



Classification and Certification of Ocean Thermal Energy Converter (OTEC) - Tentative Rules -

January 2018

**Guidance Note
NI 637 DT R00 E**

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**BUREAU
VERITAS**

MARINE & OFFSHORE - GENERAL CONDITIONS

1. INDEPENDENCY 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, 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 Services are carried out by the Society according to the applicable Rules and to the Bureau Veritas Code of Ethics. 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 the Services' performance and contract's execution.
- 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 class certificates, attestations and reports following the Society's intervention. The Certificates are an appraisal 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.
- 2.2. "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 class certificate with reference to the Rules.
- 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 register published annually by the Society.
- 2.11. "Rules" means the Society's classification rules, guidance notes and other documents. The Rules, procedures and instructions of the Society 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, training activities, all activities and duties incidental thereto such as documentation on any supporting means, software, instrumentation, measurements, tests and trials on board.
- 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 the 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. 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.

- 3.2. Subject to the Services performance 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 enters the Unit's class in the Society's Register;
- survey the Unit periodically in service to note that 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.

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 after surveys; (iii) present the Unit for surveys; and (iv) inform the Society in due course of any circumstances that may affect the given appraisal of the Unit or cause to modify the scope of the Services.
- 4.2. Certificates referring to the Society's Rules 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.

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, drawings, 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 save, indemnify, defend and hold harmless the Society from the Client's own consequential loss regardless of cause.

- 7.2. In any case, 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 performance of the Services. This limit applies regardless of fault by the Society, including 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 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 agrees to release, 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 except for those claims caused solely and completely by the 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 class 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.

10. FORCE MAJEURE

- 10.1. Neither Party shall be responsible 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 already known by the receiving Party from another source and is properly and lawfully in the possession of the receiving Party prior to the date that it is disclosed;
 - is already in possession of the public or has entered the public domain, otherwise than through a breach of this obligation;
 - is acquired 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 Society and the Client 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. 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 for the performance of the Services including, but not limited to drawings, calculations, and reports shall remain exclusive property of the Society.

13. ASSIGNMENT

- 13.1. The contract resulting from these Conditions cannot be assigned or transferred by any means by a Party to a 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

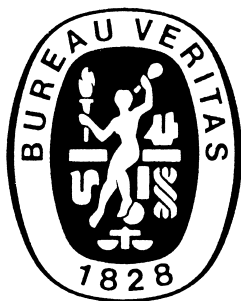
- 14.1. Invalidity of one or more provisions does not affect the remaining provisions.
- 14.2. Definitions herein take precedence over other definitions which may appear in other documents issued by the Society.
- 14.3. In case of doubt as to the interpretation of the Conditions, the English text shall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

15. GOVERNING LAW AND DISPUTE RESOLUTION

- 15.1. The Conditions shall be construed and governed by the laws of England and Wales.
- 15.2. The Society and the Client 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 by arbitration under the LCIA rules, 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 London (UK).

16. PROFESSIONAL ETHICS

- 16.1. Each Party shall conduct all activities in compliance with all laws, statutes, rules, 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. 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 Society's Code of Ethics of Bureau Veritas, <http://www.bureauveritas.com/home/about-us/ethics-and-compliance>



GUIDANCE NOTE NI 637

Classification and Certification of Ocean Thermal Energy Converter (OTEC) - Tentative Rules

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SECTION 1 GENERAL

1 General

1.1 Application

1.1.1 The present tentative rules purpose is to provide guidance for the classification/certification of Ocean Thermal Energy Converter (OTEC) floating unit.

The tentative requirements are intended to cover the floating platform supporting the OTEC plant. The renewable power generation pieces of equipment related to the OTEC plant are not included in the scope of the present note.

1.1.2 Attention is essentially to be paid on the characteristics of the unit, such as:

- manned or unmanned unit

Note 1: In the present note, OTEC unit is considered unmanned when no personnel are on board in normal working condition, even if some personnel are on board for short time period (e.g. maintenance operation).

- presence or not of dangerous gas/liquid (working fluid).

1.1.3 Rules

Particular provisions of the present tentative rules are complementary to provisions of the following rules, which remain applicable, when relevant:

- NR216 Rules on Material and Welding for the Classification of Marine Units
- NI 423 Corrosion Protection of Steel Offshore Units and Installations
- NR426 Construction survey of steel structures of offshore units and installations
- NR445 Rules for the Classification of Offshore Units
- NR493 Classification of Mooring Systems for Permanent Offshore Units
- NR494 Rules for the Classification of Offshore Loading and Offloading Buoys
- NR526 Rules for the classification of lifting appliances onboard ships and offshore units
- NR595 Classification of Offshore Handling Systems
- NI 605 Geotechnical and Foundation Design
- NI 621 Guidelines for Moonpool Assessment.

1.1.4 Other standards

Standards other than those mentioned in the present note may be used on a case by case basis, upon the acceptance of the Society.

1.1.5 The full list of standards which are specified and used for a given project are to be submitted to the Society before the review of documents is started.

1.2 Definition

1.2.1 Certification

Certification is a formal procedure by which an accredited or authorized third party assesses and attests in writing by issuing a certificate, that the characteristics, quality, qualification, or status of individuals or organizations, goods or services, procedures or processes, events or situations, are in accordance with specified requirements, standards or national and international regulations (in particular by delegation from different governments).

1.2.2 Classification

Classification consists of a representation of the level of compliance of a ship, vessel or offshore structure to the rules set up by a classification society. This is established following plan approval and surveys carried out by the society's experts, as provided for in the rules. Unit classification provides a point of reference on unit safety and reliability to builders, repairers, brokers, charterers, Flag Administrations, insurers and the financial community. It is represented by a class, entered on classification certificates and transcribed in the register published periodically by the society.

The Society establishes and applies rules in relation to the design and construction of a unit, and assesses the structural strength of the unit as well as reliability of the machinery on board during its life.

1.2.3 Dangerous goods

Dangerous goods are substances or articles which can pose a threat to people, property and/or the environment, as listed in the IMO International Maritime Dangerous Goods Code (IMDG Code).

1.2.4 Hazardous area

Hazardous areas are all those areas where, due to the possible presence of a flammable atmosphere, the use without proper consideration of machinery or electrical equipment may lead to fire hazard or explosion.

1.2.5 Moonpool

A moonpool is a vertical well extending through the unit from deck to bottom, providing a direct access to the sea and allowing safe and easy deployment of equipment used for sea water pumping or any other subsea operation.

1.2.6 Pressure equipment

Pressure equipment means pressure vessels, piping, safety accessories and pressure accessories.

1.2.7 Pressure vessel

Pressure vessel means pressure retaining item designed and built to contain fluids under pressure including its direct attachments up to the coupling point connecting it to other equipment. A vessel may be composed of more than one chamber.

1.2.8 Subsea power cable system

The subsea power cable system connects the floating unit to the shore or substation for transmission of electrical power and information.

1.2.9 Water intake and discharge pipe system

Water intake and discharge pipe system includes the cold water pipes (CWP), the warm water pipes (WWP) and the seawater discharge pipes (SDP), their supports and all integrated pipes components.

1.2.10 Working fluid

The working fluid means the gas or liquid heat transfer medium which drives the turbine. Closed cycle OTEC systems generally use cryogenic fluid. Open cycle OTEC systems generally use vapor from the flash evaporation of warm sea water producing low pressure steam.

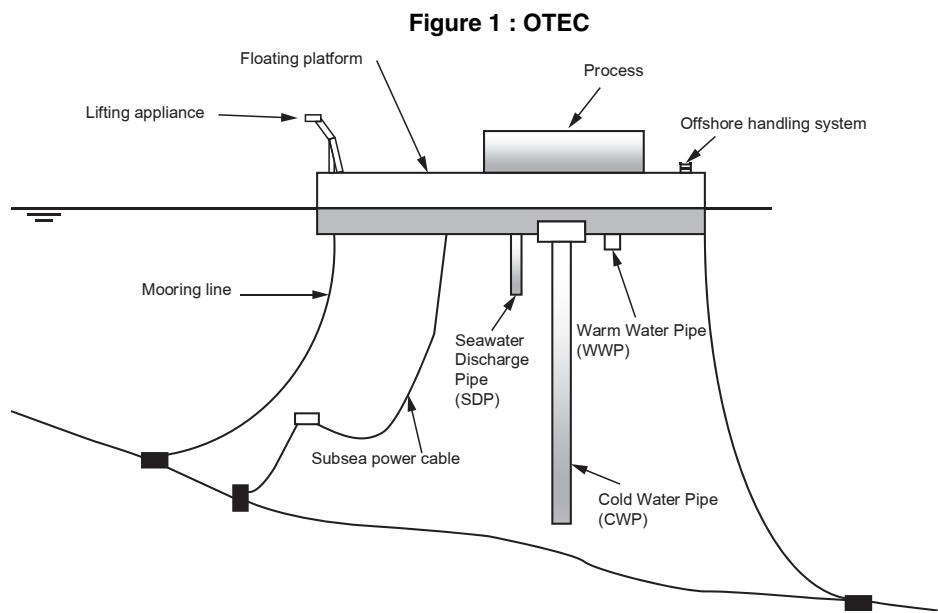
1.2.11 Cryogenic fluid, refrigerated fluid

Cryogenic fluids and refrigerated fluids are gases which are partially liquid because of their low temperature. Cryogenic fluids have boiling points below -238°F (-150°C).

In the context of this document, the refrigerated fluids are referred to as cryogenic fluids (independently of their boiling point temperature).

1.2.12 Technology qualification

A technology qualification is a confirmation by examination that a new technology meets the specified requirements for the intended use. The qualification process is carried out through a set of documented activities to prove that the technology is fit for service.



2 Principles of classification and certification

2.1 Certification

2.1.1 Certification results in issuance of certificates attesting the compliance of the unit and/or its components with Rules or standards. The certification activity consists of review of plans and calculations, surveys, checks and tests intended to demonstrate that standards/ national Regulations are met.

2.1.2 Certification in compliance with special national rules

It is reminded that certification in compliance with specific national regulations can be delivered by the Society only when it is authorized to do so by the competent National Authority.

2.1.3 Detailed boundaries for certification

For each project, the detailed boundaries for certification are defined by the Society on case-by-case basis and with reference to the applicable rules, standards or regulations.

2.2 Classification

2.2.1 Classification is the expression of confidence given by the Classification Society to a unit, for a particular use or service and for a certain period of time, by reference to its Rules, Rule or Guidance Notes and other documents.

2.2.2 Classification work

The classification of a unit includes, in accordance with the Rule notes:

- review of design drawings and documents
- surveys of materials and equipment
- survey during construction of the unit
- attendance to trials alongside and at sea
- issuance of Classification documents
- in service surveys.

2.2.3 The unit, the construction and condition of which satisfy the applicable Rule requirements, is registered with the corresponding classification symbols, marks and notations.

2.2.4 Scope of classification

The scope of classification of OTEC unit is based on appraisal of the integrated unit covering (see Tab 1), in general:

a) hull, accommodation, helideck and hull attachments and appurtenances including:

- water pipe support structure

Note 1: In principle, for water intake and discharge pipes, the limit of classification is the connector of the pipes with the manifold.

- subsea power cable support structure
- structure to which the moorings are attached, and supports for mooring equipment
- foundations for the support of topsides modules and the hull mounted equipment.
- support structure for life saving appliances
- passive fire protection and cathodic protection.

b) moonpool arrangement, if applicable

c) intact and damage stability

d) accommodation quarter, if applicable

e) mooring system:

- for the additional service feature **POSA**:
mooring line components (anchors, chains, wire and accessories) and hull mounted equipment (fairleads, stoppers...)
- for the additional class notation **OHS**:
mooring line handling equipment (winch, sheaves,...).

- f) lifting appliance, when additional class notation **ALM** is requested.

Classification covers the crane pedestal and its foundation welded to the hull or to a classed topside structure, considering the loads specified by the designer.

Note 2: In case the pedestal is connected to the topside structure not covered by class and extended over the hull, only the part of pedestal connected to the hull is classed for the specific loads.

- g) equipment and systems necessary for the safe operation of the hull and to the safety of personnel on board
- h) equipment and systems installed in the hull, the failure of which may jeopardise the safety of the floating unit
- i) fire and gas detection system for the hull as well as the definition of hazardous area of the hull, when relevant
- j) fire water and foam system for the protection of the hull
- k) propulsion plant, if applicable
- l) renewable power generation equipment and installations may be covered upon specific request of the Owner, or should be certified according to recognized standard.

2.2.5 Detailed boundaries for classification

For each project, the detailed boundaries for the classification of units are defined by the Society on case-by-case basis and with reference to the requested structural type and service notations, additional class notations and additional service feature.

2.2.6 Classification of renewable power generation equipment requested

When classification of the renewable power generation equipment is requested, the equipment in relation to renewable power generation is included in the scope of the classification. Structural elements supporting or housing this equipment, and related facilities (topside structures), are to be designed and built in accordance with the relevant requirements.

Subject to initial 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 supports points and other relevant loadings.

2.2.7 Classification of renewable power generation equipment not requested

When the classification of the renewable power generation equipment is not requested, the equipment only necessary to the operation of the renewable power generation systems and the related topsides structures are not included in the scope of the classification.

However, the Society will include in the scope of the classification items relating to renewable power generation equipment and installations affecting the general safety of the unit, such as:

- structural safety and loads generated by renewable power generation equipment on the hull or other classed parts of the unit
- definition of hazardous areas, when applicable
- venting system, when applicable
- interface to the fire fighting and fire prevention systems
- arrangement of emergency escapes.

Supports and foundations of renewable power generation equipment which are welded to the hull or other classed part of the unit will be included in the scope of the classification. Classification limits will be defined on a case-by-case basis, after examination of submitted drawings and documentation.

Table 1 : OTEC Classification and certification

Equipment/system	Comments
Hull	Classification
Mooring	Classification (POSA additional notation according to NR493)
Marine systems	Classification
Offshore handling systems	Classification (OHS additional notation according to NR595) or certification
Lifting appliances	Classification or certification (see NR 526)
Renewable power generation equipment	Certification or classification
Subsea power cable	Certification
Cold water pipes	Certification
Warm water pipes	Qualification of new technologies, (see NI 525 (1))
(1) NI 525 Risk Based Qualification of New Technology - Methodological Guidelines	

2.3 Classifications notations

2.3.1 When classification is requested, the classification notations give the scope according to which the class of the unit has been based and refer to the specific rule requirements which are to be complied with for their assignment.

2.3.2 Structural type notations

At least one structural type notation is to be assigned to every classed unit as given in NR445, Pt A, Ch 1, Sec 2. For example, the following structural type notation may be granted:

- **offshore service barge**
- **offshore buoy**
- **column stabilized unit.**

2.3.3 Service notations

The service notation defines the type/service of the unit which have been considered for its classification. At least one service notation is to be assigned to every classed unit as given in NR445, Pt A, Ch 1, Sec 2. The following service notation may be granted to OTEC unit:

- **special service (OTEC).**

2.3.4 Additional service features

A service notation may be completed by one or more additional service features, giving further precision regarding the type of service of the unit, for which specific rule requirements are applied, as given in NR445, Pt A, Ch 1, Sec 2. For example, the following additional service features may be granted to an OTEC unit:

- **POSA:** station keeping systems, mandatory for permanent unit.

2.3.5 Additional class notations

An additional class notation expresses the classification of additional equipment or specific arrangement which has been requested, see NR445, Pt A, Ch 1, Sec 2. For example, the following additional class notations may be granted to an OTEC unit:

- **ALM:** lifting appliances
- **HEL:** helideck
- **INWATERSURVEY:** for units provided with suitable arrangements to facilitate the in-water surveys, mandatory for permanent installation
- **OHS:** offshore handling systems
- **LSA:** life saving appliances
- **Spectral Fatigue:** fatigue check of structural details performed through spectral fatigue techniques
- **COMF HEALTH-NOISE/VIB:** comfort and health on board related to level of noise/vibration.

2.3.6 Site notation

A site notation consists in the name of geographical area and/or the most unfavourable sea condition where the unit is intended to operate.

Data, limitations and assumptions used for the assessment of the unit on site are to be stated in the Design Criteria Statement, (see NR445, PtA, Ch1, Sec1, [1.6]) which is referred to on a memorandum.

2.3.7 Transit notation

Units involved in towing or sailing by means of own propulsion system between construction shipyard and the intended site, or between different operation sites, are to be granted with the notation **transit**.

Note 1: Dry towing is not covered by the notation **transit**.

SECTION 2

DESIGN, STRUCTURE AND STATION KEEPING

1 Application

1.1 General

1.1.1 The list of references to the applicable requirements of the NR445, when relevant, is given in Tab 1.

2 Design conditions and loads

2.1 Design conditions

2.1.1 Operating conditions

- a) Production conditions:
Production conditions are conditions wherein unit is on location and performs electricity production within design limits.
Production conditions are associated to normal external conditions.
- b) Parked conditions:
Parked conditions are conditions wherein unit is on location but no electricity production is performed.
- c) Transit, Installation and Maintenance conditions:
Transit, Installation and Maintenance conditions are conditions assumed for the transportation, assembly, maintenance and repair on site of the unit.

2.1.2 Environmental conditions

Environmental conditions are subdivided into normal and extreme categories. Normal conditions are expected to occur frequently during the unit life. Extreme conditions have a low probability of being exceeded during the unit life.

For the purpose of this document, the minimum return period, R_p , are to be considered:

- $R_p = 1$ year for normal conditions
- $R_p = 100$ years for extreme conditions.

Note 1: For units without dangerous goods, return periods may be reduced according to the Society.

3 Structure

3.1 General

- 3.1.1 Structure of the OTEC unit should consider provisions of NR445, Part B according to its structural type (surface unit, buoy...).
- 3.1.2 Materials
The selected materials are to have mechanical properties satisfying the structural design of the unit and are to be of a type suitable for use in a marine environment.

Table 1 : Applicable rules

Scope		Rules	Comments
Structure	General	NR445, Part B NR445, Part D	According to the structural type
	Moonpool	NI 621	Guidance to be considered for any vessel fitted with a moonpool
Station keeping		NR493	Permanent unit equipped with position anchoring equipment is to comply with the applicable requirements of NR493. (Additional service feature POSA is to be assigned to classed permanent unit)
Foundation		NI 605	Anchor and its foundation is to be designed in accordance with NI 605