



Classification of Floating Gas Units

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**Rule Note
NR 542 DT R04 E**

Marine & Offshore
8 Cours du Triangle - CS 50101
92937 Paris La Defense Cedex - France
Tel: + 33 (0)1 55 24 70 00
<https://marine-offshore.bureauveritas.com/bv-rules>
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GENERAL CONDITIONS

1. INDEPENDENCE OF THE SOCIETY AND APPLICABLE TERMS

- 1.1 The Society shall remain at all times an independent contractor and neither the Society nor any of its officers, employees, servants, agents or subcontractors shall be or act as an employee, servant or agent of any other party hereto in the performance of the Services.
- 1.2 The operations of the Society in providing its Services are exclusively conducted by way of random inspections and do not, in any circumstances, involve monitoring or exhaustive verification.
- 1.3 The Society acts as a services provider. This cannot be construed as an obligation bearing on the Society to obtain a result or as a warranty. The Society is not and may not be considered as an underwriter, broker in Unit's sale or chartering, expert in Unit's valuation, consulting engineer, controller, naval architect, designer, manufacturer, shipbuilder, repair or conversion yard, charterer or shipowner; none of them above listed being relieved of any of their expressed or implied obligations as a result of the interventions of the Society.
- 1.4 The Society only is qualified to apply and interpret its Rules.
- 1.5 The Client acknowledges the latest versions of the Conditions and of the applicable Rules applying to the Services' performance.
- 1.6 Unless an express written agreement is made between the Parties on the applicable Rules, the applicable Rules shall be the Rules applicable at the time of entering into the relevant contract for the performance of the Services.
- 1.7 The Services' performance is solely based on the Conditions. No other terms shall apply whether express or implied.

2. DEFINITIONS

- 2.1 "Certificate(s)" means classification or statutory certificates, attestations and reports following the Society's intervention.
- 2.2 "Certification" means the activity of certification in application of national and international regulations or standards, in particular by delegation from different governments that can result in the issuance of a Certificate.
- 2.3 "Classification" means the classification of a Unit that can result or not in the issuance of a classification Certificate with reference to the Rules. Classification is an appraisalment given by the Society to the Client, at a certain date, following surveys by its surveyors on the level of compliance of the Unit to the Society's Rules or to the documents of reference for the Services provided. They cannot be construed as an implied or express warranty of safety, fitness for the purpose, seaworthiness of the Unit or of its value for sale, insurance or chartering.
- 2.4 "Client" means the Party and/or its representative requesting the Services.
- 2.5 "Conditions" means the terms and conditions set out in the present document.
- 2.6 "Industry Practice" means international maritime and/or offshore industry practices.
- 2.7 "Intellectual Property" means all patents, rights to inventions, utility models, copyright and related rights, trade marks, logos, service marks, trade dress, business and domain names, rights in trade dress or get-up, rights in goodwill or to sue for passing off, unfair competition rights, rights in designs, rights in computer software, database rights, topography rights, moral rights, rights in confidential information (including know-how and trade secrets), methods and protocols for Services, and any other intellectual property rights, in each case whether capable of registration, registered or unregistered and including all applications for and renewals, reversions or extensions of such rights, and all similar or equivalent rights or forms of protection in any part of the world.
- 2.8 "Parties" means the Society and Client together.
- 2.9 "Party" means the Society or the Client.
- 2.10 "Register" means the public electronic register of ships updated regularly by the Society.
- 2.11 "Rules" means the Society's classification rules and other documents. The Society's Rules take into account at the date of their preparation the state of currently available and proven technical minimum requirements but are not a standard or a code of construction neither a guide for maintenance, a safety handbook or a guide of professional practices, all of which are assumed to be known in detail and carefully followed at all times by the Client.
- 2.12 "Services" means the services set out in clauses 2.2 and 2.3 but also other services related to Classification and Certification such as, but not limited to: ship and company safety management certification, ship and port security certification, maritime labour certification, training activities, all activities and duties incidental thereto such as documentation on any supporting means, software, instrumentation, measurements, tests and trials on board. The Services are carried out by the Society according to the applicable referential and to the Bureau Veritas' Code of Ethics. The Society shall perform the Services according to the applicable national and international standards and Industry Practice and always on the assumption that the Client is aware of such standards and Industry Practice.
- 2.13 "Society" means the classification society 'Bureau Veritas Marine & Offshore SAS', a company organized and existing under the laws of France, registered in Nanterre under number 821 131 844, or any other legal entity of Bureau Veritas Group as may be specified in the relevant contract, and whose main activities are Classification and Certification of ships or offshore units.
- 2.14 "Unit" means any ship or vessel or offshore unit or structure of any type or part of it or system whether linked to shore, river bed or sea bed or not, whether operated or located at sea or in inland waters or partly on land, including submarines, hovercrafts, drilling rigs, offshore installations of any type and of any purpose, their related and ancillary equipment, subsea or not, such as well head and pipelines, mooring legs and mooring points or otherwise as decided by the Society.

3. SCOPE AND PERFORMANCE

- 3.1 Subject to the Services requested and always by reference to the Rules, the Society shall:
- review the construction arrangements of the Unit as shown on the documents provided by the Client;
 - conduct the Unit surveys at the place of the Unit construction;
 - class the Unit and enter the Unit's class in the Society's Register;
 - survey the Unit periodically in service to note whether the requirements for the maintenance of class are met.
- The Client shall inform the Society without delay of any circumstances which may cause any changes on the conducted surveys or Services.
- 3.2 The Society will not:
- declare the acceptance or commissioning of a Unit, nor its construction in conformity with its design, such activities remaining under the exclusive responsibility of the Unit's owner or builder;
 - engage in any work relating to the design, construction, production or repair checks, neither in the operation of the Unit or the Unit's trade, neither in any advisory services, and cannot be held liable on those accounts.

4. RESERVATION CLAUSE

- 4.1 The Client shall always: (i) maintain the Unit in good condition after surveys; (ii) present the Unit for surveys; and (iii) inform the Society in due time of any circumstances that may affect the given appraisalment of the Unit or cause to modify the scope of the Services.
- 4.2 Certificates are only valid if issued by the Society.
- 4.3 The Society has entire control over the Certificates issued and may at any time withdraw a Certificate at its entire discretion including, but not limited to, in the following situations: where the Client fails to comply in due time with instructions of the Society or where the Client fails to pay in accordance with clause 6.2 hereunder.
- 4.4 The Society may at times and at its sole discretion give an opinion on a design or any technical element that would 'in principle' be acceptable to the Society. This opinion shall not presume on the final issuance of any Certificate or on its content in the event of the actual issuance of a Certificate. This opinion shall only be an appraisal made by the Society which shall not be held liable for it.

5. ACCESS AND SAFETY

- 5.1 The Client shall give to the Society all access and information necessary for the efficient performance of the requested Services. The Client shall be the sole responsible for the conditions of presentation of the Unit for tests, trials and surveys and the conditions under which tests and trials are carried out. Any information, drawing, etc. required for the performance of the Services must be made available in due time.
- 5.2 The Client shall notify the Society of any relevant safety issue and shall take all necessary safety-related measures to ensure a safe work environment for the Society or any of its officers, employees, servants, agents or subcontractors and shall comply with all applicable safety regulations.

6. PAYMENT OF INVOICES

- 6.1 The provision of the Services by the Society, whether complete or not, involve, for the part carried out, the payment of fees thirty (30) days upon issuance of the invoice.

6.2 Without prejudice to any other rights hereunder, in case of Client's payment default, the Society shall be entitled to charge, in addition to the amount not properly paid, interests equal to twelve (12) months LIBOR plus two (2) per cent as of due date calculated on the number of days such payment is delinquent. The Society shall also have the right to withhold Certificates and other documents and/or to suspend or revoke the validity of Certificates.

- 6.3 In case of dispute on the invoice amount, the undisputed portion of the invoice shall be paid and an explanation on the dispute shall accompany payment so that action can be taken to solve the dispute.

7. LIABILITY

- 7.1 The Society bears no liability for consequential loss. For the purpose of this clause consequential loss shall include, without limitation:
- Indirect or consequential loss;
 - Any loss and/or deferral of production, loss of product, loss of use, loss of bargain, loss of revenue, loss of profit or anticipated profit, loss of business and business interruption, in each case whether direct or indirect.
- The Client shall defend, release, save, indemnify, defend and hold harmless the Society from the Client's own consequential loss regardless of cause.
- 7.2 Except in case of wilful misconduct of the Society, death or bodily injury caused by the Society's negligence and any other liability that could not be, by law, limited, the Society's maximum liability towards the Client is limited to one hundred and fifty per-cents (150%) of the price paid by the Client to the Society for the Services having caused the damage. This limit applies to any liability of whatsoever nature and howsoever arising, including fault by the Society, breach of contract, breach of warranty, tort, strict liability, breach of statute.
- 7.3 All claims shall be presented to the Society in writing within three (3) months of the completion of Services' performance or (if later) the date when the events which are relied on were first discovered by the Client. Any claim not so presented as defined above shall be deemed waived and absolutely time barred.

8. INDEMNITY CLAUSE

- 8.1 The Client shall defend, release, save, indemnify and hold harmless the Society from and against any and all claims, demands, lawsuits or actions for damages, including legal fees, for harm or loss to persons and/or property tangible, intangible or otherwise which may be brought against the Society, incidental to, arising out of or in connection with the performance of the Services (including for damages arising out of or in connection with opinions delivered according to clause 4.4 above) except for those claims caused solely and completely by the gross negligence of the Society, its officers, employees, servants, agents or subcontractors.

9. TERMINATION

- 9.1 The Parties shall have the right to terminate the Services (and the relevant contract) for convenience after giving the other Party thirty (30) days' written notice, and without prejudice to clause 6 above.
- 9.2 In such a case, the Classification granted to the concerned Unit and the previously issued Certificates shall remain valid until the date of effect of the termination notice issued, subject to compliance with clause 4.1 and 6 above.
- 9.3 In the event where, in the reasonable opinion of the Society, the Client is in breach, or is suspected to be in breach of clause 16 of the Conditions, the Society shall have the right to terminate the Services (and the relevant contracts associated) with immediate effect.

10. FORCE MAJEURE

- 10.1 Neither Party shall be responsible or liable for any failure to fulfil any term or provision of the Conditions if and to the extent that fulfilment has been delayed or temporarily prevented by a force majeure occurrence without the fault or negligence of the Party affected and which, by the exercise of reasonable diligence, the said Party is unable to provide against.
- 10.2 For the purpose of this clause, force majeure shall mean any circumstance not being within a Party's reasonable control including, but not limited to: acts of God, natural disasters, epidemics or pandemics, wars, terrorist attacks, riots, sabotages, impositions of sanctions, embargoes, nuclear, chemical or biological contaminations, laws or action taken by a government or public authority, quotas or prohibition, expropriations, destructions of the worksite, explosions, fires, accidents, any labour or trade disputes, strikes or lockouts.

11. CONFIDENTIALITY

- 11.1 The documents and data provided to or prepared by the Society in performing the Services, and the information made available to the Society, are treated as confidential except where the information:
- is properly and lawfully in the possession of the Society;
 - is already in possession of the public or has entered the public domain, otherwise than through a breach of this obligation;
 - is acquired or received independently from a third party that has the right to disseminate such information;
 - is required to be disclosed under applicable law or by a governmental order, decree, regulation or rule or by a stock exchange authority (provided that the receiving Party shall make all reasonable efforts to give prompt written notice to the disclosing Party prior to such disclosure).
- 11.2 The Parties shall use the confidential information exclusively within the framework of their activity underlying these Conditions.
- 11.3 Confidential information shall only be provided to third parties with the prior written consent of the other Party. However, such prior consent shall not be required when the Society provides the confidential information to a subsidiary.
- 11.4 Without prejudice to sub-clause 11.1, the Society shall have the right to disclose the confidential information if required to do so under regulations of the International Association of Classifications Societies (IACS) or any statutory obligations.

12. INTELLECTUAL PROPERTY

- 12.1 Each Party exclusively owns all rights to its Intellectual Property created before or after the commencement date of the Conditions and whether or not associated with any contract between the Parties.
- 12.2 The Intellectual Property developed by the Society for the performance of the Services including, but not limited to drawings, calculations, and reports shall remain the exclusive property of the Society.

13. ASSIGNMENT

- 13.1 The contract resulting from to these Conditions cannot be assigned or transferred by any means by a Party to any third party without the prior written consent of the other Party.
- 13.2 The Society shall however have the right to assign or transfer by any means the said contract to a subsidiary of the Bureau Veritas Group.

14. SEVERABILITY

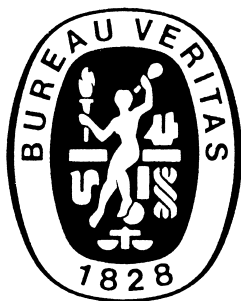
- 14.1 Invalidity of one or more provisions does not affect the remaining provisions.
- 14.2 Definitions herein take precedence over other definitions which may appear in other documents issued by the Society.
- 14.3 In case of doubt as to the interpretation of the Conditions, the English text shall prevail.

15. GOVERNING LAW AND DISPUTE RESOLUTION

- 15.1 These Conditions shall be construed and governed by the laws of England and Wales.
- 15.2 The Parties shall make every effort to settle any dispute amicably and in good faith by way of negotiation within thirty (30) days from the date of receipt by either one of the Parties of a written notice of such a dispute.
- 15.3 Failing that, the dispute shall finally be settled under the Rules of Arbitration of the Maritime Arbitration Chamber of Paris ("CAMP"), which rules are deemed to be incorporated by reference into this clause. The number of arbitrators shall be three (3). The place of arbitration shall be Paris (France). The Parties agree to keep the arbitration proceedings confidential.

16. PROFESSIONAL ETHICS

- 16.1 Each Party shall conduct all activities in compliance with all laws, statutes, rules, economic and trade sanctions (including but not limited to UN sanctions and EU sanctions) and regulations applicable to such Party including but not limited to: child labour, forced labour, collective bargaining, discrimination, abuse, working hours and minimum wages, anti-bribery, anti-corruption, copyright and trademark protection, personal data protection (<https://personal.dataprotection.bureauveritas.com/privacypolicy>).
- Each of the Parties warrants that neither it, nor its affiliates, has made or will make, with respect to the matters provided for hereunder, any offer, payment, gift or authorization of the payment of any money, directly or indirectly, to or for the use or benefit of any official or employee of the government, political party, official or candidate.
- 16.2 In addition, the Client shall act consistently with the Bureau Veritas' Code of Ethics. <https://group.bureauveritas.com/group/corporate-social-responsibility>



RULE NOTE NR 542

NR 542 Classification of Floating Gas Units

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SECTION 1

GENERAL

1 General

1.1 Application

1.1.1 The present Rule Note provides requirements for the classification of floating gas units. The requirements are only applicable for steel units having one of the structural type notations and service notations defined in [1.2].

1.1.2 The requirements of this Rule Note are complementary to the provisions of NR445 Rules for the Classification of Offshore Units, which remain applicable, except where otherwise specified.

1.1.3 Units intended to be assigned with the service notation **liquefied gas storage**, as defined in [1.2.2], are to comply with the requirements of IGC Code, except where otherwise specified in this Rule Note. This Rule Note provides additional requirements and interpretations of IGC Code to be considered for the purpose of classification. The Society may refer to IGC Code when deemed necessary, as defined in [3.2.3].

1.1.4 The provisions of this Rule Note are applicable to the design and construction of new built units. For units based on conversion of existing seagoing ships, the minimum requirements are to be defined on a case-by-case basis.

1.1.5 The provisions of this Rule Note are applicable for permanent installations, as defined in [3.2.5].

In case of mobile units, as defined in Pt A, Ch 1, Sec 1, [4.5.1] of the Offshore Rules, not considered as permanent installations, special requirements are to be met based on the operating requirements. Such requirements are to be mentioned in the Design Criteria Statement which may influence not only the design but also the in-service inspections.

Note 1: The provisions of the present Note are not applicable to gas carriers used temporarily as gas terminals. This type of units is to comply with the requirements of the Ship Rules (see [3.2.1]) applicable for the service notation **liquefied gas carrier**, with or without the additional service features **RV** or **STL-SPM**.

1.2 Class notations

1.2.1 Structural type notations

This Rule Note applies to surface units, as defined in Pt A, Ch 1, Sec 1, [4.3.1] of the Offshore Rules.

Surface units complying with this Rule Note are assigned one of the following structural type notations, as defined in Pt A, Ch 1, Sec 2 of the Offshore Rules:

- **offshore barge** - for non-propelled surface units, including the case of converted ships when unable to perform non-assisted voyages
- **offshore ship** - for surface units having a propulsion system and steering appliances.

Note 1: Units granted with the structural type notation **offshore ship** are not to be involved in the transport of cargoes.

1.2.2 Service notations

At least one of the following service notations, as defined in Pt A, Ch 1, Sec 2, of the Offshore Rules, is to be assigned to units complying with this Rule Note

- **liquefied gas storage** - mandatory for units designed and equipped for the storage of liquefied gas in integral or independent tanks within the hull.
- **gas production unit** - may be assigned to units designed and equipped to receive gas and to process it.
- **gas liquefaction unit** - may be assigned to units designed and equipped for gas liquefaction

Production equipment is not included in the scope of classification except when one of the additional class notation **PROC-GP** or **PROC-GL**, as defined in Pt A, Ch 1, Sec 2 of the Offshore Rules, is assigned (see [1.2.4] and [1.7.1]).

1.2.3 Additional service features

The following additional service features, as defined in Part A, Ch 1, Sec 2 of the Offshore Rules, may be assigned to units complying with this Rule Note:

- **SLOSHING** - mandatory for units with service notation **liquefied gas storage** using membrane tanks for cargo containment.

Note 1: **SLOSHING** may also be requested by the Society on a case-by-case basis for containment systems other than membrane type, if deemed necessary considering the specific design of the containment system.

- One of the additional service features **POSA**, **POSA-HR** or **POSA JETTY** - mandatory for permanent installations.
- **INERTGAS** - may be assigned to units intended to be granted the service notation **liquefied gas storage** or **gas production unit** or **gas liquefaction unit**, when they are equipped with an inert gas plant for condensate storage tanks complying with the corresponding provisions of Part D, Chapter 1 of the Offshore Rules. This additional service feature applies also to gas blanketing systems.

On a case-by-case basis, the Society may require the assignment of the additional service feature **INERTGAS** for units fitted with condensate storage tanks.

1.2.4 Additional class notations

The following additional class notations, defined in Pt A, Ch 1, Sec 2 of the Offshore Rules, are mandatory for units covered by this Rule Note:

- **AUTO**
- **VeriSTAR-HULL**

The following additional class notations may be granted to units covered by this Rule Note:

- The additional class notation **REGAS**, see Pt A, Ch 1, Sec 2, [8.3.13] of the Offshore Rules.
- Requirements relating to the additional class notation **PROC-GP**, as defined in Pt A Ch 1 sec 2 of the Offshore Rules, are given in [1.7.1] and Sec 13.
- Requirements relating to the additional class notation **PROC-GL**, as defined in Pt A Ch 1 sec 2 of the Offshore Rules, are given in [1.7.1] and Sec 13.
- Requirements relating to the additional class notation **liquefied gas transfer**, as defined in Pt A Ch 1 sec 2, [8.3.8] of the Offshore Rules, are given in Sec 14.

Furthermore, the additional class notations as mentioned in the Ship Rules may be granted.

Note 1: The additional class notation **INWATERSURVEY** is mandatory for the permanent units.

1.2.5 Site, transit and navigation notations

Site, transit and navigation notations are granted in accordance with the provisions of Pt A, Ch 1, Sec 2, [7] of the Offshore Rules.

1.3 Classification Society involvement

1.3.1 The scope of classification for units listed in [1.2] is based on appraisal of the integrated unit covering, in general:

- Hull, accommodation, helideck and hull attachments and appurtenances including:
 - riser support structure
 - structure to which the moorings are attached, and supports for mooring equipment
 - foundations for the support of topsides modules, the flare tower, and the hull mounted equipment
 - support structure for life saving appliances
 - passive fire protection and cathodic protection
- Cargo containment system including integral tanks, membrane tanks, independent tanks and their supports to the hull
- Intact and damage stability
- Marine equipment (with foundations) pertaining to the offloading facilities
- Accommodation quarters
- Mooring system:
 - for the additional service feature **POSA, POSA-HR** or **POSA JETTY**:
mooring line components (anchors, chains, wire and accessories)
 - hull mounted equipment (fairleads, stoppers...)

- for the additional class notation **OHS**:

mooring line handling equipment (winch, sheaves...)

- Lifting appliances (in case of additional class notation **ALM**, see Pt A, Ch 1, Sec 2, [8.3.1] of the Offshore Rules)
- Equipment and systems necessary for the safe operation of the hull and to the safety of personnel on board as defined in the Offshore Rules and related applicable Rules (taking into account the additional class notation **LSA**, see Pt A, Ch 1, Sec 2, [8.3.5] of the Offshore Rules)
- Equipment and systems installed in the hull, the failure of which may jeopardise the safety of the floating unit
- The fire and gas detection system for the hull as well as the definition of the hazardous areas of the hull
- The fire water and foam system for the protection of the hull
- Topsides systems, as follows:
 - gas process plant, in case of additional class notation **PROC-GP** (see Pt A, Ch 1, Sec 2, [8.3.3] of the Offshore Rules)
 - gas liquefaction plant, in case of additional class notation **PROC-GL** (see Pt A, Ch 1, Sec 2, [8.3.3] of the Offshore Rules)
 - cargo transfer system, in case of additional class notation **liquefied gas transfer**

- The revaporization plant, in case of additional class notation **REGAS**

- Propulsion plant:

For each project, the detailed boundaries for the classification of units intended to be granted with the structural type notation **offshore barge** or **offshore ship** are defined by the Society on a case-by-case basis and with reference to the requested structural type and service notations, additional class notations and additional service features.

1.3.2 Classification - Design Criteria Statement

Classification is based upon the design data or assumptions specified by the party applying for classification.

A Design Criteria Statement is to list the services performed by the unit and the design conditions and other assumptions on the basis of which class is assigned to the unit.

The Design Criteria Statement is to be:

- issued by the Society
- referred to on the unit classification certificate
- incorporated in the Operating Manual, as stated in Pt A, Ch 1, Sec 1, [3.4] of the Offshore Rules.

Additional details about the Design Criteria Statement are given in Pt A, Ch 1, Sec 1, [1.6] of the Offshore Rules.

1.4 Structural requirements

1.4.1 The structural requirements in Pt D, Ch 1, Sec 1, [1.5] of the Offshore Rules are to be complied with for units covered by this Rule Note, as applicable.

1.5 Design life

1.5.1 The requirements about design life, unit modifications and unit re-assessment are given in Pt A, Ch 1, Sec 1, [1.7] of the Offshore Rules.

1.6 Station keeping

1.6.1 Permanent installations

Permanent installations covered by the present Note are to comply with the requirements stipulated in Pt D, Ch 1, Sec 1, [1.7.1] of the Offshore Rules.

1.6.2 Dynamic positioning system

For units having a mooring system consisting, partly or entirely, of dynamic positioning system, the Society makes reference to the requirements given for the additional class notation **DYNAPOS** (see Pt A, Ch 1, Sec 2, [6.14.6] of the Ship Rules).

1.6.3 Mooring to buoy

When the mooring of unit is assured through a floating buoy, the buoy and its mooring system are to be classed by the Society.

The buoy is to be considered as a permanent installation having one of the following service notations:

- **gas/condensate loading**
- **gas/condensate offloading.**

The arrangement of the buoy is to comply with the requirements of NR494 Rules for the Classification of Offshore Loading and Offloading Buoys, as applicable.

The additional service feature **POSA** or **POSA-HR** is to be granted to the buoy.

For mooring to an existing Single Point Mooring (SPM) (possibly classed by another Classification Society), detailed documentation of the SPM is to be submitted to the Society for review. This documentation is to include certificate, design and maintenance. The Society reserves the right to require complete re-classification of the installation, including remeasurement of lines and anchors.

1.7 Scope of additional class notations

1.7.1 Classed topsides - Notations PROC-GP and PROC-GL

When the additional class notation **PROC-GP** or **PROC-GL** is granted, in addition to requirements given in Sec 13, the structure of deck modules, flare boom and other structures housing production equipment, as well as related facilities, are to be designed and built in accordance with the relevant requirements of Part B, Chapter 2 and Part B, Chapter 3 of the Offshore Rules.

When not subjected to green waters, and subject to the Society agreement, topsides structures may be designed following other recognized standards, provided due consideration is given to inertial loads, overall deformations of the unit, differential displacements of support points and other

relevant loadings, in accordance with the provisions of Part B, Chapter 2 of the Offshore Rules.

1.7.2 Notation PROC-GP or PROC-GL not requested

When the additional class notation **PROC-GP** or **PROC-GL** is not requested, the structure of deck modules, flare boom and other structures housing production equipment are not covered by the classification.

For equipment and piping installations, where classed systems within the hull have some part of their facilities located within the topsides, these facilities are covered by the classification. The Society reserves the right to include, in the scope of classification, the structure of the supporting skid and its connection to the topside structure, even if this structure is mainly supporting production facilities.

The classification covers the equipment necessary to the proper operation of these systems, as requested by this Rule Note and other related applicable rules or standards.

Classification excludes all the equipment only necessary to the operation of the topsides systems. For these systems, upon receipt of specific information and request, the Society endeavours to verify that failure of equipment and systems external to the scope of classification does not impair significantly the hull installation. For the structure supporting classed equipment, the attending Surveyor verifies the proper fitting of the local supporting elements, as indicated by the equipment manufacturer.

Particular attention is to be paid to the design of the pipe rack on the main deck, which remains within the scope of classification, regardless of the presence of pipes serving the topsides process plants.

Fig 1 and Fig 2 show examples of classification limits for different types of appurtenances.

1.7.3 Lifting appliances - Notations ALP and ALM

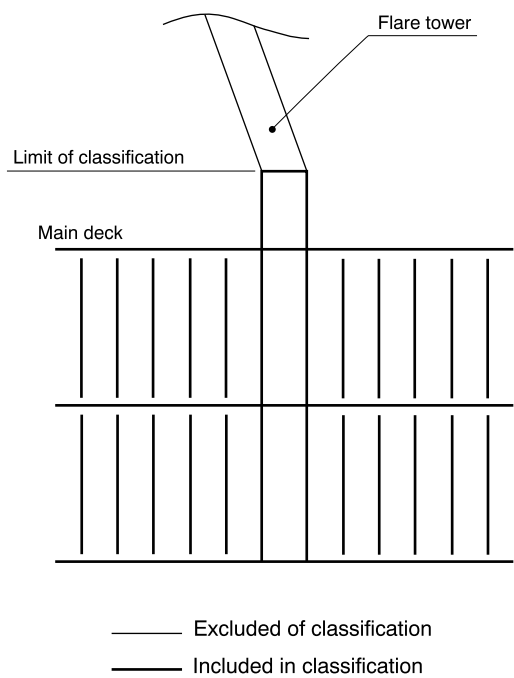
The additional class notations **ALP** and **ALM**, as defined in Offshore Rules Pt A, Ch 1, Sec 2 [8.3.1], may be assigned to units equipped with cranes and other lifting appliances meeting the relevant requirements of NR526, Rules for the Certification of Lifting Appliances onboard Ships and Offshore Units.

When no additional class notation for lifting appliances is granted, the classification covers only the crane pedestal and its foundation welded to the hull, considering the loads specified by the designer.

When the crane pedestal and its foundation are welded to a classed topside structure covered by the additional class notation **PROC-GP** or **PROC-GL**, they are covered by class for the specific loads provided by the designer.

When one of the additional class notations **ALP** and **ALM** is granted and the crane pedestal is partially or completely supported by a topside structure not covered by class (additional class notation **PROC-GP** or **PROC-GL** not requested), the crane pedestal and its foundation are not covered by class. In case the pedestal is connected to the topside structure and extended over the hull, only the part of pedestal connected to the hull is classed for the specific loads provided by the shipyard.

Figure 1 : Example 1 of classification limits



The structure calculation for the crane pedestal and its foundation is to be submitted to the Society for information if not requested otherwise for classification.

Note 1: For the additional class notations **ALP** and **ALM**, the construction mark as defined in Pt A, Ch 1, Sec 2 of the Offshore Rules is required.

1.8 Classification and towing/transit

1.8.1 The towing or sailing by means of own propulsion system, between the construction shipyard and the intended site, is covered by classification requirements.

To flag the unit is:

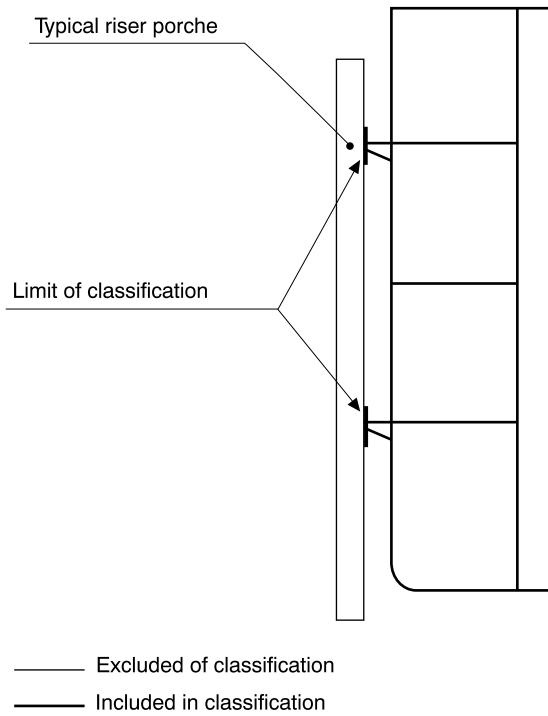
- recommended for the towing
- mandatory in international waters and when people is onboard. Attention is to be paid to the compliance with international codes and standards as required by National Authorities.

The Society issues a provisional certificate upon completion of the hull, with design criteria for towing/transit condition clearly identified.

1.8.2 Temporary conditions

In accordance with the provisions of classification, any temporary conditions during fabrication and load out, any intermediate towing between two construction sites before complete finalisation of the unit and final load out of top-side modules are considered beyond the scope of classification, unless a specific demand has been received from the party applying for classification.

Figure 2 : Example 2 of classification limits



Corrosion protection systems are to be arranged for the hull during the outfitting phase. The documentation is to be submitted to the Society for information. The Society may require thickness measurements to be carried out prior to the hull leaving the yard.

1.8.3 Environmental conditions for towing/transit

The Society may require:

- detailed documentation for the intended route between the construction shipyard and the intended site, and
- further investigation of slamming loads, green waters, bow impact and ice loads, if any, depending on the severity of the intended route, the planned period of the year and duration for the towing.

Extreme loads for towing/transit are to be taken by default for a return period of 10 years (typically referred to as a probability level of 10^{-7,7}). Different values may be considered if specified by the party applying for classification.

Limitations on sea heading (for avoidance of beam seas) including possible seasonal limitations are to be defined by the Owner and/or the party applying for classification.

1.8.4 Fatigue strength during towing/transit

The Society reserves the right to require, for structural members, a direct fatigue analysis resulting from the towing/transit. Such fatigue analysis is to be combined with the overall fatigue verification of the unit in operation at intended site.

2 Statutory requirements

2.1 General

2.1.1 Project specification

Prior to commencement of the review of drawings, the complete list of Regulations, Codes and Statutory Requirements to be complied with is to be submitted for information:

- International Regulations
- Flag State requirements
- Coastal State requirements
- Owner standards and procedures
- Industry standards.

The project specification is also to specify the list of statutory certificates requested by the Owner.

2.1.2 Conflict of Rules

In case of conflict between the Classification Rules and any Statutory Requirements as given by Flag State or Coastal State, the latter ones are to take precedence over the requirements of this Rule Note.

3 Symbols and definitions

3.1 General

3.1.1 Unless otherwise specified, the units, symbols, definitions and reference co-ordinate system given in Pt B, Ch 1, Sec 2 of the Ship Rules remain applicable.

3.1.2 In addition, specific definitions are given in [3.2].

3.2 Definitions

3.2.1 Ship Rules

Ship Rules means Bureau Veritas Rules for the Classification of Steel Ships (NR467). The applicable requirements are those for ships greater than 65 m in length. When reference is made to the Ship Rules, the latest version of these ones is applicable.

3.2.2 Offshore Rules

Offshore Rules means Bureau Veritas Rules for the Classification of Offshore Units (NR445). When reference is made to the Offshore Rules, the latest version of these ones is applicable.

3.2.3 IGC Code

IGC Code means the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, as amended.

Where requirements of IGC Code are quoted as excerpts, they are printed in italic type.

3.2.4 Rule length L

For a unit with propulsion system, the rule length L is determined similarly to seagoing ships (see the Ship Rules). In case of units without rudder shaft, the rule length L is to be taken equal to 97% of the extreme length at the maximum draught.

The extreme length at the maximum draught is not to include external turret system or boat landing platforms possibly attached to the extreme ends.

3.2.5 Permanent installation

Surface units having one of the structural type notations given in [1.2.1] are considered as permanent installations when performing their service either:

- at a single location, or
- on a single site for a duration not less than, typically, 5 years.

Two types of permanent installations are to be considered:

- disconnectable, when the unit has a means of disengaging from its mooring and riser systems in extreme environmental or emergency conditions
- non-disconnectable.

A permanent installation is assigned with a site notation consisting in the name of the unit operation field.

3.2.6 Topsides

A topside structure is usually an independent structure located on the deck of the floating unit (typically the free-board or the strength deck). Depending on the supporting arrangement, provisions are to be taken for possible effects of longitudinal stress and deformation from hull girder in the topsides structure. Topsides equipment may contain essential marine systems which are within the scope of classification. The Society may require detailed documentation for information.

The topsides are usually arranged into modules to ease fabrication and installation, and to reduce impact from longitudinal stress in hull girder of the floating unit.

3.2.7 Site draughts

The draught is the distance, in m, from the base line to the waterline, measured amidships.

The maximum site draught $T_{\max}$ is the deepest draught able to be observed during operation.

The minimum site draught $T_{\min}$ is the lightest draught able to be observed during operation.

3.2.8 Transit draughts

For any transit phase, a maximum draught and a minimum draught are to be determined by the designer – and reflected in the associated loading conditions.

3.2.9 Fore and aft parts

The fore part and aft part are determined on a case-by-case basis, according to the main wave heading.

For units articulated around a single point mooring, the fore part is the part next to this single point mooring.

During transit, the fore part is the one orientated in the direction of towage.

3.2.10 Splash zone

The splash zone is the zone of the floating structure which is alternately in and out of water due to wind, waves and motions. Areas which are wetted only in case of major storms are excluded from the splash zone.

The exact location and vertical extent of the splash zone are to be determined at the design stage as a function of the environmental conditions at the intended site.

Unless otherwise indicated by the designer, the splash zone is usually considered as extending from 3 m below the lowest operational draught up to 5 m above the maximum loaded draught.

Corrosion in the splash zone during service is to be prevented by means of protective coating systems and/or corrosion margins and thickness increments of the plating.

3.2.11 Hull and superstructures

The hull is a floating structure with overall dimensions in accordance with Pt B, Ch 5, Sec 2 of the Ship Rules. The purpose is to store cargo, ballast and production liquids. In addition, there are dedicated machinery spaces provided for essential generators, etc.

The definition of the hull includes the living quarters, which are to be designed and built in accordance with the relevant requirements for superstructures, as given by the Ship Rules.

The hull includes supports for pertinent features of hull structure design, named 'attachments and appurtenances' in this Rule Note, as for example hull topsides supports and foundations. The interface point is the bearing and sliding supports of the topside modules.

3.2.12 Cargo

Cargo means liquefied gas stored and processed by units subject to the present Rule Note. The list of products to be considered as cargo is given in Pt D, Ch 9, Sec 19 of the Ship Rules.

3.2.13 Condensate

Condensate is a low density cargo (high API gravity hydrocarbon phase) that generally occurs in association with natural gas. The presence of condensate depends on temperature and pressure conditions allowing condensation of liquid from vapours.

3.2.14 Cargo containment system

Cargo containment system is the arrangement for containment of cargo, including, where fitted, a primary and secondary barrier, associated insulation and any intervening spaces, and adjacent structure if necessary for the support of these elements. If the secondary barrier is part of the hull structure, it may be a boundary of the hold space.

3.2.15 Primary barrier

Primary barrier is the inner element designed to contain the cargo when the cargo containment system includes two boundaries.

3.2.16 Secondary barrier

Secondary barrier is the liquid resistant outer element of a cargo containment system designed to afford temporary containment of any envisaged leakage of liquid cargo through the primary barrier and to prevent the lowering of the temperature of the unit's structure to an unsafe level.

3.2.17 Integral tank

Integral tanks form a structural part of the unit's hull and are influenced in the same manner and by the same loads which stress the adjacent hull structure. Integral tanks may be used for cargoes having a boiling point not below -10°C .

3.2.18 Independent tank

Independent tanks are self-supporting tanks; they do not form part of the unit's hull and are not essential to the hull strength. There are three types of independent tanks:

- type A
- type B
- type C,

as defined in IGC Code.

3.2.19 Membrane tanks

Membrane tanks are non-self-supporting tanks which consist of a thin layer (membrane) supported through insulation by the adjacent hull structure. The membrane is designed in such a way that the thermal and other expansion or contraction is compensated for without undue stressing of the membrane.

3.2.20 Corrosion addition

The corrosion addition is the thickness to be added to the net thickness in view of corrosion allowance, as defined in Sec 2, [5.2].

3.2.21 Thickness increment

The thickness increment is the thickness that may be added to the gross thickness, in accordance with Sec 2, [6.2].

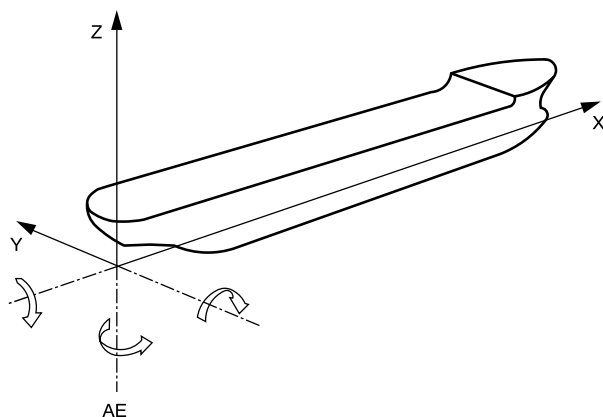
3.3 Reference co-ordinate system

3.3.1 The unit's geometry, motions, accelerations and loads are defined with respect to the following right-hand co-ordinate system (see Fig 3):

- Origin : At the intersection between the longitudinal plane of symmetry of the unit, the aft end of L and the baseline
- X axis : Longitudinal axis, positive forwards
- Y axis : Transverse axis, positive towards portside
- Z axis : Vertical axis, positive upwards.

Positive rotations are oriented in anti-clockwise direction about the X, Y and Z axes.

Figure 3 : Reference co-ordinate system



4 Calculation

4.1 Calculations to be submitted

4.1.1 Procedures and calculations

Procedures and assumptions used for structural and hydrodynamic calculations requested by the Rules are to be submitted to the Society for review prior to submission of final report with conclusions of the analysis.

The following procedures and calculations are to be submitted:

- Model test procedures, including a listing of possible sources of error and limits of applicability
- Hydrodynamic calculations:
 - direct calculation report
 - model test report and calibration report, if relevant
- Calculation of material temperature in the design condition (see Sec 2, [2.1])
- Sloshing study, as relevant
- Finite element calculations:
 - primary supporting members, including those of cargo tanks
 - topside supports
 - turret supports
 - spread mooring seats
 - fatigue structural details
 - supports, keys and stiffening rings of independent tanks, if any
 - topsides, when additional class notation **PROC-GL** or **PROC-GP** is granted
 - spectral fatigue when additional class notation **Spectral Fatigue** is granted
- Additional calculations reports are recommended and should be submitted for information, if they are performed:
 - dropped object analysis report
 - collision analysis report
 - explosion analysis report.

Detailed documentation of software used, demonstrating calculation accuracy, may be requested by the Society.

4.1.2 Calculation report

The calculation report is to follow the procedure as described and agreed to, prior to commencement of the study. Input data, considerations for decision of boundary conditions and detailed stress results are to be available.

Finite element models usually consist of plate elements. Normal and shear stresses are usually obtained in the centre of the element and stress plots are to show element stresses and not a node average.

Graphically, information for several loading conditions is to show deformation of structure and Von Mises stress values.

5 Design criteria and data

5.1 General

5.1.1 The party applying for classification is to provide the Society with the classification data and assumptions.

Relevant information is entered in the Design Criteria Statement.

5.2 Site data

5.2.1 The party applying for classification is to specify the site at which the unit will operate, and is to provide relevant design data and background information.

Note 1: Units intended to operate on several sites or units not being permanent installations are specially considered.

5.3 Operating loading conditions

5.3.1 The data on unit operation are to include the information required from [5.3.2] to [5.3.5].

5.3.2 Cargoes and processed products

Characteristics of processed hydrocarbons and cargoes intended to be stored (in particular H₂S content).

5.3.3 Environmental conditions

- a) Extreme environmental conditions during unit operations
- b) Most severe environmental conditions, if relevant, during offloading operations towards a shuttle tanker, moored alongside or in tandem mode
- c) Limiting conditions before disconnection from the single point mooring, if relevant
- d) Most severe environmental conditions, if relevant, during maintenance operations such as dismantling of main bearings of connection with the single point mooring
- e) Environmental conditions during towing/transit from construction/conversion location to offshore site, when not covered by a navigation notation.

5.3.4 Loads

- a) Loads induced by connection to a single point mooring, if any, in all relevant conditions detailed in [1.6.3], including:
 - loads in bearings, in case of arm and yoke connections
 - loads on secondary bearings during maintenance operations
- b) Hawser loads, in case of connection by a hawser
- c) Maximum loads induced by shuttle gas carrier
- d) Loads induced by process and other equipment.

5.3.5 Loading conditions

- a) Loading conditions in normal operations, including distribution of stored cargo, ballast, stores and others, for the full sequence of loading-unloading of the unit
- b) Loading conditions in any other particular condition of operation, such as light ballast, or tank cleaning/inspection, and related limiting conditions for environment
- c) Loading conditions for towing/transit.

Note 1: For control of loadings during operations, refer to Sec 4, [2.3].

6 Documentation to be submitted

6.1

6.1.1 The documentation to be submitted is to include the following information, in addition to the documentation required in Part A, Chapter 1 of the Offshore Rules:

- a) Design criteria and data, as defined in Article [5]
- b) Data for hydrodynamic analysis:
 - lines plan and appendices on hull
 - environmental data as required in Pt B, Ch 2, Sec 2 of the Offshore Rules
 - properties of the unit related to the assessment of wind and current loads (areas, coefficients), when a heading analysis is performed (see Sec 3)
 - properties of mooring system and relevant information
 - loading manual with description of each loading condition
- c) General drawings:
 - general arrangement of the unit, showing, as relevant:
 - location of the storage tanks with their openings, ballast tanks, cofferdams and void spaces, accesses to hazardous and safe spaces, cargo storage, production piping and vent piping on the open deck, bow or stern transfer lines, etc.
 - general arrangement of process, utility and control spaces
 - general arrangement of risers, riser supports and manifolds
 - general arrangement of hazardous areas
 - flare radiation level plots
 - arrangement of the fore and aft spaces
 - general arrangement of the mooring system, or SPM connection
- d) Structural drawings, specifications and supporting documents:
 - booklet of loading conditions
 - mooring system foundations (fairleads, tensioners, winches, bollards, etc.), where applicable
 - connections and supporting structure in case of floating units connected to a single point mooring by an arm or a yoke
 - turret structural and mechanical drawings
 - riser supports
 - foundations of deck modules and flare, if any, together with the corresponding loads
 - deck modules, as relevant
 - flare structure
 - specification of coatings and drawings of cathodic protection, including hull outside and tank inside, with drawings of anode securing devices
- e) Machinery and piping drawings:
 - oil and gas processing plant (general arrangement, PID)
 - cargo offloading equipment
 - gas disposal system
 - diagram of cargo and gas piping systems, including offloading piping
 - connections to risers
 - diagram of stripping system of cofferdams, pump rooms and other spaces within the storage area
 - diagram of cargo tank vent systems
 - specification of pumps, valves, expansion joints and other cargo piping fittings
 - drawing of cargo pump shaft stuffing boxes at bulkhead penetrations
 - arrangement of gastight bulkhead penetrations
 - bilge and drainage systems for hazardous areas
 - ballast pumping within storage area
 - remote control of cargo and ballast pumping systems
 - specifications and drawings of cargo hoses
 - cargo tank heating system
 - crude oil tank washing systems, together with specification of equipment
 - arrangements for gas-freeing of cargo tanks
 - drawings of product swivels
 - drawings of electrical swivels
 - arrangements for venting cargo tanks, including specification of venting fittings
 - pressure-vacuum valves
 - arrangement and capacity of air ducts, fans and motors in storage area, together with justification of their anti-sparking properties
 - rotating parts and casings of fans
 - level-gauging arrangements, including drawings and specifications
 - emergency shut-down system
 - remote control and monitoring systems, including specifications of instrumentation
 - arrangement of instrumentation in control stations

- f) Inert gas installations:
 - single-wire diagram of the installation, together with the following main characteristics: capacity, pressure, temperature, O₂ content, water content
 - list of the components (with their characteristics) of: pipes, scrubber, blowers, non-return devices, valves, pumps, protective devices for overpressure and vacuum
 - general arrangement plan of installations on board
 - diagram of monitoring and alarm systems
 - specifications of O₂ analyser, recorder and portable control instruments
- g) Safety plans:
 - drawing and specification of fire and gas detection systems
 - the dedicated sections of the Operating Manual related to classification as specified in Ch 1, Sec 1, [3.4] of the Offshore Rules
 - fire protection details in accommodation areas
- pressure water fire main
- fire-extinguishing systems in machinery and accommodation areas
- foam extinguishing systems within storage area: general arrangement diagram, calculation note, foam agent specification, characteristics of foam monitors and hoses
- fire-extinguishing system in cargo pump rooms: general arrangement plan and calculation note
- fire-extinguishing system in process areas
- h) Others:
 - documents relevant to the contemplated additional class notations
- i) Risk analysis reports, as required in this Rule Note.

SECTION 2

STRUCTURE DESIGN PRINCIPLES

1 Definition of the unit areas

1.1 Principles

1.1.1 Following the analysis of the stress level in the structure and design environment, the Society may categorize some of the areas as ‘ship areas’ or as ‘offshore areas’.

The elements and their types of area are listed in Tab 1.

The Society reserves its right, according to appropriate structural analyses, to declare other elements as belonging to offshore areas.

1.1.2 Offshore area requirements

Offshore areas listed in Tab 1 are to be in accordance with the requirements of Part B of the Offshore Rules:

- a) Concerned areas are to include the part of the unit structure affected by the loads on listed elements
- b) Structural elements contributing to the longitudinal strength of the hull girder are also to comply with the strength requirements for ship areas (see [1.1.3]).

1.1.3 Ship area requirements

Ship areas listed in Tab 1 are to be in accordance with Part B and Part D, Chapter 9 of the Ship Rules which remain applicable except where otherwise specified in this Rule Note.

1.1.4 Limits between ship areas and offshore areas

The offshore areas always include the following items:

- the foundations of modules and equipment defined in Tab 1 and their additional local structural members
- the inserts in primary supporting members, decks, bulkheads and side shell
- the reinforced longitudinal stiffeners
- the partial stringers, deck girders and web frames.

For other members and when the limits of offshore area is not obvious from engineering judgment, the offshore area is to be extended up to a distance where the equivalent membrane stress is lower than 30 N/mm² when only appurtenance forces are applied.

1.1.5 Structural categories for offshore areas

Offshore areas are divided into three categories (special, first and secondary) for the structural members.

These categories are defined in Pt B, Ch 3, Sec 2, [2] of the Offshore Rules.

Table 1 : Types of areas

Elements	Area
Flare tower supports	Offshore area
Turret moon pool, casing, and surrounding area	
Topside supports at main deck	
Crane pedestals and foundation into hull	
Helideck support structure	
Mooring supports	
Hose handling crane pedestal and foundation into hull	
Offloading equipment foundations	
Riser porches and their foundations to the hull	
Foundations of riser and mooring lines tensioning systems	
Towing brackets and their foundations	Ship area
Other elements	

Components in load transmission areas and contributing to the load path, including stiffener brackets, flanges etc. are to be categorized as first or special category area.

In principle, topside supports are to be categorized as first category elements with the highly stressed area as special category element.

The helideck structure is considered as first category element.

2 Materials for construction

2.1 Material temperature in design condition

2.1.1 Principle of calculation

The calculation of material temperature in design condition is to take into account the following assumptions:

- the secondary barrier is to be assumed to be at cargo temperature, at atmospheric pressure
- for tanks without secondary barrier, the primary barrier should be assumed to be at the cargo temperature
- the ambient sea temperature is to be taken as the design temperature defined in Pt B, Ch 2, Sec 2, [6.3] of the Offshore Rules
- the ambient air temperature is to be taken as the design temperature defined in Pt B, Ch 2, Sec 2, [6.2] of the Offshore Rules.

A detailed calculation report is to be submitted to the Society, as required in Sec 1, [4].

2.1.2 Heating systems

The heat load of heating systems fitted inside internal spaces, such as transverse or longitudinal cofferdams, may be taken into account for the calculation of temperature in design condition of related structural elements, provided that:

- the design and construction of the heating system are at the satisfaction of the Society
- the heating system is considered as equipment for essential service and complies with the relevant requirements of Part C of the Offshore Rules
- the heating system is so arranged that, in the event of failure in any part of the system, stand-by heating could be maintained at 100% of the theoretical heat load.

Heating systems fitted in double-bottom, duct keel, double hull or other void spaces adjacent to unit's external shell are not to be taken into account for the calculation of temperature in the design condition.

2.2 Offshore areas

2.2.1 The steel grade of elements belonging to offshore areas, as defined in [1.1.2], is to be determined in accordance with the requirements of Pt B, Ch 3, Sec 2 of the Offshore Rules.

2.2.2 Secondary category elements

The steel grades of structural elements categorized as secondary category are to comply with the most stringent between Pt B, Ch 3, Sec 2 of the Offshore Rules and Pt B, Ch 4, Sec 1 of the Ship Rules.

2.2.3 Low temperature in design condition

The steel grades of structural elements belonging to offshore areas and having a calculated temperature in the design condition (as defined in [2.1]) lower than -5°C are to comply with the most stringent between Pt B, Ch 3, Sec 2 of the Offshore Rules and Chapter 6 of IGC Code.

2.3 Ship areas

2.3.1 The steel grade of elements belonging to ship areas, as defined in [1.1.3], is to be selected in accordance with Pt B, Ch 4, Sec 1 of the Ship Rules.

2.3.2 Low temperature in design condition

The steel grades of structural elements belonging to ship areas and having a calculated temperature in the design condition (as defined in [2.1]) lower than -5°C are to comply with the requirements of IGC Code, Chapter 6.

2.4 Steels with specified through thickness properties

2.4.1 The steels with specified through thickness properties are to comply with the requirements in Pt B, Ch 3, Sec 2, [4] of the Offshore Rules.

2.5 Inspection and checks

2.5.1 The requirements for inspection and checks of ship and offshore areas are given in Pt D, Ch 1, Sec 3, [2.5] of the Offshore Rules.

3 Structural principles

3.1 Typical arrangement

3.1.1 Large openings in web frames and stringers should be verified and necessary documentation/calculation notes are to be submitted to the Society.

3.2 General construction

3.2.1 Units covered by the present Rule Note are to comply with the general principle requirements given in Pt D, Ch 1, Sec 3, [3.2.2] to [3.2.6] of the Offshore Rules.

3.3 Plating

3.3.1 The requirements for the plating are those given in Pt D, Ch 1, Sec 3, [3.3] of the Offshore Rules.

3.4 Ordinary stiffeners

3.4.1 The requirements for the ordinary stiffeners are those given in Pt B, Ch 4, Sec 3, [3] of the Ship Rules.

3.5 Primary supporting members

3.5.1 The requirements for the primary supporting members are those given in Pt D, Ch 1, Sec 3, [3.5] of the Offshore Rules.

4 Access

4.1 General

4.1.1 The requirements for access defined in this Rule Note are applicable instead of the requirements given in Pt B, Ch 3, Sec 1, [4] of the Offshore Rules.

4.2 Means of access

4.2.1 Complex areas like turret, riser porches, etc., are to be accessible for inspection.

The means of access in the hull are to allow inspection of the critical structure connections identified during the drawing review by the Society and/or the designer.

The number of inaccessible areas is to be limited and clearly identified on the structure drawings. The Society reserves the right to require additional corrosion allowances for these areas. Special attention is to be paid to fatigue strength.

Direct access to non-cargo tanks such as wing and side ballast tanks and voids within the cargo hold block is to be provided from the hull main deck. Such spaces are to have their own access without passing through another such tank.

Web frame numbering is to be attached to structure or walkway inside of tanks, to the satisfaction of the attending Surveyor.

Equipment on deck should be arranged to allow inspections of the deck plating and to avoid permanent concentration of dust and remaining water.

4.3 Access to spaces located outside of the cargo area

4.3.1 Access to spaces located outside of in the cargo area are to comply with the requirements of Pt B, Ch 3, Sec 1, [4.2] of the Offshore Rules.

4.4 Access to spaces in the cargo area

4.4.1 Designated passageways below and above cargo tanks are to have at least the arrangements and dimensions as specified in Pt D, Ch 9, Sec 3, [1.5.6], item a) of the Ship Rules.

4.4.2 Passage through cargo tanks

Passage through cargo tanks are to be in accordance with [1.5.4] and [1.5.5] in Pt D, Ch 9, Sec 3 of the Ships Rules.

For the purpose of these requirements, the following applies:

- a) Where the Surveyor needs to pass between the flat or curved surface to be inspected and structural elements such as deck beams, stiffeners, frames, girders etc., the distance between that surface and the free edge of the structural elements is to be at least 380 mm. The distance between the surface to be inspected and the surface to which the above structural elements are fitted, e.g. deck, bulkhead or shell, is to be at least 450 mm in the case of a curved tank surface (e.g. type C-tank) or 600 mm in case of a flat tank surface (e.g. type A-tank) (see Fig 1).

- b) Where the Surveyor does not need to pass between the surface to be inspected and any part of the structure, for visibility reasons the distance between the free edge of that structural element and the surface to be inspected is to be at least 50 mm or half the breadth of the structure's face plate, whichever is the greater (see Fig 2).
- c) If, for inspection of a curved surface, the Surveyor needs to pass between that surface and another flat or curved surface, to which no structural elements are fitted, the distance between both surfaces is to be at least 380 mm (see Fig 3). Where the Surveyor does not need to pass between a curved surface and another surface, a smaller distance than 380 mm may be accepted, taking into account the shape of the curved surface.
- d) If, for inspection of an approximately flat surface, the Surveyor needs to pass between two approximately flat and approximately parallel surfaces, to which no structural elements are fitted, the distance between those surfaces is to be at least 600 mm (see Fig 4). Where fixed access ladders are fitted, a clearance of at least 450 mm shall be provided for access.
- e) The minimum distances between a cargo tank sump and adjacent double bottom structure in way of a suction well may not be less than those defined in Fig 5. If there is no suction well, the distance between the cargo tank sump and the inner bottom may not be less than 50 mm.
- f) The distance between a cargo tank dome and deck structures may not be less than 150 mm (see Fig 6).
- g) Where necessary for inspection, fixed or portable staging is to be installed. This staging may not impair the distances specified in Pt D, Ch 9, Sec 3, [1.5.6] of the Ship Rules.
- h) Where fixed or portable ventilation ducting is to be fitted in compliance with Pt D, Ch 9, Sec 12, [1.3] of the Ship Rules, such ducting may not impair the distances specified in Pt D, Ch 9, Sec 3, [1.5.6] of the Ship Rules.

Figure 1 : Minimum passage over cargo tanks

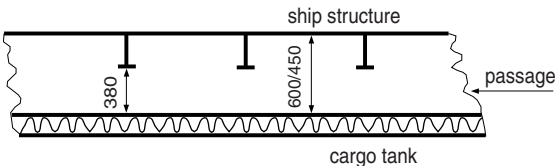


Figure 2 : Minimum distances between structures and cargo tank to allow visual inspection

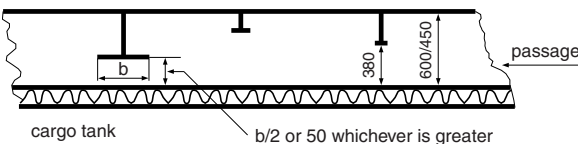


Figure 3 : Minimum passage between curved surfaces

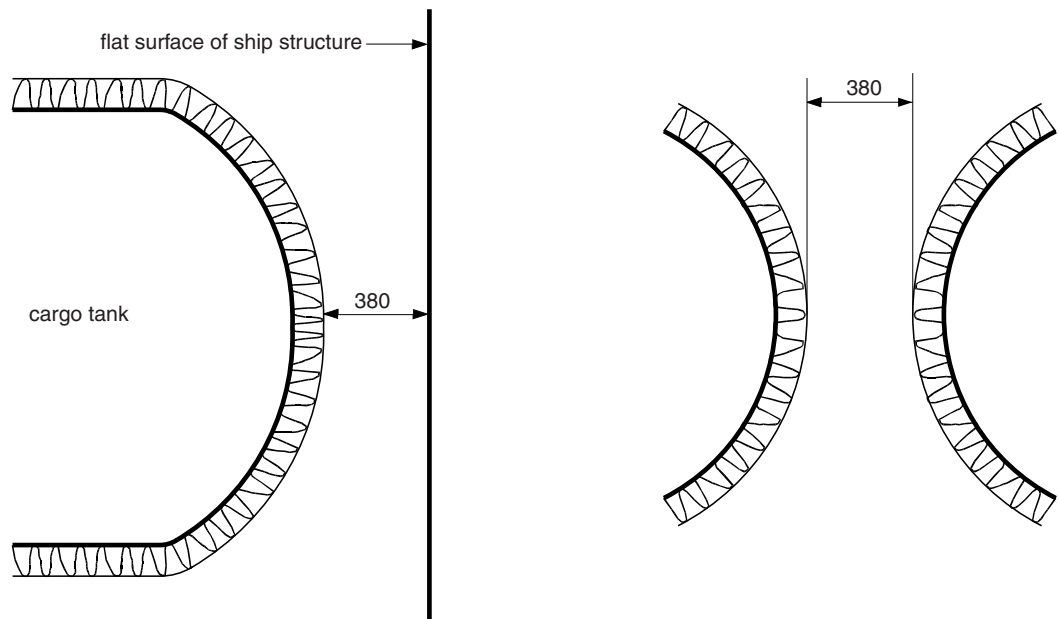


Figure 4 : Minimum passage between flat surfaces

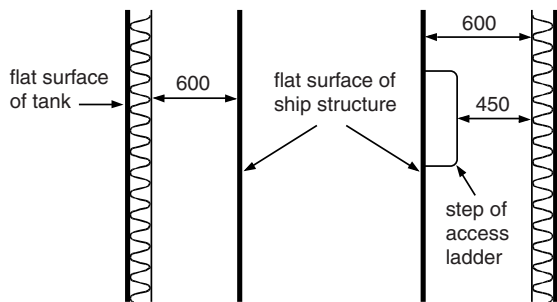


Figure 5 : Minimum distances between cargo tank sump and inner bottom

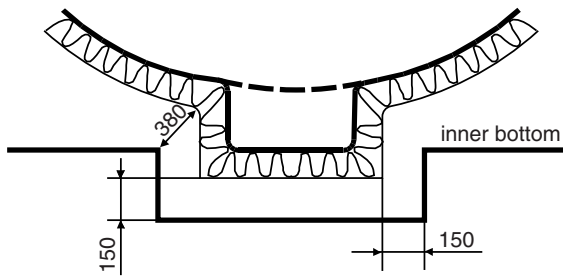
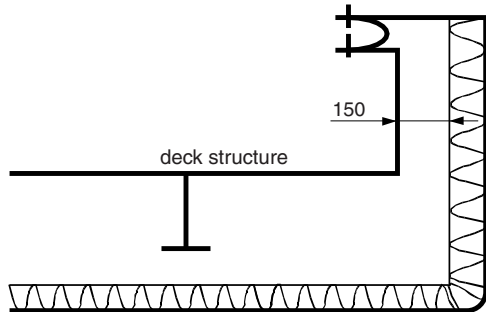


Figure 6 : Minimum distance between cargo dome and deck structures



4.4.3 Cofferdams

Where fitted, cofferdams are to have sufficient size for easy access to all their parts. The width of the cofferdams may not be less than 600 mm.

4.4.4 Pipe tunnels

Pipe tunnels are to have enough space to permit inspection of pipes. The pipes in pipe tunnels are to be installed as high as possible from the unit's bottom.

4.4.5 Access to pipe tunnels

Access to pipe tunnels through manholes in the engine space is not permitted.

4.5 Underwater parts

4.5.1 Requirements for underwater parts are given in Pt D, Ch 1, Sec 3, [3.1.2] of the Offshore Rules.

4.6 Access manual

4.6.1 An access manual is to be incorporated in the operating manual of the unit. The access manual is to describe unit's means of access to carry out overall and close-up inspections and thickness measurements.

4.6.2 The access manual is to be updated as necessary, and an up-dated copy is to be maintained onboard.

4.6.3 The access manual is to include, for each space, the following information:

- plans showing the means of access to the space, with appropriate technical specifications and dimensions
- plans showing the means of access within each space to enable an overall inspection to be carried out, with appropriate technical specifications and dimensions; the plans are to indicate from where each area in the space can be inspected