested by the Owner, the Owner and ABS may jointly establish a schedule for information submittal and plan approval. This schedule, to which ABS will adhere as far as reasonably possible, is to reflect the fabrication and construction schedule and the complexity of the pipeline systems as they affect the time required for review of the submitted data.

5 **Information Memorandum**
   
   An information memorandum on pipelines is to be prepared and submitted to ABS. ABS will review the contents of the memorandum to establish consistency with other data submitted for the purpose of obtaining classification or certification.

   An information memorandum is to contain, as appropriate to the pipelines, the following:
   
   - A site plan indicating the general features at the site and the field location of the pipelines
   - Environmental design criteria, including the recurrence interval used to assess environmental phenomena
   - Plans showing the general arrangement of the pipelines
   - Description of the safety and protective systems provided
   - Listing of governmental authorities having authority over the pipelines
   - Brief description of any monitoring proposed for use on the pipelines
   - Description of manufacturing, transportation and installation procedures
7 Site-specific Conditions

An environmental condition report is to be submitted, describing anticipated environmental conditions during pipe laying, as well as environmental conditions associated with normal operating conditions and the design environmental condition. Items to be assessed are to include, as appropriate, waves, current, temperature, tide, marine growth, chemical components of air and water, ice conditions, earthquakes and other pertinent phenomena.

A route investigation report is to be submitted, addressing with respect to the proposed route of the pipeline system the topics of seafloor topography and geotechnical properties. In the bathymetric survey, the width of the survey along the proposed pipeline route is to be based on consideration of the expected variation in the final route in comparison with its planned position, and the accuracy of positioning devices used on the vessels employed in the survey and in the pipe laying operation. The survey is to identify, in addition to bottom slopes, the presence of any rocks or other obstructions that might require removal, gullies, ledges, unstable slopes and permanent obstructions, such as existing man-made structures. The geotechnical properties of the soil are to be established to determine the adequacy of its bearing capacity and stability along the route. The methods of determining the necessary properties are to include a suitable combination of in-situ testing, seismic survey, and boring and sampling techniques. As appropriate, soil testing procedures are to adequately assess sea floor instability, scour or erosion and the possibility that soil properties may be altered due to the presence of the pipe, including reductions in soil strength induced by cyclic soil loading or liquefaction. The feasibility of performing various operations relative to the burial and covering of the pipe is to be assessed with respect to the established soil properties.

Where appropriate, data established for a previous installation in the vicinity of the pipeline proposed for classification may be utilized, if acceptable to ABS.

9 Material Specifications

Documentation for all materials of the major components of pipelines is to indicate that the materials satisfy the requirements of the pertinent specification.

For linepipes, specifications are to identify the standard with which the product is in complete compliance, the size and weight designations, material grade and class, process of manufacture, heat number and joint number. Where applicable, procedures for storage and transportation of the linepipes from the fabrication and coating yards to the offshore destination are to be given.

Material tests, if required, are to be performed to the satisfaction of ABS.

11 Design Data and Calculations

Information is to be submitted for the pipelines that describe the material data, models and variability, long-term degradation data and models, methods of material system selection, analysis and design that were employed in establishing the design. The estimated design life of the pipelines is to be stated. Where model testing is used as the basis for a design, the applicability of the test results will depend on the demonstration of the adequacy of the methods employed, including enumeration of possible sources of error, limits of applicability and methods of extrapolation to full scale data. It is preferable that the procedures be reviewed and agreed upon before material and component model testing is performed.

Calculations are to be submitted to demonstrate the adequacy of the proposed design and are to be presented in a logical and well-referenced fashion, employing a consistent system of units. Where suitable, at least the following calculations are to be performed:

11.1 Structural Strength and On-bottom Stability Analysis

Calculations are to be performed to demonstrate that, with respect to the established loads and other influences, the pipelines, support structures and surrounding soil possess sufficient strength and on-bottom stability with regard to failure due to the following:

- Excessive stresses and deflections
• Fracture
• Fatigue
• Buckling
• Collapse
• Foundation movements

Additional calculations may be required to demonstrate the adequacy of the proposed design. Such calculations are to include those performed for unusual conditions and arrangements, as well as for the corrosion protection system.

11.3 Installation Analysis

With regard to the installation procedures, installation analyses, including trenching effects, are to be submitted for review. These calculations demonstrate that the anticipated loading from the selected installation procedures does not jeopardize the strength and integrity of the pipelines.

11.5 Safety Devices

An analysis of the pipeline safety system is to be submitted to demonstrate compliance with API RP 14G. As a recommended minimum, the following safety devices are to be part of the pipelines:

• For departing pipelines, a high-low pressure sensor is required on the floater or platform to shut down the wells, and a check valve is required to avoid backflow.
• For incoming pipelines an automatic shutdown valve is to be connected to the floater or platform’s emergency shutdown system, and a check valve is required to avoid backflow.
• For bi-directional pipelines, a high-low pressure sensor is required on the floater or platform to shut down the wells, and an automatic shutdown valve is to be connected to the floater or platform’s emergency shutdown system.

Shortly after the pipelines are installed, all safety systems are to be checked in order to verify that each device has been properly installed and calibrated and is operational and performing as prescribed.

In the post-installation phase, the safety devices are to be tested at specified regular intervals and periodically operated so that they do not become fixed by remaining in the same position for extended periods of time.

13 Installation Manual

A manual is to be submitted describing procedures to be employed during the installation of pipelines and is as a minimum to include:

• List of the tolerable limits of the environmental conditions under which pipe laying may proceed
• Procedures and methods to evaluate impact and installation damage tolerance
• Procedures to be followed should abandonment and retrieval be necessary
• Repair procedures to be followed should any component of pipelines be damaged during installation
• Contingency plan

An installation manual is to be prepared to demonstrate that the methods and equipment used by the contractor meet the specified requirements. As a minimum, the qualification of the installation manual is to include procedures related to:

• Quality assurance plan and procedures
• Welding procedures and standards
• Welder qualification
Nondestructive testing procedures
- Repair procedures for field joints, internal and external coating repair, as well as repair of weld defects, including precautions to be taken during repairs to prevent overstressing the repair joints
- Qualification of pipe-lay facilities, such as tensioner and winch
- Start and finish procedure
- Laying and tensioning procedures
- Abandonment and retrieval procedures
- Subsea tie-in procedures
- Intervention procedures for crossing design, specification and construction, bagging, permanent and temporary support design, specification and construction, etc.
- Trenching procedures
- Burying procedures
- Field joint coating and testing procedures
- Drying procedures
- System pressure test procedures and acceptance criteria

Full details of the lay vessel, including all cranes, abandonment and recovery winches, stinger capacities and angles, welding and nondestructive testing gear, firing line layout and capacity and vessel motion data are to be provided, together with general arrangement drawings showing plans, elevations and diagrams of the pipeline assembly, welding, nondestructive testing, joint coating and lay operations. Full details of any trenching and burying equipment is to be provided.

15 Pressure Test Report
A report including procedures for and records of the testing of each pipeline system is to be submitted. The test records are, as a minimum, to include an accurate description of the facility being tested, the pressure gauge readings, the recording gauge charts, the dead weight pressure data and the reasons for and disposition of any failures during a test. A profile of the pipeline that shows the elevation and test sites over the entire length of the test section is to be included. Records of pressure tests are also to contain the names of the Owner and the test contractor, the date, time and test duration, the test medium and its temperature, the weather conditions and sea water and air temperatures during the test period. Plans for the disposal of test medium together with discharge permits may be required to be submitted to ABS.

17 Operations Manual
An operations manual is to be prepared to provide a detailed description of the operating procedures to be followed for expected conditions. The operations manual is to include procedures to be followed during start-up, operations, shutdown conditions and anticipated emergency conditions. This manual is to be submitted to ABS for record and file.

19 Maintenance Manual
A maintenance manual providing detailed procedures for how to ensure the continued operating suitability of the pipeline system is to be submitted to ABS for approval.

The manual is, as a minimum, to include provisions for the performance of the following items:
- Visual inspection of non-buried parts of pipelines to verify that no damage has occurred to the systems and that the systems are not being corroded
- Evaluation of the cathodic protection system performance by potential measurements
Detection of dents and buckles by caliper pigging
Inspection and testing of safety and control devices

Additionally, ABS may require gauging of pipe thickness should it be ascertained that pipelines are undergoing erosion or corrosion.

Complete records of inspections, maintenance and repairs of pipelines are to be provided for ABS.

21 As-built Documents

The results of surveys and inspections of the pipelines are to be given in a report which, as a minimum, is to include the following details:

- Plot of the final pipeline position, superimposed on the proposed route including pipeline spans and crossings
- Description and location of any major damage to the pipelines alongside information regarding how such damage was repaired
- Description of the effectiveness of burial operations (if applicable for pipelines)

As appropriate, results of additional inspections, which may include those for the proper operation of corrosion control systems, fiber-optic and/or damage sensors, buckle detection by caliper pig or other suitable means and the testing of alarms, instrumentation and safety and emergency shutdown systems, are to be included.
PART 1

CHAPTER 9 Classification Requirements for Subsea Riser Systems

CONTENTS

SECTION 1 Classification (2018) ................................................................. 126

SECTION 2 Classification Symbols and Notations (2018) ....................... 127
  1 Risers Built Under Survey ............................................................ 127
  3 Classification Data ................................................................. 127

SECTION 3 Rules for Classification (1 January 2008) .......................... 128
  1 Application ................................................................. 128

SECTION 4 Documents to be Submitted ............................................. 129
  1 General ................................................................. 129
  3 Plans and Specifications .................................................. 129
  5 Site-specific Conditions .................................................. 129
  7 Material Specifications .................................................. 130
  9 Design Data and Calculations ............................................ 130
     9.1 Flow Assurance Analysis Report ................................ 130
     9.3 Installation Analysis Report ...................................... 131
     9.5 In-place Static and Dynamic Strength Analysis Report. 131
     9.7 Fatigue Analysis Report ............................................ 131
     9.9 Riser Interference Analysis Report .............................. 131
     9.11 Safety Devices ...................................................... 131
  11 Installation Manual .......................................................... 132
  13 Pressure Test Report ....................................................... 132
  15 Operations Manual .......................................................... 133
  17 Maintenance Manual ....................................................... 133
  19 Inspection Records .......................................................... 133
The general requirements for conditions of classification are contained in Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1).

Additional requirements specific to subsea riser systems are contained in the following Sections of this Chapter.
PART 1

CHAPTER 9  Classification Requirements for Subsea Riser Systems

SECTION 2  Classification Symbols and Notations (2018)

A listing of Classification Symbols and Notations available to the Owners of vessels, offshore drilling and production units and other marine structures and systems, “List of ABS Notations and Symbols” is available from the ABS website “http://www.eagle.org”.

The following notations are specific to subsea riser systems.

1  Risers Built Under Survey

Risers which have been built, installed, tested and commissioned to the satisfaction of the ABS Surveyors to the full requirements of the Riser Guide or to its equivalent, where approved by the Committee, will be classed and distinguished in the Record by:

✠ A1 Offshore Installation – Offshore Risers

3  Classification Data

Data on a riser will be published in the Record as to the latitude and longitude of its location, type, dimensions and depth of water at the site.
CHAPTER 9 Classification Requirements for Subsea Riser Systems

SECTION 3 Rules for Classification (1 January 2008)

1 Application

The ABS Guide for Building and Classing Subsea Riser Systems (Riser Guide) is applicable to those features that are permanent in nature and can be verified by plan review, calculation, physical survey or other appropriate means. Any statement in the Guide regarding other features is to be considered as guidance to the designer, builder, owner, et al.
PART 1

CHAPTER 9 Classification Requirements for Subsea Riser Systems

SECTION 4 Documents to be Submitted

1 General

Documentation to be submitted to ABS is to include reports, calculations, drawings and other documentation necessary to demonstrate the adequacy of the design of the risers. Specifically, required documentation is to include the items listed in this Section.

3 Plans and Specifications

Plans and specifications depicting or describing the arrangements and details of the major items of the riser are to be submitted for review or approval in a timely manner. These include:

- Site plan indicating bathymetric features at the proposed site, the location of obstructions to be removed, the location of permanent man-made structures and other important features related to the characteristics of the sea floor
- Structural plans and specifications for risers, their supports and coating
- Schedules of nondestructive testing and quality control procedures
- Flow diagram indicating temperature and pressure profiles
- Specifications and plans for instrumentation and control systems and safety devices

When requested by the Operator/Owner, the Operator/Owner and ABS may jointly establish a schedule for information submittal and plan approval. This schedule, to which ABS will adhere as far as reasonably possible, is to reflect the fabrication and construction schedule and the complexity of the riser systems as they affect the time required for review of the submitted data.

5 Site-specific Conditions

Documents for site-specific conditions are to include environmental condition report and site investigation report.

In the environmental condition report, met-ocean data for normal operating, design (extreme), and survival conditions in terms of wind, waves, current with profile, direction, and associated return of periods are to be included. Other items such as temperature, tide, marine growth, ice conditions, earthquakes and other pertinent phenomena are also be included if applicable.

In the site investigation report, geotechnical data acquisition and integrated geoscience studies should be included to determine soil properties, soil conditions, and geotechnical hazards and constraints across the site as specified in APR RP 2GEO, if applicable.

Geotechnical data acquisition is to include, logging, sampling, in situ testing, field and onshore laboratory testing, evaluation of geotechnical data, and reporting. The area for soil sampling is to be based on riser type, consideration of the expected variation between final and planned riser position as well as installation tolerance. The soil properties testing should include a suitable combination of in-situ and laboratory testing, seismic, and boring methods. The geotechnical data is to be integrated with geoscience studies.
(geophysics and geology). The geophysical survey is to identify seabed slopes, gullies, ledges, and the presence of any rocks or obstructions (nature or man-made) that might require removal or avoidance.

Geological modelling and identification of hazards, if applicable, is to determine seismic action due to earthquake, fault planes, sea floor instability, scour and sediment mobility, shallow gas, seabed subsidence, and the possibility that soil properties may be altered due to cyclic loading and the presence of other man-made structures such as pipelines, anchors and wellhead.

Where appropriate, data established for a previous installation in the vicinity of the riser proposed for classification may be utilized, if acceptable to ABS.

7 **Material Specifications**

Documentation for all materials comprising the major components of risers is to indicate that the materials satisfy the requirements of the pertinent specification including size and weight, material grade and class. Where applicable, procedures for storage and transportation of the riser pipes from the fabrication and coating yards to the offshore destination are to be given.

Material tests, if required, are to be performed to the satisfaction of ABS.

9 **Design Data and Calculations**

Information is to be submitted for the risers that describes the material data, and methods of analysis and design that were employed in establishing the design. The estimated design life of the risers is to be stated.

Calculations are to be performed to demonstrate that, with respect to the established loads and other influences, the risers, support structures and surrounding soil possess sufficient strength with regard to failure due to the following:

- Stresses
- Fracture
- Fatigue
- Buckling
- Collapse
- Foundation movements

Where applicable, the following analyses reports are to be submitted:

9.1 **Flow Assurance Analysis Report**

In the flow assurance report, the following studies are typically included based on the flow assurance design basis:

- Production fluid properties indicating the ratio of gas, oil, and water or the phase envelope for a given range of pressure and temperature
- Steady state and transient thermal-hydraulic assessment to determine inner diameter, thermal insulation requirement as well as pressure, temperature, and phase profile along the entire flow passage including riser
- Fluid behavior and solid formation/deposition assessment to develop operating strategies with procedures for control of corrosion, emulsion, and solids such as hydrate, paraffin wax, asphaltenes, and scale during the entire service life
- Slugging assessment if applicable, to determine slug size and slug induced loads
- Sand erosion assessment, if applicable, to determine local thickness requirement at needed locations
9.3 **Installation Analysis Report**

With regard to installation procedures, calculations and analysis for the installation procedures and limiting weather envelope are to be submitted for review. These calculations are to demonstrate that the anticipated loading from the selected installation procedures and limiting weather window does not jeopardize the strength and integrity of the risers and their foundations.

A riser interference study with already installed riser during installation should also be included in the report. Fatigue damage during installation stage should be calculated in the installation analysis report and is to be combined with calculated riser in-place fatigue damage for riser fatigue damage evaluation.

9.5 **In-place Static and Dynamic Strength Analysis Report**

The in-place static and dynamic strength analysis reports are to be submitted to demonstrate that stresses in the riser are within allowable limits as specified in this Guide. Loading conditions should include normal operating, extreme and survival conditions. Loads in each loading condition should include functional loads; environmental loads directly acting on the riser; platform static offsets for at least near, far and transverse positions; platform dynamic motions due to waves; as well as internal fluid induced vibration loads due to slugging and pressure surge during system shut down if applicable. Load cases and their corresponding safety factors for each loading condition should be included. Interference study with other risers, mooring lines and adjacent structures should also be included.

9.7 **Fatigue Analysis Report**

Riser fatigue analysis due to environment and platform (and/or buoy) dynamic motions (including VIM) should be carried out. Fatigue damage should be accumulated together with the VIV induced fatigue damages, installation induced fatigue damage, platform or buoy VIM induced riser fatigue damage, and internal fluid induced fatigue damage including slugging if applicable. In the analysis, stress concentration factors (SCFs) due to geometry discontinuity and misalignment is to be addressed, and S-N curves are to be properly selected.

The vortex induced vibration analysis is to include VIV susceptibility study. If VIV is susceptible, VIV induced fatigue damage is to be included in the analysis. VIV analysis using either frequency or time domain method is acceptable. If fatigue damage exceeds allowable levels, VIV suppression devices and its effect to fatigue damage is to be included in the analysis.

VIV induced additional drag or VIV suppression device induced drag coefficients should also be considered in the in-place strength and interference analysis.

If VIM of riser attached platform (or buoy) is susceptible, VIM analysis and calculations of riser fatigue damage due to platform (or buoy) VIM are to be included in the fatigue analysis report.

9.9 **Riser Interference Analysis Report**

Interference analyses during riser in-place condition and during installation are to be included in the report to assess the potential of interference under corresponding environment conditions between the risers and the adjacent structures. The effects of wake on drag and lift forces, VIV and dynamics are to be considered in the interference analysis.

9.11 **Safety Devices**

An analysis of the safety system is to be submitted to demonstrate compliance with API RP 14G. As a minimum, the following safety devices are to be part of the risers:

- For a departing riser, a high-low pressure sensor is required on the floater or platform to shut down the wells, and a check valve is required to avoid backflow.
- For an incoming riser, an automatic shutdown valve is to be connected to the floater or platform’s emergency shutdown system, and a check valve is required to avoid backflow.
For a bi-directional riser, a high-low pressure sensor is required on the floater or platform to shut down the wells, and an automatic shutdown valve is to be connected to the floater or platform’s emergency shutdown system.

Shortly after the risers are installed, all safety systems are to be checked in order to verify that each device has been properly installed and calibrated and is operational and performing as prescribed.

In the post-installation phase, the safety devices are to be tested at specified regular intervals and periodically operated so that they do not become fixed by remaining in the same position for extended periods of time.

### 11 Installation Manual

A manual is to be submitted describing procedures to be employed during the installation of risers to include:

- Procedures to be followed should abandonment and retrieval be necessary
- Repair procedures to be followed should any component of risers be damaged during installation
- Contingency plan

In the installation manual, the following qualifications and procedure are to be included to demonstrate that the methods and equipment used by the installation contractor meet requirements:

- Quality assurance plan and procedures
- Welding procedures and standards
- Welder qualification
- Nondestructive testing procedures
- Repair procedures for field joints, internal and external coating repair, as well as repair of weld defects, including precautions to be taken during repairs to prevent overstressing of the repaired joints
- Qualification of pipe-lay facilities, such as tensioner and winch
- Start and finish procedure
- Laying and tensioning procedures
- Abandonment and retrieval procedures
- Subsea tie-in procedures
- Intervention procedures for crossing design, specification and construction, bagging, permanent and temporary support design, specification and construction, etc.
- Field joint coating and testing procedures
- Drying procedures
- System Pressure Test procedures and acceptance criteria

### 13 Pressure Test Report

A pressure test report including procedures for and records of the testing of the riser system is to be submitted. The test records are to denote the facility being tested, the pressure gauge readings, the recording gauge charts, and the test medium weight pressure data. Records of pressure tests are also to contain the names of the Operator/Owner and the test contractor, the date, time and test duration, the test medium and its temperature, the weather conditions during the test period.
15 Operations Manual

An operations manual is to be prepared to provide a detailed description of the operating procedures to be followed for expected conditions. The operations manual is to include procedures to be followed during start-up, operations, shutdown conditions and anticipated emergency conditions. This manual is to be submitted to ABS.

17 Maintenance Manual

A maintenance manual providing detailed procedures for the continued operation of the riser system is to be submitted to ABS for record and file.

The manual is to include provisions for the performance of the following items:

- Visual inspection of the riser to verify that no damage has occurred to the system, and that the system is not corroding. Particular attention is to be paid to corrosion in the splash zone of risers
- Evaluation of the cathodic protection system performance by potential measurements
- Detection of dents and buckles by caliper pigging
- Inspection and testing of safety and control devices

Additionally, ABS may require gauging of pipe thickness should it be ascertained that risers are undergoing erosion or corrosion.

Complete records of inspections, maintenance and repairs of risers are to be provided for ABS on board the FPI.

19 Inspection Records

The results of surveys and inspections of the risers are to be provided in a report which is to include the following:

- Description and location of any major damage to a riser and information regarding how such damage was repaired
- The result of the inspections of the riser tie-in to demonstrate compliance with all plans and specifications

As appropriate, results of additional inspections, which may include those for the proper operation of corrosion control systems, buckle detection by caliper pig or other suitable means and the testing of alarms, instrumentation and safety and emergency shutdown systems, are to be included.
10 Classification Requirements for Floating Offshore Liquefied Gas Terminals

CONTENTS

SECTION 1 Classification.................................................................................................................135

SECTION 2 Classification Symbols and Notations (2018)..................................................... 136
  1 Class Notations.........................................................................................................................136
  3 Geographical Limitations..........................................................................................................136

SECTION 3 Rules for Classification............................................................................................ 137
  1 Application of Rules.................................................................................................................137
  3 Scope of Class............................................................................................................................137
  5 Alternatives...............................................................................................................................137
PART 1
CHAPTER 10 Classification Requirements for Floating Offshore Liquefied Gas Terminals

SECTION 1 Classification

The general requirements for conditions of classification are contained in Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1).

Additional requirements specific to floating offshore liquefied gas terminals are contained in the following Sections of this Chapter.
Classification Requirements for Floating Offshore Liquefied Gas Terminals

Classification Symbols and Notations (2018)

A listing of Classification Symbols and Notations available to the Owners of vessels, offshore drilling and production units and other marine structures and systems, “List of ABS Notations and Symbols” is available from the ABS website “http://www.eagle.org”.

The following notations are specific to floating offshore liquefied gas terminals.

Class Notations

Floating offshore liquefied gas terminals that have been built, installed and commissioned to the satisfaction of the ABS Surveyors to the full requirements of the FLGT Guide, where approved by the Committee for service for the specified design environmental conditions, may be classed and distinguished in the ABS Record by the symbol ✠ A1, followed by Offshore Liquefied Gas Terminal and the appropriate notation for the intended service listed below.

Class notations were chosen to provide a clear description of the function of each configuration using the following symbols:

- F  Floating
- L  Liquefaction Facility
- O  Transfer of Liquefied Gas (Offloading/Loading)
- P  Gas Processing Facility
- R  Re-Gasification Facility
- S  Storage Facility
- T  Terminal with processing facilities which are not classed

A complete description of applicable class notations for floating liquefied gas terminals is provided in 2-1/1.1 of the FLGT Guide.

Geographical Limitations

Floating offshore liquefied gas terminals which have been built to the satisfaction of the ABS Surveyors to special modified requirements for a limited service, where approved by the Committee for that particular service, may be classed and distinguished in the Record by suitable symbols or notations, but the symbols or notations will either be followed by or have included in them the appropriate service limitation.
PART 1

CHAPTER 10 Classification Requirements for Floating Offshore Liquefied Gas Terminals

SECTION 3 Rules for Classification

1 Application of Rules


3 Scope of Class

A description of the parts of a floating offshore liquefied gas terminal included in the ABS classification is provided in 2-1/1 of the FLGT Guide.

5 Alternatives

Any departure from the requirements of the FLGT Guide may be considered by ABS on the basis of an additional risk assessment to that required per 2-2/5 of the FLGT Guide, or at least a separate, clearly identified part of the risk assessment. In the case of such departures, classification is subject to ABS's approval upon a demonstration of fitness for purpose in line with the principles of ABS Guides and Rules, as well as recognized and generally accepted good engineering practice. Risk acceptance criteria are to be developed in line with the principles of the ABS Rules and are subject to ABS’s approval. The ABS Guidance Notes on Risk Assessment Application for the Marine and Offshore Oil and Gas Industries contain an overview of risk assessment techniques and additional information.

A risk approach justification of alternatives may be applicable either to the terminal as a whole or to individual systems, subsystems or components. As appropriate, account must be given to remote hazards outside of the bounds of the system under consideration. Such account must include incidents relating to remote hazards directly affecting or being influenced by the system under consideration. ABS will consider the application of risk-based techniques in the design of the terminal, verification surveys during construction and surveys for maintenance of class.

Portions of the terminal not included in the risk assessment are to comply with the applicable parts of the ABS Rules.

The following are the responsibility of the Owner/Operator:

i) Risk acceptance criteria
ii) Hazard identification
iii) Risk assessment
iv) Risk management
v) Compliance of the system under consideration with the applicable requirements of Flag and Coastal State
## CONTENTS

**SECTION 1** Classification

**SECTION 2** Classification Symbols and Notations (2018)

1. Class Notations

3. Geographical Limitations

**SECTION 3** Rules for Classification

1. Application of Rules

3. Scope of Class

5. Alternatives
The general requirements for conditions of classification are contained in Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1).

Additional requirements specific to gravity-based offshore LNG terminals are contained in the following Sections of this Chapter.
PART 1

CHAPTER 11 Classification Requirements for Gravity-Based Offshore LNG Terminals

SECTION 2 Classification Symbols and Notations (2018)

A listing of Classification Symbols and Notations available to the Owners of vessels, offshore drilling and production units and other marine structures and systems, “List of ABS Notations and Symbols” is available from the ABS website “http://www.eagle.org”.

The following notations are specific to gravity-based offshore LNG terminals.

1 Class Notations

Gravity-based offshore LNG terminals that have been built, installed and commissioned to the satisfaction of the ABS Surveyors to the full requirements of the GBLNGT Guide, where approved by the Committee for service for the specified design environmental conditions, may be classed and distinguished in the ABS Record by the symbol ✠A1, followed by Offshore Liquefied Gas Terminal and the appropriate notation for the intended service listed below.

Class notations were chosen to provide a clear description of the function of each configuration using the following symbols:

G Gravity Based
L Liquefaction Facility
O Transfer of LNG (Offloading>Loading)
P Gas Processing Facility
R Re-Gasification Facility
S Storage Facility
T Terminal with processing facilities which are not classed

A complete description of applicable class notations is provided for gravity-based offshore LNG terminals in 2-1/1.1 of the GBLNGT Guide.

3 Geographical Limitations

Gravity-based offshore LNG terminals which have been built to the satisfaction of the ABS Surveyors to special modified requirements for a limited service, where approved by the Committee for that particular service, may be classed and distinguished in the Record by suitable symbols or notations, but the symbols or notations will either be followed by or have included in them the appropriate service limitation.
CHAPTER 11 Classification Requirements for Gravity-Based Offshore LNG Terminals

SECTION 3 Rules for Classification

1 Application of Rules


3 Scope of Class

A description of the parts of a gravity-based offshore LNG terminal included in the ABS classification is provided in 2-1/1 of the GBLNGT Guide.

5 Alternatives

Any departure from the requirements of this Guide may be considered by ABS on the basis of an additional risk assessment to that required per 2-2/3 of the GBLNGT Guide, or at least a separate, clearly identified part of the risk assessment. In the case of such departures, classification is subject to ABS’s approval upon a demonstration of fitness for purpose in line with the principles of ABS Guides and Rules, as well as recognized and generally accepted good engineering practice. Risk acceptance criteria are to be developed in line with the principles of the ABS Rules and are subject to ABS’s approval. The ABS Guidance Notes on Risk Assessment Application for the Marine and Offshore Oil and Gas Industries contain an overview of risk assessment techniques and additional information.

A risk approach justification of alternatives may be applicable either to the terminal as a whole or to individual systems, subsystems or components. As appropriate, account must be given to remote hazards outside of the bounds of the system under consideration. Such account must include incidents relating to remote hazards directly affecting or being influenced by the system under consideration. ABS will consider the application of risk-based techniques in the design of the terminal, verification surveys during construction and surveys for maintenance of class.

Portions of the terminal not included in the risk assessment are to comply with the applicable parts of the ABS Rules.

The following are the responsibility of the Owner/Operator:

i) Risk acceptance criteria

ii) Hazard identification

iii) Risk assessment

iv) Risk management

v) Compliance of the system under consideration with the applicable requirements of Flag and Coastal State
## CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Classification</td>
<td>143</td>
</tr>
<tr>
<td>2</td>
<td>Classification Symbols and Notations (2018)</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td>Installations Built under ABS Survey</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td>Rotor-Nacelle Assembly (1 October 2015)</td>
<td>144</td>
</tr>
<tr>
<td>3</td>
<td>Rules for Classification</td>
<td>145</td>
</tr>
<tr>
<td></td>
<td>Application</td>
<td>145</td>
</tr>
<tr>
<td></td>
<td>References</td>
<td>145</td>
</tr>
<tr>
<td></td>
<td>Alternatives (1 October 2015)</td>
<td>145</td>
</tr>
<tr>
<td>4</td>
<td>Design Documentation to be Submitted</td>
<td>147</td>
</tr>
<tr>
<td></td>
<td>Reports</td>
<td>147</td>
</tr>
<tr>
<td></td>
<td>Offshore Wind Farm Conditions (15 January 2013)</td>
<td>147</td>
</tr>
<tr>
<td></td>
<td>Environmental Considerations (15 January 2013)</td>
<td>148</td>
</tr>
<tr>
<td></td>
<td>Foundation Data</td>
<td>148</td>
</tr>
<tr>
<td></td>
<td>Materials and Welding</td>
<td>148</td>
</tr>
<tr>
<td></td>
<td>Design Data and Calculations</td>
<td>149</td>
</tr>
<tr>
<td></td>
<td>Loadings</td>
<td>149</td>
</tr>
<tr>
<td></td>
<td>Structural Dynamic Properties (15 January 2013)</td>
<td>149</td>
</tr>
<tr>
<td></td>
<td>Structural Responses</td>
<td>149</td>
</tr>
<tr>
<td></td>
<td>Marine Operations (15 January 2013)</td>
<td>149</td>
</tr>
<tr>
<td></td>
<td>Other Calculations</td>
<td>149</td>
</tr>
<tr>
<td></td>
<td>Plans and Specifications (15 January 2013)</td>
<td>149</td>
</tr>
<tr>
<td></td>
<td>Information Memorandum (15 January 2013)</td>
<td>150</td>
</tr>
<tr>
<td>5</td>
<td>Operating Manual (15 January 2013)</td>
<td>151</td>
</tr>
</tbody>
</table>
PART 1

CHAPTER 12  Classification Requirements for Bottom-Founded Offshore Wind Turbine Installations

SECTION 1  Classification

The general requirements for conditions of classification are contained in Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1).

Additional requirements specific to Bottom-founded Offshore Wind Turbine Installations are provided in the following Sections of this Chapter.
PART 1

CHAPTER 12 Classification Requirements for Bottom-Founded Offshore Wind Turbine Installations

SECTION 2 Classification Symbols and Notations (2018)

A listing of Classification Symbols and Notations available to the Owners of vessels, offshore drilling and production units and other marine structures and systems, “List of ABS Notations and Symbols” is available from the ABS website “http://www.eagle.org”.

The following class notations are designated for the Bottom-founded Offshore Wind Turbine Installation as defined in 1-4/3.3 of the BOWTI Guide.

1 Installations Built under ABS Survey

Installations built and constructed to the satisfaction of the ABS Surveyors and to the requirements of the BOWTI Guide or to their equivalent, where approved by ABS, may be classed and distinguished in the ABS Record by the following symbol:

✠ A1 Offshore Wind Turbine Installation (Bottom-Founded)

The mark ✠ (Maltese cross) signifies that the installation was built, installed and commissioned to the satisfaction of the ABS Surveyors.

3 Rotor-Nacelle Assembly (1 October 2015)

The RNA, as defined in 1-4/3.43 of the BOWTI Guide, may be considered for the classification at the Owner’s request. Where the RNA are in full compliance with the requirements of the ABS Type Approval requirements of Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1), the installation may be classed and distinguished in the Record by the optional class notation RNA.

When the RNA is not included in the classification, the RNA installed on the ABS classed Bottom-founded Offshore Wind Turbine Installation is required to have a type certificate in accordance with IEC 61400-22 or other recognized standards. The RNA type certificate will be reviewed by ABS solely to verify that the information of the installed RNA is consistent with the design information, criteria and limitations considered in the classification of the Bottom-founded Offshore Wind Turbine Installation. ABS will not review or be responsible for the accuracy of the RNA type certificate. Use of the RNA which does not have an appropriate type certification or the wind turbine having a non-horizontal-axis configuration will be subject to special consideration by ABS.
PART 1

CHAPTER 12 Classification Requirements for Bottom-Founded Offshore Wind Turbine Installations

SECTION 3 Rules for Classification

1 Application

The requirements in the ABS Guide for Building and Classing Bottom-Founded Offshore Wind Turbine Installations (BOWTI Guide) applicable to the Bottom-founded Offshore Wind Turbine Installation, as defined in 1-4/3.3 of the BOWTI Guide. The design criteria specified in the BOWTI Guide are intended for the Bottom-founded Offshore Wind Turbine Installation to achieve the normal safety class as defined in IEC 61400-3 (2009).

The BOWTI Guide is applicable to those features that are permanent in nature and can be verified by plan review, calculation, physical survey or other appropriate means. Any statement in this document regarding other features is to be considered as guidance to the designer, Fabricator, Owner, et al.

3 References

Reference is made in the BOWTI Guide to ABS Rules and other criteria issued by ABS and other organizations. A1-4/3 of the BOWTI Guide contains a list of such references. Unless otherwise noted, the applicable edition of a reference is the one officially issued and available on the date the Agreement for Classification is accepted by ABS. Where a particular edition or date associated with a reference is given, it means that particular edition is relevant to the topic being presented in the BOWTI Guide. ABS may consider at its discretion, upon the request of the Owner, the application of other appropriate alternative methods and recognized codes of practice.

5 Alternatives (1 October 2015)

Any departure from the requirements of the BOWTI Guide may be considered by ABS on the basis of suitable engineering analyses or risk assessments. In the case of such departures, classification is subject to ABS’s approval upon a demonstration of acceptable levels of safety in line with the principles of the BOWTI Guide and recognized and generally accepted current offshore wind industry practice. Risk acceptance criteria are subject to ABS’s approval. The ABS Guidance Notes on Risk Assessment Application for the Marine and Offshore Oil and Gas Industries contains an overview of risk assessment techniques and additional information.

Using a risk assessment approach to justify alternatives may be applicable either to the Bottom-founded Offshore Wind Turbine Installation as a whole or to individual systems, subsystems or components. As appropriate, account must be given to remote hazards outside of the bounds of the system under consideration. Such account must include incidents relating to remote hazards directly affecting or being influenced by the system under consideration. ABS will consider the application of risk-based techniques in the design of the Bottom-founded Offshore Wind Turbine Installation as well as surveys during construction and surveys for maintenance of class.

Portions of the Bottom-founded Offshore Wind Turbine Installation not included in the risk assessment are to comply with the applicable parts of the ABS Rules.

The following are the responsibility of the Owner:

i) Risk acceptance criteria
ii) Hazard identification

iii) Risk assessment

iv) Risk management

v) Compliance with the applicable requirements of the coastal State or other governmental authorities
PART 1

CHAPTER 12 Classification Requirements for Bottom-Founded Offshore Wind Turbine Installations

SECTION 4 Design Documentation to be Submitted

(15 January 2013) The design documentation to be submitted is to describe the data, tools, procedures and methodologies of design and analysis which are employed to establish the design of the Bottom-founded Offshore Wind Turbine Installation. The intended design life is also to be stated.

Where model testing is used as a basis for a design, the applicability of the test results depends on the demonstration of the adequacy of the methods employed, including enumeration of possible sources of error, limits of applicability, and methods of extrapolation to full scale. Preferably, procedures are to be reviewed and agreed upon before model testing is done.

As required in the subsequent Subsections, calculations are to be submitted to demonstrate the sufficiency of the proposed design. Such calculations are to be presented in a logical and well-referenced fashion employing a consistent system of units. Where the calculations are in the form of computer analysis, the submittal is to provide input and output data with computer generated plots for the structural model. A program description (not code listings), user manuals, and the results of program verification sample problems may be required to be submitted.

The design documentation to be submitted is to include the reports, calculations, plans, specifications and other documentation where applicable. The extensiveness of the submitted documentation is to reflect:

i) The uniqueness of a specific design of the Bottom-founded Offshore Wind Turbine Installation within an offshore wind farm, and

ii) The level of experience with conditions in an area where the Bottom-founded Offshore Wind Turbine Installation is to be located.

Design documentation should generally be submitted electronically to ABS. However, hard copies will also be accepted.

1 Reports

Reports by consultants and other specialists used as a basis for design are to be submitted for review. The contents of reports on offshore wind farm conditions, environmental considerations, foundation data, and materials are, in general, to comply with the recommended list of items given below.

1.1 Offshore Wind Farm Conditions (15 January 2013)

A report on offshore wind farm conditions is to present the configuration of an offshore wind farm and exact locations of all individual offshore wind turbines, transformer platform, service and accommodation units and any other supporting structures and facilities in the offshore wind farm where applicable.

The report is also to contain the information of wind turbine RNAs, particularly those properties that are used as the input or as the basis of the input for the load calculation and structural assessment for the Support Structure.
1.3 Environmental Considerations (15 January 2013)

Reports on environmental considerations, as described in Section 3-1 of the BOWTI Guide, are to describe all environmental phenomena appropriate to the areas of construction, transportation, installation, maintenance, and repair. The types of environmental phenomena to be accounted for, as appropriate to the type and location of the Bottom-founded Offshore Wind Turbine Installation, include wind, waves, current, temperature, tide, marine growth, chemical components and density of air and water, snow and ice, earthquake, and other pertinent phenomena.

The establishment of environmental conditions is to be based on appropriate original data or, when permitted, data from analogous areas. Demonstrably valid statistical models are to be employed to perform the extrapolation to long-term values. Calculations required to establish the pertinent design environmental parameters are to be submitted for review.

The report on environmental considerations is also to contain the calculations which quantify the effects or loadings on the Bottom-founded Offshore Wind Turbine Installation if they are not provided in other documentation.

1.5 Foundation Data

Reports on foundation data are to present the results of investigations or, when applicable, data from analogous areas on geophysical, geological and geotechnical considerations existing at and near the installation site of an offshore wind turbine. The manner in which such data is established and the specific items to be assessed are to comply with 5-4/1 and 5-4/5 of the BOWTI Guide. The report is to contain a listing of references to cover the investigation, sampling, testing, and interpretive techniques employed during and after the site investigation.

The report is to include a listing of the predicted soil-structure interaction, such as $p-y$ data, to be used in the design. As appropriate to the planned structure, the items which may be covered in the reports are: axial and lateral pile capacities and response characteristics, the effects of cyclic loading on soil strength, scour, settlements and lateral displacements, dynamic interaction between soil and structure, the capacity of pile groups, slope stability, bearing and lateral stability, soil reactions on the structure, and penetration resistance.

Recommendations relative to any special anticipated problem regarding installation are to be included in the report. Items such as the following are to be included, as appropriate: hammer sizes, soil erosion during installation, bottom preparation, and procedures to be followed in the case that pile installation procedures significantly deviate from those anticipated.

The documentation for the foundation design is to be submitted in accordance with Section 5-4 of the BOWTI Guide.

1.7 Materials and Welding

Reports on structural materials and welding may be required for metallic structures, concrete structures or welding procedures where materials or procedures do not conform to those provided in Chapter 2 of the BOWTI Guide.

For metallic structures, when it is intended to employ new alloys not defined by a recognized specification, reports are to be submitted indicating the adequacy of the material’s metallurgical properties, fracture toughness, yield and tensile strengths, and corrosion resistance, with respect to their intended application and service temperatures.

For concrete gravity foundation structures, when it is not intended to test or define material properties in accordance with applicable standards of the American Society for Testing and Materials (ASTM) as listed in Section 2-1 of the BOWTI Guide, a report is to be provided indicating the standards actually to be employed and their relative adequacy with respect to the corresponding ASTM standards.
3 **Design Data and Calculations**

Design and analysis calculations are to be submitted for items relating to loadings and structural responses for in-place and marine operations, structural dynamic properties, and foundation designs. Calculations are in general to include the items listed below.

Calculations which may be required in association with environmental considerations and foundation data are described in 1-12-4/1.

### 3.1 Loadings

Calculations for loadings are to be submitted in accordance with Chapter 4 of the *BOWTI Guide*.

### 3.3 Structural Dynamic Properties *(15 January 2013)*

Calculations of natural periods of the Support Structure are to be submitted for review. A resonance diagram (Campbell diagram) depicting the relationship between the rotor speeds and the natural periods of turbine components and the Support Structure is to be submitted.

As applicable, the calculation of vibration amplitudes, velocities, and accelerations of the Support Structure may also be required.

### 3.5 Structural Responses

The stress and deflection calculations to be submitted are to include nominal element or member stresses and deflections. Calculations are also required for stresses in localized areas and structural joints, dynamic responses of the structure, and fatigue life of critical members and joints.

For a pile-supported structure, calculations for stresses in each pile and the load capacity of the connection between the structure and the pile are to be submitted. For a gravity structure, calculations are to be submitted for the effects of soil’s reaction on the foundation structure.

For a Self-Elevating Unit to be used as the Support Structure of an offshore wind turbine, the applicable calculations required in 3-1-2/3 of the *ABS Rules for Building and Classing Mobile Offshore Units* are to be submitted.

### 3.7 Marine Operations *(15 January 2013)*

Calculations are to be submitted in compliance with Chapter 6 of the *BOWTI Guide*. For structural responses resulting from the marine operations described in Chapter 6 of the *BOWTI Guide*, calculations are to demonstrate the adequacy of structural elements, members, or local structure, as deemed necessary. In addition, the calculations are to demonstrate, as applicable, that deflections resulting from applied loadings and overall structural displacement and settlement do not impair the structural performance of the Support Structure.

### 3.9 Other Calculations

As required, additional calculations which demonstrate the adequacy of an overall design are to be submitted. Such calculations are to include those performed in the design of corrosion protection system.

5 **Plans and Specifications *(15 January 2013)***

Plans or specifications depicting or describing arrangements and details of major items of the Bottom-founded Offshore Wind Turbine Installation are to be submitted for review or approval in a timely manner.

Where deemed appropriate, and when requested by the Owner, a schedule for information submittal and plan approval can be jointly established by the Owner and ABS. This schedule, which affects the time required for review of submitted data and ABS will adhere to as far as reasonably possible, is to reflect the construction schedule and the complexity of the Bottom-founded Offshore Wind Turbine Installation.
These plans are to include the following, where applicable.

i) Arrangement plans, elevations, and plan views clearly showing in sufficient detail the overall configuration, dimensions and layout of the rotor, nacelle, tower, substructure, foundation, etc.

ii) Layout plans indicating the locations, dimension and weights of main turbine components (e.g., blade, hub, shaft, nacelle, etc.) and the components (e.g., electrical, mechanical and control systems, etc.) in nacelle housing.

iii) Layout of secondary structures, fenders, ladders, access platform, boat landing, J-tube, etc.

iv) Structural plans indicating the complete structural arrangement, dimensions, member sizes, plating and framing, material properties, and details of connections and attachments

v) Pile plans indicating arrangements, nominal sizes, thicknesses and penetration

vi) Welding details and procedures, and schedule of nondestructive testing

vii) Corrosion control systems

viii) Various information in support of novel features utilized in the design where applicable

For a Self-Elevating Unit to be used as the Support Structure of an offshore wind turbine, the additional plans and design data required in 3-1-2/1 of the ABS Rules for Building and Classing Mobile Offshore Units are to be submitted.

7 Information Memorandum (15 January 2013)

An information memorandum is to be prepared and submitted to ABS. ABS will review the contents of the memorandum to establish consistency with other data submitted for the purpose of obtaining classification. ABS will not review the contents of the memorandum for their accuracy or the features described in the memorandum for their adequacy.

An information memorandum is to contain, as appropriate to the installation, the following:

i) Specifications of the RNA to be installed.

ii) Site plan indicating general features at the installation site and the layout of the offshore wind farm

iii) Environmental design criteria, including the recurrence interval used to assess environmental phenomena

iv) Plans showing the general arrangement of the Support Structure and its connection to the RNA

v) Description of the safety and protective systems provided

vi) Description of modes of operation

vii) Listing of governmental authorities having cognizance over the offshore wind farm

viii) Listing of any novel features

ix) Brief description of any monitoring proposed and security systems installed on the Support Structure

x) Description of transportation, installation and maintenance procedures
The Operating Manual of the Bottom-founded Offshore Wind Turbine Installation is to be submitted for review by ABS solely to verify the operational procedures and conditions are consistent with the design information, criteria and limitations considered in the classification. ABS is not responsible for the operation of offshore wind turbines.

A copy of the Operating Manual is preferably to be stored onboard of the Bottom-founded Offshore Wind Turbine Installation. Alternatively, the Operating Manual may be retained by the Owner and made readily available to the ABS Surveyor and to service personnel prior to conducting any maintenance or inspection.

The Operating Manual required by this Subsection does not need to be in addition to that required by the coastal State or other governmental authorities.
PART 1
CHAPTER 13 Classification Requirements for Floating Offshore Wind Turbine Installations

CONTENTS

SECTION 1 Classification ........................................................................................................... 154

SECTION 2 System Classification, Symbols and Notations (2018) ........................................... 155
1 Classification Boundaries (1 October 2015) ..................................................................... 155
3 Classification Symbols and Notations ................................................................................. 155
3.1 Installations Built under ABS Survey ............................................................................. 155
5 Rotor-Nacelle Assembly (1 October 2015) ........................................................................ 155

SECTION 3 Rules for Classification ......................................................................................... 157
1 Application ......................................................................................................................... 157
3 References .......................................................................................................................... 157
5 Alternatives (1 October 2015) ........................................................................................... 157

SECTION 4 Design Documentation to be Submitted ............................................................... 159
1 Reports ................................................................................................................................. 159
1.1 Offshore Wind Farm Conditions ..................................................................................... 159
1.3 Environmental Considerations ......................................................................................... 160
1.5 Soil Data ............................................................................................................................ 160
1.7 Materials and Welding ....................................................................................................... 160
1.9 Model Test ......................................................................................................................... 161
3 Design Data and Calculations ............................................................................................. 161
3.1 Loadings ............................................................................................................................ 161
3.3 Stability ............................................................................................................................ 161
3.5 Dynamic Properties .......................................................................................................... 161
3.7 Global Performance (1 October 2015) ........................................................................... 161
3.9 Structural Responses ......................................................................................................... 161
3.11 Other Calculations............................................................................................................ 162
5 Design Plans of Floating Support Structure ...................................................................... 162
7 Design Documentation of Stationkeeping System ............................................................... 163
9 Design Plans of Machinery and Systems ........................................................................... 163
9.1 Design Documentation of Electrical Installations ............................................................ 163
9.3 Design Documentation of Instrumentation and Control Systems .................................. 164
9.5 Fire Protection and Personnel Safety Design Plans ......................................................... 164
9.7 Design Plans for Other Machinery and Systems ............................................................... 164
11 Additional Plans ................................................................................................................ 164
13 Information Memorandum ................................................................................................ 164
SECTION 5 Manuals and Procedures

1 Operating Manual

3 Procedures
PART 1

CHAPTER 13 Classification Requirements for Floating Offshore Wind Turbine Installations

SECTION 1 Classification

The general requirements for conditions of classification are contained in Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1).

Additional requirements specific to the Floating Offshore Wind Turbine Installation are contained in the following Sections of this Chapter.
PART 1

CHAPTER 13 Classification Requirements for Floating Offshore Wind Turbine Installations

SECTION 2 System Classification, Symbols and Notations (2018)

1 Classification Boundaries (1 October 2015)

The classification of the Floating Offshore Wind Turbine Installation addresses three principal areas which are subject to the requirements of this Guide:

i) The Floating Support Structure, which carries the wind turbine Rotor-Nacelle Assembly (RNA);

ii) The stationkeeping system; and

iii) Applicable marine systems and associated equipment and machinery, safety systems and associated equipment, and lifesaving appliances and machinery

Additionally, at the request of the Owner, the Rotor-Nacelle Assembly (RNA) may be included in the classification subject to the ABS Type Approval requirements of Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1).

3 Classification Symbols and Notations

A listing of Classification Symbols and Notations available to the Owners of vessels, offshore drilling and production units and other marine structures and systems, “List of ABS Notations and Symbols” is available from the ABS website “http://www.eagle.org”.

The following class notations apply to the Floating Offshore Wind Turbine Installation, as defined in 1-13-2/1 and further in 1-1/15.3.8 of the FOWTI Guide.

3.1 Installations Built under ABS Survey

Installations built and constructed to the satisfaction of the ABS Surveyors and to the requirements of the FOWTI Guide or to their equivalent, where approved by ABS, may be classed and distinguished in the ABS Record by the following symbol:

✠ A1 Offshore Wind Turbine Installation (Floating)

The mark ✠ (Maltese cross) signifies that the installation was built, installed and commissioned to the satisfaction of the ABS Surveyors.

5 Rotor-Nacelle Assembly (1 October 2015)

The RNA, as defined in 1-1/15.3.25 of the FOWTI Guide, may be considered for the classification at the Owner’s request. Where the RNA are in full compliance with the requirements of the ABS Type Approval requirements of Chapter 1 of these ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1), the installation may be classed and distinguished in the Record by the optional class notation RNA.

When the RNA is not included in the classification, the RNA installed on the ABS classed Floating Offshore Wind Turbine Installation is required to have a type certificate in accordance with IEC 61400-22
or other recognized standards. The RNA type certificate will be reviewed by ABS solely to verify that the information of the installed RNA is consistent with the design information, criteria and limitations considered in the classification of the Floating Offshore Wind Turbine Installation. ABS will not review or be responsible for the accuracy of the RNA type certificate. Use of the RNA which does not have an appropriate type certification or the wind turbine having a non-horizontal-axis configuration will be subject to special consideration by ABS.
PART 1

CHAPTER 13 Classification Requirements for Floating Offshore Wind Turbine Installations

SECTION 3 Rules for Classification

1 Application

The requirements of the ABS Guide for Building and Classing Floating Offshore Wind Turbine Installations (FOWTI Guide) are applicable to Floating Offshore Wind Turbine Installations as defined in 1-13-2/1 and further in 1-1/15.3.8 of the FOWTI Guide.

The FOWTI Guide is applicable to those features that are permanent in nature and can be verified by plan review, calculation, physical survey or other appropriate means. Any statement in this document regarding other features is to be considered as guidance to the designer, Fabricator, Owner, et al.

3 References

References are made in the FOWTI Guide to ABS Rules and other criteria issued by ABS and other organizations. 1-1/17.3 of the FOWTI Guide contains a list of such references. Unless otherwise noted, the applicable edition of a reference is the one officially issued and available on the date the Agreement for Classification is accepted by ABS. Where a particular edition or date associated with a reference is given, it means that particular edition is relevant to the topic being presented in the FOWTI Guide. ABS may consider at its discretion, upon the request of the Owner, the application of other appropriate alternative methods and recognized codes of practice.

5 Alternatives (1 October 2015)

Any departure from the requirements of the FOWTI Guide may be considered by ABS on the basis of suitable engineering analyses or risk assessments. In the case of such departures, classification is subject to ABS’s approval upon a demonstration of acceptable levels of safety in line with the principles of the FOWTI Guide (see 3-1/3 of the FOWTI Guide) and recognized and generally accepted current offshore wind industry practice. Risk acceptance criteria are subject to ABS’s approval. The ABS Guidance Notes on Risk Assessment Application for the Marine and Offshore Oil and Gas Industries contains an overview of risk assessment techniques and additional information.

Using a risk assessment approach to justify alternatives may be applicable either to the Floating Offshore Wind Turbine Installation as a whole or to individual systems, subsystems or components. As appropriate, account must be given to remote hazards outside of the bounds of the system under consideration. Such account must include incidents relating to remote hazards directly affecting or being influenced by the system under consideration. ABS will consider the application of risk-based techniques in the design of the Floating Offshore Wind Turbine Installation as well as surveys during construction and surveys for maintenance of class.

Portions of the Floating Offshore Wind Turbine Installation not included in the risk assessment are to comply with the applicable parts of the ABS Rules.

The following are the responsibility of the Owner:

i) Risk acceptance criteria

ii) Hazard identification
iii) Risk assessment
iv) Risk management
v) Compliance with the applicable requirements of the coastal State or other governmental authorities
13 Classification Requirements for Floating Offshore Wind Turbine Installations

4 Design Documentation to be Submitted

The design documentation to be submitted is to describe the data, tools, procedures and methodologies of design and analysis which are employed to establish the design of the Floating Offshore Wind Turbine Installation. The intended design life is also to be stated.

Where model testing is used as a basis for a design, the applicability of test results depends on the demonstration of the adequacy of the methods employed, including enumeration of possible sources of error, limits of applicability, and methods of extrapolation to full scale. Preferably, procedures are to be reviewed and agreed upon before model testing is done.

As required in the subsequent Subsections, calculations are to be submitted to demonstrate the sufficiency of a proposed design. Such calculations are to be presented in a logical and well-referenced fashion employing a consistent system of units. Where the calculations are in the form of computer analysis, the submittal is to provide input and output data with computer generated plots for the analysis model. A program description (not code listings), user manuals, and the results of program verification sample problems may be required to be submitted.

The design documentation to be submitted is to include the reports, calculations, plans, specifications and other documentation where applicable. The extensiveness of the submitted documentation is to reflect

i) The uniqueness of a specific design of the Floating Offshore Wind Turbine Installation within an offshore wind farm, and

ii) The level of experience with conditions in the area where the Floating Offshore Wind Turbine Installation is to be located.

Design documentation should generally be submitted electronically to ABS. However, hard copies will also be accepted.

1 Reports

Reports by consultants and other specialists used as a basis for design are to be submitted for review. The contents of reports on offshore wind farm conditions, environmental considerations, foundation data, and materials are, in general, to comply with the recommended list of items given below.

1.1 Offshore Wind Farm Conditions

A report on offshore wind farm conditions is to present the configuration of an offshore wind farm and the exact locations of all individual floating offshore wind turbines, subsea cables, transformer platform, service and accommodation units and any other supporting structures and facilities in the offshore wind farm where applicable.

The report is also to contain information of wind turbines, particularly those properties that are used as the input or as the basis of the input for the design of the Floating Offshore Wind Turbine Installation.
1.3 Environmental Considerations

Reports on environmental considerations, as described in Section 4-1 of the FOWTI Guide, are to describe all environmental phenomena appropriate to the areas for the pre-service (load-out, transportation, installation and commissioning) and in-service (operation, maintenance and repair) phases. The types of environmental phenomena to be accounted for, as appropriate to the type and location of the Floating Offshore Wind Turbine Installation, include wind, waves, currents, temperature, tide, marine growth, chemical components and density of air and water, snow and ice, earthquake and other pertinent phenomena.

The establishment of environmental conditions is to be based on appropriate original data or, when permitted, data from analogous areas. Demonstrably valid statistical models are to be employed to perform the extrapolation to long-term values. Any calculations required to establish the pertinent environmental conditions are to be submitted for review.

The report on environmental considerations is also to contain the calculations which quantify the effects or loadings on the Floating Offshore Wind Turbine Installation where these are not provided in other documentation.

1.5 Soil Data

Reports on soil data are to present the results of investigations or, when applicable, data from analogous areas on geophysical, geological and geotechnical considerations existing at and near the installation site of anchoring structures of the stationkeeping system. As appropriate to the planned anchoring structure, the manner in which such data is established and the specific items to be assessed are in general to comply with 5-4/1 and 5-4/5 of the ABS Guide for Building and Classing Bottom-Founded Offshore Wind Turbine Installations (BOWTI Guide). The report is to contain a listing of references to cover the investigation, sampling, testing, and interpretive techniques employed during and after the site investigation.

Where applicable, the report is to include a listing of the predicted interaction between the soil and the anchoring structure of the stationkeeping system to be used in the design. As appropriate to the planned anchoring structure, the items which may need to be covered in the reports are: axial and lateral pile capacities and response characteristics, the effects of cyclic loading on soil strength, scour, settlements and lateral displacements, dynamic interaction between soil and structure, the capacity of pile groups, slope stability, bearing and lateral stability, soil reactions on the structure, and penetration resistance.

Recommendations relative to any special anticipated problem regarding installation are to be included in the report on soil data. Items such as the following are to be included, as appropriate: hammer sizes, soil erosion during installation, bottom preparation, and procedures to be followed in the case that pile anchor installation procedures significantly deviate from those anticipated.

1.7 Materials and Welding

Reports on structural materials and welding may be required for structures or welding procedures where materials or welding procedures do not conform to those provided in Chapter 2 of the FOWTI Guide.

For metallic structures intending to employ new alloys not defined by a recognized specification, reports are to be submitted indicating the adequacy of the material’s metallurgical properties, fracture toughness, yield and tensile strengths, and corrosion resistance, with respect to their intended application and service temperatures.

For a concrete structure, when it is not intended to test or define material properties in accordance with Chapter 2 of the FOWTI Guide, a report is to be provided indicating the standards to be employed and their relative adequacy with respect to the corresponding standards referenced in Chapter 2 of the FOWTI Guide.
1.9 Model Test

If model testing is performed (for example as per 6-1/9 of the FOWTI Guide for the assessment of global performance, Section 5-3 of the FOWTI Guide for the determination of environmental loads, or Section 9-2 of the FOWTI Guide for establishing the dynamic-response-based intact stability criteria), a model test report containing the information required in the relevant Sections is to be submitted.

3 Design Data and Calculations

Design and analysis calculations are to be submitted for items relating to loadings and responses for operations during the pre-service and in-service phases. Calculations are in general to comply with the items listed below.

Calculations which may be required in association with environmental considerations and soil data are described in 1-13-4/1.

3.1 Loadings

Calculations for loadings are to be submitted in accordance with 3-1/9 and Chapter 5 of the FOWTI Guide.

3.3 Stability

Stability analyses are to be performed and the results are to be submitted in accordance with Section 9-2 of the FOWTI Guide.

3.5 Dynamic Properties

Calculations of natural periods of the Floating Offshore Wind Turbine Installation are to be submitted for review. A resonance diagram (Campbell diagram) depicting the relationship between the rotor speeds and the natural periods of turbine components and the Floating Offshore Wind Turbine Installation is to be submitted.

As applicable, the calculation of vibration amplitudes, velocities and accelerations of the Floating Support Structure may also be required.

3.7 Global Performance (1 October 2015)

Global performance analyses are to be carried out in accordance with 3-1/11 and Chapter 6 of the FOWTI Guide. Descriptions of analysis methods and calculation results of the parameters listed in 6-1/1 of the FOWTI Guide are to be submitted for review.

The design documentation for the mooring lines and anchors (or tendons and foundation) and other stationkeeping system components is to be submitted in accordance with Chapter 8 of the FOWTI Guide.

3.9 Structural Responses

Calculations necessary to verify structural adequacy of the Floating Support Structure are to be submitted for review. The needed extent and types of analyses and the sophistication of such analyses are dependent on one or a combination of the following factors:

i) The design basis of the structure relative to the conditions to be encountered at the site

ii) The relative lack of experience with the structure’s arrangement, local details, loading patterns, and failure mode sensitivities

iii) Potential deleterious interactions with other subsystems of the Floating Offshore Wind Turbine Installation

The required structural analyses are to employ the loads associated with the design load conditions determined in accordance with Chapter 5 of the FOWTI Guide. More specific information on required structural analyses is given in Chapter 7 of the FOWTI Guide for the Floating Support Structure.
3.11 Other Calculations

Calculations are to include those performed in the design of the corrosion protection system. Additional calculations which demonstrate the adequacy of an overall design may also be required.

5 Design Plans of Floating Support Structure

Plans showing the scantlings, arrangements and details of the principal parts of the tower and hull structure of the Floating Offshore Wind Turbine Installation to be built under survey are to be submitted and approved before the work of construction is commenced. These plans are to clearly indicate the scantlings, joint details and welding, or other methods of connection. In general, plans to be submitted are to include the following, where applicable:

- General arrangement
- Body plan, lines, offsets, curves of form, inboard and outboard profile
- Layout plans indicating the locations, dimension and weights of turbine components (e.g., blade, hub, nacelle, etc.) and the components (e.g., electrical, mechanical and control systems, etc.) in nacelle housing
- Layout plans of secondary structures, fenders, ladders, access platform, boat landing, export electrical cable support, etc.
- Wind heeling moment curves or equivalent data for the Floating Support Structure carrying the RNA
- Thrust curve of the turbine rotor
- Arrangement plan of watertight compartmentation
- Diagrams showing the extent to which the watertight and weathertight integrity are intended to be maintained, as well as the location, type and disposition of watertight and weathertight closures
- Capacity plan and tank sounding tables
- Summary of distributions of weights (fixed, variable, ballast, etc.) for various conditions
- Type, location and quantities of permanent ballast, if any
- Loadings for all decks
- Turbine tower scantlings
- Tower-hull connection details
- Hull transverse section showing scantlings
- Hull longitudinal sections showing scantlings
- Decks, including helicopter deck if applicable
- Framing, shell plating, watertight bulkheads and flats, structural bulkheads and flats, tank bulkheads and flats with location of overflows and air pipes
- Pillars, girders, diagonals and struts
- Stability columns, intermediate columns, hulls, pontoons, superstructure and deck houses
- Arrangement and details of watertight doors and hatches
- Foundations for anchoring equipment, industrial equipment, etc., where attached to hull structure, superstructures or deckhouses
- Mooring turrets and yoke arms, including mechanical details, if applicable
- Corrosion control arrangements
- Welding details and procedures
Methods and locations for nondestructive testing
Information in support of novel features utilized in the design, where applicable

### 7 Design Documentation of Stationkeeping System

The design documentation for the stationkeeping system is to include the following, where applicable:

- Mooring arrangement or pattern
- Details of winching equipment
- Details of anchoring system
- Details of mooring line or tendon segments
- Connections at anchors and between mooring line segments
- Details of in-line (spring) buoys
- Details of buoy of catenary anchor leg mooring (CALM) system
- Details of single anchor leg mooring (SALM) structures
- Details of turret system to show turret structure, swivel, turntable and disconnecting device
- Details of yoke (hard or soft) connecting the Floating Support Structure and the CALM/SALM structure
- Reports on wind farm conditions, environmental considerations and soil data, as required in 1-13-4/1
- Global performance analysis report, as required in 1-13-4/3.7
- Model test report when the design loads are based on model tests in a wave basin (see 1-13-4/1.9)
- Thruster specifications and calculations of a system with dynamic positioning system for thruster forces and power to counteract environmental forces.

### 9 Design Plans of Machinery and Systems

Design plans of the machinery and systems addressed in Chapter 10 of the FOWTI Guide are to be submitted for review and approval by ABS.

#### 9.1 Design Documentation of Electrical Installations

The design documentation for the electrical installation is to include the following, where applicable:

- Electrical one-line diagrams
- Short-circuit current calculations
- Coordination study
- Specifications and data sheets for generators and motors
- Specifications and data sheets for distribution transformers
- Details of storage batteries
- Details of emergency power source
- Standard details of wiring cable and conduit installation practices
- Switchboards and distribution panel
- Panel board
9.3 **Design Documentation of Instrumentation and Control Systems**

The design documentation for the instrumentation and control system is to include the following, where applicable:

- General arrangements
- Data sheet
- Schematic drawings – electrical systems
- Schematic drawings – hydraulic and pneumatic systems
- Programmable electronic systems

9.5 **Fire Protection and Personnel Safety Design Plans**

The applicability of the following requirements to the submission of design documentation may vary, depending upon the nature of a specific design of the Floating Wind Turbine Installation.

- Portable or semi-portable extinguishers
- Fire detection and alarm systems
- Fire cause and effect chart
- Heating, ventilation and air conditioning (HVAC) plan [including air handling unit (AHU)], location, duct layout, duct construction and bulkhead and deck penetration details
- Guard rails
- Escape routes (may be included on the fire control plan or separate plan)
- Lifesaving appliances and equipment plan (escape routes must be indicated)

9.7 **Design Plans for Other Machinery and Systems**

Submission of design plans for other machinery and systems which are described in Chapter 10 of the *FOWTI Guide* but not specified in 1-13-4/9.1 through 1-13-4/9.5 is to follow 1-2-4/3, where applicable.

11 **Additional Plans**

Where additional class notations or certification under the other Rules, Guides or regulations, as described in Section 1-1-5, are requested, submission of additional plans and calculations may be required.

13 **Information Memorandum**

An information memorandum is to be prepared and submitted to ABS. ABS will review the contents of the memorandum to establish consistency with other data submitted for the purpose of obtaining classification. ABS will not review the contents of the memorandum for their accuracy or the features described in the memorandum for their adequacy.

An information memorandum is to contain, as appropriate to the Floating Offshore Wind Turbine Installation, the following:

- Specifications of turbine RNAs to be installed
- Site plan indicating the general features at the site and the layout of the offshore wind farm
- Environmental and soil design criteria, including the recurrence interval used to assess environmental phenomena
- Plans showing the general arrangement of the Floating Offshore Wind Turbine Installation
- Description of the safety, protective, security and trespass avoidance systems provided
- Description of the modes of operation
• Listing of governmental authorities having cognizance over the installation
• Listing of any novel features
• Brief description of any monitoring proposed for use on the installation
• Description of pre-service load-out, transportation, installation and commissioning procedures
• Description of on-site maintenance and repair procedures for both the Floating Offshore Wind Turbine Installation and the RNA
• Description of disconnecting, transportation and reconnecting procedures for maintenance and repair operations, if applicable
PART 1
CHAPTER 13 Classification Requirements for Floating Offshore Wind Turbine Installations
SECTION 5 Manuals and Procedures

1 Operating Manual

The Operating Manual pertaining to the safe operation of the Floating Offshore Wind Turbine Installation is to be prepared and submitted for review. A copy of the Operating Manual is preferably to be stored onboard of the Floating Offshore Wind Turbine Installation. Alternatively, the Operating Manual may be retained by the Owner and made readily available to the ABS Surveyor and to service personnel prior to conducting any maintenance or inspection.

Insofar as classification is concerned, the Operating Manual is to include, as appropriate, the following information:

i) A general description of the Floating Offshore Wind Turbine Installation, including major dimensions, lightship characteristics

ii) A general description and the maintenance record of the RNA

iii) Summaries of approved modes of operation (See 5-2 of the FOWTI Guide), including for each mode of operation:
   - Design environmental conditions, including wave height and period, wind speed, current velocity, minimum air and sea temperatures, air gap, and water depth
   - Turbine RNA operating mode in conjunction with the condition of turbine control, protection and electrical systems and the status of electrical network connection
   - Design deck loadings, mooring loads, icing loads, variable load, cranes and, if applicable, types of helicopter for which the helideck is designed
   - Draft or draft range, disposition of movable equipment such as crane booms, etc.
   - Maximum allowable KG versus draft curve or equivalent and associated limitations or assumptions upon which the allowable KG is based (See 9-2/1 of the FOWTI Guide)
   - Disposition (open or closed) of watertight and weathertight closures (See 9-3/1 of the FOWTI Guide)
   - (1 October 2015) Maximum allowable offset and heeling angle of the Floating Support Structure

iv) Information showing:
   - General arrangements
   - Type, location and quantities of permanent ballast
   - Allowable deck loadings
   - Information related to stability and watertight/weathertight integrity, as required in 9-2/5.3, 9-2/7, and 9-3/1 of the FOWTI Guide
   - Capacity, centers of gravity and free surface correction for each tank
• Capacity and centers of gravity of each void provided with sounding arrangements but not provided with means of draining
• Location and means of draining voids
• Hydrostatic curves or equivalent
• Simplified electrical one line diagrams of main power and emergency power systems
• Schematic diagrams of the bilge, ballast and ballast control system

vi) Ballasting and deballasting procedure

vj) Disconnecting and reconnecting procedure, if applicable, for operating disconnectable mooring systems

The Operating Manual is to be reviewed by ABS solely to verify the operational procedures and conditions are consistent with the design information, criteria and limitations considered in the installation’s classification. ABS is not responsible for the operation of floating offshore wind turbines.

The Operating Manual required by this subsection does not need to be in addition to that required by the coastal State or other governmental authorities. These administrations may require that additional information be included in the Operating Manual.

3 Procedures

Procedures are to be submitted for the following:

• Installation Procedures
• Hook-Up Procedures for connecting the stationkeeping system to the Floating Support Structure
• Startup and Commissioning Procedures
• Survey and Inspection Planning Document
• Underwater Inspection Procedure or, if applicable, Drydocking Survey Procedure
• Disconnecting and Reconnecting Procedure, if applicable, for operating disconnectable mooring systems
CONTENTS

SECTION 1 Comparison of Existing Classification Rules vs. 2018 Classification Rules

................................................................. 169
## Comparison of Existing Classification Rules vs. 2018 Classification Rules

### Generic

<table>
<thead>
<tr>
<th>Existing Class</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 1</td>
<td>Conditions of Classification</td>
<td>1-1-1</td>
</tr>
<tr>
<td>Chapter 1</td>
<td>Scope and Conditions of Classification</td>
<td>1-1-1</td>
</tr>
<tr>
<td>Section 1</td>
<td>Classification</td>
<td>1-1-1</td>
</tr>
<tr>
<td>1-1-1</td>
<td>Classification</td>
<td>1-1-1</td>
</tr>
<tr>
<td>1-1-1/1</td>
<td>Process</td>
<td>1-1-1/1</td>
</tr>
<tr>
<td>1-1-1/3</td>
<td>Certificates and Reports</td>
<td>1-1-1/3</td>
</tr>
<tr>
<td>1-1-1/3.1</td>
<td>---</td>
<td>1-1-1/3.1</td>
</tr>
<tr>
<td>1-1-1/3.3</td>
<td>---</td>
<td>1-1-1/3.3</td>
</tr>
<tr>
<td>1-1-1/3.5</td>
<td>---</td>
<td>1-1-1/3.5</td>
</tr>
<tr>
<td>1-1-1/3.7</td>
<td>---</td>
<td>1-1-1/3.7</td>
</tr>
<tr>
<td>1-1-1/5</td>
<td>Representations as to Classification</td>
<td>1-1-1/5</td>
</tr>
<tr>
<td>1-1-1/7</td>
<td>Scope of Classification</td>
<td>1-1-1/7</td>
</tr>
</tbody>
</table>

### Part 1

<table>
<thead>
<tr>
<th>Conditions of Classification</th>
<th>Suspension and Cancellation of Classification</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1</td>
<td>Scope and Conditions of Classification</td>
<td>1-1-2</td>
</tr>
<tr>
<td>Section 2</td>
<td>Suspension and Cancellation of Classification</td>
<td>1-1-2</td>
</tr>
<tr>
<td>1-1-2</td>
<td>Suspension and Cancellation of Classification</td>
<td>1-1-2</td>
</tr>
<tr>
<td>1-1-2/1</td>
<td>General</td>
<td>1-1-2/1</td>
</tr>
<tr>
<td>1-1-2/1.1</td>
<td>---</td>
<td>1-1-2/1.1</td>
</tr>
<tr>
<td>1-1-2/1.3</td>
<td>---</td>
<td>1-1-2/1.3</td>
</tr>
<tr>
<td>1-1-2/3</td>
<td>Notice of Surveys</td>
<td>1-1-2/3</td>
</tr>
<tr>
<td>1-1-2/5</td>
<td>Special Notations</td>
<td>1-1-2/5</td>
</tr>
<tr>
<td>1-1-2/7</td>
<td>Suspension of Class</td>
<td>1-1-2/7</td>
</tr>
<tr>
<td>1-1-2/7.1</td>
<td>---</td>
<td>1-1-2/7.1</td>
</tr>
<tr>
<td>1-1-2/7.3</td>
<td>---</td>
<td>1-1-2/7.3</td>
</tr>
<tr>
<td>1-1-2/7.5</td>
<td>---</td>
<td>1-1-2/7.5</td>
</tr>
<tr>
<td>1-1-2/7.7</td>
<td>---</td>
<td>1-1-2/7.7</td>
</tr>
<tr>
<td>1-1-2/7.9</td>
<td>---</td>
<td>1-1-2/7.9</td>
</tr>
<tr>
<td>1-1-2/7.11</td>
<td>---</td>
<td>1-1-2/7.11</td>
</tr>
<tr>
<td>Existing Class</td>
<td>Title</td>
<td>Class 2018</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>1-1-2/7.13</td>
<td>---</td>
<td>1-1-2/7.13</td>
</tr>
<tr>
<td>1-1-2/7.15</td>
<td>---</td>
<td>1-1-2/7.15</td>
</tr>
<tr>
<td>1-1-2/7.17</td>
<td>---</td>
<td>1-1-2/7.17</td>
</tr>
<tr>
<td>1-1-2/9</td>
<td>Lifting of Suspension</td>
<td>1-1-2/9</td>
</tr>
<tr>
<td>1-1-2/9.1</td>
<td>---</td>
<td>1-1-2/9.1</td>
</tr>
<tr>
<td>1-1-2/9.3</td>
<td>---</td>
<td>1-1-2/9.3</td>
</tr>
<tr>
<td>1-1-2/9.5</td>
<td>---</td>
<td>1-1-2/9.5</td>
</tr>
<tr>
<td>1-1-2/11</td>
<td>Cancellation of Class</td>
<td>1-1-2/11</td>
</tr>
<tr>
<td>1-1-2/11.1</td>
<td>---</td>
<td>1-1-2/11.1</td>
</tr>
<tr>
<td>1-1-2/11.3</td>
<td>---</td>
<td>1-1-2/11.3</td>
</tr>
<tr>
<td>1-1-2/11.5</td>
<td>---</td>
<td>1-1-2/11.5</td>
</tr>
<tr>
<td>1-1-2/11.7</td>
<td>---</td>
<td>1-1-2/11.7</td>
</tr>
<tr>
<td>1-1-2/11.9</td>
<td>---</td>
<td>1-1-2/11.9</td>
</tr>
<tr>
<td>1-1-2/13</td>
<td>Alternative Procedures</td>
<td>1-1-2/13</td>
</tr>
</tbody>
</table>

**Part 1**

**Chapter 1**

**Section 3**

**Conditions of Classification**

**Scope and Conditions of Classification**

**Classification Symbols and Notations**

<table>
<thead>
<tr>
<th>Classification Symbols and Notations</th>
<th>1-1-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drilling Units Built Under Survey</td>
<td>1-1-3/1</td>
</tr>
<tr>
<td>Self-Elevating Drilling Units</td>
<td>1-1-3/1.1</td>
</tr>
<tr>
<td>Column-Stabilized Drilling Units</td>
<td>1-1-3/1.3</td>
</tr>
<tr>
<td>Surface Type Drilling Units</td>
<td>1-1-3/1.5</td>
</tr>
<tr>
<td>Ship-Type Drilling Units</td>
<td>1-1-3/1.5.1</td>
</tr>
<tr>
<td>Barge-Type Drilling Units</td>
<td>1-1-3/1.5.2</td>
</tr>
<tr>
<td>Other Types of Drilling Units</td>
<td>1-1-3/1.7</td>
</tr>
<tr>
<td>Anchoring (Temporary Mooring) Equipment</td>
<td>1-1-3/1.9</td>
</tr>
<tr>
<td>Symbol © for Anchoring (Temporary Mooring) Equipment</td>
<td>1-1-3/1.9.1</td>
</tr>
<tr>
<td>Position Mooring Equipment and Systems</td>
<td>1-1-3/1.11</td>
</tr>
<tr>
<td>Symbol © for Position Mooring Equipment</td>
<td>1-1-3/1.11.1</td>
</tr>
<tr>
<td>Symbol © for Position Mooring System</td>
<td>1-1-3/1.11.2</td>
</tr>
<tr>
<td>Special Purpose Units</td>
<td>1-1-3/3</td>
</tr>
<tr>
<td>Service Limitations</td>
<td>1-1-3/5</td>
</tr>
<tr>
<td>Units Not Built Under Survey</td>
<td>1-1-3/7</td>
</tr>
<tr>
<td>Offshore Installations</td>
<td>1-1-3/9</td>
</tr>
<tr>
<td>Floating Production Installations</td>
<td>1-1-3/11</td>
</tr>
<tr>
<td>Existing Class</td>
<td>Title</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>1-1-3/13</td>
<td>Liftboats</td>
</tr>
<tr>
<td>1-1-3/15</td>
<td>Subsea Pipeline Systems</td>
</tr>
<tr>
<td>1-1-3/17</td>
<td>Subsea Riser Systems</td>
</tr>
<tr>
<td>1-1-3/19</td>
<td>Facilities on Offshore Installations</td>
</tr>
<tr>
<td>1-1-3/19.1</td>
<td>Floating Installations</td>
</tr>
<tr>
<td>1-1-3/19.3</td>
<td>Fixed Installations</td>
</tr>
<tr>
<td>1-1-3/21</td>
<td>Single Point Moorings</td>
</tr>
<tr>
<td>1-1-3/23</td>
<td>Offshore LNG Terminals</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1-1-3/25</td>
<td>Propulsion Machinery</td>
</tr>
<tr>
<td>1-1-3/27</td>
<td>Thrusters</td>
</tr>
<tr>
<td>1-1-3/29</td>
<td>Dynamic Positioning Systems</td>
</tr>
<tr>
<td>1-1-3/31</td>
<td>Drilling Systems</td>
</tr>
<tr>
<td>1-1-3/33</td>
<td>Ice Strengthening</td>
</tr>
</tbody>
</table>

**Part 1**  
**Chapter 1**  
**Section 4**  

<table>
<thead>
<tr>
<th>Rule Reference</th>
<th>Description</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1-4</td>
<td>Rules for Classification</td>
<td>1-1-4</td>
</tr>
<tr>
<td>1-1-4/1</td>
<td>Application of Rules</td>
<td>1-1-4/1</td>
</tr>
<tr>
<td>1-1-4/1.1</td>
<td>General</td>
<td>1-1-4/1.1</td>
</tr>
<tr>
<td>1-1-4/1.3</td>
<td>Application</td>
<td>1-1-4/1.3</td>
</tr>
<tr>
<td>1-1-4/3</td>
<td>Effective Date of Rule Change</td>
<td>1-1-4/3</td>
</tr>
<tr>
<td>1-1-4/3.1</td>
<td>Effective Date</td>
<td>1-1-4/3.1</td>
</tr>
<tr>
<td>1-1-4/3.3</td>
<td>Implementation of Rule Changes</td>
<td>1-1-4/3.3</td>
</tr>
<tr>
<td>1-1-4/3.3.1</td>
<td>General</td>
<td>1-1-4/3.3.1</td>
</tr>
<tr>
<td>1-1-4/3.3.2</td>
<td>Date of Contract for Construction</td>
<td>1-1-4/3.3.2</td>
</tr>
<tr>
<td>1-1-4/3.3.3</td>
<td>Series of Units and Optional Units</td>
<td>1-1-4/3.3.3</td>
</tr>
<tr>
<td>1-1-4/3.3.4</td>
<td>Additional Optional Units</td>
<td>1-1-4/3.3.4</td>
</tr>
<tr>
<td>1-1-4/5</td>
<td>Other Conditions</td>
<td>1-1-4/5</td>
</tr>
<tr>
<td>1-1-4/7</td>
<td>Installations Not Covered by the Rules</td>
<td>1-1-4/7</td>
</tr>
<tr>
<td>1-1-4/9</td>
<td>Alternatives</td>
<td>1-1-4/9</td>
</tr>
<tr>
<td>1-1-4/9.1</td>
<td>General</td>
<td>1-1-4/9.1</td>
</tr>
<tr>
<td>1-1-4/9.3</td>
<td>National Standards</td>
<td>1-1-4/9.3</td>
</tr>
<tr>
<td>1-1-4/9.5</td>
<td>Other Rules</td>
<td>1-1-4/9.5</td>
</tr>
<tr>
<td>1-1-4/9.7</td>
<td>ABS Type Approval Program</td>
<td>1-1-4/9.7</td>
</tr>
<tr>
<td>1-1-4/9.7.1</td>
<td>Type Approval</td>
<td>1-1-4/9.7.1</td>
</tr>
<tr>
<td>Existing Class</td>
<td>Title</td>
<td>Class 2018</td>
</tr>
<tr>
<td>----------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>1-1-4/9.7.2</td>
<td>Unit Certification</td>
<td>1-1-4/9.7.2</td>
</tr>
<tr>
<td>1-1-4/9.7.3</td>
<td>Product Type Approval</td>
<td>1-1-4/9.7.3</td>
</tr>
<tr>
<td>1-1-4/9.7.4</td>
<td>Approval on Behalf of Administrations</td>
<td>1-1-4/9.7.4</td>
</tr>
<tr>
<td>1-1-4/9.7.5</td>
<td>Applicable uses of Type Approved Products</td>
<td>1-1-4/9.7.5</td>
</tr>
<tr>
<td>1-1-4/9.7.6</td>
<td>Definitions</td>
<td>1-1-4/9.7.6</td>
</tr>
<tr>
<td>1-1-4/9.7.7</td>
<td>The Terms and Conditions for use of ABS Type Approved Product Logo</td>
<td>1-1-4/9.7.7</td>
</tr>
<tr>
<td>1-1-4/11</td>
<td>Novel Features</td>
<td>1-1-4/11</td>
</tr>
<tr>
<td>1-1-4/13</td>
<td>Risk Evaluations for Alternative Arrangements and Novel Features</td>
<td>1-1-4/13</td>
</tr>
</tbody>
</table>

**Part 1**  
**Chapter 1**  
**Section 5**  
Conditions of Classification  
Scope and Conditions of Classification  
Other Regulations

| 1-1-5       | Other Regulations | 1-1-5 |
| 1-1-5/1     | Governmental and Other Regulations | 1-1-5/1 |
| 1-1-5/3     | Other International Conventions or Codes | 1-1-5/3 |
| 1-1-5/5     | Governmental Regulations | 1-1-5/5 |
| 1-1-5/5.1   | Governmental Authorization | 1-1-5/5.1 |
| 1-1-5/5.3   | European Commission | 1-1-5/5.3 |

**Part 1**  
**Chapter 1**  
**Section 6**  
Conditions of Classification  
Scope and Conditions of Classification  
International Association of Classification Societies (IACS)

| 1-1-6       | IACS Audit | 1-1-6 |

**Part 1**  
**Chapter 1**  
**Section 7**  
Conditions of Classification  
Scope and Conditions of Classification  
Plans and Design Data to be Submitted

| 1-1-7       | Plans and Design Data to be Submitted | 1-1-7 |
| 1-1-7/1     | Hull and Design Data | 1-1-7/1 |
| 1-1-7/3     | Machinery Plans | 1-1-7/3 |
| 1-1-7/5     | Additional Plans | 1-1-7/5 |
| 1-1-7/7     | Submissions | 1-1-7/7 |

**Part 1**  
**Chapter 1**  
**Section 8**  
Conditions of Classification  
Scope and Conditions of Classification  
Conditions for Surveys After Construction

<p>| 1-1-8       | Conditions for Surveys After Construction | 1-1-8 |
| 1-1-8/1     | Damage, Failure and Repair | 1-1-8/1 |
| 1-1-8/1.1   | Examination and Repair | 1-1-8/1.1 |
| 1-1-8/1.3   | Repairs | 1-1-8/1.3 |</p>
<table>
<thead>
<tr>
<th>Existing Class</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1-8/1.5</td>
<td>Suspension of Classification</td>
<td>1-1-8/1.5</td>
</tr>
<tr>
<td>1-1-8/1.7</td>
<td>Representation</td>
<td>1-1-8/1.7</td>
</tr>
<tr>
<td>1-1-8/3</td>
<td>Notification and Availability for Survey</td>
<td>1-1-8/3</td>
</tr>
<tr>
<td>1-1-8/5</td>
<td>Attendance at Port State Request</td>
<td>1-1-8/5</td>
</tr>
<tr>
<td>1-1-8/7</td>
<td>Safety Management System</td>
<td>1-1-8/7</td>
</tr>
<tr>
<td>Part 1 Chapter 1 Section 9</td>
<td>Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fees</td>
<td>1-1-9</td>
</tr>
<tr>
<td>Part 1 Chapter 1 Section 10</td>
<td>Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disagreement</td>
<td>1-1-10</td>
</tr>
<tr>
<td>1-1-10</td>
<td>Disagreement</td>
<td>1-1-10</td>
</tr>
<tr>
<td>1-1-10/1</td>
<td>Rules</td>
<td>1-1-10/1</td>
</tr>
<tr>
<td>1-1-10/3</td>
<td>Surveyors</td>
<td>1-1-10/3</td>
</tr>
<tr>
<td>Part 1 Chapter 1 Section 11</td>
<td>Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Limitation of Liability</td>
<td>1-1-11</td>
</tr>
<tr>
<td>1-1-11</td>
<td>Limitation of Liability</td>
<td>1-1-11</td>
</tr>
<tr>
<td>Part 1 Chapter 1 Section 12</td>
<td>Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hold Harmless</td>
<td>1-1-12</td>
</tr>
<tr>
<td>1-1-12</td>
<td>Hold Harmless</td>
<td>1-1-12</td>
</tr>
<tr>
<td>Part 1 Chapter 1 Section 13</td>
<td>Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Bar to Legal Action</td>
<td>1-1-13</td>
</tr>
<tr>
<td>1-1-13</td>
<td>Time Bar to Legal Action</td>
<td>1-1-13</td>
</tr>
<tr>
<td>Part 1 Chapter 1 Section 14</td>
<td>Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arbitration</td>
<td>1-1-14</td>
</tr>
<tr>
<td>1-1-14</td>
<td>Arbitration</td>
<td>1-1-14</td>
</tr>
<tr>
<td>Part 1 Chapter 1 Appendix 1</td>
<td>Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Classification Symbols and Notations</td>
<td></td>
</tr>
<tr>
<td>1-1-A1</td>
<td>Classification Symbol and Notation</td>
<td>1-1-A1</td>
</tr>
<tr>
<td>Part 1 Chapter 1 Appendix 2</td>
<td>Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ABS Type Approval Program</td>
<td></td>
</tr>
<tr>
<td>1-1-A2</td>
<td>ABS Type Approval Program</td>
<td>1-1-A2</td>
</tr>
<tr>
<td>1-1-A2/1</td>
<td>General</td>
<td>1-1-A2/1</td>
</tr>
<tr>
<td>1-1-A2/3</td>
<td>Limitations</td>
<td>1-1-A2/3</td>
</tr>
<tr>
<td>Existing Class</td>
<td>Title</td>
<td>Class 2018</td>
</tr>
<tr>
<td>----------------</td>
<td>----------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>1-1-A2/5</td>
<td>Process</td>
<td>1-1-A2/5</td>
</tr>
<tr>
<td>1-1-A2/5.1</td>
<td>Product Design Assessment (PDA) Tier 2</td>
<td>1-1-A2/5.1</td>
</tr>
<tr>
<td>1-1-A2/5.1.1</td>
<td>Design Evaluation</td>
<td>1-1-A2/5.1.1</td>
</tr>
<tr>
<td>1-1-A2/5.1.2</td>
<td>Survey and/or Testing of Prototype or Production Units</td>
<td>1-1-A2/5.1.2</td>
</tr>
<tr>
<td>1-1-A2/5.1.3</td>
<td>Product Design Assessment Certificate</td>
<td>1-1-A2/5.1.3</td>
</tr>
<tr>
<td>1-1-A2/5.1.4</td>
<td>Product Design Assessment, Limited</td>
<td>1-1-A2/5.1.4</td>
</tr>
<tr>
<td>1-1-A2/5.1.5</td>
<td>Duplicate Product Design Assessment</td>
<td>1-1-A2/5.1.5</td>
</tr>
<tr>
<td>1-1-A2/5.3</td>
<td>Manufacturing Assessment (MA)</td>
<td>1-1-A2/5.3</td>
</tr>
<tr>
<td>1-1-A2/5.3.1</td>
<td>Quality Assurance Standard</td>
<td>1-1-A2/5.3.1</td>
</tr>
<tr>
<td>1-1-A2/5.3.1(a)</td>
<td>Manufacturer’s Procedure</td>
<td>1-1-A2/5.3.1(a)</td>
</tr>
<tr>
<td>1-1-A2/5.3.1(b)</td>
<td>Recognized Quality Standard (RQS)</td>
<td>1-1-A2/5.3.1(b)</td>
</tr>
<tr>
<td>1-1-A2/5.3.1(c)</td>
<td>Quality Manual</td>
<td>1-1-A2/5.3.1(c)</td>
</tr>
<tr>
<td>1-1-A2/5.3.2</td>
<td>Quality Control</td>
<td>1-1-A2/5.3.2</td>
</tr>
<tr>
<td>1-1-A2/5.3.3</td>
<td>Manufacturing Assessment Certificate (MA)</td>
<td>1-1-A2/5.3.3</td>
</tr>
<tr>
<td>1-1-A2/5.3.4</td>
<td>Confirmation of Type Approval (CTA)</td>
<td>1-1-A2/5.3.4</td>
</tr>
<tr>
<td>1-1-A2/5.5</td>
<td>Product Quality Assurance Certification (PQA) Tier 4 (IACS UR Z26</td>
<td>1-1-A2/5.5</td>
</tr>
<tr>
<td></td>
<td>Alternative Certification Scheme)</td>
<td></td>
</tr>
<tr>
<td>1-1-A2/5.7</td>
<td>Certificates</td>
<td>1-1-A2/5.7</td>
</tr>
<tr>
<td>1-1-A2/5.7.1</td>
<td>Unit-Certification</td>
<td>1-1-A2/5.7.1</td>
</tr>
<tr>
<td>1-1-A2/5.7.1(a)</td>
<td>Products Covered by Product Quality Assurance (1-1-A2/5.5) Tier 4</td>
<td>1-1-A2/5.7.1(a)</td>
</tr>
<tr>
<td>1-1-A2/5.7.1(b)</td>
<td>Products with Manufacturing Assessment (1-1-A2/5.3) Requiring Unit</td>
<td>1-1-A2/5.7.1(b)</td>
</tr>
<tr>
<td></td>
<td>Certification Tier 5</td>
<td></td>
</tr>
<tr>
<td>1-1-A2/5.7.2</td>
<td>Issuance and Updating of Certificates</td>
<td>1-1-A2/5.7.2</td>
</tr>
<tr>
<td>1-1-A2/5.7.2(a)</td>
<td>Issuance of Certificates</td>
<td>1-1-A2/5.7.2(a)</td>
</tr>
<tr>
<td>1-1-A2/5.7.2(b)</td>
<td>Changes to Design, Procedures and Regulations other than ABS Rules</td>
<td>1-1-A2/5.7.2(b)</td>
</tr>
<tr>
<td>1-1-A2/5.7.2(c)</td>
<td>Website Entry</td>
<td>1-1-A2/5.7.2(c)</td>
</tr>
<tr>
<td>1-1-A2/5.7.3</td>
<td>Acceptability of Type Approved Products</td>
<td>1-1-A2/5.7.3</td>
</tr>
<tr>
<td>1-1-A2/5.7.4</td>
<td>Renewal</td>
<td>1-1-A2/5.7.4</td>
</tr>
<tr>
<td>1-1-A2/5.7.5</td>
<td>Overdue Audit</td>
<td>1-1-A2/5.7.5</td>
</tr>
<tr>
<td>1-1-A2/5.9</td>
<td>Terms and Conditions of the Request for Product Type Approval and</td>
<td>1-1-A2/5.9</td>
</tr>
<tr>
<td></td>
<td>Agreement</td>
<td></td>
</tr>
<tr>
<td>1-1-A2/5.9.2</td>
<td>Representation as to Product Type Approval</td>
<td>1-1-A2/5.9.2</td>
</tr>
<tr>
<td>1-1-A2/5.9.3</td>
<td>Suspension of Certification</td>
<td>1-1-A2/5.9.3</td>
</tr>
<tr>
<td>1-1-A2/5.9.4</td>
<td>Validity</td>
<td>1-1-A2/5.9.4</td>
</tr>
<tr>
<td>1-1-A2/5.9.5</td>
<td>Disagreement</td>
<td>1-1-A2/5.9.5</td>
</tr>
<tr>
<td>1-1-A2/5.9.6</td>
<td>Limitation</td>
<td>1-1-A2/5.9.6</td>
</tr>
</tbody>
</table>
### Existing Class

<table>
<thead>
<tr>
<th>Existing Class</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1-A2/5.9.7</td>
<td>Hold Harmless</td>
<td>1-1-A2/5.9.7</td>
</tr>
<tr>
<td>1-1-A2/5.9.8</td>
<td>Arbitration</td>
<td>1-1-A2/5.9.8</td>
</tr>
<tr>
<td>1-1-A2/5.9.9</td>
<td>Time Bar to Legal Action</td>
<td>1-1-A2/5.9.9</td>
</tr>
<tr>
<td>1-1-A2/5.9.10</td>
<td>Limitation of Liability</td>
<td>1-1-A2/5.9.10</td>
</tr>
<tr>
<td>1-1-A2/5.9.11</td>
<td>Scope of Certification</td>
<td>1-1-A2/5.9.11</td>
</tr>
<tr>
<td>1-1-A2/Figure 1</td>
<td>Process of the Type Approval Program</td>
<td>1-1-A2/Figure 1</td>
</tr>
</tbody>
</table>

#### Part 1
#### Chapter 1
#### Appendix 3

<table>
<thead>
<tr>
<th>Part 1</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1</td>
<td>Scope and Conditions of Classification</td>
<td>1-1-A2/5.9.9</td>
</tr>
<tr>
<td>Appendix 3</td>
<td>Tiers of Approval</td>
<td>1-1-A3</td>
</tr>
</tbody>
</table>

### Mobile Offshore Drilling Units

<table>
<thead>
<tr>
<th>MODU 2018</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 1</td>
<td>Conditions of Classification</td>
<td>1-2-1</td>
</tr>
<tr>
<td>Chapter 1</td>
<td>Scope and Conditions of Classification</td>
<td>1-2-2</td>
</tr>
<tr>
<td>Section 1</td>
<td>Classification</td>
<td>1-2-3</td>
</tr>
<tr>
<td>1-1-1</td>
<td>Classification</td>
<td>1-2-3/1</td>
</tr>
<tr>
<td>1-1-2</td>
<td>Classification Symbols and Notations</td>
<td>1-2-3/1</td>
</tr>
<tr>
<td>1-1-3</td>
<td>Rules for Classification</td>
<td>1-2-3/1.1</td>
</tr>
<tr>
<td>1-1-3/1</td>
<td>Application of Rules</td>
<td>1-2-3/1.3</td>
</tr>
<tr>
<td>1-1-3/1.1</td>
<td>General</td>
<td>1-2-4</td>
</tr>
<tr>
<td>1-1-3/1.3</td>
<td>Application</td>
<td>1-2-4/1</td>
</tr>
<tr>
<td>1-1-4</td>
<td>Plans and Design Data to be Submitted</td>
<td>1-2-4/3</td>
</tr>
<tr>
<td>1-1-4/1</td>
<td>Hull and Design Data</td>
<td>1-2-4/4</td>
</tr>
<tr>
<td>1-1-4/3</td>
<td>Machinery Plans</td>
<td>1-2-4/7</td>
</tr>
<tr>
<td>1-1-4/5</td>
<td>Additional Plans</td>
<td>1-2-4/9</td>
</tr>
<tr>
<td>1-1-4/7</td>
<td>Submissions</td>
<td>1-2-4/9</td>
</tr>
</tbody>
</table>

#### Part 1
#### Chapter 1
#### Section 5

<table>
<thead>
<tr>
<th>Part 1</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1</td>
<td>Scope and Conditions of Classification</td>
<td>1-2-4</td>
</tr>
<tr>
<td>Section 5</td>
<td>Operating Manual</td>
<td>1-2-4</td>
</tr>
</tbody>
</table>
### MODU 2018

<table>
<thead>
<tr>
<th>Part</th>
<th>Section</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-1-5</td>
<td>Operating Manual</td>
<td>1-2-5</td>
</tr>
<tr>
<td>1</td>
<td>1-1-5/1.1</td>
<td>---</td>
<td>1-2-5/1.1</td>
</tr>
<tr>
<td>1</td>
<td>1-1-5/1.3</td>
<td>---</td>
<td>1-2-5/1.3</td>
</tr>
<tr>
<td>1</td>
<td>1-1-5/1.5</td>
<td>---</td>
<td>1-2-5/1.5</td>
</tr>
<tr>
<td>1</td>
<td>1-1-5/1.7</td>
<td>---</td>
<td>1-2-5/1.7</td>
</tr>
<tr>
<td>1</td>
<td>1-1-5/1.9</td>
<td>---</td>
<td>1-2-5/1.9</td>
</tr>
<tr>
<td>1</td>
<td>1-1-5/1.11</td>
<td>---</td>
<td>1-2-5/1.11</td>
</tr>
<tr>
<td>1</td>
<td>1-1-5/1.13</td>
<td>---</td>
<td>1-2-5/1.13</td>
</tr>
<tr>
<td>1</td>
<td>1-1-5/1.15</td>
<td>---</td>
<td>1-2-5/1.15</td>
</tr>
<tr>
<td>1</td>
<td>1-1-5/3</td>
<td>---</td>
<td>1-2-5/3</td>
</tr>
</tbody>
</table>

### Mobile Offshore Units

<table>
<thead>
<tr>
<th>Part</th>
<th>Section 1</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-1</td>
<td>Classification</td>
<td>1-2-1</td>
</tr>
</tbody>
</table>

### MOU 2008

<table>
<thead>
<tr>
<th>Part</th>
<th>Section 1</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-2</td>
<td>Classification Symbols and Notations</td>
<td>1-2-2</td>
</tr>
<tr>
<td>1</td>
<td>1-2/1</td>
<td>Units Built Under Survey</td>
<td>1-2-2/1</td>
</tr>
<tr>
<td>1</td>
<td>1-2/1.1</td>
<td>Self-Elevating Units</td>
<td>1-2-2/1.1</td>
</tr>
<tr>
<td>1</td>
<td>1-2/1.3</td>
<td>Column-Stabilized Units</td>
<td>1-2-2/1.3</td>
</tr>
<tr>
<td>1</td>
<td>1-2/1.5</td>
<td>Specific Unit Types</td>
<td>1-2-2/1.5</td>
</tr>
<tr>
<td>1</td>
<td>1-2/3</td>
<td>Service Limitations</td>
<td>1-2-2/7</td>
</tr>
<tr>
<td>1</td>
<td>1-2/5</td>
<td>Units Not Built Under Survey</td>
<td>1-1-3/3</td>
</tr>
<tr>
<td>1</td>
<td>1-2/7</td>
<td>Temporary Mooring Equipment and Systems</td>
<td>1-2-2/9</td>
</tr>
<tr>
<td>1</td>
<td>1-2/9</td>
<td>Position Mooring Equipment and Systems</td>
<td>1-2-2/11</td>
</tr>
<tr>
<td>1</td>
<td>1-2/9.1</td>
<td>Symbol ⚫</td>
<td>1-2-2/11.1</td>
</tr>
<tr>
<td>1</td>
<td>1-2/9.3</td>
<td>Symbol ⚫</td>
<td>1-2-2/11.3</td>
</tr>
<tr>
<td>1</td>
<td>1-2/11</td>
<td>Propulsion Machinery</td>
<td>1-2-2/13</td>
</tr>
<tr>
<td>1</td>
<td>1-2/13</td>
<td>Thrusters</td>
<td>1-2-2/13</td>
</tr>
<tr>
<td>1</td>
<td>1-2/15</td>
<td>Dynamic Positioning Systems</td>
<td>1-1-3/5</td>
</tr>
<tr>
<td>1</td>
<td>1-2/17</td>
<td>Ice Strengthening</td>
<td>1-1-3/9</td>
</tr>
<tr>
<td>1</td>
<td>1-2/19</td>
<td>Automatic or Remote Control and Monitoring Systems</td>
<td>1-2-2/17</td>
</tr>
<tr>
<td>1</td>
<td>1-2/19.1</td>
<td>ACC or ACCU Notations</td>
<td>1-2-2/17.1</td>
</tr>
<tr>
<td>1</td>
<td>1-2/19.3</td>
<td>AMCC or AMCCU Notations</td>
<td>1-2-2/17.3</td>
</tr>
</tbody>
</table>
### MOU 2008

<table>
<thead>
<tr>
<th>Chapter 1</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 3</td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td>Rules for Classification</td>
<td>1-2-3</td>
</tr>
<tr>
<td>1-3/1</td>
<td>Application of Rules</td>
<td>1-2-3/1</td>
</tr>
<tr>
<td>1-3/1.1</td>
<td>General</td>
<td>1-2-3/1</td>
</tr>
<tr>
<td>1-3/1.3</td>
<td>Application</td>
<td>1-1-2/1.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 1</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 4</td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td>1-4</td>
<td>Plans and Design Data to be Submitted</td>
<td></td>
</tr>
<tr>
<td>1-4/1</td>
<td>Hull and Design Data</td>
<td>1-2-4/1</td>
</tr>
<tr>
<td>1-4/3</td>
<td>Machinery Plans</td>
<td>1-2-4/3</td>
</tr>
<tr>
<td>1-4/5</td>
<td>Calculations</td>
<td>1-2-4/5</td>
</tr>
<tr>
<td>1-4/7</td>
<td>Additional Plans</td>
<td>1-2-4/7</td>
</tr>
<tr>
<td>1-4/9</td>
<td>Submissions</td>
<td>1-2-4/9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 1</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 5</td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td>Operating Manual</td>
<td>1-2-5</td>
</tr>
<tr>
<td>1-5/1.1</td>
<td>---</td>
<td>1-2-5/1.1</td>
</tr>
<tr>
<td>1-5/1.3</td>
<td>---</td>
<td>1-2-5/1.3</td>
</tr>
<tr>
<td>1-5/1.5</td>
<td>---</td>
<td>1-2-5/1.5</td>
</tr>
<tr>
<td>1-5/1.7</td>
<td>---</td>
<td>1-2-5/1.7</td>
</tr>
<tr>
<td>1-5/1.9</td>
<td>---</td>
<td>1-2-5/1.9</td>
</tr>
<tr>
<td>1-5/1.11</td>
<td>---</td>
<td>1-2-5/1.13</td>
</tr>
<tr>
<td>1-5/1.13</td>
<td>---</td>
<td>1-2-5/3</td>
</tr>
</tbody>
</table>

### Offshore Installations

<table>
<thead>
<tr>
<th>OI 2018</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 1</td>
<td>Classification, Testing and Survey</td>
<td></td>
</tr>
<tr>
<td>Section 1</td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td>1-1-1</td>
<td>Classification</td>
<td>1-3-1</td>
</tr>
<tr>
<td>1-1-2</td>
<td>Class Designation</td>
<td>1-3-2</td>
</tr>
<tr>
<td>1-1-2/1</td>
<td>Offshore Installations Built Under Survey</td>
<td>1-3-2/1</td>
</tr>
<tr>
<td>1-1-2/3</td>
<td>Offshore Installations Not Built Under Survey</td>
<td>1-3-3/3</td>
</tr>
<tr>
<td>1-1-2/5</td>
<td>Classification Data</td>
<td>1-3-2/3</td>
</tr>
<tr>
<td>1-1-3</td>
<td>Rules for Classification</td>
<td>1-3-3</td>
</tr>
<tr>
<td>1-1-3/1</td>
<td>Application of Rules</td>
<td>1-3-3/1</td>
</tr>
<tr>
<td>1-1-4</td>
<td>Plans and Design Data to be Submitted</td>
<td>1-3-4</td>
</tr>
</tbody>
</table>
### Single Point Moorings

<table>
<thead>
<tr>
<th>Part</th>
<th>Chapter</th>
<th>Section</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Conditions of Classification</td>
<td>1-4-1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>Classification Symbols and Notations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-1-2</td>
<td></td>
<td>Single Point Moorings Built Under Survey</td>
<td>1-4-2</td>
</tr>
<tr>
<td></td>
<td>1-1-2/1</td>
<td></td>
<td>General</td>
<td>1-4-2/1.1</td>
</tr>
<tr>
<td></td>
<td>1-1-2/1.3</td>
<td></td>
<td>Modified Scope to Exclude PLEM</td>
<td>1-4-2/1.3</td>
</tr>
<tr>
<td></td>
<td>1-1-2/1.5</td>
<td></td>
<td>Unconventional Designs</td>
<td>1-4-2/1.5</td>
</tr>
<tr>
<td></td>
<td>1-1-2/3</td>
<td></td>
<td>Single Point Moorings Not Built Under Survey</td>
<td>1-1-3/3</td>
</tr>
<tr>
<td></td>
<td>1-1-2/5</td>
<td></td>
<td>Single Point Mooring as a Part of a Floating Production System</td>
<td>1-4-2/3</td>
</tr>
<tr>
<td></td>
<td>1-1-2/7</td>
<td></td>
<td>Classification Data</td>
<td>1-4-2/5</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>3</td>
<td>Rules for Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-1-3</td>
<td></td>
<td>Rules for Classification</td>
<td>1-4-3</td>
</tr>
<tr>
<td></td>
<td>1-1-3/1</td>
<td></td>
<td>Application of Rules</td>
<td>1-4-3/1</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>4</td>
<td>Plans and Design Data to be Submitted</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-1-4</td>
<td></td>
<td>Plans</td>
<td>1-4-4</td>
</tr>
<tr>
<td></td>
<td>1-1-4/1</td>
<td></td>
<td>Site Chart</td>
<td>1-4-4/1</td>
</tr>
<tr>
<td></td>
<td>1-1-4/3</td>
<td></td>
<td>Site Condition Reports</td>
<td>1-4-4/3</td>
</tr>
<tr>
<td></td>
<td>1-1-4/5</td>
<td></td>
<td>Site Condition Reports</td>
<td>1-4-4/5</td>
</tr>
<tr>
<td></td>
<td>1-1-4/7</td>
<td></td>
<td>Model Tests</td>
<td>1-4-4/7</td>
</tr>
<tr>
<td></td>
<td>1-1-4/9</td>
<td></td>
<td>Calculations</td>
<td>1-4-4/9</td>
</tr>
<tr>
<td></td>
<td>1-1-4/11</td>
<td></td>
<td>Additional Plans</td>
<td>1-4-4/11</td>
</tr>
<tr>
<td></td>
<td>1-1-4/13</td>
<td></td>
<td>Submissions</td>
<td>1-4-4/13</td>
</tr>
</tbody>
</table>
### Conditions of Classification

#### Scope and Conditions of Classification

**Information Booklet & Maintenance Manual**

<table>
<thead>
<tr>
<th>Class 2018</th>
<th>SPM 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5-3</td>
<td>1-1-5</td>
</tr>
<tr>
<td>1-5-3/1</td>
<td>1-1-5/1</td>
</tr>
</tbody>
</table>

### Floating Production Installations

**System Classification, Symbols and Notations**

<table>
<thead>
<tr>
<th>Class 2018</th>
<th>FPI 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5-1</td>
<td>1-1-1</td>
</tr>
<tr>
<td>1-5-2</td>
<td>1-1-2</td>
</tr>
<tr>
<td>1-5-2/1</td>
<td>1-1-2/1</td>
</tr>
<tr>
<td>1-5-2/3</td>
<td>1-1-2/3</td>
</tr>
<tr>
<td>1-5-2/3.1</td>
<td>1-1-2/3.1</td>
</tr>
<tr>
<td>1-5-2/3.3</td>
<td>1-1-2/3.3</td>
</tr>
<tr>
<td>1-5-2/3.3.1</td>
<td>1-1-2/3.3.1</td>
</tr>
<tr>
<td>1-5-2/3.3.2</td>
<td>1-1-2/3.3.2</td>
</tr>
<tr>
<td>1-5-2/3.3.2(a)</td>
<td>1-1-2/3.3.2(a)</td>
</tr>
<tr>
<td>1-5-2/3.3.2(b)</td>
<td>1-1-2/3.3.2(b)</td>
</tr>
<tr>
<td>1-5-2/3.5</td>
<td>1-1-2/3.5</td>
</tr>
<tr>
<td>1-5-2/5</td>
<td>1-1-2/5</td>
</tr>
<tr>
<td>1-5-2/5.1</td>
<td>1-1-2/5.1</td>
</tr>
<tr>
<td>1-5-2/5.3</td>
<td>1-1-2/5.3</td>
</tr>
<tr>
<td>1-5-2/5.5</td>
<td>1-1-2/5.5</td>
</tr>
<tr>
<td>1-5-2/5.7</td>
<td>1-1-2/5.7</td>
</tr>
<tr>
<td>1-5-2/5.9</td>
<td>1-1-2/5.9</td>
</tr>
<tr>
<td>1-5-2/5.9.1</td>
<td>1-1-2/5.9.1</td>
</tr>
<tr>
<td>1-5-2/5.9.2</td>
<td>1-1-2/5.9.2</td>
</tr>
<tr>
<td>1-5-2/5.9.3</td>
<td>1-1-2/5.9.3</td>
</tr>
<tr>
<td>1-5-2/5.9.3(a)</td>
<td>1-1-2/5.9.3(a)</td>
</tr>
<tr>
<td>1-5-2/5.9.3(b)</td>
<td>1-1-2/5.9.3(b)</td>
</tr>
<tr>
<td>1-5-2/5.10</td>
<td>1-1-2/5.10</td>
</tr>
<tr>
<td>FPI 2018</td>
<td>Title</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>1-1-2/5.10.1</td>
<td>New Construction</td>
</tr>
<tr>
<td>1-1-2/5.10.2</td>
<td>Relocation of FPI</td>
</tr>
<tr>
<td>1-1-2/5.11</td>
<td>Design Life and Design Fatigue Life</td>
</tr>
<tr>
<td>1-1-2/5.11.1</td>
<td>Design Life – New Construction</td>
</tr>
<tr>
<td>1-1-2/5.11.2</td>
<td>Design Fatigue Life – New Construction</td>
</tr>
<tr>
<td>1-1-2/5.11.3</td>
<td>Conversion of Existing Vessel to FPSO, FPS or FSO</td>
</tr>
<tr>
<td>1-1-2/5.11.4</td>
<td>Relocation of FPI</td>
</tr>
<tr>
<td>1-1-2/5.11.5</td>
<td>Life Extension of FPI on the Same Site</td>
</tr>
<tr>
<td>1-1-2/5.12</td>
<td>Spectral Fatigue Analysis</td>
</tr>
<tr>
<td>1-1-2/5.12.1</td>
<td>Design Fatigue Life – New Construction</td>
</tr>
<tr>
<td>1-1-2/5.12.2</td>
<td>Conversion of Existing Vessel to FPSO, FPS or FSO</td>
</tr>
<tr>
<td>1-1-2/5.13</td>
<td>Additional Corrosion Margin</td>
</tr>
<tr>
<td>1-1-2/5.15</td>
<td>Hull Construction Monitoring Program</td>
</tr>
<tr>
<td>1-1-2/7</td>
<td>AMS Notation</td>
</tr>
<tr>
<td>1-1-2/9</td>
<td>Notations for Automatic or Remote Control and Monitoring Systems</td>
</tr>
<tr>
<td>1-1-2/9.1</td>
<td>ACC or ACCU Notations</td>
</tr>
<tr>
<td>1-1-2/9.3</td>
<td>AMCC or AMCCU Notations</td>
</tr>
<tr>
<td>1-1-2/11</td>
<td>Temporary Mooring Equipment Symbol</td>
</tr>
<tr>
<td>1-1-2/13</td>
<td>Conversion of Existing Vessels or Floating Structures</td>
</tr>
<tr>
<td>1-1-2/15</td>
<td>Significant Change of Operating Conditions Affecting Safety of Unit or Personnel</td>
</tr>
</tbody>
</table>

Part 1  
Chapter 1  
Section 3  
Conditions of Classification  
Scope and Conditions of Classification  
Rules and the Criteria Presented for Classification

<table>
<thead>
<tr>
<th>Part 1</th>
<th>Conditions of Classification</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rules and the Criteria Presented for Classification</td>
<td>1-5-3</td>
</tr>
<tr>
<td>1-1-3</td>
<td>Application</td>
<td>1-5-3/1</td>
</tr>
<tr>
<td>1-1-3/1</td>
<td>General</td>
<td>1-5-3/1.1</td>
</tr>
<tr>
<td>1-1-3/1.1</td>
<td>Application</td>
<td>1-5-3/1.3</td>
</tr>
<tr>
<td>1-1-3/3</td>
<td>Reference Standards</td>
<td>1-5-3/3</td>
</tr>
<tr>
<td>1-1-3/5</td>
<td>Risk Evaluations for Alternative Arrangements and Novel Features</td>
<td>1-5-3/5</td>
</tr>
</tbody>
</table>

Part 1  
Chapter 1  
Section 4  
Conditions of Classification  
Scope and Conditions of Classification  
Submission of Plans, Data and Calculations

<table>
<thead>
<tr>
<th>Part 1</th>
<th>Conditions of Classification</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Submission of Plans, Data and Calculations</td>
<td>1-5-4</td>
</tr>
<tr>
<td>1-1-4</td>
<td>Design Plans and Data</td>
<td>1-5-4/1</td>
</tr>
<tr>
<td>1-1-4/1</td>
<td>Position Mooring System Design Documentation</td>
<td>1-5-4/3</td>
</tr>
<tr>
<td>1-1-4/5</td>
<td>Production Facilities and Production Support Facilities</td>
<td>1-5-4/5</td>
</tr>
</tbody>
</table>
### Facilities on Offshore Installations

<table>
<thead>
<tr>
<th>Facilities 2018</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1</td>
<td>Scope and Conditions of Classification</td>
<td>1-6-1</td>
</tr>
<tr>
<td>Section 1</td>
<td>Classification</td>
<td></td>
</tr>
<tr>
<td>1-1</td>
<td>Classification</td>
<td>1-6-1</td>
</tr>
<tr>
<td>Chapter 1</td>
<td>Scope and Conditions of Classification</td>
<td>1-6-2</td>
</tr>
<tr>
<td>Section 2</td>
<td>Application, System Classification Boundaries, Symbols, and Notations</td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td>Application, System Classification Boundaries, Symbols, and Notations</td>
<td>1-6-2</td>
</tr>
<tr>
<td>1-2/1</td>
<td>Scope</td>
<td>1-6-2/1</td>
</tr>
<tr>
<td>1-2/3</td>
<td>Classification Boundaries</td>
<td>1-6-2/3</td>
</tr>
<tr>
<td>1-2/5</td>
<td>Classification Symbols</td>
<td>1-6-2/5</td>
</tr>
<tr>
<td>1-2/5.1</td>
<td>Floating Installations</td>
<td>1-6-2/5.1</td>
</tr>
<tr>
<td>1-2/5.3</td>
<td>Fixed Installations</td>
<td>1-6-2/5.3</td>
</tr>
<tr>
<td>1-2/7</td>
<td>Systems not Built Under Survey</td>
<td>1-1-3/3</td>
</tr>
<tr>
<td>1-2/9</td>
<td>Conversion of Existing Vessels</td>
<td>1-6-2/7</td>
</tr>
<tr>
<td>1-2/11</td>
<td>Conversion of Existing Structures</td>
<td>1-6-2/9</td>
</tr>
<tr>
<td>Chapter 1</td>
<td>Scope and Conditions of Classification</td>
<td>1-6-3</td>
</tr>
<tr>
<td>Section 3</td>
<td>Rules and the Criteria Presented for Classification</td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td>Rules and the Criteria Presented for Classification</td>
<td>1-6-3</td>
</tr>
<tr>
<td>1-3/1</td>
<td>Application</td>
<td>1-6-3/1</td>
</tr>
<tr>
<td>Chapter 1</td>
<td>Scope and Conditions of Classification</td>
<td>1-6-4</td>
</tr>
<tr>
<td>Section 4</td>
<td>Recognition of Risk Based Techniques to Justify Alternatives</td>
<td></td>
</tr>
<tr>
<td>1-4</td>
<td>Recognition of Risk Based Techniques to Justify Alternatives</td>
<td>1-6-4</td>
</tr>
<tr>
<td>1-4/1</td>
<td>General</td>
<td>1-6-4/1</td>
</tr>
<tr>
<td>1-4/3</td>
<td>Application</td>
<td>1-6-4/3</td>
</tr>
<tr>
<td>1-4/5</td>
<td>Submittals</td>
<td>1-6-4/5</td>
</tr>
<tr>
<td>1-4/7</td>
<td>Risk Evaluation Methodology</td>
<td>1-6-4/7</td>
</tr>
<tr>
<td>1-4/9</td>
<td>Identification of Hazards</td>
<td>1-6-4/9</td>
</tr>
<tr>
<td>1-4/11</td>
<td>Other Requirements</td>
<td>1-6-4/11</td>
</tr>
</tbody>
</table>
## Facilities 2018

<table>
<thead>
<tr>
<th>Chapter 1</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 5</td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Submission of Plans, Data and Calculations</td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td>Submission of Plans, Data and Calculations</td>
<td>1-6-5</td>
</tr>
</tbody>
</table>

## Liftboats

<table>
<thead>
<tr>
<th>Liftboat 2018</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 1 Chapter 1 Section 1</td>
<td>Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Classification</td>
<td></td>
</tr>
<tr>
<td>1-1-1</td>
<td>Classification</td>
<td>1-7-1</td>
</tr>
<tr>
<td>1-1-1/1</td>
<td>Scope</td>
<td>1-7-1/1</td>
</tr>
<tr>
<td>1-1-1/3</td>
<td>Classification</td>
<td>1-7-1/3</td>
</tr>
<tr>
<td>Part 1 Chapter 1 Section 2</td>
<td>Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Classification Symbols and Notations</td>
<td></td>
</tr>
<tr>
<td>1-1-2</td>
<td>Classification Symbols and Notations</td>
<td>1-7-2</td>
</tr>
<tr>
<td>1-1-2/1</td>
<td>Liftboats Built Under Survey</td>
<td>1-7-2/1</td>
</tr>
<tr>
<td>1-1-2/3</td>
<td>Liftboats Not Built Under Survey</td>
<td>1-7-2/3</td>
</tr>
<tr>
<td>1-1-2/5</td>
<td>Service Limitations</td>
<td>1-7-2/5</td>
</tr>
<tr>
<td>1-1-2/7</td>
<td>Temporary Mooring Equipment Symbol</td>
<td>1-7-2/7</td>
</tr>
<tr>
<td>1-1-2/9</td>
<td>Propulsion Machinery</td>
<td>1-7-2/9</td>
</tr>
<tr>
<td>1-1-2/11</td>
<td>Thrusters</td>
<td>1-7-2/11</td>
</tr>
<tr>
<td>1-1-2/13</td>
<td>Geographical Limitations</td>
<td>1-7-2/13</td>
</tr>
<tr>
<td>1-1-2/15</td>
<td>Centralized or Automatic Control Systems</td>
<td></td>
</tr>
<tr>
<td>Part 1 Chapter 1 Section 3</td>
<td>Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rules for Classification</td>
<td></td>
</tr>
<tr>
<td>1-1-3</td>
<td>Rules for Classification</td>
<td>1-7-3</td>
</tr>
<tr>
<td>1-1-3/1</td>
<td>Application of Rules</td>
<td>1-7-3/1</td>
</tr>
<tr>
<td>1-1-3/1.1</td>
<td>General</td>
<td>1-7-3/1</td>
</tr>
<tr>
<td>1-1-3/1.3</td>
<td>Application</td>
<td>1-7-3/3</td>
</tr>
<tr>
<td>Part 1 Chapter 1 Section 4</td>
<td>Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plans and Design Data to be Submitted</td>
<td></td>
</tr>
<tr>
<td>1-1-4</td>
<td>Plans and Design Data to be Submitted</td>
<td>1-7-4</td>
</tr>
<tr>
<td>1-1-4/1</td>
<td>Hull and Design Data</td>
<td>1-7-4/1</td>
</tr>
<tr>
<td>1-1-4/3</td>
<td>Machinery Plans</td>
<td>1-7-4/3</td>
</tr>
<tr>
<td>1-1-4/5</td>
<td>Calculations</td>
<td>1-7-4/5</td>
</tr>
</tbody>
</table>
### Liftboat 2018

<table>
<thead>
<tr>
<th>Part</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Additional Plans</td>
<td>1-7-4/7</td>
</tr>
<tr>
<td>1</td>
<td>Submissions</td>
<td>1-7-4/9</td>
</tr>
</tbody>
</table>

#### Part 1

**Chapter 1**

**Section 5**

Operating Manual

<table>
<thead>
<tr>
<th>1-1-5</th>
<th>1-7-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1-5/1</td>
<td>1-7-5/1</td>
</tr>
<tr>
<td>1-1-5/1.1</td>
<td>1-7-5/1.1</td>
</tr>
<tr>
<td>1-1-5/1.3</td>
<td>1-7-5/1.3</td>
</tr>
<tr>
<td>1-1-5/1.5</td>
<td>1-7-5/1.5</td>
</tr>
<tr>
<td>1-1-5/1.7</td>
<td>1-7-5/1.7</td>
</tr>
<tr>
<td>1-1-5/1.9</td>
<td>1-7-5/1.9</td>
</tr>
<tr>
<td>1-1-5/3</td>
<td>1-7-5/3</td>
</tr>
</tbody>
</table>

#### Part 1

**Chapter 1**

**Section 6**

Construction Booklet

| 1-1-6 | 1-7-6 |

#### Part 1

**Chapter 1**

**Appendix 1**

Requirements for Building and Classing Liftboats Intended for Service in Domestic Waters

<table>
<thead>
<tr>
<th>1-1-A1</th>
<th>1-7-A1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1-A1/1</td>
<td>1-7-A1/1</td>
</tr>
<tr>
<td>1-1-A1/3</td>
<td>1-7-A1/3</td>
</tr>
<tr>
<td>1-1-A1/3.1</td>
<td>1-7-A1/3.1</td>
</tr>
<tr>
<td>1-1-A1/3.3</td>
<td>1-7-A1/3.3</td>
</tr>
</tbody>
</table>

### Subsea Pipeline Systems

<table>
<thead>
<tr>
<th>Pipeline 2006</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1</td>
<td>Scope and Conditions of Classification Applicability</td>
<td>1-8-1</td>
</tr>
<tr>
<td>Section 1</td>
<td>Applicability</td>
<td>1-8-1 Pipeline 1-2</td>
</tr>
<tr>
<td>1-1</td>
<td>Classification</td>
<td>1-8-1</td>
</tr>
</tbody>
</table>

#### Chapter 1

**Section 2**

Scope and Conditions of Classification

Classification Symbols and Notations

<table>
<thead>
<tr>
<th>1-2</th>
<th>1-8-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2/1</td>
<td>Pipelines Built under Survey</td>
</tr>
<tr>
<td>Pipeline 2006</td>
<td>Title</td>
</tr>
<tr>
<td>--------------</td>
<td>-------</td>
</tr>
<tr>
<td>1-2/3</td>
<td>Pipelines not Built under Survey</td>
</tr>
<tr>
<td>1-2/5</td>
<td>Classification Data</td>
</tr>
<tr>
<td><strong>Chapter 1</strong></td>
<td><strong>Scope and Conditions of Classification</strong></td>
</tr>
<tr>
<td><strong>Section 3</strong></td>
<td>1-3</td>
</tr>
<tr>
<td></td>
<td>1-3/1</td>
</tr>
<tr>
<td><strong>Chapter 1</strong></td>
<td><strong>Scope and Conditions of Classification</strong></td>
</tr>
<tr>
<td><strong>Section 4</strong></td>
<td>1-4</td>
</tr>
<tr>
<td></td>
<td>1-4/1</td>
</tr>
<tr>
<td></td>
<td>1-4/3</td>
</tr>
<tr>
<td></td>
<td>1-4/5</td>
</tr>
<tr>
<td></td>
<td>1-4/7</td>
</tr>
<tr>
<td></td>
<td>1-4/9</td>
</tr>
<tr>
<td></td>
<td>1-4/11</td>
</tr>
<tr>
<td></td>
<td>1-4/11.1</td>
</tr>
<tr>
<td></td>
<td>1-4/11.3</td>
</tr>
<tr>
<td></td>
<td>1-4/11.5</td>
</tr>
<tr>
<td></td>
<td>1-4/13</td>
</tr>
<tr>
<td></td>
<td>1-4/15</td>
</tr>
<tr>
<td></td>
<td>1-4/17</td>
</tr>
<tr>
<td></td>
<td>1-4/19</td>
</tr>
<tr>
<td></td>
<td>1-4/21</td>
</tr>
<tr>
<td><strong>Chapter 1</strong></td>
<td><strong>Scope and Conditions of Classification</strong></td>
</tr>
<tr>
<td><strong>Section 5</strong></td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>1-5/1</td>
</tr>
<tr>
<td></td>
<td>1-5/1.1</td>
</tr>
<tr>
<td></td>
<td>1-5/1.3</td>
</tr>
<tr>
<td></td>
<td>1-5/1.5</td>
</tr>
<tr>
<td></td>
<td>1-5/1.7</td>
</tr>
<tr>
<td></td>
<td>1-5/3</td>
</tr>
<tr>
<td></td>
<td>1-5/3.1</td>
</tr>
<tr>
<td></td>
<td>1-5/3.3</td>
</tr>
<tr>
<td></td>
<td>1-5/3.5</td>
</tr>
<tr>
<td></td>
<td>1-5/3.7</td>
</tr>
</tbody>
</table>
### Pipeline 2006

<table>
<thead>
<tr>
<th>Part</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5/3.9</td>
<td>Welding Procedure Specifications and Qualifications</td>
<td>Pipeline 4-1/3.9</td>
</tr>
<tr>
<td>1-5/3.11</td>
<td>Weld Inspection</td>
<td>Pipeline 4-1/3.11</td>
</tr>
<tr>
<td>1-5/3.13</td>
<td>Tolerances and Alignments</td>
<td>Pipeline 4-1/3.13</td>
</tr>
<tr>
<td>1-5/3.15</td>
<td>Corrosion Control Systems</td>
<td>Pipeline 4-1/3.15</td>
</tr>
<tr>
<td>1-5/3.17</td>
<td>Concrete Weight Coatings</td>
<td>Pipeline 4-1/3.17</td>
</tr>
<tr>
<td>1-5/3.19</td>
<td>Nondestructive Testing</td>
<td>Pipeline 4-1/3.19</td>
</tr>
<tr>
<td>1-5/3.21</td>
<td>Fabrication Records</td>
<td>Pipeline 4-1/3.21</td>
</tr>
<tr>
<td>1-5/5</td>
<td>Inspection and Testing during Installation</td>
<td>Pipeline 4-1/5</td>
</tr>
<tr>
<td>1-5/5.1</td>
<td>Specifications and Drawings for Installation</td>
<td>Pipeline 4-1/5.1</td>
</tr>
<tr>
<td>1-5/5.3</td>
<td>Installation Manual</td>
<td>Pipeline 4-1/5.3</td>
</tr>
<tr>
<td>1-5/5.5</td>
<td>Inspection and Survey During Pipe Laying</td>
<td>Pipeline 4-1/5.5</td>
</tr>
<tr>
<td>1-5/5.7</td>
<td>Final Inspection and Pressure Testing</td>
<td>Pipeline 4-1/5.7</td>
</tr>
<tr>
<td>1-5/5.9</td>
<td>Inspection for Special Cases</td>
<td>Pipeline 4-1/5.9</td>
</tr>
<tr>
<td>1-5/5.11</td>
<td>Notification</td>
<td>Pipeline 4-1/5.11</td>
</tr>
<tr>
<td>1-5/7</td>
<td>In-service Inspection and Survey</td>
<td>Pipeline 4-1/7</td>
</tr>
<tr>
<td>1-5/9</td>
<td>Inspection for Extension of Use</td>
<td>Pipeline 4-1/9</td>
</tr>
</tbody>
</table>

### Chapter 1

#### Section 6

**Scope and Conditions of Classification**

- **Definitions**
  - 1-6: Definitions
  - 1-6/1: Classification
  - 1-6/3: Constructor or Contractor
  - 1-6/5: Extension of Use
  - 1-6/7: Maximum Allowable Operating Pressure
  - 1-6/9: Offshore
  - 1-6/11: Operator
  - 1-6/13: Owner
  - 1-6/15: Pipeline
  - 1-6/17: Pipeline System
  - 1-6/19: Recurrence Period or Return Period

### Subsea Riser Systems

#### Risers 2017

<table>
<thead>
<tr>
<th>Part</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1</td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td>Section 1</td>
<td>Applicability</td>
<td>1-9-1</td>
</tr>
<tr>
<td>1-1</td>
<td>Applicability</td>
<td>Riser 1-2</td>
</tr>
<tr>
<td>Risers 2017</td>
<td>Title</td>
<td>Class 2018</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>1-1/1</td>
<td>General</td>
<td>Riser 1-2/1</td>
</tr>
<tr>
<td>1-1/3</td>
<td>Scope</td>
<td>Riser 1-2/3</td>
</tr>
<tr>
<td>1-1/5</td>
<td>Classification</td>
<td>1-9-1</td>
</tr>
<tr>
<td>1-1/7</td>
<td>Minimum Design Service Life</td>
<td>Riser 1-2/5</td>
</tr>
</tbody>
</table>

**Chapter 1**  
**Section 2**  
**Scope and Conditions of Classification**  
**Classification Symbols and Notations**

| 1-2 | Classification Symbols and Notations | 1-9-2 |
| 1-2/1 | Risers Built under Survey | 1-9-2/1 |
| 1-2/3 | Riser not Built under Survey | 1-1-3/3 |
| 1-2/5 | Classification Data | 1-9-2/3 |

**Chapter 1**  
**Section 3**  
**Scope and Conditions of Classification**  
**Rules for Classification**

| 1-3 | Application | 1-9-3 |

**Chapter 1**  
**Section 4**  
**Scope and Conditions of Classification**  
**Documents to be Submitted**

| 1-4 | Documents to be Submitted | 1-9-4 |
| 1-4/1 | General | 1-9-4/1 |
| 1-4/3 | Plans and Specifications | 1-9-4/3 |
| 1-4/5 | Site-specific Conditions | 1-9-4/5 |
| 1-4/7 | Material Specifications | 1-9-4/7 |
| 1-4/9 | Design Data and Calculations | 1-9-4/9 |
| 1-4/9.5 | In-place Static and Dynamic Strength Analysis Report | 1-9-4/9.5 |
| 1-4/11 | Installation Manual | 1-9-4/11 |
| 1-4/13 | Pressure Test Report | 1-9-4/13 |
| 1-4/19 | Inspection Records | 1-9-4/19 |

**Chapter 1**  
**Section 5**  
**Scope and Conditions of Classification**  
**Survey, Inspection and Testing**

| 1-5 | Survey, Inspection and Testing | Riser 4-1 |
| 1-5/1 | General | Riser 4-1/1 |
## Risers 2017

<table>
<thead>
<tr>
<th>Clause 2017</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5/1.1</td>
<td>Scope</td>
<td>Riser 4-1/1.1</td>
</tr>
<tr>
<td>1-5/1.3</td>
<td>Quality Control and Assurance Program</td>
<td>Riser 4-1/1.3</td>
</tr>
<tr>
<td>1-5/1.5</td>
<td>Access and Notification</td>
<td>Riser 4-1/1.5</td>
</tr>
<tr>
<td>1-5/1.7</td>
<td>Identification of Materials</td>
<td>Riser 4-1/1.7</td>
</tr>
<tr>
<td>1-5/3</td>
<td>Inspection and Testing in Fabrication Phase</td>
<td>Riser 4-1/3</td>
</tr>
<tr>
<td>1-5/3.1</td>
<td>Material Quality</td>
<td>Riser 4-1/3.1</td>
</tr>
<tr>
<td>1-5/3.3</td>
<td>Manufacturing Procedure Specification and Qualification</td>
<td>Riser 4-1/3.3</td>
</tr>
<tr>
<td>1-5/3.5</td>
<td>Welder Qualification and Records</td>
<td>Riser 4-1/3.5</td>
</tr>
<tr>
<td>1-5/3.7</td>
<td>Pre-Welding Inspection</td>
<td>Riser 4-1/3.7</td>
</tr>
<tr>
<td>1-5/3.9</td>
<td>Welding Procedure Specifications and Qualifications</td>
<td>Riser 4-1/3.9</td>
</tr>
<tr>
<td>1-5/3.11</td>
<td>Weld Inspection</td>
<td>Riser 4-1/3.11</td>
</tr>
<tr>
<td>1-5/3.13</td>
<td>Tolerances and Alignments</td>
<td>Riser 4-1/3.13</td>
</tr>
<tr>
<td>1-5/3.15</td>
<td>Corrosion Control Systems</td>
<td>Riser 4-1/3.15</td>
</tr>
<tr>
<td>1-5/3.17</td>
<td>Nondestructive Testing</td>
<td>Riser 4-1/3.17</td>
</tr>
<tr>
<td>1-5/3.19</td>
<td>Fabrication Records</td>
<td>Riser 4-1/3.19</td>
</tr>
<tr>
<td>1-5/5</td>
<td>Inspection and Testing during Installation</td>
<td>Riser 4-1/5</td>
</tr>
<tr>
<td>1-5/5.1</td>
<td>Specifications and Drawings for Installation</td>
<td>Riser 4-1/5.1</td>
</tr>
<tr>
<td>1-5/5.3</td>
<td>Installation Manual</td>
<td>Riser 4-1/5.3</td>
</tr>
<tr>
<td>1-5/5.5</td>
<td>Inspection and Survey During Installation</td>
<td>Riser 4-1/5.5</td>
</tr>
<tr>
<td>1-5/5.7</td>
<td>Final Inspection and Pressure Testing</td>
<td>Riser 4-1/5.7</td>
</tr>
<tr>
<td>1-5/5.9</td>
<td>Inspection for Special Cases</td>
<td>Riser 4-1/5.9</td>
</tr>
<tr>
<td>1-5/5.11</td>
<td>Notification</td>
<td>Riser 4-1/5.11</td>
</tr>
<tr>
<td>1-5/7</td>
<td>In-service Inspection and Survey</td>
<td>Riser 4-1/7</td>
</tr>
<tr>
<td>1-5/9</td>
<td>Inspection for Extension of Use</td>
<td>Riser 4-1/9</td>
</tr>
</tbody>
</table>

### Chapter 1

#### Section 6

<table>
<thead>
<tr>
<th>Clause 2017</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-6</td>
<td>Definitions and Abbreviations</td>
<td>Riser 1-3</td>
</tr>
<tr>
<td>1-6/1</td>
<td>Definitions</td>
<td>Riser 1-3/1</td>
</tr>
<tr>
<td>1-6/1.1</td>
<td>Classification</td>
<td>Riser 1-3/1.1</td>
</tr>
<tr>
<td>1-6/1.3</td>
<td>Contractor</td>
<td>Riser 1-3/1.3</td>
</tr>
<tr>
<td>1-6/1.5</td>
<td>Extension of Use</td>
<td>Riser 1-3/1.5</td>
</tr>
<tr>
<td>1-6/1.7</td>
<td>Maximum Allowable Operating Pressure</td>
<td>Riser 1-3/1.7</td>
</tr>
<tr>
<td>1-6/1.9</td>
<td>Offshore</td>
<td>Riser 1-3/1.9</td>
</tr>
<tr>
<td>1-6/1.111</td>
<td>Operator</td>
<td>Riser 1-3/1.11</td>
</tr>
<tr>
<td>1-6/1.13</td>
<td>Owner</td>
<td>Riser 1-3/1.13</td>
</tr>
</tbody>
</table>
## Risers 2017

<table>
<thead>
<tr>
<th>Part</th>
<th>1</th>
<th>Rules for Conditions of Classification - Offshore Units and Structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix</td>
<td>1</td>
<td>Section 1 Comparison of Existing Classification Rules vs. 2018 Classification Rules</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurrence Period or Return Period</td>
<td>Riser 1-3/1.15</td>
</tr>
<tr>
<td>Riser</td>
<td>Riser 1-3/1.17</td>
</tr>
<tr>
<td>Production Riser</td>
<td>Riser 1-3/1.17.1</td>
</tr>
<tr>
<td>Injection Riser</td>
<td>Riser 1-3/1.17.2</td>
</tr>
<tr>
<td>Export Riser</td>
<td>Riser 1-3/1.17.3</td>
</tr>
<tr>
<td>Abbreviations</td>
<td>Riser 1-3/3</td>
</tr>
</tbody>
</table>

### Floating Offshore Liquefied Gas Terminals

<table>
<thead>
<tr>
<th>Class 2018</th>
</tr>
</thead>
</table>

### Gravity-Based Offshore LNG Terminals

<table>
<thead>
<tr>
<th>Class 2018</th>
</tr>
</thead>
</table>
### Bottom-Founded Offshore Wind Turbine Installations

**GBLNGT 2010**

<table>
<thead>
<tr>
<th>Part</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/5.1</td>
<td>Class Notations</td>
<td>1-11-2/1</td>
</tr>
<tr>
<td>1-1/5.3</td>
<td>Geographical Limitations</td>
<td>1-11-2/3</td>
</tr>
<tr>
<td>1-1/5.5</td>
<td>Gravity-Based Terminals Not Built Under Survey</td>
<td>1-1-3/3</td>
</tr>
<tr>
<td>1-1/7</td>
<td>Rules for Classification</td>
<td>1-11-3</td>
</tr>
<tr>
<td>1-1/7.1</td>
<td>Application of Rules</td>
<td>1-11-3/1</td>
</tr>
<tr>
<td>1-1/7.3</td>
<td>Scope of Class</td>
<td>1-11-3/3</td>
</tr>
<tr>
<td>1-1/7.5</td>
<td>Alternatives</td>
<td>1-11-3/5</td>
</tr>
<tr>
<td>1-1/9</td>
<td>Units</td>
<td>GBLNGT 1-2/3</td>
</tr>
<tr>
<td>1-1/11</td>
<td>Abbreviations and References</td>
<td>GBLNGT 1-2/5</td>
</tr>
<tr>
<td>1-1/11.1</td>
<td>Abbreviations</td>
<td>GBLNGT 1-2/5.1</td>
</tr>
<tr>
<td>1-1/11.3</td>
<td>References</td>
<td>GBLNGT 1-2/5.3</td>
</tr>
</tbody>
</table>

### Class 2018

**BFOWTI 2015**

<table>
<thead>
<tr>
<th>Part</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1</td>
<td>Classification and Surveys</td>
<td>1-12</td>
</tr>
<tr>
<td>Section 1</td>
<td>Scope and Conditions of Classification</td>
<td>1-12-1</td>
</tr>
<tr>
<td>1-1</td>
<td>Scope and Conditions of Classification</td>
<td>1-12</td>
</tr>
<tr>
<td>1-1/1</td>
<td>Classification</td>
<td>1-12-1</td>
</tr>
<tr>
<td>1-1/3</td>
<td>Classification Symbols and Notations</td>
<td>1-12-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-12-2/3</td>
</tr>
<tr>
<td>1-1/3.1</td>
<td>Installations Built under ABS Survey</td>
<td>1-12-2/1</td>
</tr>
<tr>
<td>1-1/3.3</td>
<td>Installations Not Built under ABS Survey</td>
<td>1-1-3/3</td>
</tr>
<tr>
<td>1-1/3.5</td>
<td>Additional Class Notation</td>
<td>1-12-2/3</td>
</tr>
<tr>
<td>1-1/5</td>
<td>Rules for Classification</td>
<td>1-12-3</td>
</tr>
<tr>
<td>1-1/5.1</td>
<td>Application</td>
<td>1-12-3/1</td>
</tr>
<tr>
<td>1-1/5.3</td>
<td>References</td>
<td>1-12-3/3</td>
</tr>
<tr>
<td>1-1/5.5</td>
<td>Alternatives</td>
<td>1-12-3/5</td>
</tr>
<tr>
<td>1-1/7</td>
<td>Design Documentation to be Submitted</td>
<td>1-12-4</td>
</tr>
<tr>
<td>1-1/7.1</td>
<td>Reports</td>
<td>1-12-4/1</td>
</tr>
<tr>
<td>1-1/7.1.1</td>
<td>Offshore Wind Farm Conditions</td>
<td>1-12-4/1.1</td>
</tr>
<tr>
<td>1-1/7.1.2</td>
<td>Environmental Considerations</td>
<td>1-12-4/1.3</td>
</tr>
<tr>
<td>1-1/7.1.3</td>
<td>Foundation Data</td>
<td>1-12-4/1.5</td>
</tr>
<tr>
<td>1-1/7.1.4</td>
<td>Materials and Welding</td>
<td>1-12-4/1.7</td>
</tr>
<tr>
<td>1-1/7.3</td>
<td>Design Data and Calculations</td>
<td>1-12-4/3</td>
</tr>
<tr>
<td>1-1/7.3.1</td>
<td>Loadings</td>
<td>1-12-4/3.1</td>
</tr>
<tr>
<td>BFOWTI 2015</td>
<td>Title</td>
<td>Class 2018</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>1-1/7.3.2</td>
<td>Structural Dynamic Properties</td>
<td>1-12-4/3.3</td>
</tr>
<tr>
<td>1-1/7.3.3</td>
<td>Structural Responses</td>
<td>1-12-4/3.5</td>
</tr>
<tr>
<td>1-1/7.3.4</td>
<td>Marine Operations</td>
<td>1-12-4/3.7</td>
</tr>
<tr>
<td>1-1/7.3.5</td>
<td>Other Calculations</td>
<td>1-12-4/3.9</td>
</tr>
<tr>
<td>1-1/7.5</td>
<td>Plans and Specifications</td>
<td>1-12-4/5</td>
</tr>
<tr>
<td>1-1/7.7</td>
<td>Information Memorandum</td>
<td>1-12-4/7</td>
</tr>
<tr>
<td>1-1/9</td>
<td>Operating Manual</td>
<td>1-12-5</td>
</tr>
</tbody>
</table>

### Floating Offshore Wind Turbine Installations

<table>
<thead>
<tr>
<th>FOWTI 2015</th>
<th>Title</th>
<th>Class 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1</td>
<td>Classification and Surveys</td>
<td></td>
</tr>
<tr>
<td>Section 1</td>
<td>Scope and Conditions of Classification</td>
<td></td>
</tr>
<tr>
<td>1-1</td>
<td>Scope and Conditions of Classification</td>
<td>1-13</td>
</tr>
<tr>
<td>1-1/1</td>
<td>Classification</td>
<td>1-13-1</td>
</tr>
<tr>
<td>1-1/3</td>
<td>Classification Boundaries</td>
<td>1-13-2/1</td>
</tr>
<tr>
<td>1-1/5</td>
<td>Classification Symbols and Notations</td>
<td>1-13-2/3</td>
</tr>
<tr>
<td>1-1/5.1</td>
<td>Installations Built under ABS Survey</td>
<td>1-13-2/3.1</td>
</tr>
<tr>
<td>1-1/5.3</td>
<td>Installations Not Built under ABS Survey</td>
<td>1-13-3/3</td>
</tr>
<tr>
<td>1-1/5.5</td>
<td>Additional Class Notation</td>
<td>1-13-2/5</td>
</tr>
<tr>
<td>1-1/7</td>
<td>Rules for Classification</td>
<td>1-13-3</td>
</tr>
<tr>
<td>1-1/7.1</td>
<td>Application</td>
<td>1-13-3/1</td>
</tr>
<tr>
<td>1-1/7.3</td>
<td>References</td>
<td>1-13-3/3</td>
</tr>
<tr>
<td>1-1/7.5</td>
<td>Alternatives</td>
<td>1-13-3/5</td>
</tr>
<tr>
<td>1-1/9</td>
<td>Design Documentation to be Submitted</td>
<td>1-13-4</td>
</tr>
<tr>
<td>1-1/9.1</td>
<td>Reports</td>
<td>1-13-4/1</td>
</tr>
<tr>
<td>1-1/9.1.1</td>
<td>Offshore Wind Farm Conditions</td>
<td>1-13-4/1.1</td>
</tr>
<tr>
<td>1-1/9.1.2</td>
<td>Environmental Considerations</td>
<td>1-13-4/1.3</td>
</tr>
<tr>
<td>1-1/9.1.3</td>
<td>Soil Data</td>
<td>1-13-4/1.5</td>
</tr>
<tr>
<td>1-1/9.1.4</td>
<td>Materials and Welding</td>
<td>1-13-4/1.7</td>
</tr>
<tr>
<td>1-1/9.1.5</td>
<td>Model Test</td>
<td>1-13-4/1.9</td>
</tr>
<tr>
<td>1-1/9.3</td>
<td>Design Data and Calculations</td>
<td>1-13-4/3</td>
</tr>
<tr>
<td>1-1/9.3.1</td>
<td>Loadings</td>
<td>1-13-4/3.1</td>
</tr>
<tr>
<td>1-1/9.3.2</td>
<td>Stability</td>
<td>1-13-4/3.3</td>
</tr>
<tr>
<td>1-1/9.3.3</td>
<td>Dynamic Properties</td>
<td>1-13-4/3.5</td>
</tr>
<tr>
<td>1-1/9.3.4</td>
<td>Global Performance</td>
<td>1-13-4/3.7</td>
</tr>
<tr>
<td>FOWTI 2015</td>
<td>Title</td>
<td>Class 2018</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>1-1/9.3.5</td>
<td>Structural Responses</td>
<td>1-13-4/3.9</td>
</tr>
<tr>
<td>1-1/9.3.6</td>
<td>Other Calculations</td>
<td>1-13-4/3.9</td>
</tr>
<tr>
<td>1-1/9.5</td>
<td>Design Plans of Floating Support Structure</td>
<td>1-13-4/5</td>
</tr>
<tr>
<td>1-1/9.7</td>
<td>Design Documentation of Stationkeeping System</td>
<td>1-13-4/7</td>
</tr>
<tr>
<td>1-1/9.9</td>
<td>Design Plans of Machinery and Systems</td>
<td>1-13-4/9</td>
</tr>
<tr>
<td>1-1/9.9.1</td>
<td>Design Documentation of Electrical Installations</td>
<td>1-13-4/9.1</td>
</tr>
<tr>
<td>1-1/9.9.4</td>
<td>Design Plans for Other Machinery and Systems</td>
<td>1-13-4/9.7</td>
</tr>
<tr>
<td>1-1/9.11</td>
<td>Additional Plans</td>
<td>1-13-4/11</td>
</tr>
<tr>
<td>1-1/11</td>
<td>Manuals and Procedures</td>
<td>1-13-5</td>
</tr>
<tr>
<td>1-1/11.1</td>
<td>Operating Manual</td>
<td>1-13-5/1</td>
</tr>
<tr>
<td>1-1/11.3</td>
<td>Procedures</td>
<td>1-13-5/3</td>
</tr>
<tr>
<td>1-1/13</td>
<td>Information Memorandum</td>
<td>1-13-4/13</td>
</tr>
<tr>
<td>1-1/15</td>
<td>Terms and Definitions</td>
<td>FOWTI 1-2</td>
</tr>
<tr>
<td>1-1/15.1</td>
<td>Types of Floating Support Structures</td>
<td>FOWTI 1-2/1</td>
</tr>
<tr>
<td>1-1/15.1.1</td>
<td>TLP-Type Floating Support Structures</td>
<td>FOWTI 1-2/1.1</td>
</tr>
<tr>
<td>1-1/15.1.2</td>
<td>Spar-Type Floating Support Structures</td>
<td>FOWTI 1-2/1.3</td>
</tr>
<tr>
<td>1-1/15.1.3</td>
<td>Column-Stabilized Floating Support Structures</td>
<td>FOWTI 1-2/1.5</td>
</tr>
<tr>
<td>1-1/15.1.4</td>
<td>Other Types of Floating Support Structures</td>
<td>FOWTI 1-2/1.7</td>
</tr>
<tr>
<td>1-1/15.3</td>
<td>Terminology</td>
<td>FOWTI 1-2/3</td>
</tr>
<tr>
<td>1-1/15.3.1</td>
<td>Material Applications Categories</td>
<td>FOWTI 1-2/3.1</td>
</tr>
<tr>
<td>1-1/15.3.1(a)</td>
<td>Special Application Structure</td>
<td>FOWTI 1-2/3.1.1</td>
</tr>
<tr>
<td>1-1/15.3.1(b)</td>
<td>Primary Application Structure</td>
<td>FOWTI 1-2/3.1.2</td>
</tr>
<tr>
<td>1-1/15.3.1(c)</td>
<td>Secondary Application Structure</td>
<td>FOWTI 1-2/3.1.3</td>
</tr>
<tr>
<td>1-1/15.3.2</td>
<td>Consultant</td>
<td>FOWTI 1-2/3.3</td>
</tr>
<tr>
<td>1-1/15.3.3</td>
<td>Cut-In Wind Speed ($V_{in}$)</td>
<td>FOWTI 1-2/3.5</td>
</tr>
<tr>
<td>1-1/15.3.4</td>
<td>Cut-Out Wind Speed ($V_{out}$)</td>
<td>FOWTI 1-2/3.7</td>
</tr>
<tr>
<td>1-1/15.3.5</td>
<td>Design Life</td>
<td>FOWTI 1-2/3.9</td>
</tr>
<tr>
<td>1-1/15.3.6</td>
<td>Emergency Shutdown</td>
<td>FOWTI 1-2/3.11</td>
</tr>
<tr>
<td>1-1/15.3.7</td>
<td>Fabricator</td>
<td>FOWTI 1-2/3.13</td>
</tr>
<tr>
<td>1-1/15.3.8</td>
<td>Floating Offshore Wind Turbine Installation</td>
<td>FOWTI 1-2/3.15</td>
</tr>
<tr>
<td>1-1/15.3.9</td>
<td>Floating Support Structure</td>
<td>FOWTI 1-2/3.17</td>
</tr>
<tr>
<td>1-1/15.3.10</td>
<td>Foundation System (for Tendons)</td>
<td>FOWTI 1-2/3.19</td>
</tr>
<tr>
<td>1-1/15.3.11</td>
<td>Gust</td>
<td>FOWTI 1-2/3.21</td>
</tr>
<tr>
<td>FOWTI 2015</td>
<td>Title</td>
<td>Class 2018</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>1-1/15.3.12</td>
<td>Hull</td>
<td>FOWTI 1-2/3.23</td>
</tr>
<tr>
<td>1-1/15.3.13</td>
<td>Hub Height</td>
<td>FOWTI 1-2/3.25</td>
</tr>
<tr>
<td>1-1/15.3.14</td>
<td>Idling</td>
<td>FOWTI 1-2/3.27</td>
</tr>
<tr>
<td>1-1/15.3.15</td>
<td>Mean Sea Level or Mean Still Water Level (MSL)</td>
<td>FOWTI 1-2/3.29</td>
</tr>
<tr>
<td>1-1/15.3.16</td>
<td>Mean Wind Speed</td>
<td>FOWTI 1-2/3.31</td>
</tr>
<tr>
<td>1-1/15.3.17</td>
<td>Normal Shutdown</td>
<td>FOWTI 1-2/3.33</td>
</tr>
<tr>
<td>1-1/15.3.18</td>
<td>Offshore Wind Farm</td>
<td>FOWTI 1-2/3.35</td>
</tr>
<tr>
<td>1-1/15.3.19</td>
<td>Omni-directional (Wind, Waves or Currents)</td>
<td>FOWTI 1-2/3.37</td>
</tr>
<tr>
<td>1-1/15.3.20</td>
<td>Owner</td>
<td>FOWTI 1-2/3.39</td>
</tr>
<tr>
<td>1-1/15.3.21</td>
<td>Parked</td>
<td>FOWTI 1-2/3.41</td>
</tr>
<tr>
<td>1-1/15.3.22</td>
<td>Rated Power</td>
<td>FOWTI 1-2/3.43</td>
</tr>
<tr>
<td>1-1/15.3.23</td>
<td>Rated Wind Speed (Vr)</td>
<td>FOWTI 1-2/3.45</td>
</tr>
<tr>
<td>1-1/15.3.24</td>
<td>Return Period (Recurrence Period)</td>
<td>FOWTI 1-2/3.47</td>
</tr>
<tr>
<td>1-1/15.3.25</td>
<td>Rotor-Nacelle Assembly (RNA)</td>
<td>FOWTI 1-2/3.49</td>
</tr>
<tr>
<td>1-1/15.3.26</td>
<td>Splash Zone</td>
<td>FOWTI 1-2/3.51</td>
</tr>
<tr>
<td>1-1/15.3.27</td>
<td>Standstill</td>
<td>FOWTI 1-2/3.53</td>
</tr>
<tr>
<td>1-1/15.3.28</td>
<td>Stationkeeping System</td>
<td>FOWTI 1-2/3.55</td>
</tr>
<tr>
<td>1-1/15.3.29</td>
<td>Still Water Level (SWL)</td>
<td>FOWTI 1-2/3.57</td>
</tr>
<tr>
<td>1-1/15.3.30</td>
<td>Surveyor</td>
<td>FOWTI 1-2/3.59</td>
</tr>
<tr>
<td>1-1/15.3.31</td>
<td>Tendon</td>
<td>FOWTI 1-2/3.61</td>
</tr>
<tr>
<td>1-1/15.3.32</td>
<td>Tower</td>
<td>FOWTI 1-2/3.63</td>
</tr>
<tr>
<td>1-1/15.3.33</td>
<td>Turbulence Intensity</td>
<td>FOWTI 1-2/3.65</td>
</tr>
<tr>
<td>1-1/15.3.34</td>
<td>Uni-directional (Wind, Waves or Currents)</td>
<td>FOWTI 1-2/3.67</td>
</tr>
<tr>
<td>1-1/15.3.35</td>
<td>Water Depth</td>
<td>FOWTI 1-2/3.69</td>
</tr>
<tr>
<td>1-1/15.3.36</td>
<td>Wind Profile (Wind Shear Law)</td>
<td>FOWTI 1-2/3.71</td>
</tr>
<tr>
<td>1-1/15.3.37</td>
<td>Yaw Misalignment</td>
<td>FOWTI 1-2/3.73</td>
</tr>
<tr>
<td>1-1/17</td>
<td>Abbreviations and References</td>
<td>FOWTI 1-3</td>
</tr>
<tr>
<td>1-1/17.1</td>
<td>Abbreviations of Organizations</td>
<td>FOWTI 1-3/1</td>
</tr>
<tr>
<td>1-1/17.3</td>
<td>References</td>
<td>FOWTI 1-3/3</td>
</tr>
</tbody>
</table>