OFFSHORE SERVICE SPECIFICATION

DNV-OSS-101

Rules for Classification of Offshore Drilling and Support Units

APRIL 2012

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FOREWORD

DET NORSKE VERITAS (DNV) is an autonomous and independent foundation with the objectives of safeguarding life, property and the environment, at sea and onshore. DNV undertakes classification, certification, and other verification and consultancy services relating to quality of ships, offshore units and installations, and onshore industries worldwide, and carries out research in relation to these functions.

DNV service documents consist of among others the following types of documents:

— *Service Specifications.* Procedural requirements.
— *Standards.* Technical requirements.
— *Recommended Practices.* Guidance.

The Standards and Recommended Practices are offered within the following areas:

A) Qualification, Quality and Safety Methodology
B) Materials Technology
C) Structures
D) Systems
E) Special Facilities
F) Pipelines and Risers
G) Asset Operation
H) Marine Operations
J) Cleaner Energy
O) Subsea Systems

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CHANGES

General

This document supersedes DNV-OSS-101, October 2011.

Text affected by the main changes in this edition is highlighted in red colour. However, if the changes involve a whole chapter, section or sub-section, normally only the title will be in red colour.

The present edition of the rules includes amendments and additions decided by the Executive Committee in March 2012.

Main Changes coming into force 1 October 2012

— Included references for the new/ updated notations:
  — **HELDK**, qualifiers i.e. **SHF** and **N**.
  — **ISDS** qualifiers.
  — **OFFLOADING**.

— Included documentation as expected for asbestos in line with MODU code / SOLAS updates.
— Clarified scope for **DRILL** survey.
— Handling of **POSMOOR/DP** notations in Operation.

- **Ch.1**

— Sec.3 B600 changes in Table B3.
— Sec.4 new item in A204.
— New B700 Temporary equipment.
— Sec.7 A100 new limited liability.

- **Ch.2**

— Sec.1 corrected reference in G502.
— Sec.1 new L. Preparation for Surveys and Inspections on Location.
— Sec.1 M100 changes in Table M1.
— Sec.2 deleted G. Preparation for Surveys and Inspections on Location.
— Sec.4 new B201.
— Sec.6 changes in E101, E102 and E201.
— Sec.6 S101 changes in Table S1.
— Sec.6 U101 changes in Table U1.

- **Ch.3**

— Sec.1 B407 changes in Table B2.
— Sec.4 new text in B101.
— Sec.4 deleted text in B202.
— Sec.4 B400 deleted B403.
— Sec.4 B500 deleted B508.
— Sec.4 C202 changes in text.
— Sec.4 deleted item in D102.
— Sec.4 text changed in E104.
— Sec.4 minor correction in G201, G205.
— Sec.4 minor correction in K203.
— Sec.6 new text B102.
— Sec.6 new text C105.
— Sec.6 D104 deleted.
— Sec.6 D303 changes in text.
— Sec.6 E101 text deleted.
— Sec.7 text changes in G600.

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OFFSHORE SERVICE SPECIFICATION
DNV-OSS-101

RULES FOR CLASSIFICATION OF OFFSHORE DRILLING AND SUPPORT UNITS

CHAPTER 1

PRINCIPLES AND PROCEDURES FOR CLASSIFICATION

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DET NORSKE VERITAS AS

SECTION 1
INTRODUCTION

A. Introduction

A 100 General

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

A 200 Organisation of DNV-OSS-101

201 DNV-OSS-101 is divided into three main chapters as follows:

— *Chapter 1:* providing general information about classification principles and procedures
— *Chapter 2:* providing design and construction requirements for the newbuilding phase
— *Chapter 3:* providing requirements for maintenance of class in the operational phase.

A 300 Objects covered

301 DNV-OSS-101 covers classification of mobile offshore units (*units*) of the following design types:

— ship-shaped units
— column-stabilised units
— self-elevating units

for the following services:

— drilling
— well intervention
— accommodation
— heavy-lifting
— general offshore support.

B. Definitions

B 100 Verbal forms

101 *Shall:* Indicates a mandatory requirement to be followed for fulfilment or compliance with the present service specification. Deviations are not permitted unless formally and rigorously justified, and accepted by all relevant contracting parties.

102 *Should:* Indicates that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required. Other possibilities may be applied subject to agreement.

103 *May:* Verbal form used to indicate a course of action permissible within the limits of the service specification.

104 *Will:* Indicates a mandatory action or activity to be undertaken by DNV. (Ref. "shall" for other parties).

B 200 Definitions

201 *Approval* or *approved:* Denotes acceptance by DNV of documentation showing design solutions, arrangements and equipment that complies with the Rules.

202 *Assessment:* An Act of assessing, appraising or evaluating a condition of a product, process or system.

203 *Assigning class:* Originally signified designation of one of several classes to a vessel based on its condition, ranging from good to bad. Today only the highest class is assigned, comprising the main class, **1A1**, and an obligatory additional class notation, e.g. **Drilling Unit**, where applicable.

Voluntary additional class notations may also be assigned covering special service, equipment or systems, e.g. **DRILL** denoting a classed drilling plant.

204 *BOP:* Blow out preventer.

205 *Builder:* Signifies the party contracted to build a vessel in compliance with the Society's rules.

206 *Certificate:* A document confirming compliance with the Society's rules or with other rules and regulations for which the Society has been authorized to act.

207 *Certification:* A service confirming compliance with applicable requirements on the date that the survey was completed.

208 *Certification of materials and components (CMC)*: The activity of ensuring that materials, components and systems used in vessels to be classed by the Society comply with the rule requirements. The scope of classification re-quires that specified materials, components and systems intended for the vessel are certified. Depending on the categorisation, certification may include both plan approval and survey during production and/or of the final product.

209 *Class:* Class is assigned to and will be retained by vessels complying with applicable requirements of the Society's rules.

210 *Classification:* A service which comprises the development of independent technical standards for vessels - class rules and standards, and to verify compliance with the rules and standards throughout the vessels' life.

211 *Close-up examination:* An examination where the details of structural components are within the close visual inspection range of the surveyor, i.e. preferably within reach of hand.

212 *Coating conditions:*

— "GOOD": Condition with only minor spot rusting.
— "FAIR": Condition with local breakdown at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition.
— "POOR": Condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration.

213 *Commissioning:* A process of assuring that components, equipment and the systems are functioning in accordance with the functional requirements.

214 *Concurrent surveys:*

Surveys required to be concurrently completed shall have the same date of completion.

A survey required to be carried out in conjunction with or carried out as part of another survey shall be completed on or before the completion of the other survey, however, within the time window for that survey.

215 *Condition of Class (CC):* Constitutes a requirement that specific measures, repairs or surveys shall be carried out within a specific time limit in order to retain class.

216 *Condition on behalf of the flag administration (CA):*

Constitutes specific measures, repairs or surveys that shall be carried out within a specific time limit in order to retain the statutory certificate.

A CA will be issued only when the Society has been authorised to carry out statutory surveys on behalf of the flag ad-ministration.

217 *Contract:* The specific agreement between DNV and the customer. It defines the extent of services requested by the customer, and is concerned with:

— the classification of vessels or installations, both new buildings and in operation
— statutory work carried out on behalf of national maritime authorities
— equipment and materials.

218 *Critical structural areas:* Areas that have been identified from calculations to require monitoring or from the service history of the subject vessel or from similar or sister vessels to be sensitive to cracking, buckling or corrosion which would impair the structural integrity of the vessel.

219 *Customer:* Signifies the party who has requested the Society's service.

220 *Designer:* Signifies a party who creates documentation submitted to the Society for approval or information.

221 *Det Norske Veritas (DNV):* An autonomous and independent foundation with the purpose of safeguarding life, property and the environment.

The foundation operates through the limited company Det Norske Veritas AS, which is registered in Norway and operates through a worldwide network of offices.

222 *ESD:* Emergency Shut Down.

223 The *EC* Signifies the Executive Committee of the Society.

224 *"Exceptional circumstances"* means unavailability of dry-docking facilities; unavailability of repair facilities; unavailability of essential materials, equipment or spare parts; or delays incurred by action taken to avoid severe weather conditions.

225 *Flag administration:* The maritime administration of a vessel's country of registry.

226 *FMECA:* Failure Mode Effect and Consequence Analysis.

227 *FUI:* Fatigue Utilisation Factor.

228 *Guidance note:* Contain advice which is not mandatory for the assignment or retention of class, but with which the Society, in light of general experience, advises compliance.

229 *IACS:* The International Association of Classification Societies. Unified rules, interpretations, guidelines and recommendations may be found on www.iacs.org.uk.

230 *IACS member society:* A classification society being a member of IACS.

231 *IMO:* The International Maritime Organization.

232 *Independent tank:* Self-supporting tank which does not form part of the vessel's hull and does not contribute to the hull strength.

Independent gravity tank is a tank with design vapour pressure not exceeding 0.7 bar.

Pressure vessel is a tank with design gas or vapour pressure exceeding 0.7 bar.

233 *ISO:* Signifies the International Organisation for Standardization.

234 *HP:* High Pressure.

235 *Lay-up:* A terminology used for vessels that are out of commission. In this state the offshore vessel may be at anchorage or permanently moored in a safe harbour.

236 *LRFD methodology:* Load and resistance factor design methodology.

237 *Manufacturer:* Signifies the entity that manufactures the material or product, or carries out part production that determines the quality of the material or product, or does the final assembly of the product.

238 *Mechanical Completion (MC):* Verification that the components, equipment and the systems are constructed, installed and tested in accordance with applicable drawings and specifications and are ready for testing and commissioning in a safe manner.

239 *Memorandum to Owner (MO):* Constitutes information related to the ship, its machinery and equipment or to rule requirements.

A MO will be issued in relation to information that does not require any corrective action or survey.

240 *Mobile offshore unit:* A buoyant construction engaged in offshore operations including drilling, production, storage or support functions, not intended for service at one particular offshore location, and which can be relocated without major dismantling or modification.

241 *OEM:* Original Equipment Manufacturer.

242 *Offshore installation:* A collective term to cover any construction, buoyant or non-buoyant, designed and built for installation at a particular offshore location.

243 *Overall examination:* An examination intended to report on the overall condition of the structure.

244 *Owner:* Signifies the registered owner or manager of the vessel or any other organization or person who has assumed the responsibility for operation of the vessel and who on assuming such responsibility has agreed to take over all the duties and responsibilities.

245 *Plan approval:* Signifies a systematic and independent examination of drawings, design documents or records in order to verify compliance with the rules or statutory requirements.

Plan approval will be carried out at the discretion of the Society, which also decides the extent and method of examination.

246 *Plan approval staff:* Personnel authorized to carry out plan approval and to conclude whether or not compliance has been met.

247 *Prompt and thorough repair:* A permanent repair completed at the time of survey to the satisfaction of the surveyor, therein removing the need for the imposition of any associated condition of class.

248 *Quality audit:* A systematic and independent examination to determine whether established work processes and quality systems are adhered to.

249 *Quality system:* Signifies both the quality management system and established production and control procedures.

250 *Quality Survey Plan (QSP):* A plan that systematically identifies activities related to the classification project (e.g., Construction, installation, testing, mechanical completion, pre-commissioning, testing and commissioning) and the extent of involvement each party (i.e., Yard's QC, Yards' QA, DNV and Owners[if desired]) will undertake. Such a plan needs to be submitted to the Society for approval prior to commencement of classification projects.

251 *RBI:* Risk Based Inspection.

252 *RCM:* Reliability Centred Maintenance.

253 *Recognised classification society:* A classification society which is a full or associate member of IACS.

254 *Reliability:* The ability of a component or a system to perform its required function under given conditions for a given time interval.

255 *Representative tanks:* Those tanks which are expected to reflect the condition of other tanks of similar type and service and with similar corrosion protection systems. When selecting representative tanks account shall be taken of the service and repair history on board and identifiable critical and/or suspect areas.

256 *Retroactive Requirement (RR):* Constitutes a class or statutory requirement that will enter into force for certain vessel's in operation and under construction at a given date or an upcoming survey. The RR will specify the required actions to be taken in order to retain class or statutory certification.

RR related to statutory certification will be issued only if the Society has been authorised to carry out statutory certification on behalf of the flag administration.

257 *Review:* Signifies a systematic examination of drawings, design documents or records in order to evaluate their ability to meet requirements, to identify any problems and to pro-pose necessary actions.

258 The *Rules:* All rule requirements accepted by the EC as basis for classification.

259 *Sighting survey:* A survey to confirm that the relevant construction or the equipment is in a satisfactory condition and, as far as can be judged, will remain so until the postponed survey has been carried out.

260 *Significant repair:* A repair where machinery is completely dismantled and re-assembled. Significant repairs will, furthermore, be cases of repairs after serious damage to machinery.

261 The *Society:* Signifies Det Norske Veritas AS.

262 *Safety systems:* Systems, which are provided to prevent, detect, control or mitigate the effects of an accidental event. Failure of a safety system could lead to the development or escalation of an accidental event.

263 *Spaces:* Separate compartments including holds and tanks.

264 *Statement of compliance:* A document confirming compliance with specified requirements. Such documents may be issued by the Society in cases where it has not been authorised to certify compliance.

265 *Statutory certificates:* IMO convention certificates issued on behalf of, or by, national authorities.

266 *Statutory survey:* Survey carried out by or on behalf of a flag administration.

267 *Substantial corrosion:* Extent of corrosion such that assessment of corrosion pattern indicates wastage in excess of 75% of allowable margins, but within acceptable limits.

268 *Survey:* Signifies a systematic and independent examination of a vessel, materials, components or systems in order to verify compliance with the rules and/or statutory requirements.

Surveys will be carried out on the vessel, at the construction or repair site as well as at sub-suppliers and other locations at the discretion of the Society, which also decides the extent and method of control.

269 *Survey staff:* Personnel authorized to carry out surveys and to conclude whether or not compliance has been met.

270 *Suspect areas:* Areas showing substantial corrosion and/or are considered by the surveyor to be prone to rapid wastage.

271 *SWL:* Safe Working Load.

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

273 *Temporary equipment:* equipment intended for use on installations and which is covered by class, requires hook-up to systems covered by class and/or is a significant deck load and/or may pose a risk for fire, explosion and escape routes.

274 *Tentative rules and standards:* Apply to new fields to which DNV reserves the right to make adjustments during a period in order to obtain the purpose intended.

275 *Transit conditions:* All wet vessel movements from one geographical location to another.

276 *Transverse section:* Section which includes all longitudinal members such as plating, longitudinals and girders at the deck, side, bottom, inner bottom and hopper side plating, longitudinal bulkhead and bottom plating in top wing tanks, as applicable.

For transversely framed vessels, a transverse section includes adjacent frames and their end connections in way of transverse sections.

Guidance note:

Adjacent frames include the frames located just forward and aft of the transverse section.

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277 *UT:* Ultrasonic Testing.

278 *Verification:* A service that signifies a confirmation through the provision of objective evidence (analysis, observation, measurement, test, records or other evidence) that specified requirements have been met.

279 *Vertical contract audit:* An IACS audit which assesses the correct application of the quality system through audit of the process for a specific contract. The IACS QSCS (Quality System Certification Scheme) audit team is responsible for carrying out these audits.

280 *Vessel:* In the context of these rules mean a mobile offshore unit (MOU).

281 *Witnessing:* Signifies attending tests or measurements where the surveyor verify compliance with agreed test or measurement procedures.

282 *WP:* Working Pressure.

283 *WSD methodology:* Working stress design methodology.

C. Normative References

C 100 Normative references

101 DNV-OSS-101 includes references to other DNV documents and recognised codes and standards which shall be used in conjunction with the requirements given in this document for assignment of class.

C 200 DNV reference documents

201 Applicable DNV reference documents are listed in Table C1. See Sec.2 A200 for applicable editions.

Table C1 DNV reference documents

Reference	*Title*
DNV-OS-A101	Safety Principles and Arrangement
DNV-OS-B101	Metallic Materials
DNV-OS-C101	Design of Offshore Steel Structures, General
DNV-OS-C103	Structural Design of Column Stabilised Units (LRFD method)
DNV-OS-C104	Structural Design of Self Elevating Units (LRFD method)
DNV-OS-C107	Structural Design of Ship-shaped Drilling and Well Service Units
DNV-OS-C201	Structural Design of Offshore Units (WSD method)
DNV-OS-C301	Stability and Watertight Integrity
DNV-OS-C401	Fabrication and Testing of Offshore Structures
DNV-OS-D101	Marine and Machinery Systems and Equipment
DNV-OS-D201	Electrical Installations
DNV-OS-D202	Automation, Safety, and Telecommunication Systems
DNV-OS-D301	Fire Protection
DNV-OS-E101	Drilling Plant
DNV-OS-E201	Hydrocarbon Production Plant
DNV-OS-E301	Position Mooring
DNV-OS-E401	Helicopter Decks
DNV-OS-J301	Standard for Classification of Wind Turbine Installation Units
DNV-OSS-305	Rules for Certification and Verification of Diving Systems
DNV-RP-A201	Plan Approval Documentation Types – Definitions
Standards for Certification No. 2.22	Lifting Appliances
SHIP	Rules for Classification of Ships

C 300 Other references

301 Other normative references are given in Table C2. See Sec.2 A200 for applicable editions.

Table C2 Non-DNV normative references

Reference	*Title*
IACS	Shipbuilding and Repair Quality Standard, ref. www.iacs.org.uk

D. Informative References

D 100 DNV informative references

101 The publications listed in Table D1 are referenced in the text of this document, and may be used as a source of supplementary services and information.

102 See Sec.2 A200 for applicable editions.

Table D1 DNV informative references	
Reference	*Title*
DNV-OSS-102	Rules for Classification of Floating Production, Storage and Loading Units
DNV-OSS-201	Verification for Compliance with Norwegian Shelf Regulations
DNV-OSS-202	Verification for Compliance with UK Shelf Regulations
Standard for Certification No. 1.2	Type Approval
Classification Note 72.1	Allowable Thickness Diminution for Hull Structures

D 200 Other references

201 Other references are given in Table D2. See Sec.2 A200 for applicable editions.

Table D2 Other references	
Reference	*Title*
API RP 2I	In-service inspection of mooring hardware for floating drilling units
API RP 8B	Inspection, maintenance, repair, and re-manufacture of hoisting equipment
BS 5430-1	Periodic inspection, testing and maintenance of transportable gas containers (excluding dissolved acetylene containers). Specification for seamless steel containers of water capacity 0.5 litres and above
ISO 3166	Codes for the representation of names of countries and their subdivisions
ISO 4309	Cranes - Wire ropes - Care, maintenance, installation, examination and discard
ISO 9001	Quality management systems - Requirements
ISO 17359	Condition monitoring and diagnostics of machines - General guidelines
PD 5500 (Previous BS 5500)	Specification for unfired fusion welded pressure vessels

E. Abbreviations

E 100 General

101 The abbreviations given in Table E1 are used in this standard.

Table E1 Abbreviations	
Abbreviation	*In full*
API	American Petroleum Institute
BS	British Standard (issued by British Standard Institution)
DFF	Design Fatigue Factors
DNV	Det Norske Veritas
DP	Dynamic Positioning
EDP	Emergency Disconnect Package
IC	Inspection Category
IIP	In service Inspection Program
ISO	International Organisation for Standardisation
LRFD	Load and Resistance Factor Design
LRP	Lower Riser Package
MPI	Magnetic Particle Inspection
NDT	Non-Destructive Testing
OS	Offshore Standard
OSS	Offshore Service Specification
RCM	Reliability Cantered Maintenance
RP	Recommended Practice
SCF	Stress Concentration Factor
SHIP	Rules for Classification of Ships
WSD	Working Stress Design

SECTION 2
CLASSIFICATION PRINCIPLES

A. The Classification Concept

A 100 Introduction

101 Classification provides assurance that a set of requirements laid down in rules established by DNV are met during design and construction, and maintained during operation of a vessel.

Classification has gained worldwide recognition as representing an adequate level of safety and quality.

102 Classification implies an activity, in which a vessel is surveyed during construction on the basis of design approval, tested before being taken into service, and surveyed regularly during its whole operational life. The aim is to verify that the required safety standard is built in, observed and maintained.

103 Having assigned class, DNV will issue a classification certificate and enter the main particulars and details of class in the "Register of vessels classed with DNV".

A 200 Applicable Rules

201 Rules and amendments accepted by the EC will come into force when decided by the EC. Unless stated otherwise, the coming into force date shall be six (6) months after the date of publication.

Unless stated otherwise, the coming into force date for documents referenced by this OSS as technical basis for classification shall be six (6) months after the date of publication.

202 The applicable rules for assignment of class to a new vessel are those in force at the date (as given to the Society by the customer) when the contract between the owner and the builder is signed.

Subsequent amendments not made mandatory according to 204 may be applied to objects under construction provided both builder and owner agree to such application.

203 In exceptional cases, where unacceptable service experience and/or theoretical findings clearly show that safety hazards may arise in connection with items covered by the existing rules, DNV may lay down supplementary requirements to maintain the overall safety standard reflected by the rules.

204 DNV will consider alternatives found to represent an overall safety standard equivalent to that of the rules.

The alternative solution shall be adequately documented and will be reviewed for acceptance on the basis of relevant references set forth by DNV.

Approval may be revoked if subsequent information indicates that the chosen alternative is not satisfactory.

In cases where detailed requirements are not given in the rules, specific solutions or decisions approved by DNV and its surveyors shall be based on the principles of the rules, and shall give a safety standard equivalent to that of the rules.

205 The approval as required in 204 shall be based on an agreed scheme of analysis that is separately worked out and approved.

Guidance note:

For new technology, Recommended Practice DNV-RP-A203 can be a suitable basis for such scheme.

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206 The Society may propose an approach to resolve the issue if detailed requirements are not given in the rules.

207 Exceptionally, if for some reason, it is impossible to comply with a rule requirement or to find a fully equivalent solution, then other solutions may be accepted by DNV provided the parties to the classification contract all agree, and always provided that overall safety level is not jeopardised. The alternative solution shall be adequately documented and will be reviewed for acceptance on the basis of relevant references set forth by DNV. The solution shall be recorded in the "Appendix to the Classification Certificate".

208 In accordance with 204, DNV may consider the use of reliability methods as a means of documenting compliance to class requirements.

209 The Society reserves the exclusive right to interpret, decide equivalence or make exemptions to the rules.

210 The rules are an integral part of the Society's classification service. The safety objectives inherent in the rules are achieved in conjunction with this service.

Using the rules without the corresponding classification services may have the result that safety objectives are not met.

211 Periodical survey regulations for retaining class shall be according to the rules in force at the time of survey (given in Ch.3).

A 300 Basis for assignment of class

301 Having assigned a specific class implies that DNV:

— has been satisfied that the object meets the rule requirements for the particular class
— will verify, through a system of surveys, that the requirements stipulated for retention of class are complied with.

302 Prior to assigning class to an existing offshore object, it is in general to undergo all periodical surveys pertaining to the age and type of object.

303 When assigning class to a vessel which has not been built under supervision of DNV, but by another recognised classification society, DNV may on the basis of an overall safety consideration in connection with a design review and survey, give exemptions from rule requirements.

304 When assigning class to vessels of a series under construction to the classification of, or a design previously accepted by, a recognised classification society, DNV may on the basis of an overall safety consideration in connection with a design review give exemptions from DNV rule requirements, and base the survey on the design approval done by the other recognised society. A note to this effect may be included in the Appendix to the classification certificate.

305 When assigning class to a vessel registered in a flag state that undertakes approval and surveys of items covered by the rules, DNV may accept their decisions as basis of assigning class.

306 DNV may also accept decisions by the national authority with jurisdiction over the waters in which the vessel or installation is to operate (shelf state) as basis for assigning class.

A 400 Basis for maintenance of class

401 The requirements for retention of class are found in Sec.4 B. In addition, classification is based on the following:

Valid statutory certificates

For flagged vessels and installations the statutory certificates of the applicable international conventions shall be valid at all times, and the surveys prescribed in the conventions shall be carried out within the time windows prescribed.

Maintenance of the vessel or installation and its equipment

It is assumed that the vessel, machinery installations and equipment are maintained at a standard complying with the requirements of the rules.

Installed systems or equipment carried on board in excess of the rule requirements, but otherwise covered by the rules, shall either be maintained in accordance with the rules, or be removed or disconnected in such a way as to ensure that the installed system or equipment cannot be used.

Handling of the vessel or installation

It is assumed that the vessel, machinery installations and equipment are adequately manned and competently handled. Class conditions regarding the use of the vessel shall be observed.

Recording of lightweight and centre of gravity

The data for lightweight and centre of gravity (C.o.G.) shall be continuously recorded and adjusted by the master for any items taken onboard or ashore during operation.

A 500 Documentation

501 All information that may influence the judgement, decisions and requirements of DNV for the purpose of classification, shall be made available to DNV. It is the customer's responsibility to document or demonstrate compliance with the Society's rules. Information may be made available by submitting documents to the Society or by permitting surveys performed by the Society at the customer's premises, onboard the vessel or at the premises of the customer's sub-contractors.

502 The documentation forming the basis for classification is, at all times, to reflect the true conditions. Revisions of documents are therefore to be submitted to DNV to the extent such revisions may influence decisions and requirements relating to class.

503 The submitted documentation shall use SI-units (International System of Units) unless otherwise agreed.

A 600 Disclosure of information

601 DNV will not disclose any information received or reports made in connection with classification to any other than those entitled thereto or those having been given the right to receive information by legislation, court decision or by written permission by the owner.

Guidance note:
Table A1 indicates which parties will be entitled to various kinds of information.

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602 DNV will not disclose information that can be considered as the property of another party except when this party's permission is given in writing.

603 Internal communication, notes, calculations etc. produced within DNV in connection with classification will not be disclosed to other parties.

604 Notwithstanding 601 to 603, the following parties will have access to such information:

— authorised representatives of the flag administration
— authorised audit teams performing audits in connection with certification of the Society.

605 Notwithstanding 601 and 603, the Society may disclose information requested by a court order, governmental body (including regional bodies) or other public investigation bodies that are authorised by a decree.

606 Information recorded in the Society's "Register of Vessels", will be published and/or released to any interested party.

607 The Society may at its discretion release to other classification societies information concerning relevant technical information on serious hull structural, ship machinery and system failures for the purpose of improving ship safety and protection of the marine environment. The owners will be informed accordingly.

Table A1 Disclosure of information

Information in question	*Owner*	*Flag administration*	*Port state authority/ Coastal state authority*	*Insurance company*)*	*Builder or supplier*
Newbuildings:					
Approved structure related drawings	Yes 1)	Upon request	No	No	Yes 1)
Approved system and component drawings	Yes 1)	Yes 1)	No	No	Yes 1)
Vessels in operation:					
Class and statutory certificates issued by the Society	Yes	Yes	Upon request 3)	Yes 2)	N/A
Condition on behalf of the flag Administration (CA)	Yes	Yes	Yes	Yes 2)	N/A
Text of Conditions of Class (CC)	Yes	Yes	Yes	Yes4)	N/A
Text of Condition on behalf of the flag Administration (CA)	Yes	Yes	Yes	Yes4)	N/A
Survey reports	Yes	Yes	Yes 1)	Yes 2)	N/A
Memorandum to Owner (MO)	Yes	Yes	Yes 1)	Yes 2)	N/A
Retroactive Requirement (RR)	Yes	Yes	Yes 1)	Yes 2)	N/A
Other information:					
Correspondence with Builder or owner	Yes 1)	Yes 1)	No	Yes 1)	Yes 1)

1) When accepted in writing by owner, builder or copyright holder, as applicable
2) When accepted in writing by owner or through special clause in insurance contract
3) Survey reports pertaining to a Port State Control (PSC) rectification survey can be given upon request from the PSC authority
4) Overdue Conditions of Class only
*) Insurance company means P&I Clubs and Hull & Machinery Underwriters
N/A Not applicable. However, certificates with possible related CC and MO will normally be received by the builder upon class assignment.

A 700 Access

701 For the purpose of verifying compliance with the rules, the customer shall whenever necessary provide the Society's surveyors with safe access to the vessel and/or to their premises.

The premises and objects to be inspected shall as agreed be cleaned and prepared for inspection.

702 The customer shall provide flag authorities and authorised audit teams with safe access to the vessel and/ or to their premises in order to audit the Society's compliance with applicable rules, regulations and quality standards.

703 The Society reserves the right to decline to perform a requested service when inadequate access is provided or the safety of its surveyors may be compromised.

A 800 Calibration of equipment

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

A 900 Service suppliers

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

A 1000 Limitation of DNV's responsibility

1001 The classification service is performed on the basic assumption that other parties involved (building yard, designers, manufacturers, sub-contractors, owners, etc.) fulfil their individual obligations. The classification service is not performed in substitution of other parties' role or obligations. DNV Surveyors will not substitute the essential role of Yard or Subcontractors Quality Control / Quality Assurance inspectors/ officers or other relevant personnel. Nothing contained herein or in any certificate, report or document issued in connection with or pursuant to these rules, shall relieve any designer, engineer, builder, manufacturer, yard, seller, supplier, owner, operator or other parties from any obligations or consequences of default whatsoever. In particular, compliance with the rules does not imply acceptance or commissioning of a vessel. This is the exclusive responsibility of the owner.

Any document issued by DNV in relation to surveys performed reflects the condition of the vessel at the time of survey. It is the responsibility of the owner to maintain the condition of the vessel as required by the rules between surveys.

B. Appeals

B 100 Decisions taken by the Society

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

C. Statutory Certification

C 100 General

101 The Society undertakes statutory certification on behalf of flag administrations when and to the extent the Society has been authorised to do so by the individual flag administration.

Statutory certification includes inter alia approval, survey and the issuance of statutory certificates.

When the Society acts on behalf of a flag administration, the Society follows international statutory instruments, IACS Unified Interpretations and DNV Statutory Interpretations, and generally follows guidance issued by IMO in Circulars etc. unless the flag administration has instructed the Society otherwise.

102 It is assumed by the Society that required statutory surveys for vessels classed by the Society will be carried out by the Society or by officers of the flag administration itself and that statutory certificates will be issued by the Society or by the flag administration with the exceptions mentioned in 103 to 106. The Society assumes the right to withdraw class if statutory certificates are not issued as described in this paragraph.

103 The Society may accept that Safety Management Certificates (ISM Code) are issued by a third party that has been authorised by the flag administration and complies with IMO Resolution A.739(18) and A.789(19).

104 The Society may accept that International Ship Security Certificates (ISPS Code) are issued by a third party that has been authorised by the flag administration and complies with MSC/Circ.1074.

105 The Society may accept that Cargo Ship Safety Radio Certificates (SOLAS) are issued by a third party that has been authorised by the flag administration.

106 For a dually classed vessel, where the Society has not been authorised by the flag administration to issue statutory certificates, the Society may accept that such certificates are issued by the dual class society provided the other class society is authorised by the flag administration.

C 200 Service suppliers

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

— the relevant flag administration
— duly authorised organisations acting on behalf of the flag administration
— an equipment supplier when explicitly described by IMO conventions, resolutions or circulars, or
— the Society.

SECTION 3
CLASSIFICATION SCOPE AND NOTATIONS

A. Scope of Classification

A 100 General

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

A 200 Rule parts

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

202 Ad hoc combination of codes or standards, different as described in the rules, should only be made after proper consideration of the compatibility of the documents, and only where safety and sound engineering practice can be justified. Such selective (piecemeal) application of a code or standard shall be verified.

A 300 Rule particulars

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

Hull and main structure
— strength
— materials and welding
— corrosion protection
— constructional fire protection
— weathertight and watertight integrity
— stability and floatability
— tank arrangement.

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

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

Other installations stated in the rules.

B. Class Notations

B 100 General

101 Classed units will be given a class designation consisting of:

— construction symbol
— main character of class
— basic design notation
— service notation
— special equipment and systems notations (as applicable)
— special feature notations (as applicable).

B 200 Construction symbols

201 The symbol ✠ will be given to units built under the supervision of DNV.

202 The symbol ✠ will be given to units built under the supervision of a recognised classification society and later assigned class with DNV.

B 300 Main character of class

301 The notation **1A1** will be given to units with hull and marine machinery and equipment found to be in compliance with the basic (common) requirements of the applicable DNV offshore standards referred to in the rules.

B 400 Basic design notations

401 The basic design notation indicates the type of structural design. The notations currently in use are given in Table B1.

Table B1 Class notations related to basic design

Class notation	*Description*	*Qualifier*	*Description*	*Design requirements*	*Survey requirements*
Column-stabilised	A structure dependent on the buoyancy of widely spaced columns for floatation and stability in all modes of operation			Ch.2 Sec.1	Ch.3
Self-elevating	A structure with hull of sufficient buoyancy for safe transport which is raised above sea surface on legs supported by the sea bed during operation			Ch.2 Sec.1	Ch.3
Ship-shaped	Monohull ship and barge structures having displacement hulls with or without propulsion machinery			Ch.2 Sec.1	Ch.3
Mobile Offshore	A structure not properly characterised by the above notations			Ch.2 Sec.1	Ch.3

B 500 Service notations

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

502 Service notations currently in use are defined in Table B2.

Table B2 Class notations related to service

Class notation	*Description*	*Qualifier*	*Description*	*Design requirements*	*Survey requirements*
Accommodation	Vessel purpose accommodation	**Unit**	Mobile offshore unit	Ch.2 Sec.4	Ch.3 Sec.5 D
Crane	Vessel purpose crane operation	**Unit**	Mobile offshore unit	Ch.2 Sec.5	Ch.3 Sec.5 E
DSV	Vessel purpose diving support	**SAT**	No restrictions, except those imposed by the rule requirements	Ch.2 Sec.6 I	Ch.3 Sec.6 I
		SURFACE	Maximum operating depth <= 60 m, maximum operating time <= 8 h		
Drilling	Vessel purpose drilling	**Unit**	Mobile offshore unit	Ch.2 Sec.2	Ch.3 Sec.5 B
Fire Fighter	Vessel purpose fire fighting	**I**	Active protection, giving the vessel capability to withstand higher heat radiation loads from external fires.	Ch.2 Sec.6 K	Ch.3 Sec.6 K
		II	Continuous fighting of large fires and cooling of structures.		
		III	Continues fighting of large fires and cooling of structures with large water pumping capacity and comprehensive fire fighting equipment.		
Offshore Support	Vessel purpose offshore support	**Unit**	Mobile offshore unit	NA	Ch.3 Sec.5 F
Well Intervention	Vessel purpose well intervention	**1**	Excluding risers, i.e. no circulation of hydrocarbons	Ch.2 Sec.3	Ch.3 Sec.5 C
		2	Including risers, i.e. circulation of hydrocarbons		
		Unit	Mobile offshore unit		
Wind Turbine Installation	Vessel purpose installation of fixed and floating wind power equipment	**Unit**	Mobile offshore unit	Ch.2 Sec.7	NA

503 The service notations in Table B2 shall be considered mandatory for the relevant types of units except for **Well Intervention 1**.

504 Classification services related to hydrocarbon production, storage and loading are presented in separate rules, DNV-OSS-102.

505 Units intended for both drilling and production service (FDPSO) shall comply with the requirements for production units in DNV-OSS-102 and for drilling units in DNV-OSS-101 (in case of conflicting requirements, the most stringent requirement will prevail).

B 600 Additional class: special equipment and systems notations

601 Units having special equipment or systems found to satisfy specified class requirements will be given a corresponding additional class notation. Notations currently in use are given in Table B3.

Table B3 Class notations related to equipment and systems

Class notation	Description	Qualifier	Description	Design requirements	Survey requirements
CLEAN	Arrangements for controlling and limiting operational emissions and discharges	<none>	Basic operational requirements	Ch.2 Sec.6 S200	Ch.3 Sec.6 T200
		DESIGN	Additional operational requirements. Design requirements for protection against accidents and for limiting their consequences.		
COMF	Requirements for noise, vibration and indoor climate	C(crn)	Indoor climate	Ch.2 Sec.6 P200	Ch.3 Sec.6 Q
		V(crn)	Noise and vibration		
		crn	comfort rating number, 1, 2 or 3, where 1 is best.		
CRANE	Onboard crane			Ch.2 Sec.6 H	Ch.3 Sec.6 H
DPS	Dynamic positioning system	(A)	Annual survey required	Ch.2 Sec.6 C	SHIP Pt.7 Ch.1 Sec.6 L
		0	Without redundancy		
		1	With an independent joystick back-up and a position reference back-up		
		2	With redundancy in technical design and with an independent joystick back-up		
		3	With redundancy in technical design and with an independent joystick back-up, plus a back-up DP-control system in an emergency DP-control centre, designed with physical separation for components that provide redundancy		
DRILL	Drilling plant			Ch.2 Sec.6 D	Ch.3 Sec.6 D
DYNPOS	Dynamic positioning system	(A)	Annual survey required	Ch.2 Sec.6 C	Ch.3 Sec.6 C
		AUT	With an independent joystick back-up and a position reference back-up		
		AUTR	With redundancy in technical design and with an independent joystick back-up		
		AUTRO	With redundancy in technical design and with an independent joystick back-up, plus a back-up DP-control system in an emergency DP-control centre, designed with physical separation for components that provide redundancy		
		AUTS	Without redundancy		
		ER	Redundancy in technical design		

Table B3 Class notations related to equipment and systems (Continued)

Class notation	Description	Qualifier	Description	Design requirements	Survey requirements
E0	Periodically unattended machinery space			Ch.2 Sec.6 M	Ch.3 Sec.6 K
ECO	Machinery centralised operated			Ch.2 Sec.6 M	Ch.3 Sec.6 K
F	Additional fire protection	A	Accommodation space	Ch.2 Sec.6 J	SHIP Pt.7 Ch.1 Sec.6 K
		M	Machinery space		
FMS	Fatigue methodology for ship-shaped units			OSS-102 Ch.2 Sec.6 O	Ch.3 Sec.6 P
HELDK	Helicopter deck	<none>	Structure	Ch.2 Sec.6 E	Ch.3 Sec.6 E
		S	Additional requirements to ship safety.		
		H	Additional requirements to helicopter safety		
		F	Additional requirements to helicopter facilities		
		(N)	Evaluated to additional requirements for the Norwegian Continental Shelf (N)		
HMON		(…)	See SHIP Pt.6 Ch.11 for qualifier definitions	Ch.2 Sec.6 O	Ch.3 Sec.6 O
ISDS		(…)	See DNV-OS D203 for qualifier definitions	Ch.2 Sec.6 T	NA
LCS	Loading computer system	DC	Damage control	Ch.2 Sec.6 L	Ch.3 Sec.6 L
OPP-F	Oil pollution prevention - fuel systems			Ch.2 Sec.6 S100	NA
POSMOOR	Position mooring system	<none>	Passive	Ch.2 Sec.6 B	Ch.3 Sec.6 B
		ATA	Automatic thruster assistance		
		TA	Thruster assistance		
		V	Vicinity of other structures		
Recyclable	Inventory of Hazardous Materials Part 1			Ch.2 Sec.6 S400	SHIP Pt.7 Ch.1 Sec.7 K
SBM	Management of safety and environmental protection in operation			Ch.2 Sec.6 R	Ch.3 Sec.6 S
TEMPSTORE	Temporary storage of oil			Ch.2 Sec.6 G	Ch.3 Sec.6 G
VIBR	Vibration level criteria for machinery, components, equipment and structure			Ch.2 Sec.6 P200	Ch.3 Sec.6 Q
WELL	Well intervention system	1	Vessel mounted system excluding subsea equipment.	Ch.2 Sec.6 N	Ch.3 Sec.6 N
		2	Vessel mounted system including subsea equipment.		
WELLTEST	Well test system			Ch.2 Sec.6 F	Ch.3 Sec.6 F

B 700 Optional class notations related to cold climate operation

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

Optional class notations related to cold climate service are given in Table B4.

Table B4 Class notations related to cold climate operation

Class notation	Description	Qualifier	Description	Design requirements	Survey requirements
DAT	Design ambient air temperature suitable for regular service during winter to Arctic or Antarctic waters	(-X°C)	Lowest design ambient temperature for structure in °C.	SHIP Pt.5 Ch.1 Sec.7	NA
DEICE	De-icing or anti-icing systems	C	Including cargo deck area	SHIP Pt.6 Ch.1 Sec.5	Ch.3 Sec.6 L200
ICE	Navigation in ice	05	Arctic ice rules, ice thickness 0.5 m, no ramming anticipated	Ch.2 Sec.6 L200	NA
		10	Arctic ice rules., ice thickness 1.0 m, no ramming anticipated		
		15	Arctic ice rules, ice thickness 1.5 m, no ramming anticipated		
		C	Basic ice strengthening		
		L	Strengthened for operation in ice-infested waters		
		T	Strengthened for transit in ice-infested waters		
PC	Polar Class - navigation in ice-infested polar waters	1	Year-round operation in all polar waters	SHIP Pt.5 Ch.1 Sec.8	NA
		2	Year-round operation in moderate multi-year ice conditions		
		3	Year-round operation in second-year ice which may include multi-year ice inclusions		
		4	Year-round operation in thick first-year ice which may include old ice inclusions		
		5	Year-round operation in medium first-year ice which may include old ice inclusions		
		6	Summer / autumn operation in medium first-year ice which may include old ice inclusions		
		7	Summer / autumn operation in thin first-year ice which may include old ice inclusions		
WINTERIZED	Designed for operation in cold climate	ARCTIC	Requirements for ships operating in cold climate, with additional requirements for pollution prevention in vulnerable arctic areas	SHIP Pt.5 Ch.1 Sec.6	SHIP Pt.7 Ch.1 Sec.6 M
		BASIC	Requirements for ships operating in cold climate environments for shorter periods, not necessarily including ice covered waters		
		COLD	Requirements for ships operating in cold climate		
		t1	Materials low design temperature in °C		
		t2	Materials extreme low design temperature in °C		

B 800 Special feature notations

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

802 Special feature notations currently in use are listed in Table B5.

Table B5 Class notations related to special features

Class notation	*Description*	*Qualifier*	*Description*	*Design requirements*	*Survey requirements*
BIS	Built for in-water survey			Ch.2 Sec.6 T600	NA
INERT	Inert gas system			SHIP Pt.5 Ch.3 Sec.11	NA
NON SELF-PROPELLED	Towing assistance will be required during transit			Ch.2 Sec.6 A	NA
SUB	Resting on seabed			Ch.2 Sec.6 T200	NA
TMON	Tailshaft monitoring			Ch.2 Sec.6 T500	NA

803 Self-elevating units are considered to be non self-propelled unless otherwise specified.

B 900 Service restrictions

901 Units not approved for unrestricted service will have relevant service restrictions stated in the "Appendix to the classification certificate". These units will be given the class notation **R** to indicate that restrictions apply.

The notation **R** will be inserted after the main character of class.

902 Other service restrictions or operational limits included in the design assumptions of a unit will be stated in the "Appendix to the classification certificate", and/or on special signboards onboard.

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

B 1000 Compliance with coastal state legislation

1001 When DNV is requested to carry out verification in accordance with coastal state regulations for the complete unit or parts of the unit, an additional notation may be assigned to the relevant class designations, consisting of the relevant coastal state code and the issue of coastal state regulations used as basis for verification in brackets, e.g.:

DRILL(N).

1002 Coastal state code notations currently in use, are listed in Table B6.

Table B6 Notations for coastal state verification

Notation	*Description*
Accommodation Unit(N)	Verified for compliance with DNV's interpretation of relevant Norwegian coastal state requirements.
Drilling Unit(N)	
Well Intervention Unit(N)	
DRILL(N)	
HELDK-SH(N)/ HELDK-SHF(N)	
DRILL(US)	Verified for compliance with DNV's interpretation of relevant US Outer Continental Shelf
UKVS	Verified for compliance with DNV's interpretation of relevant UK coastal state requirements.

1003 For further information on procedures and scope of verification for coastal state requirements, see DNV offshore service specifications for coastal state compliance services listed in Sec.1 Table D1.

B 1100 Combination of notations

1101 Class notations shall be combined as follows:

✠ 1A1 <service restriction, if any><basic design notation> <service notation> <special equipment and systems notations><special feature notations>

Example:

✠ 1A1 Column-stabilised Drilling Unit POSMOOR NON-SELF-PROPELLED.

1102 Ship-shaped units may also be assigned relevant class notations given in the DNV Rules for Classification of Ships.

SECTION 4
ASSIGNMENT OF CLASS

A. Assignment of Class - New Vessels

A 100 General

101 A request for classification of a new vessel shall be submitted in writing by the customer. The Society reserves the right to decline a request for classification.

A 200 Requirements for builder or designer

201 Builders or designers unfamiliar to the Society shall provide the Society with evidence of their capability to successfully manage classification projects.

Guidance note:

Evidence may incorporate successful outcome of classification projects carried out for another IACS member society or successful outcome of design projects of similar nature.

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202 Builders or designers shall instruct their subcontractors and suppliers of materials, components and systems that the Society's rules apply and that the Society's certificates shall be provided as and when required by the rules.

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

204 The following documentation from the builder or designer (workshop and yard) and from subcontractors shall be submitted when requested by the Society:

— information related to the builder’s or designer’s quality control and quality management system
— information related to the builder's procedures for managing materials that are excluded from use on board by class and/ or statutory requirements
— list of relevant subcontractors to the building yard
— list of relevant subcontractors to the manufacturer of systems and components to be delivered for the product, if applicable.

205 To assess compliance with the rules the Society may require additional documentation and carry out an assessment of yard's processes, systems and personnel related to classification projects. The results of the assessment should be used as a basis to decide on the extent of the involvement of surveyors of the Society. The extent of verification should be clearly reflected in the Quality Survey Plan (QSP).

Guidance note:

A generic version of Quality Survey Plan (QSP) issued by the Society can be used as a model to develop an appropriate Quality Survey Plan for specific classification projects that should be submitted to the Society for approval before commencing activities in the project.

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A 300 Applicable rules

301 The rules that apply for assignment of class to a new vessel are generally those in force at the date of “contract for construction”.

The term *date of “contract for construction”* shall be construed as follows:

1) The date of “contract for construction” of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.
2) The date of “contract for construction” of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.

   Vessels built under a single contract for construction are considered a “series of vessels” if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

   a) such alterations do not affect matters related to classification, or

b) if the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.

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

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

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

(IACS PR 29 Rev.4)

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

302 For a vessel in a series of identical vessels under construction to the class of, or of a design previously approved by another IACS member society, the Society may accept the design approved by that IACS member society provided a review by the Society has demonstrated that the design in principle meets the safety and reliability level of the Society's rule requirements for main class.

303 Where requirements from international maritime conventions have been adopted in the Society's rules, compliance with these requirements is mandatory.

304 For a vessel where the flag administration undertakes approval and surveys of items covered by the rules, the Society may accept their decisions as basis for assigning class, provided the Society's requirements for main class are complied with. Necessary documentation, such as copies of approved plans, reports and other particulars approved by the flag administration shall be submitted.

305 A vessel trading solely in domestic waters, or between neighbouring states upon agreement between such states, may be assigned class based on flag administration requirements for domestic service instead of relevant rule requirements.

The assigned class shall in such cases be the class notations and service restrictions having least possible deviation from the rule requirements. The vessel will be assigned an additional class notation comprising the letters of the nation in accordance with ISO 3166.

Deviations from the rule requirements will only be considered when acceptance by the flag administration has been documented.

Deviations from the rule requirements will not be accepted for:

— requirements for structural strength, intact stability, machinery installations, steering appliances and electrical systems and equipment covered by main class
— optional class notations.

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

307 When class is assigned on the basis of a design approved by another IACS member society, the flag administration or according to flag administration requirements or decisions by national authorities according to 304, 305 or 306, information to this effect shall be included in the "Appendix to the Class Certificate" (see C106).

In case of class being assigned on the basis of flag administration requirements according to 306 an Memorandum to Owner shall also be issued (see Sec.3 B307).

A 400 Plan approval

401 Documentation for classification shall be in accordance with the Nauticus Production System (NPS) DocReq. The DocReq is a compilation of all DNV's documentation requirements related to plan approval. The purpose of the DocReq is to provide a basis to verify that selected, safety critical parts of the requirements of the applicable DNV rules and standards are complied with in the design of the vessel. A satisfactory document review is a prerequisite for assignment of DNV class and issue of statutory certificates. The document review shall be complemented by a review of the customer's quality system and by surveys by the Society. The documentation requirements are based on standardized documentation types, which are defined in DNV-RP-A201.

402 Where subcontractors and suppliers are involved, the customer shall co-ordinate the submission of

required plans and documents, as well as co-ordinate any approval comments given by the Society.

403 Documents subject to approval will be examined by the Society. The results of the examination will be stated in a letter of approval. Comments, conditions and limitations may be stated on the plans returned or in an accompanying letter.

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

A 500 Survey during construction

501 When a vessel is built under the supervision of the Society, the Society will survey:

— that the construction and scantlings comply with the rule requirements and the approved plans, and that the required materials are used,
— that the materials, components and systems have been certified in accordance with the Rules
— that the work is carried out in compliance with the applicable rules and acceptable standards
— that satisfactory tests are carried out to the extent and in the manner prescribed by the Rules.

Guidance note:

IACS Recommendation No. 47 "Shipbuilding and Repair Quality Standard" - Part A: for New Construction - is regarded as an example of an acceptable standard.

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502 The survey carried out at the construction site and/or at the sub-suppliers will be at the discretion of the Society and not intended to replace or substitute the essential activities by yards/manufacturers' QA/QC.

The scope of survey will be decided as specified in A200.

The survey at the customer's premises may consist of a combination of visual inspections, tests, measurements and review of records.

503 The Society may base its methods and extent of examination on the quality system as implemented in the customer's fabrication processes and as accepted by the Society and, if applicable, in combination with an agreed manufacturing survey arrangement.

504 The customer shall submit to the Society certificates for materials, components and systems installed in the vessel and as required by the Rules.

A 600 Installation of systems and equipment

601 Systems and equipment to be installed on newbuildings, which serves as a part of the main functions, shall in general be new.

Guidance note:

If second hand equipment complies with applicable rules for the newbuilding, it may upon special consideration be installed on newbuildings, provided the owner has given a written acceptance.

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602 The extent of participation in the mechanical completion activities by the Society should be clearly identified in the Quality Survey Plan (QSP) submitted by the customer and accepted by the Society. The extent of participation shall be limited to ensuring compliance with the requirement of Classification Rules and applicable statutory requirements.

A 700 Testing and Commissioning

701 Where specified by the rules, testing shall be carried out in the presence of a surveyor, and related requirements for test programmes shall be observed.

702 A test programme for harbour and sea trials shall be prepared by the customer and accepted by the Society. The programme shall specify systems and components to be tested, and the testing procedure.

The Society may, in order to verify rule compliance, request additional tests and/or data to be recorded.

703 Procedures for Pre-commissioning, testing and commissioning for all the systems onboard that are covered by the scope of classification shall be prepared by the customer and accepted by the Society.

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

705 The extent of participation by the Society should be clearly identified in the Quality Survey Plan (QSP) submitted by the customer and accepted by the Society only to ensure compliance with the requirement of Classification Rules and applicable statutory requirements.

B. Assignment of Class - Existing Vessels

B 100 General

101 A request for class entry of an existing vessel shall be submitted in writing by the customer. The Society reserves the right to accept or decline an application for class entry.

B 200 Applicable rules

201 Applicable rules for vessels at class entry are given in Sec.5 B100.

B 300 Design Approval

301 Before a vessel, which has not been built under the supervision of the Society, is surveyed for assignment of class, the information required in A401 shall, in general, be submitted for plan approval.

For a vessel classed with another IACS member society, the submitted information may be reduced to plans showing the main scantlings and arrangements of the actual hull and machinery installations.

302 The extent of plan approval for a vessel, which has been classed, or which was previously classed with a non-IACS member society, will be specified in each case.

303 For a vessel that has been built under the supervision of another IACS member society, the Society may on the basis of an overall consideration and survey, exempt the vessel from rule requirements.

B 400 Class entry survey

401 Prior to assigning class to an existing vessel, that vessel shall, as a minimum, undergo the surveys pertaining to the age and type of the vessel.

The scope of survey will in each separate case be decided by the Society.

402 Before assigning class, the flag administration will be notified about the class entry. The flag administration may decide that an extended scope of surveys has to be carried out.

C. The Class Certificate

C 100 General

101 When satisfied that all requirements corresponding to the class in question have been met, the surveyor will recommend that class is assigned and issue an interim class certificate or the class certificate.

102 Class may be assigned with Conditions of Class.

103 The interim certificate will be replaced by a full term class certificate when the Society has confirmed that applicable requirements have been met.

104 The class certificate is valid provided conditions for retention of class are complied with, as follows:

— for a new vessel: to a date not exceeding 5 years from the date of class assignment
— for an existing vessel: to a date not exceeding 5 years from the expiry date of the existing certificate
— for an existing vessel taken into class: to a date not exceeding 5 years from the date of class assignment or, if the Society accepts the periodical surveys credited by the previous classification society, until the expiry date of the class certificate of the previous classification society
— for an interim class certificate: to a date not exceeding 15 months from assignment of class.

105 Upon request, declarations confirming compliance with the rules may be issued for hull, machinery or specific class notations provided the Society's main class has been assigned.

106 An “Appendix to the Class Certificate” will be issued stating assumptions for the assignment of class and restrictions regarding the use of the vessel which were established or assumed at the time of assignment of class.

107 In case of classification of an existing ship not built under the supervision of the Society, or classification of an existing ship previously classed by the Society, the surveyor will issue the certificate of interim class when he is satisfied that the applicable survey requirements have been met.

108 When the administration of the Society has examined the surveyor's report and submitted documentation, and is satisfied that the requirements corresponding to the class in question have been met, the class will be assigned and a classification certificate will be issued.

Provided the conditions for retention of class are fulfilled and unless the class has been withdrawn in writing at an earlier stage, the class certificate will be valid for 5 years.

C 200 Late commissioning

201 If the vessel is not immediately commissioned upon completion of the construction, but is laid up for a period, the vessel may be accepted for entry into service upon application by the owner. The vessel may be subject to a condition survey before entering into service.

The extent and scope of survey will depend on the time period laid up and conservatory measures taken.

Provided the hull and machinery is found in all respects free from deterioration, subsequent periodical surveys will date from the time of the condition survey.

D. The Register of Vessels

D 100 General

101 When a vessel has been assigned class, its main particulars and details of the class assigned will be entered in the Society's "Register of Vessels". In addition to the class notations, appropriate data related to identification, flag, ownership and other particulars will also be entered.

102 The class assignment date is entered in the "Register of Vessels". For vessels built under the supervision of the Society, the due date for the periodical surveys will be calculated from this date. For vessels built under the supervision of an other classification society, the due date for the periodical surveys will depend upon the existing periodical survey schedule defined by the previous classification society.

SECTION 5
RETENTION OF CLASS

A. Conditions for Retention of Class

A 100 General requirements

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

102 Operation of the vessel shall comply with the assumptions and conditions stated in the "Appendix to the Class Certificate" and in applicable operating manuals.

103 The vessel, its hull structure, machinery, systems and equipment shall be maintained at a standard complying with the requirements of the rules (see also A300).

104 Installed systems and equipment carried onboard in excess of the minimum required for main class shall either be maintained to applicable standards, or be removed or disconnected in such a way as to ensure that the installed system or equipment cannot be used.

Installed diving systems are subject to special provisions as given in Pt.6 Ch.1 Sec.4 and Pt.7 Ch.1 Sec.6 I in the Rules for Classification of Ships. These provisions include transferable diving systems installed temporarily.

105 Temporary systems and equipment shall comply with relevant requirements in accordance with the assigned class notations of the unit.

106 The statutory certificates required by applicable international conventions and/or national legislation shall be valid at all times and shall be issued by the Society, the flag administration itself, or by a third party approved by the flag administration, within the limitations set out in Sec.2 C.

A 200 The customer's obligations

201 In order to retain a vessel's class with the Society, the customer shall:

— at all times, ensure that the vessel is maintained to the rule standard
— submit complete and correct information related to the vessel and its use, which is of significance to the Society for its assessment of the condition of the vessel in relation to the rules
— ensure that the vessel is competently handled
— subject the ship to unscheduled surveys when deemed necessary by the Society
— rectify deficiencies and carry out any Conditions of Class or Retroactive Requirement specified by the Society
— subject the vessel to surveys as required by the rules, and provide the necessary facilities for safe execution of surveys
— submit complete and correct information on the ownership and management of the vessel, addresses and corresponding administrative information pertinent to the register of vessels
— submit correct information on the registration of the vessel
— keep onboard and ashore a set of as-built drawings/documentation including subsequent alterations/ conversions
— pay all fees and expenses due to the Society. The owner has, together with managers, charterers and operators, a joint and several liability for any such fees and expenses. If a request for services is made by any other party than the owner, that party will, in addition to the owner, be responsible for the payment of the relevant fees
— notify the Society when the vessel is laid up or otherwise taken out of service for a period of more than 3 months.

202 If the hull structure, machinery, systems or equipment covered by classification sustain damage to such an extent that it may be presumed to lead to a Condition of Class (see B300), the Society shall immediately be informed. The vessel shall be surveyed in the first port of call or according to instructions from the Society.

The survey shall be of an extent considered necessary by the attending surveyor for ascertaining the extent of the damage.

203 In case inspections by port or flag authorities reveal deficiencies related to certificates issued by DNV, the customer shall immediately notify the Society.

A 300 Maintenance

301 The customer shall ensure that the vessel, its hull structure, machinery, systems and equipment at all times is properly maintained.

Guidance note:

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

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302 The vessel shall have implemented a maintenance system. The maintenance system shall ensure that:

— inspections and maintenance are carried out at defined intervals
— any defect is reported with its possible cause, if known
— appropriate correction or repair action is taken
— records of these activities are maintained.

303 Replacement components and systems shall be delivered with certificates and documentation as required by the rules for the original component or system.

B. Classification Society Involvement

B 100 Applicable rules

101 Vessels built under the supervision of the Society shall in general be maintained and repaired in compliance with the rules to which it was constructed, except in cases mentioned in B602.

102 For vessels built under the supervision of another IACS member society, the Society's rules in force at the same date as those enforced by the other society will be applied. If such date is not known the Society's rules in force at the "date of build" will be applied.

103 For vessels other than those covered by 101 and 102, the Society's rules for new vessels in force at the time of entry into class will be applied.

104 Amendments to the rules may be made retroactive.

105 In cases where rule amendments are made applicable to existing vessels at the first annual, intermediate or renewal survey after a specified date, or after the vessel reaches a specified age, the expiry date of the related survey time window shall determine when the rule amendments become effective.

B 200 Surveys

201 The objective of a survey shall be to ascertain that the vessel, its hull structure, machinery, systems and equipment are in compliance with the rules and suitable for continued safe and reliable operation.

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

203 The minimum extent of prescribed periodical surveys are given in Ch.3. The Society may increase the extent of a survey when deemed necessary in order to ascertain the condition of the vessel.

B 300 Conditions and Memoranda

301 A Condition of Class (CC) will be imposed for the following:

— repairs and/or renewals related to damage, defect or breakdown that are sufficiently serious to affect Classification (e.g. grounding, structural damages, machinery damages, wastage over the allowable limits etc.)
— supplementary survey requirements
— temporary repairs.

Guidance note:

When the Society has been authorised to carry out a statutory survey, a Condition on behalf of the flag Administration (CA) will be imposed for specific measures, repairs or surveys that should be carried out within a specific time limit in order to retain the statutory certificate.

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302 The Society will issue a CC when deemed necessary to carry out examinations in order to ascertain whether damage, a defect or a deficiency has been sustained or is imminent.

303 A CC may contain the following:

— a description of the deficiency, defect, damage or the examination required
— required action
— due date for the required action to be completed
— possible temporary requirements imposed until the required action has been completed.

Alternatively the CC may refer to a survey report for above details.

An approved repair method may be recommended as part of the required action.

304 If a CC seriously affects the vessel's safety and reliability, immediate action will be required. Otherwise a time limit will be given for the action to be completed.

305 A CC will be deleted when the Society, through a survey or received information, has been satisfied that requested action has been satisfactory completed.

306 For information related to the ship, its machinery and equipment or to rule requirements, the Society may issue an Memorandum to Owner (MO). A MO may supplement information given otherwise, e.g. in the Appendix to the class certificate or the Society's "Register of Vessels".

307 An MO may be used in the following cases:

— exemptions from rule requirements
— accepted deviations from rule requirements
— limitations on the use of the ship or its equipment
— defects or deficiencies of no concern to class
— deleted class notations
— equipment in excess of class requirements disused
— information related to agreed survey arrangements.

308 Outstanding findings may be recorded as a CC or an MO. They will be given in writing at completion of surveys. Findings may also be communicated verbally during the course of surveys. Findings that have been corrected before the survey has been completed will not be recorded as CC.

309 The Society may at any time modify a CC or MO if considered appropriate. The owner will be notified accordingly.

310 CC or MO are recorded in the vessel's class status from where they will be deleted when no longer valid. The owner will be notified accordingly.

311 The owner will be informed of Retroactive Requirements (RR).

B 400 Survey reports and survey status

401 The surveyor will prepare to the customer reports on surveys carried out.

402 Survey reports may contain the following information, to the extent applicable in each case:

— types of surveys carried out
— certificates issued, endorsed or extended
— damage, defects and/or deficiencies observed
— confirmation that repairs have been completed and accepted by the surveyor
— CC issued or deleted
— MO issued or deleted
— RR issued or deleted.

403 The Society will make class status reports available to customers on the Society's Internet website, see Sec.1 B800.

It is the customer's responsibility to obtain this information from the Society's Internet website. Survey and certificate status reports, on paper, may be distributed upon request.

404 Any document issued by the Society in relation to surveys performed reflects the condition of the vessel at the time of the survey only.

B 500 Damage and repairs

501 Repairs shall in general be carried out in such a way that the original design and scantlings are restored. Possible design modifications or reduced scantlings based on current rules which are less stringent than those originally enforced, shall be approved by the Society before the repairs are carried out.

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

Guidance note:

Guidelines for hull repairs can be found in Classification Note No. 72.1.

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503 Repairs as stipulated in 502 may be carried out without the attendance of a surveyor (e.g. during voyage) provided a repair plan is accepted by the Society in advance. A surveyor shall be called for acceptance of such repairs when completed.

B 600 Conversions and alterations

601 Conversions or alterations of vessels shall in general comply with the rules applicable at the time of class

assignment. If current rules are less stringent than those originally in force, then the current rules may be applied.

602 When conversion or alteration involves modification which:

— substantially alters the dimensions or carrying capacity of the vessel (e.g. ≥ 5% change in the unit's displacement), or
— changes the type of vessel, or
— changes the main class of the vessel,

the Society will decide on the rules to be applied.

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

Guidance note:

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

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604 Conversion or alterations shall take place under the supervision of a surveyor.

B 700 Temporary equipment

701 The Society shall be informed before the installation of temporary equipment as defined in Sec.1 B200.

702 Temporary equipment covered by class scope shall be approved and certified in line with A105.

703 For temporary equipment outside class scope, it shall be confirmed that placement of this equipment on board does not negatively affect the safety of the unit.

Guidance note:

For the consideration, the following is typically to be considered:

— escape ways shall not been blocked
— the fire and gas system covers the temporary equipment, the equipment is covered by the ESD logic
— the equipment's load is within deck load limits
— the definition of hazardeous areas takes into account the temp. equipment
— the interface to other systems covered by main class does not negatively affect their availability.

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C. Endorsement and Renewal of the Class Certificate

C 100 Endorsement of the class certificate

101 The class certificate will be endorsed upon satisfactory completion of annual, intermediate and renewal surveys for main class.

The class certificate will not be endorsed unless the following has been dealt with and accepted by the Society:

— overdue periodical class surveys
— overdue continuous survey items
— overdue Conditions of Class
— overdue Retroactive Requirement.

Guidance note:

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

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102 When the class certificate is endorsed at completion of renewal surveys, the surveyor may extend its validity as necessary but not more than to a date 5 months after the completion date, or after the expiry date of the class certificate, whichever comes first.

103 In the case where postponement of the renewal survey has been granted upon the customer's written request, the surveyor will endorse the class certificate and extend its validity, but not more than 3 months beyond the expiry date of the class certificate.

104 In the case where the main class annual survey is commenced prior to the defined time window, the survey must be completed not more than 6 months after the date of commencement. In such cases the certificate will be endorsed for advancement of anniversary date (due date) for the subsequent annual surveys.

Guidance note:
Expiry date of the class certificate may remain unchanged, but additional surveys may be required so that the prescribed survey intervals are not exceeded.

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C 200 Renewal of the class certificate

201 A new class certificate will replace the existing class certificate when renewal survey has been satisfactory completed and the Society is satisfied that the requirements for retention of class have been met.

202 The new class certificate will be valid to a date not exceeding 5 years from:

— the expiry date of the existing certificate when the renewal survey has been completed within 3 months before the expiry date of the existing certificate, or
— the expiry date of the existing certificate when the renewal survey has been completed after the expiry date of the existing certificate, or
— the completion date of the renewal survey when the renewal survey has been completed more than 3 months before the expiry date of the existing certificate, or
— the completion date of the renewal survey when the renewal survey has been commenced more than 15 months before the expiry date of the existing certificate.

203 In cases where postponement of a renewal survey has been granted, the new class certificate will be valid to a date not exceeding 5 years from the expiry date of the existing certificate before the extension was granted.

204 In cases where the renewal survey is carried out concurrently with a conversion as defined in B602, the validity of the new certificate will be 5 years from the date of completion of the conversion, if so decided by the Society.

205 For certain vessels the certificate validity and survey intervals may be reduced by the Society.

D. Suspension and Withdrawal of Class

D 100 General

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

102 The Society may suspend or withdraw a vessel's class where the conditions for retention of class, have been violated (see A).

103 The decision to suspend or withdraw a vessel's class is made by the Society. However, in cases of automatic suspension, see 201 and 202, no individual evaluation is made.

Suspension or withdrawal of class may take effect immediately or after a specified period of time. In special cases, the suspension or withdrawal of class may be made with retroactive effect (see 204).

104 If the violation only affects requirements related to optional class notations, the suspension or withdrawal may be limited to these class notations only.

105 When class is suspended or withdrawn the Society will:

— notify the customer in writing
— notify the flag administration
— make an entry to this effect in the Society's "Register of Vessels"
— make the information publicly available.

In the cases of class suspension, a time limit will be given for when the class will be withdrawn.

D 200 Suspension of class

201 The class will automatically be suspended with immediate effect if the renewal surveys for hull, machinery, systems and equipment related to main class are not completed before the expiry date of the class certificate, and no postponement has been granted or unless the vessel is under attendance for completion of the survey.

202 If the annual or intermediate surveys for main class are not completed within 3 months from the anniversary date of the class certificate, the class is automatically suspended with immediate effect, unless the vessel is under attendance for completion of the survey.

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

204 In addition to the conditions laid down in 201, 202 and 203, a vessel's class may be suspended with immediate effect in cases where:

— repair of deficiencies has not been carried out or otherwise dealt with in an appropriate manner, or

— repair of deficiencies has not been surveyed and accepted by the surveyor,
— other requirements imposed by the Society.

205 Class will not be automatically suspended according to 201 or 202 whilst a vessel is laid up, provided the requirements in Ch.3 for lay-up surveys are complied with.

206 If a ship has been detained as a result of port state inspections twice in a two year period and the deficiencies are found to be serious, the Society may decide to suspend or delete class.

D 300 Reinstatement following class suspension

301 If the overdue surveys leading to class suspension as given in 201, 202 and 203 or requirements as given in 204 are carried out within the specified time, the class will be reinstated provided the following is met:

a) The result of the survey is such that all observed deficiencies are satisfactory rectified. The Society may after consideration accept that minor deficiencies are pending to be carried out.

b) No overdue periodical surveys or overdue Conditions of Class at that time.

302 The Society reserves the right to decline an application for reinstatement of class.

303 When the class is reinstated, the Society will confirm this in writing to the customer and to the flag administration.

D 400 Withdrawal of class

401 The class will be withdrawn at the customer's request.

402 If the overdue surveys specified in 201, 202 and 203 or required repairs as given in 204 are not carried out within the specified time after the class suspension, the Society will withdraw the vessel's class.

403 When a vessel proceeds to sea without having rectified a condition of class which was required to be dealt with before leaving port, the class will be withdrawn with immediate effect.

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

405 When it is considered that a customer's failure to comply with rule requirements is sufficiently serious or fraudulent the withdrawal of class may, at the discretion of the Society, be extended to include other vessels controlled or operated by the same customer.

406 If the outstanding debt owed to the Society is not paid within a notified date, the Society may withdraw the vessel's class with one month's written notice. This also applies when the obligation to pay rests with a yard or with the vessel's previous owners. In special cases a shorter notice may be given.

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

408 For vessels having statutory certificates issued by third parties, except in those cases defined in Sec.2 C100, the class may be withdrawn.

D 500 Re-assignment of class following class withdrawal

501 In all other cases than that given in 401, and if the circumstances leading to withdrawal of class no longer exist, a vessel's may be re-assigned class upon written request. The extent of survey will in such instances be decided by the Society.

502 The Society reserves the right to decline an application for re-assignment of class.

503 A new class certificate will be issued when the survey has been satisfactory completed and the Society is satisfied that the requirements for retention of class have been met.

504 When the vessel is re-assigned class, the Society will confirm this in writing to the customer and to the flag administration and make the information publicly available.

E. Change of Owner or Manager

E 100 General

101 A vessel shall retain class when transferred to another owner or manager. The previous customer shall give the Society immediate notice, in writing, of such transfers. Obligations according to the rules shall remain with the previous customer until the Society is in receipt of such notice, in writing. See A200.

102 Class notations and survey arrangements based on certification of the management of operations will be deleted automatically when the management of a vessel is transferred.

F. Force Majeure

F 100 General

101 If due to force majeure, the vessel is not in port when surveys become overdue the Society may allow the vessel to sail, in class, directly to an agreed discharge port and then, if necessary, in ballast to an agreed repair facility at which the survey can be completed. In this context the "Force Majeure" means damage to the vessel, unforeseen inability of surveyors to attend the vessel due to governmental restrictions on right of access or movement of personnel, unforeseen delays in port or inability to discharge cargo due to unusually lengthy periods of severe weather, strikes, civil strife, acts of war or other force majeure.

SECTION 6
CERTIFICATION OF MATERIALS, COMPONENTS AND SYSTEMS

A. General

A 100 General

101 The scope of classification requires that specified materials, components and systems intended for the vessel are certified according to the rules. The objective of certification shall ensure that materials, components and systems used in vessels to be classed by the Society comply with the rule requirements.

Certification normally includes both plan approval and survey during production and/or of the final product (see B200 and B300).

102 The applicable chapters of the rules define the extent of the certification that is required for classification.

A 200 Requirements for manufacturer

201 Manufacturers of materials, components and systems of categories not covered by Sec.4 A200 shall be considered for approval according to criteria established by the Society, as applicable.

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

B. The Classification Involvement

B 100 General

101 Certification of materials, components and systems will be documented by the following types of documents:

1) *Det Norske Veritas Product Certificate (NV):*
   A document signed by a surveyor of the Society stating:

   — conformity with rule requirements
   — that tests are carried out on the certified product itself
   — that tests are made on samples taken from the certified product itself
   — that tests are performed in presence of the surveyor or in accordance with special agreements.

2) *Works Certificate (W)*
   A document signed by the manufacturer stating:

   — conformity with rule requirements
   — that tests are carried out on the certified product itself
   — that tests are made on samples taken from the certified product itself
   — that tests are witnessed and signed by a qualified department of the manufacturers.

3) *Test Report (TR)*
   A document signed by the manufacturer stating:

   — conformity with rule requirements
   — that tests are carried out on samples from the current production.

The applicable chapters and sections of the rules specify which of the above mentioned documents are required.

102 Where the rules require works certificate or test report, the surveyor may at any time require the tests to be carried out in his presence and/or that the surveyor check elements of the production control.

103 For identification and traceability, certified products shall be marked in accordance with the description given in the product certificate and as specified by the applicable chapters of the rules.

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

105 To ensure an efficient, cost effective and correct certification process, a certification agreement shall normally be established between the Society and the manufacturer of NV certified products. Such agreement may be part of a manufacturing survey arrangement (500) and shall include information on the procedures for plan approval and survey and to specify information that shall be transferred between the customer and the Society.

B 200 Plan approval

201 The plan approval of materials, components and systems shall either be on a case by case basis or follow the procedure for type approval, see 300.

202 When the case by case procedure is used, documentation of the design shall be submitted for approval for each application as required in the applicable chapters of the rules.

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

B 300 Type approval

301 *Type approval* is a procedure for plan approval. Type approval can be applied to:

— products
— groups of products
— systems
— retention survey.

This procedure should normally be used for approval of standard designs.

302 The type approval procedure may consist of the following elements:

— plan approval
— initial survey
— type testing
— issue of a type approval certificate.

The type approval procedure used by the Society is described in Standard for Certification No. 1.2.

303 When the type approval procedure is used, the following shall be submitted for approval as required in type approval programmes and the applicable chapters of the rules:

— documentation of the design
— results of type testing normally witnessed by a surveyor.

A type approval certificate will be issued by the Society when compliance with the design requirements is confirmed. The type approval certificate has a validity of 2 or 4 years depending on type of material, component or system for which the certificate is issued.

304 For certain products and systems as defined in applicable chapters of the rules, only type approval is required. For these products and systems no survey is required, i.e. no product certificate is required.

305 For certain products and systems as defined in the applicable chapters of the rules, type approval is a mandatory procedure for plan approval.

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

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

B 400 Survey

401 The survey of materials, components and systems shall either be on a case by case basis or on the basis of an established manufacturing survey arrangement (MSA), see 500.

402 When the case by case procedure is used, the survey shall be performed on the basis of approved design documentation for the actual application and as required in the applicable chapters of the rules. Compliance with the approved design documentation and applicable requirements will be documented by certificates as required in the applicable chapters of the rules.

403 When the survey is based on an MSA, the survey shall be performed on the basis of approved design documentation, applicable rule requirements and in accordance with requirements and procedures laid down in the MSA. Compliance with the approved design documentation and applicable requirements shall be documented by certificates as specified in the MSA and/or as required in the applicable chapters of the rules.

B 500 Manufacturing survey arrangement

501 When the procedures and processes of a manufacturer's quality system meet the requirements of the rules, a manufacturing survey arrangement (MSA) may be established with the manufacturer as an alternative to the survey described in the applicable rule chapters.

502 The MSA shall be described in a document stating the requirements, scope, acceptance criteria, documentation and the roles of the Society and the manufacturer in connection with the survey.

503 When it is agreed through an MSA that the majority of the required surveys and test are completed without the presence of a surveyor, it required that the manufacturer has in operation a quality system certified by an accredited certification body to ISO 9001, or equivalent.

504 When establishing an MSA, an initial assessment of the manufacturer's ability to control product quality and to comply with the scope, requirements and criteria laid down in the MSA will be performed.

The extent and frequency of periodical assessments of the manufacturer will be included in the MSA.

505 A MSA is normally given a validity of 4 years. When the MSA is based on a certified quality system, the MSA automatically becomes invalid if the quality system certificate no longer is valid.

C. Suspension and Withdrawal of Certificates

C 100 General

101 A product certificate, type approval certificate or approval of manufacturer certificate may be suspended or withdrawn at any time if the Society finds it justified.

102 The decision to suspend or withdraw a certificate is made by the Society.

Suspension or withdrawal of a certificate may take effect immediately or after a specified period of time. In special cases, the withdrawal of a certificate may be made with retroactive effect.

103 When a certificate is suspended or withdrawn the Society will:

— notify the customer in writing
— make the information publicly available.

In the cases of suspension, a time limit will be given for when the certificate will be withdrawn.

SECTION 7
LEGAL PROVISIONS

A. Liability and Jurisdiction

A 100 Limited liability

101 If any person suffers loss or damage which is proven to have been caused by any negligent act or omission of the Society, then the Society shall pay compensation to such person for his proven direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question. The maximum compensation shall never exceed USD 2 million.

102 The above limitation of liability shall also apply to the relevant Flag administration, for any services provided hereunder on behalf of such Flag administration, to the same extent as it applies to the Society.

103 A person relying on any work subject to the Rules cannot bring any claims in excess of the above limitation of liability against the Society and/or the Flag Administration and nothing herein shall be construed as granting a party the right to cumulate or aggregate this limitation of liability. Further, said person undertakes to pay to the Society any sums awarded against the Flag Administration in respect of claims, losses, damages, costs, expenses and liabilities, and shall save, indemnify, defend and hold harmless the Society in every respect, if a claim is brought against the Flag Administration in breach of this obligation.

104 In this provision the "Society" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

A 200 Use by other parties

201 These rules are under the sole ownership rights and copy-rights of the Society. It is prohibited by anyone else than the Society to offer and/or perform classification or other services, wholly or partly, on the basis of and/or pursuant to these rules. The Society is not responsible for the consequences arising from the possible un-authorised use of the Rules by others.

A 300 Governing law

301 These rules, the classification of the vessel and the relationship between DNV and other parties shall be governed by Norwegian law.

A 400 Venue

401 Any dispute arising in relation to or as a consequence of these rules shall only be resolved by the courts of Norway, the Municipal Court of Oslo being the proper venue.

CHAPTER 2

DESIGN AND CONSTRUCTION PROVISIONS

CONTENTS PAGE

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SECTION 1
DESIGN AND CONSTRUCTION REQUIREMENTS FOR 1A1 MOU MAIN CLASS

A. General

A 100 Introduction

101 This section identifies design and construction requirements common to all types of mobile offshore units. Units complying with these requirements will be assigned a main character of class ✠ **1A1** followed by a description of the basic design concept of the unit, e.g. column-stabilised unit.

102 The following discipline areas are covered within main class:

— safety principles and arrangement
— materials
— hull design and fabrication
— temporary mooring and towing
— stability, watertight and weathertight integrity
— marine and machinery systems and equipment
— electrical systems and equipment
— instrumentation and telecommunication systems
— fire protection.

103 Systems and structures will be certified or classified based on the following main activities:

— design approval
— certification of materials and components
— survey during construction and installation
— survey during commissioning.

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

104 The requirements of this section are given as:

— references to standards, codes and rules containing technical requirements which shall be complied with for assignment of main class
— supplementary requirements which shall be applied in conjunction with the technical reference documents for assignment of class
— requirements for certification of materials and components.

A 200 Technical reference documents

201 Technical requirements are given by reference to selected:

— DNV offshore standards
— DNV recommended practices
— other DNV rules and standards
— internationally recognised codes and standards.

202 The technical reference documents which shall be applied are given in the following subsections and are summarised in Table L1.

A 300 General assumptions

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

302 Where referred codes and standards call for the extent of inspections and tests to be agreed between contractor, manufacturer and customer, the resulting extent is to be agreed with DNV.

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

B. Safety Principles and Arrangement

B 100 General

101 Safety principles and arrangement include the following discipline areas:

— design principles, including generic accidental loads
— arrangement; including segregation of areas and location of plants and equipment
— escape and evacuation.

B 200 Design principles

201 The requirements given in DNV-OS-A101, Sec.1 and Sec.2, shall be complied with.

B 300 Arrangement

301 Arrangement of the unit shall be in accordance with the requirements of DNV-OS-A101, Sec.3.

B 400 Escape and evacuation

401 Escape and evacuation shall be in accordance with DNV-OS-A101, Sec.6.

C. Materials

C 100 Technical requirements

101 Materials for:

— rolled steel for structural applications, boilers and pressure vessels
— steel tubes, pipes and fittings
— steel forgings
— steel castings
— aluminium alloys

shall comply with the requirements given by DNV-OS-B101 unless otherwise stated in the relevant technical reference documents.

C 200 Supplementary classification requirements

201 Certification requirements for materials are given in DNV-OS-B101, Ch.3.

202 Rolled, forged or cast elements of steel and aluminium for structural application shall be supplied with DNV's material certificates in compliance with the requirements given in DNV-OS-B101.

D. Structural Design

D 100 Technical requirements

101 Structural design shall comply with the following design codes depending on hull shape and applied design methodology.

102 Ship-shaped structures shall comply with DNV-OS-C101 and DNV-OS-C102.

103 Column-stabilised structures shall comply with DNV-OS-C101 and DNV-OS-C103 when applying the LRFD methodology.

Alternatively the design shall comply with DNV-OS-C201 when applying the WSD methodology.

104 Self-elevating structures shall comply with DNV-OS-C101 and DNV-OS-C104 when applying the LRFD methodology.

Alternatively the design shall comply with DNV-OS-C201 when applying the WSD methodology.

105 Earthquake, ice and soil conditions are not included in class scope of work unless specifically specified.

106 Transit conditions are included in the structural design scope of work. Temporary conditions are not included unless specifically specified. See definitions in Ch.1 Sec.1 B.

E. Fabrication and Testing of Offshore Structures

E 100 Technical requirements

101 Requirements for:

— welding procedures and qualification of welders
— fabrication and tolerances
— testing
— corrosion protection systems

shall be in accordance with DNV-OS-C401.

Guidance note:
Application of coating, steel surface preparation with respect to application of coating and fabrication, installation of sacrificial anodes and impressed current systems are not included in the Society's scope of work unless upon special agreement.

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E 200 Supplementary classification requirements

201 Classification procedures specifically related to fabrication and testing of offshore structures are given in DNV-OS-C401, Ch.3.

F. Stability and Watertight/Weathertight Integrity

F 100 Technical requirements

101 Requirements for:

— intact and damaged stability
— watertight integrity
— freeboard
— weathertight closing appliances

shall be in accordance with DNV-OS-C301.

102 If onboard computers for stability calculations are installed, these systems shall be approved in accordance with requirements in Rules for Classification of Ships Pt.6 Ch.9.

G. Mooring and Towing

G 100 General

101 Depending on type of unit, main class stipulates requirements for:

— temporary mooring
— towing.

102 For units with the additional class notation **POSMOOR**, the requirements for temporary mooring are normally covered within this notation.

103 For units with the additional class notations **DYNPOS-AUTR** and **DYNPOS-AUTRO**, temporary mooring arrangement is not required as a condition for classification.

104 When requested by the Owner or if required by flag administrations, DNV can perform certification of the complete mooring equipment according to the **POSMOOR** notation or the relevant national regulations.

G 200 Ship-shaped units

201 Ship-shaped units shall have an arrangement for temporary mooring complying with the Rules for Classification of Ships, Pt.3 Ch.3 Sec.3.

202 Equipment for drilling barges will be considered in each case.

G 300 Column-stabilised units

301 Column-stabilised units shall have an arrangement for temporary mooring complying with DNV-OS-E301, Ch.3.

G 400 Self-elevating units

401 Self propelled self-elevating units shall have an arrangement for temporary mooring complying with DNV-OS-E301, Ch.3.

G 500 Towing

501 Column stabilised and self elevating units shall have arrangement and devices for towing complying with DNV-OS-E301, Ch.2.

502 Ship shaped units with propulsion shall have towing arrangement according to Rules for Classification of Ships Pt.3 Ch.3 Sec.5 C.

G 600 Supplementary classification requirements

601 Classification procedures specifically related to mooring and towing are given in DNV-OS-E301, Ch.3.

602 Certification requirements for equipment are given in DNV-OS-E301, Ch.3.

H. Marine and Machinery Systems and Equipment

H 100 Technical requirements

101 Requirements for marine and machinery systems and equipment include:

— general piping design, fabrication and testing
— pumps, valves and pipe connections
— ballast, bilge and drainage systems
— air, overflow and sounding pipes
— cooling, feed water and condensation systems
— lubricating oil, fuel oil and thermal oil systems
— hydraulic, steam and pneumatic systems
— heating, ventilation and air conditioning systems
— propulsion and auxiliary machinery including thrusters
— boilers, pressure vessels and incinerators
— anchoring and mooring equipment
— steering, jacking gear and turret machinery

and shall be designed, manufactured, tested and installed in accordance with DNV-OS-D101.

102 Units not equipped with propulsion and steering arrangements for independent transit will be given the special feature notation **NON-SELFPROPELLED**, and shall comply with DNV-OS-D101 as applicable for such type of units.

H 200 Supplementary classification requirements

201 Classification procedures specifically related to marine and machinery systems and equipment are given in DNV-OS-D101, Ch.3.

202 Certification requirements for equipment are given in DNV-OS-D101, Ch.3.

I. Electrical Systems and Equipment

I 100 Technical requirements

101 Electrical systems and equipment include:

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

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

I 200 Supplementary classification requirements

201 Classification procedures specifically related to electrical systems and equipment are given in DNV-OS-D201.

202 Certification requirements for equipment are given in DNV-OS-D201.

J. Instrumentation and Telecommunication Systems

J 100 Technical requirements

101 Instrumentation and telecommunication systems and equipment include:

— design principles and system design
— computer based systems
— component design and installation
— environmental conditions
— user interface

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

J 200 Supplementary classification requirements

201 Classification procedures specifically related to instrumentation and telecommunication systems are given in DNV-OS-D202, Ch.3.

Certification requirements for equipment are given in DNV-OS-D202, Ch.3.

K. Fire Protection

K 100 Technical requirements

101 Fire protection include:

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

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

K 200 Supplementary classification requirements

201 Classification procedures specifically related to fire protection are given in DNV-OS-D301, Ch.3.

202 Certification requirements for equipment are given in DNV-OS-D301, Ch.3.

L. Preparation for Surveys and Inspections on Location

L 100 General

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

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

— arrangement for underwater inspection of hull, propellers, thrusters, rudders and openings affecting seaworthiness
— marking of the hull
— means for blanking off all openings including side thrusters
— use of corrosion resistant materials for shafts
— use of glands for propeller and rudder
— accessibility of all tanks and spaces for inspection
— corrosion protection of hull or structure
— maintenance and inspection of thrusters
— measurement of wear in the propulsion shaft and rudder bearings
— testing facilities of all important machinery.

Guidance note:

The underwater body should be marked in such a way that the surveyor can identify the location of any damages found. One acceptable way of preparing ship-shaped hulls for underwater inspection is described in the following.

Transverse and longitudinal reference lines of minimum length 300 mm and minimum width 25 mm should be applied as marking. The marks should be made permanent by welding or otherwise and painted in contrast colour.

Markings should normally be placed as follows:

— at flat bottom in way of intersections of tank bulkheads or watertight floors and girders

— at unit's sides in way of the positions of transverse bulkheads (the marking need not be extended more than 1 m above the bilge plating)
— the intersection between tank top and watertight floors in way of the unit's sides
— all openings for sea suctions and discharges.
— letter/number codes may conveniently be applied on the shell for identification of tanks, sea suctions and discharges.

Markings should be adequately documented.

---e-n-d---of---G-u-i-d-a-n-c-e---n-o-t-e---

103 In addition to the above ship shaped units can apply for the class notation BIS for in water survey of the bottom. (ref he Ship rules part 3, Ch.1 Sec.1 D)

M. Summary of Technical Reference Standards

M 100 General

101 Technical standards which shall be applied for assignment of main character of class for mobile offshore units are summarised in Table M1.

Table M1 Technical reference standards for main character of class (1A1 MOU)

Technical item	*Reference standard*	*Applicable parts or comments*
SAFETY PRINCIPLES AND ARRANGEMENT		
Design principles	DNV-OS-A101	Sec.1: General Sec.2: Design Principles and Assessment
Arrangement		Sec.3: Arrangement
Escape and evacuation		Sec.6: Escape and Evacuation
MATERIALS		
Metallic materials	DNV-OS-B101	
STRUCTURAL DESIGN (select type as appropriate)		
Ship-shape structure	DNV-OS-C101 DNV-OS-C102 DNV-OS-C201	
Column-stabilised type structure	DNV-OS-C101 DNV-OS-C103	LRFD methodology
	DNV-OS-C201	WSD methodology
Self-elevating type structure	DNV-OS-C101 DNV-OS-C104	LRFD methodology
	DNV-OS-C201	WSD methodology
HULL FABRICATION		
Fabrication, including welding and NDT	DNV-OS-C401 Rules for classification ships Pt.2 Ch.3 Sec.7	For self-elevating and semi-submersible units For ship-shaped units
STABILITY AND WATERTIGHT INTEGRITY		
Stability, watertight integrity, freeboard and weathertight closing appliances	DNV-OS-C301	Covers all types of structures
MOORING AND TOWING		
Temporary mooring, towing	Rules for Classification of Ships Pt.3 Ch.3 Sec.3	Ship-shaped units
	DNV-OS-E301	All other types of units
MARINE AND MACHINERY SYSTEMS AND EQUIPMENT		
Piping design, manufacturing and testing; platform piping systems; machinery piping systems; machinery and mechanical equipment	DNV-OS-D101	All sections
ELECTRICAL SYSTEM EQUIPMENT		

Table M1 Technical reference standards for main character of class (1A1 MOU) (Continued)		
Technical item	*Reference standard*	*Applicable parts or comments*
Electrical systems including switchgear and controlgear assemblies, rotating machinery, static convertors, cables, installation, testing, and electric propulsion	DNV-OS-D201	All sections
INSTRUMENTATION AND TELECOMMUNICATION SYSTEMS		
Instrumentation systems including design principles, system design, computer based systems, component design and installation, and user interface	DNV-OS-D202	All sections
FIRE PROTECTION		
Fire protection including passive fire protection, active fire protection, fire fighting systems, fire and gas detection systems	DNV-OS-D301	Chapter 2: Sec.1: Passive Fire Protection Sec.2: Active Fire Protection of Specific Areas Sec.3: Fire Fighting Systems Sec.4: Fire and Gas Detection Systems Sec.5: Miscellaneous Items

SECTION 2
SUPPLEMENTARY REQUIREMENTS FOR SERVICE NOTATION DRILLING UNIT

A. General

A 100 Introduction

101 This section identifies design and construction requirements for assignment of service notation **Drilling Unit**.

102 The requirements in this section are supplementary to those for main class (**1A1**) as stated in Sec.1.

B. Safety Principles and Arrangement

B 100 General

101 Service notation **Drilling Unit** specifies additional requirements for:

— arrangement
— area classification
— shutdown
— escape, evacuation and communication.

B 200 Arrangement

201 Drilling units shall comply with DNV-OS-A101, Sec.8.

B 300 Area classification

301 Drilling units shall comply with DNV-OS-A101, Sec.4, and Sec.8.

B 400 Emergency shutdown

401 Drilling units shall comply with DNV-OS-A101, Sec.5.

B 500 Escape, evacuation and communication

501 Drilling units shall comply with DNV-OS-A101, Sec.8.

C. Structural Design

C 100 General

101 The structural strength shall be as required for the main class taking into account necessary strengthening of supporting structures for equipment applied in and forces introduced by the drilling operation.

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

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

D. Not in Use

E. Fire Protection

E 100 General

101 Service notation **Drilling Unit** specifies additional requirements for:

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

E 200 Supplementary technical requirements

201 Drilling units shall comply with DNV-OS-D301, Ch.2 Sec.6.

F. Summary of Requirements

F 100 Technical reference standards

101 Technical standards which shall be applied for assignment of service notation **Drilling Unit** are summarised in Table E1.

Table F1 Summary of technical reference standards for service notation Drilling Unit

Technical item	*Reference standard*	*Applicable parts or comments*
Safety principles and arrangement	DNV-OS-A101	Sec.1 to Sec.6. (Sec.4 and Sec.5 supplementary to **1A1**)
		Sec.8, Special requirements for drilling units
Materials	DNV-OS-B101	(No supplementary requirements to **1A1**)
Structural design of ship-shaped units	DNV-OS-C101 DNV-OS-C102	(No supplementary requirements to **1A1**)
Structural design of column-stabilised units	DNV-OS-C101 DNV-OS-C103	LRFD methodology (No supplementary requirements to **1A1**)
	DNV-OS-C201	WSD methodology (No supplementary requirements to **1A1**)
Structural design of self-elevating units	DNV-OS-C101 DNV-OS-C104	LRFD methodology (No supplementary requirements to **1A1**)
	DNV-OS-C201	WSD methodology (No supplementary requirements to **1A1**)
Structural fabrication	DNV-OS-C401	(No supplementary requirements to **1A1**)
Stability and watertight integrity	DNV-OS-C301	(No supplementary requirements to **1A1**)
Mooring and towing	Rules for Classification of Ships Pt.3 Ch.3 Sec.3	Ship-shaped units (No supplementary requirements to **1A1**)
	DNV-OS-E301	Other units (No supplementary requirements to **1A1**)
Marine and machinery systems and equipment	DNV-OS-D101	(No supplementary requirements to **1A1**)
Electrical systems and equipment	DNV-OS-D201	(No supplementary requirements to **1A1**)
Instrumentation and telecommunication systems	DNV-OS-D202	(No supplementary requirements to **1A1**)
Fire protection	DNV-OS-D301	Sec.1 to Sec.5 (**1A1** requirements)
		Sec.6, Supplementary requirements for drilling units

F 200 Industrial equipment

201 Drilling related systems and equipment installed in enclosed hull compartments below the damage water line shall be included in the scope of classification.

202 The items specified in 201 shall comply with relevant requirements given in DNV-OS-E101.

SECTION 3
SUPPLEMENTARY REQUIREMENTS FOR SERVICE NOTATION WELL INTERVENTION UNIT 1 AND WELL INTERVENTION UNIT 2

A. General

A 100 Introduction

101 This section identifies design and construction requirements for assignment of service notation **Well Intervention Unit 1** and **Well Intervention Unit 2**.

102 Units equipped for performing wire line intervention without introducing well fluids on board will be assigned class the notation **Well Intervention Unit 1**.

103 Units intended and equipped for direct contact with well fluids through riser and coiled tubing or drill pipe or intended to carry out well testing will be assigned class notation **Well Intervention Unit 2**.

104 The requirements in this section are supplementary to those for main class (**1A1**) as stated in Sec.1. Where no specific requirements for well intervention units are specified, the requirements for drilling units shall apply for **Well Intervention Unit 2**.

105 The service notation **Well Intervention Unit 1** is a voluntary notation. **Well Intervention Unit 2** is mandatory for DNV classed vessels.

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

B. Requirements for Well Intervention Unit 1

B 100 General

101 Service notation **Well Intervention Unit 1** specifies additional requirements for:

— area classification
— shutdown/disconnection.

B 200 Area classification

201 Units shall comply with DNV-OS-A101, Sec.4, as applicable for drilling units.

B 300 Emergency shutdown

301 Units shall comply with DNV-OS-A101, Sec.8 as applicable for drilling units, including a system for quick disconnect from the well head.

B 400 Fire Protection

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

B 500 Supplementary classification requirements

501 Reception tanks for handling of hydrocarbons shall be located taking into account the risk of fire and hydrocarbon leakages.

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

503 Machinery and other equipment necessary for the well intervention which is to be installed in hazardous areas shall be suitable for the intended purpose.

504 Internal combustion engines shall not be installed in hazardous areas.

505 Exhaust outlets for internal combustion engines and boilers installed in the work areas, shall be fitted with efficient spark arresting devices and shall discharge outside the hazardous areas.

C. Requirements for Well Intervention Unit 2

C 100 General

101 Service notation **Well Intervention Unit 2** specifies additional requirements for:

— arrangement
— area classification
— shutdown/disconnection
— escape, evacuation and communication.

There are similarities between a Well Intervention Unit 2 and a drilling unit. Therefore, DNV will reference the requirements for drilling units, where no other requirements are given for such units.

C 200 Arrangement

201 Units shall comply with DNV-OS-A101 Sec.3 and Sec.8 as applicable for drilling units.

C 300 Area classification

301 Units shall comply with DNV-OS-A101 Sec.4 and Sec.8 as applicable for drilling units.

C 400 Emergency shutdown

401 Units shall comply with DNV-OS-A101 Sec.5 D103 and Sec.8 as applicable for drilling units, including a system for quick disconnect from the well head.

C 500 Escape, evacuation and communication

501 Units shall comply with DNV-OS-A101 Sec.6 and Sec.8 as applicable for drilling units.

C 600 Fire Protection

601 Service notation **Well Intervention Unit 2** specifies additional requirements for:

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

602 Units shall comply with DNV-OS-D301, Sec.6, as applicable for drilling units.

C 700 Supplementary classification requirements

701 If the unit is equipped with tanks for carriage of liquid cargo in bulk with flash point below 60ºC, such as crude oil, the requirements in the Rules for Classification of Ship Pt.5 Ch.3, shall be complied with.

702 Reception tanks for handling of hydrocarbons shall be located taking into account the risk of fire and hydrocarbon leakages.

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

704 Machinery and other equipment necessary for well intervention which is to be installed in hazardous areas shall be suitable for the intended purpose.

705 Internal combustion engines shall not be installed in hazardous areas.

706 Exhaust outlets for internal combustion engines and boilers in the work areas shall be fitted with efficient spark arresting devices and shall discharge outside the hazardous areas.

D. Structural Design

D 100 General

101 Service notation **Well Intervention Unit 1** and **Well Intervention Unit 2** specifies additional requirements for:

— well intervention equipment substructure and foundation
— moonpool
— drill floor (if applicable).

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

D 200 Supplementary technical requirements

201 The items listed in 101 shall comply with the relevant sections of DNV-OS-C101 and:

— DNV-OS-C103 for column-stabilised units or installations
— DNV-OS-C104 for self-elevating units or installations
— DNV-OS-C106 for deep draught units or installations
— DNV-OS-C102 for ship-shaped units or installations.

E. Position Keeping

E 100 General

101 Units with the notation **Well Intervention Unit 1** or **2** shall as a minimum comply with the class notation **DYNPOS-AUTR** (IMO equipment class 2).

102 Requirements for **DYNPOS-AUTR** are given in DNV Rules for Ships Pt.6 Ch.7.

SECTION 4
SUPPLEMENTARY REQUIREMENTS FOR SERVICE NOTATION ACCOMMODATION UNIT

A. General

A 100 Introduction

101 This section identifies design and construction requirements for assignment of service notation **Accommodation Unit**.

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

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

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

B. Safety Principles and Arrangement

B 100 Arrangement of emergency power

101 The emergency switchboard shall be installed as near to the emergency source of power as is practicable.

102 Where the emergency source of power is a generator, the emergency switchboard shall be located in the same space as the emergency source of power, unless the operation of the emergency switchboard would thereby be impaired.

103 No accumulator battery fitted in accordance with E102 shall be installed in the same space as the emergency switchboard.

B 200 Emergency shutdown

201 Accommodation units that are located adjacent to operational units which have potential for hydrocarbon release shall comply with DNV-OS-A101, Sec.5.

C. Structural Strength

C 100 General

101 Service notation **Accommodation unit** includes requirements for the following:

— structural strength of the accommodation
— connection of the accommodation modules to main structure
— gangways.

C 200 Design loads

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

C 300 Containerised modules

301 If containerised modules are used for accommodation, the structural strength of the connections between the modules and between the modules and the supporting structure shall be in accordance with the general requirements given for the main class, assuming forces as given for heavy units in DNV-OS-C103, Sec.3 E400.

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

$$P_H = \sin\alpha \, g_0 M \quad \text{(kN)}$$

M = mass of unit in t
α = angle of heel corresponding to loss of buoyancy of one column.

Permissible usage factors are given in DNV-OS-C201, Sec.2 Table E2.

C 400 Gangways

401 Gangways shall be made of slip-proof open grating, be at least 600 mm wide and have railings at least 1 m high.

402 Environmental conditions (sea, weather, wind etc.) shall be considered for the design of gangways. Gangways shall be dimensioned for 4 kN/m^2. Allowed bending shall be maximum 1/250 between the points of support.

D. Stability and Watertight Integrity

D 100 General

101 There are no additional requirements to main class as given in Sec.1.

E. Electrical Systems and Equipment

E 100 Emergency source of power and emergency installation

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

102 Where the emergency source of power is a generator, a transitional source of emergency power shall be installed. This shall be an accumulator battery of sufficient capacity:

— to supply emergency lighting continuously for 30 minutes
— to close the watertight doors (if electrically operated), but not necessarily to close them simultaneously
— to operate the indicators (if electrically operated) which show whether power operated, watertight doors are open or closed
— to operate the sound signals (if electrically operated) which give warning that power operated, watertight doors are about to close
— to operate the fire detection and alarm systems, unless these systems are supplied by separate batteries.

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

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

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

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

F. Position Keeping

F 100 General

101 Accommodation units shall have the class notation **POSMOOR-V** or **DYNPOS-AUTR**.

SECTION 5
SUPPLEMENTARY REQUIREMENTS FOR SERVICE NOTATION **CRANE UNIT**

A. Introduction

A 100 Objective

101 This section identifies design and construction requirements for assignment of service notation **Crane Unit**.

102 Crane units are column-stabilised or self-elevating units specially intended for lifting purposes.

103 The requirements for main class **1A1**, as stated in Sec.1 shall be complied with in addition to the supplementary requirements for **Crane Unit** listed in this section.

B. Structural Design

B 100 General

101 The following is covered by the service notation:

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

B 200 Technical requirements

201 The hull structural strength shall in general be as required for main class taking into account necessary strengthening for supporting the crane(s). Crane units shall comply with the requirements of the Rules for Classification of Ships, Pt.5 Ch.7 Sec.17.

C. Stability and Watertight Integrity

C 100 Technical requirements

101 The requirements of the Rules for Classification of Ships, Pt.5 Ch.7 Sec.7, shall be complied with.

D. Certification of Materials and Components

D 100 Certification requirements

101 The crane(s) shall be delivered with certificates in compliance with DNV Standards for Certification No. 2.22 Lifting Appliances.

In agreement with the Society the crane may be certified based on other internationally recognised standards. Cranes certified by other Societies may be accepted based on special considerations.

SECTION 6
ADDITIONAL CLASS NOTATIONS: DESIGN AND CONSTRUCTION REQUIREMENTS FOR SPECIAL EQUIPMENT AND SYSTEMS

A. Introduction

A 100 General

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

102 Units fitted with systems and/or special features complying with relevant requirements of this section may be assigned class notations as described in Ch.1 Sec.3 Tables B3 and B5.

A 200 Technical reference documents

201 Technical requirements are given by reference to selected:

— DNV offshore standards
— DNV recommended practices
— other DNV rules and standards
— internationally recognised codes and standards.

202 The technical reference documents which shall be applied are given in the following subsections and summarised in Table V1.

A 300 General assumptions

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

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

B. Position Mooring System

B 100 General

101 **POSMOOR** notation may be assigned to units fitted with single or spread point mooring systems in accordance with the requirements of this section.

102 The notation is complemented with the symbols **-V**, **-TA** or **-ATA** as described in Table B1.

Table B1 POSMOOR class notations

Notation	*Description*
POSMOOR	Passive position mooring system
POSMOOR-V	Mooring system designed for positioning in vicinity of other structures
POSMOOR-TA	Thruster assisted mooring system dependent on manual remote thrust control system
POSMOOR-ATA	Thruster assisted mooring system dependent on automatic remote thrust control system

103 The notations aim to cover the reliability of the mooring system and equipment, for the purpose of ensuring safe position mooring, and covers the following aspects:

— environmental conditions and loads
— mooring system analysis
— thruster assisted mooring
— mooring equipment
— tests.

B 200 Technical requirements

201 The technical requirements of DNV-OS-E301 shall be complied with for assignment of the **POSMOOR** notations.

B 300 Certification of materials and components

301 Certification of equipment shall be in accordance with DNV-OS-E301, Ch.3.

C. Dynamic Positioning Systems

C 100 General

101 The following notations may be assigned to units with dynamic positioning systems: **DYNPOS-AUTS**, **DYNPOS-AUT**, **DYNPOS-AUTR** or **DYNPOS-AUTRO** according to extent of requirements applied.

Table C1 DYNPOS class notations

Notation	*Description*
DYNPOS-AUTS	Dynamic positioning system without redundancy
DYNPOS-AUT	Dynamic positioning system with an independent joystick back-up and a position reference back-up
DYNPOS-AUTR	Dynamic positioning system with redundancy in technical design and with an independent joystick back-up
DYNPOS-AUTRO	Dynamic positioning system with redundancy in technical design and with an independent joystick back-up. Plus a back-up dynamic positioning control system in an emergency dynamic positioning control centre, designed with physical separation for components that provide redundancy

102 The various notations depend on the dynamic positioning system layout and configuration as given in Table C1.

103 The dynamic positioning system includes requirements for the following subsystems, control panels and back-up systems which are necessary to dynamically position the unit:

— power system
— controller
— measuring system
— thruster system
— remote thrust control
— control panels.

C 200 Technical requirements

201 Technical requirements for the dynamic positioning notations shall be in accordance with the Rules for Classification of Ships Pt.6 Ch.7.

202 For **DPS** notations granted through class entries, see Rules for Classification of Ships Pt.6 Ch.7.

D. Drilling Plant

D 100 General

101 **DRILL** notation covers design fabrication, installation and operational aspects of offshore drilling facilities which have potential to affect safety of personnel or pollution of the environment.

102 **DRILL** notation requires certification of drilling equipment and systems, and approval of the complete drilling plant, which includes at least the following:

— Drilling structures
— Well control systems
— Heave compensation and tensioning systems
— Hoisting and rotating systems
— Drilling equipment handling systems
— Bulk storage, drilling fluid mixing and circulation, and cementing systems
— Well testing systems
— Other drilling equipment (winches, gear transmissions, man-riding equipment).

D 200 Technical requirements

201 The requirements for drilling facilities are stated in DNV-OS-E101.

D 300 Certification of materials and components

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

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

Guidance note:

Evidence may incorporate successful outcome of construction projects of similar nature.

---e-n-d---of---G-u-i-d-a-n-c-e---n-o-t-e---

D 400 DRILL(US)

401 Drilling systems and equipment for use on the Gulf of Mexico Outer Continental Shelf shall comply with the regulations of the Bureau of Ocean Energy Management Regulation and Enforcement (BOEMRE).

402 *Objective*

The objective of DRILL(US) is to ensure that the drilling plant is in compliance with relevant BOEMRE regulations.

403 *Scope*

The scope of DRILL(US) is identical with the scope as defined in DNV-OSE101

404 *Application*

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

405 *Technical requirements*

An ROV must be maintained on each floating drilling rig on a continuous basis.

Ref: BOEMRE 30 CFR Part III, par 250.442(c), 250.515(e) and 250.615(e)

406 Autoshear and Deadman systems must be provided on DP rigs DRIL(US)

Ref: BOEMRE 30 CFR Part III, par 250.442(f), 250.515(e) and 250.615(e)

407 Subsea BOP stack must be equipped with remotely operated vehicle (ROV) intervention capability. At a minimum, the ROV must be capable of closing one set of pipe rams, closing one set of blind-shear rams, and unlatching the lower marine riser package.

Ref: BOEMRE 30 CFR Part III, par 250.442(c), 250.515(e) and 250.615(e)T

E. Helicopter Decks

E 100 General

101 Units fitted with erected landing platforms for helicopters or landing areas arranged directly on decks or top of deckhouses may be given the class notation **HELDK** together with qualifiers as defined in Table E1.

Table E1 HELDK class notation

Class notation	*Description*	*Qualifier*	*Description*
HELDK	Helicopter deck	<none>	Structure
		S	Additional requirements to shipsafety.
		H	Additional requirements to helicoptersafety
		F	Additional requirements to helicopterfacilities
		(N)	Evaluated with respect to requirements for operation on the Norwegian Continental Shelf (NCS)

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

— The qualifier **H** can only be applied together with the qualifier **S**.
— The qualifier **F** can only be applied together with the qualifiers **SH**.
— The qualifier **(N)** can only be applied together with qualifiers **SH** or **SHF**.

E 200 Technical requirements

201 Technical requirements for **HELDK** shall comply with DNV-OS-E401, Ch.2, as applicable:

— Sec.1 to Sec.4 for notation **HELDK**
— Sec.5 Additional requirements for qualifier **S**
— Sec.6 Additional requirements for qualifier **H**
— Sec.7 Additional requirements for qualifier **F**.

For addition additional requirements for qualifier (**N**) see OSS-201, Ch.2, Sec.9.

F. Well Testing Facilities

F 100 General

101 Units equipped with facilities for well testing may be assigned class notation **WELLTEST**.

102 **WELLTEST** is intended for limited testing of wells in relation to drilling activities, and is applicable for units having service notation **Drilling Unit**.

F 200 Technical requirements

201 The requirements given in DNV-OS-E101, Ch.2 Sec.5 H, shall be complied with.

F 300 Certification of materials and components

301 Components subject to certification are given in DNV-OS-E101, Ch.3.

G. Temporary Oil Storage Facilities

G 100 General

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

102 The following conditions apply for assignment of **TEMPSTORE**:

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

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

G 200 Technical requirements

201 The requirements given for **Storage Units** in the following offshore standards shall be complied with as applicable for **TEMPSTORE**:

— DNV-OS-A101
— DNV-OS-D101
— DNV-OS-D301.

H. Crane Installations

H 100 General

101 **CRANE** notation may be given to units with permanently installed cranes.

102 In addition to certification of the crane, the following is covered:

— supporting structure for the crane, (strengthening of deck structure, pedestal etc.)
— devices for locking crane in parked position (unit at sea).

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

H 200 Technical requirements

201 The requirements given in the Rules for Classification of Ships, Pt.6 Ch.1 Sec.3, shall be complied with for assignment of class notation **CRANE**.

H 300 Certification of materials and components

301 Cranes shall be delivered as DNV certified in accordance with DNV Standards for Certification No. 2.22 Lifting Appliances.

I. Diving System Installations

I 100 General

101 Units arranged for support of diving operations applying rope and/or umbilical connection between the submerged bell and the unit may be given class notations **DSV-SURFACE** or **DSV-SAT** as applicable depending on:

— physical size of the chambers
— the life support system
— control stand
— communication system
— capacity of the emergency power supply.

102 The various class notations are related to the maximum operation depth d_{max} and maximum operation time T_{OP} as given in Table I1.

Table I1 DSV class notations		
Class	**DSV-SURFACE**	**DSV-SAT**
Restrictions	$d_{max} \leq 60$ m $T_{OP} \leq 8$ hours	None, except those imposed by the rule requirements

103 The class notation will cover matters of:

— the unit's position keeping ability during diving operations
— hull structural arrangements related to the diving system, e.g. moonpool
— arrangement and installation of the diving system
— electrical systems
— fire protection, detection and extinction
— complete diving system with respect to safety and functioning
— sanitary systems (where applicable)
— testing
— stability and floatability.

I 200 Technical requirements

201 Assignment of **DSV** class notations is based on compliance with the Rules for Classification of Ships, Pt.5 Ch.14.

I 300 Certification of materials and components

301 The diving equipment shall be certified according to the Rules for Certification of Diving Systems.

302 Cranes and other appliances for lifting of diving equipment and systems shall be certified according to DNV Standards for Certification No. 2.22 Lifting Appliances.

J. Additional Fire Protection

J 100 General

101 Units with additional fire safety measures in accommodation spaces and machinery spaces may be assigned class notations **F-A**, **F-M**, or **F-AM**.

102 The various notations are related to areas subjected to additional fire protection as given in Table J1.

Table J1 Class notations for additional fire protection	
Notation	*Description*
F-A	Accommodation space
F-M	Machinery space
F-AM	Accommodation and machinery space

J 200 Technical requirements

201 The requirements as stated in the Rules for Classification of Ships, Pt.6 Ch.4, shall be complied with for assignment of the class notations.

K. Fire Fighters

K 100 General

101 Units arranged and equipped for fighting fires on offshore and onshore structures in accordance with the requirements of this sub-section, may be assigned the class notation **FIRE FIGHTER I**, **II** or **III**. The numbers indicate the level of capability as given by Table K1.

Table K1 Fire Fighter class notations

Notation	*Description*
FIRE FIGHTER I	Early stage fire fighting and rescue close to structure on fire
FIRE FIGHTER II	Continuous fire fighting and cooling of structures on fire
FIRE FIGHTER III	As **FIRE FIGHTER II**, plus larger pumping capacity and more comprehensive equipment

K 200 Technical requirements

201 The requirements given in the Rules for Classification of Ships, Pt.5 Ch.7 Sec.5, shall be complied with for assignment of the class notations.

L. Loading computer

L 100 General

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

The letters are denoting **L**oading **C**omputer **S**ystem-**D**amage **C**ontrol.

L 200 Technical requirements

201 The requirements of the Rules for Classification of Ships Pt.6 Ch.9 Sec.4 shall be complied with as applicable.

M. Periodically Unattended Machinery Space

M 100 General

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

102 **E0** is assigned when machinery alarms are relayed to the bridge and engineers' accommodation, and a central control system is fitted.

103 **ECO** is assigned when machinery alarms are initiated in an attended centralised control station, and a remote control system from at least this station is fitted.

M 200 Technical requirements

201 Assignment of class notations **E0** and **ECO** is based on compliance with the Rules for Classification of Ships, Pt.6 Ch.3, with qualifications given in 202.

202 References to the Rules for Classification of Ships, Pt.4 Ch.10 (fire protection) shall be replaced with DNV-OS-D301 for unit application.

N. Well Intervention System

N 100 General

101 **WELL-1** and **WELL-2** notation covers design and operational aspects of offshore well intervention facilities which have potential to affect safety of personnel or pollution of the environment.

102 **WELL-1** notation covers the vessel mounted systems associated with well intervention:

— Well intervention structures
— Heave compensation and tensioning systems
— Hoisting systems
— EDP/LRP and pipe handling systems
— Fluid circulation
— Other systems (e.g. winches, man riding equipment, skids, carriers).

103 **WELL-2** notation covers the vessel mounted systems and the subsea equipment used for well intervention:

— Well intervention structures
— Well control systems (e.g. riser, EDP/LRP)
— Wire line systems
— Coiled tubing systems
— Heave compensation and tensioning systems
— Hoisting systems
— EDP/LRP and pipe handling systems
— Fluid circulation
— Other systems (e.g. winches, man riding equipment, skids, carriers).

104 **WELL-1** and **WELL-2** include specific requirements relating to:

— design principles
— well intervention systems and equipment
— materials and welding
— piping
— electrical and control systems
— instrumentation component design and installation
— user interface (optional)
— manufacture, workmanship, testing and maintenance.

N 200 Technical requirements

201 The requirements for Well Intervention Systems are stated in DNV-OS-E101.

N 300 Certification of materials and components

301 Procedures and requirements for classification including certification of equipment and systems shall be in accordance with DNV-OS-E101, Ch.3.

O. Hull Monitoring System

O 100 General

101 Units equipped with instrumentation system for monitoring hull behaviour in accordance with the requirements of this section may be assigned class notation **HMON (...)** as given in the Rules for Classification of Ships, Pt.6 Ch.11.

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

O 200 Technical requirements

201 Assignment of **HMON (...)** class notations is based on compliance with the Rules for Classification of Ships, Pt.6 Ch.11.

P. Noise, Vibration and Comfort Rating Notations

P 100 General

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

P 200 Vibration class

201 *General*

Units arranged and equipped with the aim to reduce the risk of failure in machinery, components and structures onboard units, caused by excessive vibration may be given the additional class notation **VIBR**.

202 *Technical requirements*

The requirements of the Rules for Classification of Ships Pt.6 Ch.15 shall be complied with as applicable.

P 300 Comfort class

301 *General*

Units arranged and equipped with the aim to reduce the impact of noise and vibration related to comfort on board may be assigned for the following additional class notations:

— **COMF-V(55)**, where **crn** is a comfort rating number which quantifies the comfort rating of noise and vibration for the unit
— **COMF-C(crn)**, where **crn** is a comfort rating number which quantifies the comfort rating of the indoor climate for the unit, or
— **COMF-V(crn)C(crn)**.

302 *Technical requirements*

The requirements of the Rules for Classification of Ships Pt.5 Ch.12 shall be complied with as applicable.

Q. Winterization, Cold Climate and Ice Notations

Q 100 General

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

Optional class notations related to cold climate service are given in Ch.1 Sec.3 Table B4.

Q 200 Operation of column-stabilised units in ice conditions

201 *General*

Units strengthened for occasional navigation and operation in waters with light to heavy first year ice conditions in accordance with this sub-section may be assigned class notations **ICE-T** or **ICE-L** as described in Table Q1.

Table Q1 ICE class notations

Notation	*Description*
ICE-T	Strengthened for ice condition transit
ICE-L	Strengthened for ice condition operation

202 *Technical requirements*

The ice strengthening requirements given in the Rules for Classification of Ships, Pt.5 Ch.1 Sec.3 shall be applied as far as relevant and practicable. Propeller nozzles and associated shafts and machinery situated more that 5 m below lowest transit waterline (TWL) are not considered affected by ice loads.

R. Management of Safety and Environmental Protection

R 100 General

101 Units which have implemented a management system in compliance with the provisions of Q may receive a “Shipboard SEP Classification” certificate. To receive the “Shipboard SEP Classification” certificate, the Company must hold a valid “Company SEP Classification” certificate and the unit must have been successfully audited by DNV. Units classified in accordance with the provisions of Q will be given the class notation **SBM**.

102 SEP classification includes:

— assessment of the management system
— initial audit of the SEP management system ashore and onboard
— periodical audits ashore and onboard for retention of the SEP certificates
— renewal audits ashore and onboard every fifth year.

R 200 Technical requirements

201 Assignment of **SBM** class notation is based on compliance with the Rules for Classification of Ships, Pt.7 Ch.3 Sec.1.

S. Environmental Notations

S 100 Additional oil pollution prevention measures fuel oil systems

101 *General*

Units arranged and equipped with additional oil pollution prevention measures for the fuel oil system may be given the class notation **OPP-F**.

102 *Technical requirements*

The requirements given in the Rules for Classification of Ships, Pt.6 Ch.1 Sec.6, shall be complied with for assignment of the class notations.

S 200 CLEAN or CLEAN DESIGN

201 *General*

Units arranged and equipped with the aim to reduce the environmental impact from emissions to air, discharges to sea, and deliveries to shore from Units may be given the additional class notations: **CLEAN** or **CLEAN DESIGN**.

202 *Technical requirements*

The requirements given in the Rules for Classification of Ships, Pt.6 Ch.12 Sec.1, shall be complied with for assignment of the class notations.

S 300 Vapour Control Systems (VCS)

301 General

Units and installations fitted with systems for control of vapour emission from cargo tanks may be given one of the following additional class notations: **VCS-1, VCS-2** or **VCS-3**.

Table S1 VCS class notations	
Notation	*Description*
VCS-1	Basic installation (meeting IMO MSC/Circ.585)
VCS-2	**VCS-1** + overfill alarm (meeting USCG CFR 46 part 39)
VCS-3	**VCS-2** + installation for onboard vapour processing

302 *Technical requirements*

The requirements given in the Rules for Classification of Ships, Pt.6 Ch.10 Sec.1, shall be complied with for assignment of the class notations.

S 400 Recyclable

401 The additional class notation **RECYCLABLE** may be given to offshore units to document early compliance with the requirements for IHM Part 1 set forth by the IMO Hong Kong Convention for the Safe and Environmentally Sound Recycling of Ships.

402 The requirements given in the Rules for Classification of Ships, Pt.6 Ch.27, shall be complied with for assignment of the class notations.

T. Integrated Software Dependent Systems

T 100 General

101 Units built and tested in compliance with the requirements of DNV-OS-D203 may be assigned one of the optional class notations for integrated software-dependent systems shown in Table T1.

Table T1 ISDS Class notations	
Notation	*Description*
ISDS [system1,...,system n]	Units having undergone enhanced software-dependent system integration for the system(s) according to DNV-OS-D203

U. Special Feature Notations

U 100 General

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

U 200 Special feature notation SUB

201 **SUB** is applicable for column-stabilised units strengthened for operation when resting on the seabed.

202 Requirements for air gap, safety against overturning stability, local reinforcement of bottom of pontoons, etc. will be especially considered for the “resting on seabed” condition.

U 300 Special feature notation NON-SELFPROPELLED

301 Units not fitted with propulsion and steering arrangement for independent transit will be assigned special feature notation **NON-SELFPROPELLED**.

302 For **NON-SELFPROPELLED** units the survey scopes for steering gear, tailshaft and thrusters for propulsion may be adjusted in accordance with the intended use (e.g. for **DYNPOS-AUTS**, **POSMOOR**, as auxiliary installation, or not used at all).

U 400 Tailshaft monitoring – TMON

401 When the following design requirements are fulfilled, the class notation **TMON** (tailshaft condition monitoring survey arrangement) may be obtained:

— the stern tube bearings are oil lubricated
— high temperature alarm is fitted on aft stern tube bearing (2 sensors or one easily interchangeable sensor located in the bearing metal near the surface, in way of the area of highest load, which normally will be the bottom area (5 to 7 o'clock) in the aft third of the bearing)
— where one interchangeable sensor is fitted one spare sensor is to be stored on board
— the setting of the stern tube high temperature alarm is normally not to exceed 65°C. Higher alarm set point may be accepted upon special consideration
— the sealing rings in the stern tube sealing box must be replaceable without shaft withdrawal or removal of propeller
— arrangement for bearing wear down measurement is fitted
— electrical grounding of the shafting is mandatory
— the system must allow representative oil samples to be taken for analysis of oil quality under running conditions. Location where samples are to be taken shall be clearly pointed out on system drawing and test cock to be fitted with signboard. A written procedure for how to take oil samples shall be submitted.

402 A test kit for monitoring of possible water content in the stern tube lubricating oil is to be provided on board. The water content is normally not to exceed 2% by volume. If water content above 2% is detected appropriate, action shall be taken.

403 Oil lubricated propeller shafts with roller bearings arranged in the stern tube may be granted **TMON**. Additional requirements for such arrangements are:

a) The bearing temperature is to be monitored. Two sensors (or one sensor easily interchangeable at sea) are to be fitted. Temperature alarm level should normally not exceed 90°C.

b) Vibration monitoring is required for roller bearings. Handheld probes are not accepted; magnetic, glue, screw mountings or equivalent are compulsory.

c) Vibration signal is to be measured as velocity or acceleration. Integration from acceleration to velocity is allowed.

d) The vibration analysis equipment must be able to detect fault signatures in the entire frequency range for the monitored bearing. A reference level under clearly defined operational conditions is to be established. The reference level shall be used as basis for establishing an alarm level.

e) For podded propulsors (where the propeller shaft is a part of the electrical motor rotor) all roller bearings for the propeller shafting are to be monitored with both oil temperature sensors and vibration monitoring.

f) The water content is normally not to exceed 0.5%.

U 500 Special Feature Notation BIS

501 Units prepared for in-water survey during building may be given the notation **BIS**.

502 The technical requirements in the Rules for Classification of Ships, Pt.3 Ch.1 Sec.1 D, shall be complied with.

V. Summary of Reference Documents for Additional Class Notations

V 100 General

101 Rules and standards which shall be applied for assignment of system and special facility class notations are summarised in Table V1.

Table V1 Summary of reference documents for system and special facility notations	
Notation	*Description*
CLEAN **CLEAN DESIGN**	Rules for Classification of Ships, Pt.6 Ch.12 Sec.1
COMF- V(crn) (or) **C(crn)** (or) **V(crn)C(crn))**	Rules for Classification of Ships Pt.5 Ch.12
CRANE	Rules for Classification of Ships Pt.6 Ch.1 Sec.3
DEICE **DEICE-C**	Rules for Classification of Ships Pt.6 Ch.1 Sec.5
DRILL **DRILL(N)** **DRILL(US)**	DNV-OS-E101 DNV-OSS-201 DNV-OSS-101
DSV-SURFACE **DSV-SAT**	Rules for Classification of Ships Pt.5 Ch.14
DYNPOS-AUTS **DYNPOS-AUT** **DYNPOS-AUTR** **DYNPOS-AUTRO**	Rules for Classification of Ships Pt.6 Ch.7
DYNPOS-ER	Rules for Classification of Ships Pt.6 Ch.26
DPS 1-3	Rules for Classification of Ships Pt.6 Ch.7
E0 **ECO**	Rules for Classification of Ships Pt.6 Ch.3
F-A **F-M** **F-AM**	Rules for Classification of Ships Pt.6 Ch.4
FIRE FIGHTER I **FIRE FIGHTER II** **FIRE FIGHTER III**	Rules for Classification of Ships Pt.5 Ch.7 Sec.5
FMS	DNV-RP-C206 “Fatigue Methodology for Offshore Ships”
HELDK	DNV-OS-E401
HMON (...)	Rules for Classification of Ships Pt.6 Ch.11
ICE-T **ICE-L**	Rules for Classification of Ships Pt.5 Ch.1 Sec.3
ISDS	DNV-OS-D203
LCS-DC	Rules for Classification of Ships Pt.6 Ch.9 Sec.4
OPP-F	Rules for Classification of Ships, Pt.6 Ch.1 Sec.6
POSMOOR **POSMOOR-V** **POSMOOR-TA** **POSMOOR-ATA**	DNV-OS-E301
SBM	Rules for Classification of Ships Pt.7 Ch.3 Sec.1
TEMPSTORE	DNV-OS-A101, DNV-OS-D101, DNV-OS-D301
VCS-1 **VCS-2** **VCS-3**	Rules for Classification of Ships, Pt.6 Ch.10 Sec.1
VIBR	Rules for Classification of Ships Pt.6 Ch.15 Sec.1
WELL	DNV-OS-E101
WELLTEST	DNV-OS-E101
WINTERIZED **WINTERIZED ARCTIC**	Rules for Classification of Ships Pt.5 Ch.1 Sec.6

SECTION 7
SERVICE NOTATION WIND TURBINE INSTALLATION UNIT

A. General

A 100 Introduction

101 This section identifies design and construction requirements for assignment of service notation **Wind Turbine Installation Unit**.

102 Wind Turbine Installation Units are specially intended for installation and/or maintenance of fixed and floating wind power equipment such as:

— foundations
— columns
— generator house
— blades.

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

104 The requirements for main class (1A1) given in Sec.1 shall be complied with. Specific requirements given in DNV-OS-J301 take precedence over requirements for main class (1A1).

B. General requirements for Wind Turbine Installation Unit

B 100 Column Stabilised or Self-elevating Units

101 Design and construction requirements for assignment of service notation **Wind Turbine Installation Unit** are provided in DNV-OS-J301.

B 200 Non Self-elevating Vessel

201 Design and construction requirements for assignment of service notation **Wind Turbine Installation Vessel** is provided in Rules for Classification of Ships Pt.5 Ch.7 Sec.22.

C. Crane Installations

C 100 General

101 Wind Turbine Installation Units which are equipped with a crane, and is specially intended for lifting purposes, shall in addition to service notation **Wind Turbine Installation Unit** be assigned the service notation **Crane Unit** as specified in Sec.5 and shall comply with the requirements of class notation **CRANE** as specified in Sec.6 H.

OFFSHORE SERVICE SPECIFICATION
DNV-OSS-101

RULES FOR CLASSIFICATION OF OFFSHORE DRILLING AND SUPPORT UNITS

CHAPTER 3

CLASSIFICATION IN OPERATION

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SECTION 1
GENERAL PROVISIONS FOR PERIODICAL SURVEYS

A. Introduction

A 100 General

101 This section states the periodical survey principles and requirements for retention of class to units covered by the provisions of DNV-OSS-101. Requirements are applicable to main class, service notations and additional class notations unless otherwise stated.

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

103 Units of ship-shaped structure are generally treated as ships with respect to survey of hull and equipment. Exceptions are noted in respective survey requirements.

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

105 For *column-stabilised* and *self-elevating units*, DNV will develop and maintain an In-service Inspection Program (IIP) which will contain the structural items to be surveyed to satisfy the requirements of main class, excluding any additional class notations. The IIP constitutes the formal basis for surveying structural items under main class and shall be completed to the satisfaction of attending surveyor before renewal survey can be credited.

106 It is provided that every unit have implemented a maintenance system including machinery system and equipment subject to class (see Sec.7 Table A1). The maintenance system shall ensure that:

— inspections and maintenance are carried out at defined intervals
— records of these activities are maintained.

Guidance note:
The maintenance system may be manual or computerised.

---e-n-d---of---G-u-i-d-a-n-c-e---n-o-t-e---

A 200 Survey pre-planning and record keeping

(IACS UR Z15)

201 A specific survey program for renewal surveys and continuous surveys must be worked out in advance of the renewal survey by the owner in cooperation with the classification society. The survey program shall be in written format. The IIP may be part of the program.

202 Plans and procedures for dry-docking surveys (or underwater inspection in lieu of dry-docking survey per DNV-RP-A201) are to be submitted for review in advance of the survey and made available on board. These should include drawings or forms for identifying the areas to be surveyed, the extent of hull cleaning, non-destructive testing locations (including NDT methods), nomenclature, and for the recording of any damage or deterioration found. Submitted data, after review by the Society, will be subject to revision if found to be necessary in light of experience.

B. Periodical Surveys

B 100 General

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

102 Periodical surveys will belong to one of the following categories according to the level of survey requirements:

— annual survey
— intermediate survey
— complete survey.

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

— renewal survey.

The following specific surveys may be scheduled according to one or more of the above categories:

— bottom survey
— propulsion/positioning thruster survey
— boiler survey (including steam generator survey)
— thermal oil heater survey
— survey of optional class notations (voluntary class notations).

103 Periodical surveys shall be carried out at prescribed intervals and within applicable time windows.

A survey may be split in different parts, commenced and progressed within the time window provided all the requirements of the survey are completed by the end of the time window.

The main class intermediate survey can not serve as commencement of the next renewal survey. For concurrent surveys, the time window may be limited by that of the other survey.

104 The due date of a periodical survey will be established depending upon the survey interval, measured from one of the following events, whichever is relevant:

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

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

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

B 200 Postponement of periodical surveys

201 Except for annual and intermediate surveys for main class, the Society may accept to postpone periodical surveys in exceptional circumstances and upon consideration in each separate case.

202 Postponement of a periodical survey shall not exceed 3 months and will not affect the survey's next due date.

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

B 300 Survey of units out of commission

301 Units which have been out of commission, e.g. laid up, for a period of at least 12 months, shall be surveyed and tested before re-entering service. The extent of the surveys and tests will be considered in each case depending upon:

— the time the unit has been out of commission
— the maintenance and preservative measures taken during lay-up
— the extent of surveys carried out during the time out of commission. As a minimum, a sea trial for function testing of the machinery installation shall be carried out. All overdue surveys shall be completed prior to re-entering service.

302 During lay-up, units shall be subjected to annual survey.

The extent of the annual survey will be reduced compared to main class annual survey, but shall cover watertight integrity, bilge system, fire hazard and equipment in use.

B 400 Survey Schedules

401 Annual survey schedule is as follows:

— The due date in general corresponds to the anniversary date of the class assignment or the expiry of the previous classification certificate if different.
— The survey shall normally be carried out within a time window of 3 months on either side of the due date
— In case a main class annual survey is commenced prior to the defined time window, the survey must be completed not more than 6 months after the date of commencement. In such cases the anniversary dates for the subsequent annual surveys will be advanced, corresponding to a date not later than 3 months after the commencement of the annual survey just carried out.
— An additional main class annual survey may be required when the anniversary date has been advanced unless the expiry date of the classification certificate is also advanced.

402 Intermediate survey schedule is as follows:

— The due date corresponds to the date 2.5 years before the expiry date of the classification certificate.
— The survey shall normally be carried out within a time window of 9 months on either side of the due date.
— The main class intermediate survey shall be completed concurrently with the second or third main class annual survey in each period of the classification certificate.
— The same surveys and UTM of tanks or spaces can not be credited towards both intermediate and renewal survey

403 Complete surveys are denoted:

— Complete survey (2.5 years), or
— Complete survey (5 years).

Complete survey schedule is as follows:

— The due date corresponds to 2.5 years, or 5 years
— The survey shall normally be carried out within a time window of 9 months before and 6 months after the due date.
— Survey required to be concurrent with the renewal survey shall be completed no later than at the completion of the renewal survey.

404 Renewal survey schedule is as follows:

— The due date is set at 5 years interval and corresponds to the expiry date of the classification certificate.
— The survey shall normally be completed within a time window of 3 months before the due date.
— The survey may be commenced at the fourth annual survey or between the fourth and fifth annual surveys.
— In case the survey is commenced more than 15 months before the expiry date of the classification certificate, the due date of the survey will be advanced to a date not later than 15 months after the commencement.
— The renewal survey shall be completed concurrently with the last main class annual survey in each period of the classification certificate.
— The same surveys and UTM of tanks or spaces can not be credited towards both Intermediate and renewal survey.

405 Bottom survey schedule is as follows:

a) The due date is set at intervals in accordance with the following:

— two bottom surveys are required during each five-year period of the classification certificate
— the interval between any two successive bottom surveys is in no case to exceed 36 months.

b) The survey shall be carried out on or before the due date.
Time window is not applicable.

c) One bottom survey shall be carried out in conjunction with the renewal survey, i.e. not more than 15 months prior to the expiry date of the classification certificate.

406 Survey of geared and podded thrusters for propulsion, and all **DYNPOS/POSMOOR** class notations are scheduled according to complete survey (5 year). Podded thrusters shall also have an annual survey.

407 Survey intervals should in general be as given in Tables B1 and B2.

Table B1 Periodical surveys main class. (For survey extent, see Sec.4)

Main character of class	*Survey extent and type (as applicable)*		*Survey interval, years*	*Survey time window, see Fig.1*		*Remarks*
				W_B *(months)*	W_A *(months)*	
1A1	Hull, machinery and equipment	Renewal	5	3	0 (See B200)	
		Annual	1	3	3	
		Intermediate	2-3 (see B402)			
	Bottom					See Sec.4 K
	Tailshaft with continuous corrosion resistant metallic liner or shaft of corrosion resistant material or shaft with specially approved protection arrangement		5	6	6	
	Tailshaft with approved oil sealing glands		5	6	6	May be extended to 10 years provided that an intermediate survey is carried out after 5 years with satisfactory result. May be extended to 15 years provided a tailshaft condition monitoring survey arrangement (**TMON**) has been granted.
	Thruster					See Sec.4 G
	Auxiliary boiler		2.5	6	6	
	Steam and steam generator		2.5	6	6	
	Thermal oil heaters		2.5	6	6	

Table B2 Periodical surveys, additional class. (For survey extent, see Sec.5 and Sec.6)

Additional class notation	*Survey extent and type*		*Survey interval years*	*Survey time window see Fig.1*		*Remarks*
				W_B *(months)*	W_A *(months)*	
Accommodation Unit	Accommodation unit	Annual Complete periodical	1 5	3 3	3 B403	
CLEAN, CLEAN DESIGN	Environmental class, Annual		1	3	3	To be carried out concurrently with the annual survey main class. WA is 0 when completed concurrently with the renewal survey main class.
COMF-V(crn) or **C(crn)** or **V(crn)C(crn))**	Comfort class, Annual		1	3	3	To be carried out concurrently with the annual survey main class. WA is 0 when completed concurrently with the renewal survey main class.
CRANE	Crane	Annual Complete periodical	1 5	3 3	3 See B403	
Crane Unit	Crane unit	Annual Complete periodical	1 5	3 3	3 See B403	
DEICE **DEICE-C**	Deicing or anti-icing system, Annual		1	3	3	

Table B2 Periodical surveys, additional class. (For survey extent, see Sec.5 and Sec.6) (Continued)

Additional class notation	*Survey extent and type*		*Survey interval years*	*Survey time window see Fig.1*		*Remarks*
				W_B *(months)*	W_A *(months)*	
DRILL	Drilling plant	Annual Complete periodical	1 5	3 3	3 See B403	
DSV-SURFACE **DSV-SAT**	Diving system	Annual Intermediate Complete periodical	1 2.5 5	3 6 3	3 6 See B403	
Drilling Unit	Drilling unit	Annual Complete periodical	1 5	3 3	3 See B403	
DYNPOS-AUTS, **DYNPOS-AUT**, **DYNPOS-AUTR**, **DYNPOS-AUTRO**, **DYNPOS-ER**, **DPS 1** to **3**	Dynamic positioning, Complete periodical		2.5	6	6	
E0, ECO	Periodically unattended machinery space	Annual Complete periodical	1 5	3 3	3 3	
F-A, F-M, F-AMC	Additional fire protection, Complete periodical		2.5	6	6	
FIRE FIGHTER (**-I**, **-II**, **-III**)	Fire fighter, Complete periodical		2.5	6	6	
FMS	Fatigue methodology for ship-shaped units		1	3	3	
HELDK	Helicopter deck, Complete periodical		5	3	See B403	
HMON (...)	Hull monitoring system, Annual		1	2	See B403	
LCS-DC	Loading computer for damage control		1	3	3	
OPP-F *)	Additional oil pollution prevention measures for fuel oil systems		5	3	0	*) No specific survey items. Complete periodical survey considered covered by renewal survey main class.
POSMOOR (**-V**, **-TA**, **-ATA**)	Position mooring	Annual Intermediate Complete periodical	1 2.5 5	3 6 3	3 6 See B403	
SBM	Safety and Environmental Protection (SEP) management system, Complete periodical		5	3	See B403	
Support Unit	See relevant class notations		See surveys			
TEMPSTORE	Temporary storage of oil	Annual Complete periodical	1 5	3 3	3 See B403	
TMON	Tailshaft monitoring, annual		1	6	6	
VIBR			1	3	3	To be carried out concurrently with the annual survey main class. WA is 0 when completed concurrently with the renewal survey main class.
Well Intervention Unit 1 or **2**	Well intervention facility	Annual Complete periodical	1 5	3 3	3 See B403	

Table B2 Periodical surveys, additional class. (For survey extent, see Sec.5 and Sec.6) (Continued)

Additional class notation	*Survey extent and type*		*Survey interval years*	*Survey time window see Fig.1*		*Remarks*
				W_B *(months)*	W_A *(months)*	
WELL-1 or **2**	Well intervention facility	Annual Complete periodical	1 5	3 3	3 See B403	
WELL TEST	Well test facility	Annual Complete periodical	1 5	3 3	3 See B403	
WINTERIZED - BASIC **WINTERIZED - COLD**	Operating in cold climate		1	3	3	
WINTERIZED ARCTIC (design temp. °C)	Operating in cold climate, with add. req. for pollution prevention in vulnerable arctic areas		1	3	3	

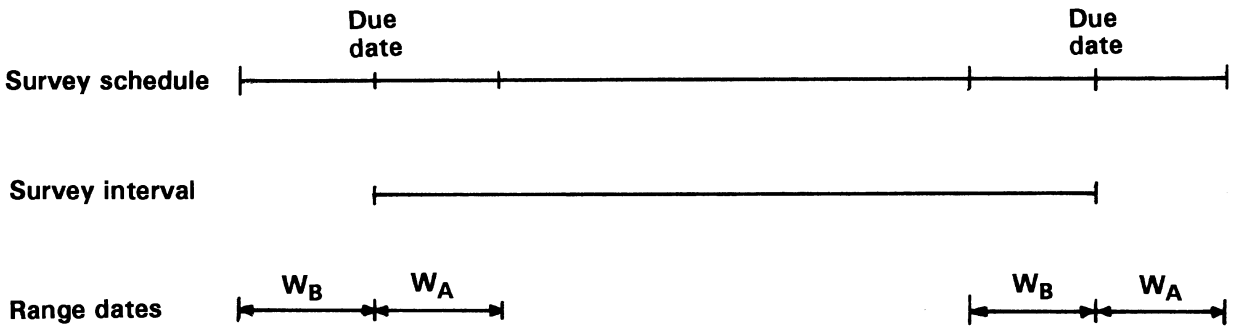

Figure 1
Survey time windows

SECTION 2
GENERAL REQUIREMENTS FOR HULL AND MACHINERY SURVEYS

A. General

A 100 Preparation for survey

101 The owner shall provide the necessary facilities for safe execution of surveys.

102 Tanks and spaces shall be safe for access, i.e. gas freed, ventilated, cleaned and illuminated.

103 For overall and close-up examination, means shall be provided to enable the surveyor to examine the structure in a safe and practical way, see B100.

B. Requirements for Hull Surveys

B 100 Conditions for survey and access to structures

101 In preparation for survey and to allow for a thorough examination, all spaces shall be cleaned including removal from surfaces of all loose accumulated corrosion scale. In tanks where soft coatings have been applied, representative areas and those areas where it is obvious that further close-up examination is required shall be cleaned free of soft coating.

Guidance note:

Spaces should be sufficiently clean and free from water, scale, dirt, oil residues etc. to reveal corrosion, deformation, fractures, damage, or other structural deterioration. However, those areas of structure whose renewal has already been decided by the owner need only be cleaned and descaled to the extent necessary to determine the limits of the renewed areas. for more detailed information with regard to a tank where soft coatings have been applied, see IACS recommendation No. 44.

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102 All spaces shall be made safe for access, i.e. gas freed, ventilated and illuminated, and prepared for the surveyor to examine the structure in a safe and practical way. One or more of the following means for access, acceptable to the surveyor, shall be provided:

— permanent staging and passages through structures
— temporary staging and passages through structures
— lifts and moveable platforms
— hydraulic arm vehicles such as conventional cherry pickers
— boats or rafts
— portable ladder
— other equivalent means.

103 Rafts or boats alone may be allowed for survey of the under deck areas for tanks or spaces, if the depth of the webs is 1.5 m or less.

If the depth of the webs is more than 1.5 m, rafts or boats alone may be allowed only:

a) when the coating of the under deck structure is in GOOD condition and there is no evidence of wastage or
b) if a permanent means of access is provided in each bay to allow safe entry and exit. This means:
   — access direct from the deck via a vertical ladder and a small platform fitted approximately 2 m below the deck in each bay or
   — access to deck from a longitudinal permanent platform having ladders to deck in each end of the tank.

   The platform shall, for the full length of the tank, be arranged in level with, or above, the maximum water level needed for rafting of under deck structure. For this purpose, the ullage corresponding to the maximum water level is to be assumed not more than 3 m from the deck plate measured at the midspan of deck transverses and in the middle length of the tank.

If neither of the above conditions are met, then staging or "other equivalent means" of access shall be provided for the survey of the under deck areas.

The use of rafts or boats alone does not preclude the use of boats or rafts to move about within a tank during a survey.

Guidance note:

Reference is made to IACS Recommendation No. 39 – Guidelines for the use of Boats or Rafts for Close-up surveys.

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Guidance note:

Use of remote inspection technique methods to facilitate the required internal examinations, including close-up examinations and thickness measurements, may be specially considered by the Society. The methods applied shall provide the information normally obtained from a survey carried out by the surveyor.

In order to verify the results, confirmatory close-up examinations and thickness measurements at selected locations shall be carried out by the surveyor, not using the remote inspection technique method.

Proposals for use of remote inspection technique methods shall be submitted to the Society for acceptance in advance of the survey.

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104 A survey planning meeting shall be held prior to the commencement of any renewal and intermediate surveys between the attending surveyor(s), the owner's representative in attendance and the thickness measurement / NDT company representative, where involved.

B 200 Survey extent

201 The survey consists of examination, measurements and testing as required for different survey categories with the aim to ensure that the hull structure, hull equipment and piping are in satisfactory condition with respect to corrosion, deformation, fractures, damage or other structural deterioration.

202 When examination or overall examination is required the structure or object is visually examined from a significant distance. In such cases the general maintenance, the condition of protective coating, rust deposits, leakages and structural detachments and damage may be observed and the surveyor may extend the survey as considered necessary.

203 When close-up examination is specified by the rules or required by the surveyor the structure or object is visually examined from a distance normally within reach of hand.

Thickness measurements for general assessment and recording of corrosion pattern shall be taken as specified by the rules as part of the survey.

Guidance note:

For areas with good coating/original coating intact, thickness measurements may be waived. Additional UTM may be required in other areas where corrosion is observed.

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204 The surveyor may require thickness measurements in any portion of the structure where signs of wastage are evident or in areas where wastage is normally found. The surveyor may extend the scope of the thickness measurements if considered necessary.

205 When thickness measurements are specified by the rules or required by the surveyor the measurements shall be carried out to an extent sufficient to determine both general and local corrosion levels.

Unless carried out by the surveyor himself, thickness measurements shall be carried out by a qualified company approved by the Society and witnessed by a surveyor. This requires the surveyor to be on board, while the measurements are taken, to the extent necessary to control the process.

Where it is required to carry out thickness measurements of structures subject to close-up examination, these measurements shall be carried out simultaneously with the close-up examination.

The surveyor shall review the final thickness measurement report and countersign the cover page.

206 Where substantial corrosion, as defined in Sec.4 D207, is found, additional thickness measurements shall be taken to confirm the extent of substantial corrosion.

The additional measurements shall be taken in patterns corresponding to tables given in Sec.4 D, depending on ship type.

These additional thickness measurements shall be carried out before the survey is considered as completed.

207 The examination may be extended also in cases when:

— information is available of defects suffered on similar structure or details in similar tanks/holds or on similar ships
— the structure under survey has been approved with reduced scantlings due to an approved corrosion control system.

B 300 Repair of structural damage or deterioration

301 A prompt and thorough repair is a permanent repair completed at the time of survey to the satisfaction of the surveyor, therein removing the need for the imposition of any associated condition of class.

302 Any damage in association with wastage over the allowable limits (including buckling, grooving, detachment or fracture), or extensive areas of wastage over the allowable limits, which affects or, in the opinion

of the surveyor, will affect the unit's structural, watertight or weathertight integrity, shall be promptly and thoroughly repaired.

303 For locations where adequate repair facilities are not available, consideration may be given to allow the unit to proceed directly to a repair facility. This may require discharging the cargo and or temporary repairs for the intended voyage.

304 Additionally, when a survey results in the identification of significant corrosion or structural defects, either of which, in the opinion of the surveyor, will impair the unit's fitness for continued service, remedial measures shall be implemented before the unit continues in service.

C. Requirements for Machinery Surveys

C 100 Maintenance and preparation for survey

101 Every unit shall have implemented a maintenance system.

The maintenance system shall ensure that:

— inspections and maintenance are carried out at defined intervals
— any non-conformity is reported with its possible cause, if known
— appropriate corrective action is taken
— records of these activities are maintained.

The machinery and systems subject to class shall be maintained in accordance with the maintenance system implemented.

102 In preparation for survey and to allow for a thorough examination, machinery components and related spaces shall be cleaned, including removal from surfaces of loose accumulated corrosion scale, mud and oil-residues. The spaces and components of attention shall have proper access including dismantling as necessary.

C 200 Replacement of machinery components

201 When machinery components are renewed, such components should in general be delivered in accordance with requirements as per valid rules at the time of newbuilding.

C 300 Machinery verification

301 If significant repairs are carried out to main or auxiliary machinery, a dock and/or sea trial shall be carried out as required by the attending surveyor.

Guidance note:

1) **Significant repair:**

A *significant repair* is one where the engine is completely dismantled and re-assembled, in cases such as renewal of crankshaft, bedplate, engine entablature renewal. significant repairs will, furthermore, be cases of repairs after serious damage to the engine after fire or flooding of the engine room resulting from e.g. collision or grounding of the unit.

The following are not defined as significant repairs.

Routine maintenance of the engine; such as:

- unit overhaul (piston, cylinder head, liner)
- turbocharger overhaul
- bearing inspections
- renewal of cracked liners
- renewal of cylinder heads
- use of new spares parts
- use of reconditioned parts
- open up and overhaul of units and bearings
- welding repair in the thrust bearing ribs.

2) **Scope of testing:**

Main engine:

a) Sea trial: upon complete reassembly after bedplate or crankshaft renewal, testing as for a new engine is required.
The service engineer of the manufacturer's prepared test program should be used by the attending surveyor.

b) Dock trial: generally, the testing should be limited to the following tests, which typically can be carried out alongside:

- start / stop / reversing
- local / remote operation
- random safety alarms and cut-outs, including emergency stop.

Auxiliary engines:

Generally, the testing can be done alongside (shipyard or at other wharf), and does not necessarily require a sea trial. Testing as follows is recommended:

- start / stop
- local / remote operation
- random safety alarms and cut-outs, including over speed and emergency stop
- parallel running and load test.

Steering gears:

Trial performed alongside is normally sufficient.

In certain case (e.g. modifications, insurance and vetting cases) testing at unit's full speed may be required, for which a sea trial will be necessary. Largely handled case by case, calling for surveyor's experienced assessment. Owners typically will not raise objection related to this issue, and actually are likely to request DNV to attend the sea trial and issue statement thereafter.

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D. Special Provisions for Ageing Offshore Units

D 100 General

101 Mobile Offshore Units with nominal age equal to or higher than documented fatigue life shall be subject to evaluation for special provisions.

102 A fatigue utilisation index (FUI) shall be calculated to characterise units of column-stabilised and self-elevating type. The FUI is defined as the ratio between the effective operational time and the documented fatigue life.

103 Calculation of effective operational time shall be based on recorded operations history. For the purpose of calculating the FUI, the following may be assumed:

— contribution from operation in harsh environment, e.g. North Sea, North Atlantic and Canada, equals actual operating time in such environment
— contribution from operation in other environments equals one third (1/3) of actual operating time in such environments
— periods of lay-up and yard stay may be disregarded
— for self-elevating units; contribution from transit operation.

104 Owner shall submit FUI or historical data allowing for calculation of FUI as part of the planning process prior to renewal survey when the nominal age exceeds the documented fatigue life.

105 Operation of the unit may continue when the FUI exceeds 1.0 provided the required safety level of the vessel is maintained. If no fatigue cracks have been found in a vessel prior to the FUI reaching 1.0, or if any findings have been evaluated to have insignificant influence on the fatigue capacity, no special provisions will be required until such cracks are detected.

106 For a vessel with FUI > 1.0 and where cracks have been detected in fatigue sensitive areas, the required safety level is in general considered satisfied either by increasing the inspection frequency (as provided in D200 and D300) or by performing a condition based assessment for the vessel. The method and procedure applied for the assessment will be reflected in the acceptance of the future inspection program.

A guide for condition based inspection planning is given below.

Guidance note:

A condition based inspection planning is performed by judging the vessel based on the actual condition rather than on age in order to maintain the required safety level. In this context a scope implementing all or parts of the following procedure can/should be performed:

- Apply the results from a fatigue analysis. The detail level of the analysis will influence the results. Higher detail level reduces the uncertainties and increases the confidence in the results and hence reduces the inspection frequency.
- Mapping of critical connections w.r.t. fatigue capacity, i.e. ranking of fatigue sensitive details.
- Identify details to be modified/upgraded w.r.t. fatigue strength.
- Determine required safety level - dependent on consequence and access for inspection.
- Apply the fatigue results in a risk based analysis (RBI) including historical data from inspections/findings and inspection quality for preparing the inspection program.
- Evaluate the result from inspections (findings) and/or analysis and perform modifications/improvements ensuring that the associated risks are adequately controlled.
- Perform a continuous updating of the inspection plan based on inspection results.

The inspection plan obtained from a condition based approach is highly dependent on the method and procedure applied; including the confidence level of the parameters considered. Less confidence increases the probability of failure (PoF) and hence the inspection frequency will increase.

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107 The Society will issue a MO (Memo to Owner) stating the FUI and agreed compensating measures (see also D200 and D300) prior to the renewal survey for the 5-year period in which the FUI exceeds 1.0.

108 The special provisions for maintaining required safety level focus on the fatigue and corrosion properties of the hull and supporting structure. Degradation mechanisms due to ageing effects related to other aspects such as marine systems must also be given due consideration by owner through maintenance, and by DNV surveyors through regular surveys.

109 Associated plans and procedures, i.e. condition based inspection plans applying risk based approach, shall be approved by the Society. The scope of the improvement program will depend on the initial assessment and owner's plans for further use of the unit.

110 Units which have undergone an assessment and improvement program as outlined above to the Society's satisfaction, will be surveyed based on the modified inspection program.

111 When the FUI exceeds 1.0, systematic thickness measurements shall be performed at renewal surveys as specified in Sec.4 D207. Owner shall submit a program for such measurements for approval prior to the renewal survey.

112 Owner shall document that the corrosion protection of the unit's hull is adequate and in line with conditions assumed in original design when the FUI exceeds 1.0. The corrosion protection system is to be specially surveyed.

D 200 Column-stabilised units

201 If fatigue cracks have been found in a unit prior to the FUI reaching 1.0, and the findings are located within fatigue sensitive areas of the unit, the owner shall assess structural details in these areas at latest prior to the renewal survey for the 5-year period in which the FUI will reach 1.0, with the purpose of maintaining the required safety level for the structure. (i.e. structural modifications for improving the fatigue capacity).

202 The basis for, the condition based inspection planning, is documented fatigue lives for the typical structural details in combination with the documented as-is condition (inspection history). The procedure as outlined in D106 is to be followed. A ranking of details starting with the lowest fatigue lives may conveniently be established See requirements for high level analysis in DNV-OS-C103 Appendix B.

203 Units with FUI >1.0, previous cracks located in fatigue sensitive areas and which have not been subjected to an assessment for documenting the condition of the unit, shall be subject to additional NDE at intermediate surveys corresponding to the extent required for renewal surveys

204 The process outlined in 201 through 203 shall be repeated prior to each successive renewal survey after the FUI has reached 1.0 or after the renewal survey then a condition based inspection plan is established.

205 Units with a watertight underwater bracing system, shall have an approved leak detection system according to guidelines issued by the Society.

206 Areas identified for leak detection shall be examined for leaks at least twice monthly when the FUI exceeds 1.0. This is to be confirmed at the annual survey.

D 300 Self-elevating units

301 For the Self-elevating units FUIs may be calculated separately and in detail for various parts of the unit such as:

— leg nodes
— spud cans
— jack house
— deck structure.

The calculations may reflect the various degrees of bottom restraints and loading pattern resulting from the deck being fixed at various levels during the operations history of the unit.

Based on the above calculation a condition based approach, as outlined in D105 above, can be applied for the inspection planning.

Guidance note:

The condition based inspection planning can be based on a high level, refined, fatigue analysis as proposed in DNV-RP-C203.

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302 When the FUI is above unity (1.0), and where fatigue deficiencies have been found in fatigue prone areas (ref. 301 above) and the condition based approach - as outlined in 105 and 301 above - is not considered, the

inspection scope is to be increased. The inspection frequency should be doubled; i.e. the NDE inspection scope as planned for the renewal survey - 5 year interval - is to be performed at intermediate survey- 2½ year interval.

303 The areas subjected for NDE shall be selected with focus on probability of cracking and consequence of possible failures. As a guide the following areas should be considered:

— leg connection to spudcan
— leg nodes in the bay above the spudcan
— leg nodes located above jack house in transport condition
— leg nodes located below jack house in operation condition
— essential connections within jack house.

304 When operational time (time in operation regardless of environment excluding periods of lay-up and yard-stay) exceed documented fatigue life, the scope for survey of jacking gears as outlined in Sec.4 D208 shall increase to comprise about 20% of jacking gear units but not less than two units per leg.

D 400 Ship-shaped units

401 Extended survey requirements for ageing units of ship-shaped type with service notation **Drilling Unit** are condition-based as per Sec.4 B201.

402 No special provisions are enforced for other service notations.

SECTION 3
ALTERNATIVE SURVEY ARRANGEMENTS AND SURVEYS PERFORMED BY APPROVED COMPANIES

A. Alternative Survey Arrangements

A 100 General overview of survey arrangements

101 Alternative survey arrangements may be accepted as an option to applicable periodical surveys for main class.

102 The following survey arrangements may be granted upon written request from the owner:

— *Hull continuous*, a survey arrangement that includes all the unit's hull compartments and structure.
— *Hull PMS (Planned Maintenance System)*.
— *Machinery continuous*, a survey arrangement based on surveys of the machinery items as detailed in Sec.7 C.
— *Machinery PMS*, a survey arrangement based on a planned maintenance system. The requirements are detailed in Sec.7 D.
— *Machinery CM*, a survey arrangement that can include selected parts of the machinery, and is not covering the complete machinery installation onboard. The requirements are detailed in Sec.7 E.
— *PMS RCM*, a survey arrangement based on review of the company management, the RCM analysis and the implemented maintenance system. The requirements are detailed in Sec.7 G.
— *Offshore CM (condition monitoring)*.

A 200 Hull PMS (Planned Maintenance System)

201 Hull PMS is a survey arrangement offered as an integral part of classification compliance for the hull structure through the alignment and integration of classification requirements with an approved and implemented planned inspection and maintenance system. The system performance and condition of hull structure and maintenance work carried out shall be verified by the Society during annual survey and in connection with renewal survey of the unit.

202 Hull PMS is applicable for units with survey arrangement Hull Continuous.

203 An initial survey shall be carried out onboard the unit in order to verify that the system has been implemented in accordance with the approved documentation and that the system

is used as intended. It is required that the planned maintenance system has been operated for at least 6 months before the initial survey is carried out.

204 If the conditions for the survey arrangement are not complied with or in case of change of technical management of the unit, the survey arrangement will be cancelled and substituted by Hull Continuous survey arrangement.

B. Surveys by Approved Companies or Service Suppliers

B 100 General

101 Parts of the periodical surveys may be carried out by companies approved by DNV. The following survey parts may be performed by such companies:

— thickness measurements
— bottom survey afloat
— general NDT
— mooring line survey.

B 200 Thickness measurements

201 Thickness measurements as part of the periodical surveys shall be carried out by a qualified company approved by the Society unless carried out by the surveyor himself.

202 Thickness measurements shall normally be carried out by means of ultrasonic test equipment. The accuracy of the equipment shall be proven to the surveyor as required.

203 A thickness measurement report shall be prepared. The report shall give the location of the measurements, the thickness measured and the corresponding original thickness. Furthermore, the report shall give the date when the measurements were carried out, type of measuring equipment, names of personnel and their qualifications. The report shall be signed by the operator.

B 300 Bottom survey afloat

301 An approved company to be used. The results of the survey are to be verified by a DNV surveyor.

B 400 Non-destructive testing

401 Non-destructive testing as part of the periodical surveys shall be carried out by a qualified company approved by the Society.

Guidance note:

For more information, see Standard for Certification No. 2.9 / Approval Programme No. 402B: "Firms Engaged in Non Destructive Testing (NDT) on Offshore Projects and Offshore Units/Components".

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B 500 Mooring chain inspections

501 Inspection of mooring lines as part of the periodical surveys shall be carried out by a qualified company approved by the Society.

Guidance note:

For more information, see Standard for Certification No. 2.9 / Approval Programme No. 413: "Service Suppliers Engaged in Renewal Survey Examination of Mooring Chain Intended for Mobile Offshore Units".

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B 600 Condition monitoring

601 Condition monitoring as part of DNV's periodical surveys of machinery and equipment can be carried out by a qualified company approved by the Society. This minimizes the requirement to oversee the condition monitoring onboard each individual offshore installation.

Guidance note:

For more information, see Approval Programme No. 416 "Service Suppliers Engaged in condition monitoring of machinery onboard". Also see Sec.7 in this chapter.

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SECTION 4
PERIODICAL SURVEY EXTENT FOR MAIN CLASS

A. General

A 100 Introduction

101 This section presents the standard extent of surveys for retention of main class (**1A1**).

102 The requirements for service notations are given in Sec.5, and additional system and special facility class notations are given in Sec.6.

103 For units and installations with special feature notation **NON-SELFPROPELLED** the survey scopes for steering gear, tailshaft and thrusters for propulsion may be adjusted to be in accordance with the intended use (e.g. for **DYNPOS-AUTS**, **POSMOOR**, as auxiliary installation, or not used).

A 200 Hull Survey - General

201 *Conditions of protective coating*

Where provided, the condition of protective coating of cargo holds, cargo tanks and ballast tanks shall be examined.

The condition will be rated *GOOD*, *FAIR* or *POOR* as defined in Table A1.

Table A1 Conditions of protective coating	
Corrosion protection system	Is normally to consist of full hard coating supplemented by anodes or full hard coating. **Guidance note:** Other coating systems may be considered acceptable as alternatives provided that they are approved by DNV and applied and maintained in compliance with the manufacturer's specification. ---e-n-d---of---G-u-i-d-a-n-c-e---n-o-t-e---
Coating condition "GOOD"	Condition with only minor spot rusting.
Coating condition "FAIR"	Condition with local breakdown at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition.
Coating condition "POOR"	Condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration.

202 For structures where original protective coatings are in GOOD condition, the extent of close-up examination and thickness measurements may be specially considered. This also applies to tanks of stainless steel. If not otherwise specified, the same applies for re-coated structures (by epoxy coating or equivalent, alternatively a type approved coating, e.g. semi-hard), provided that the condition of the protective coating is in GOOD condition and that documentation is available stating that:

— the scantlings were assessed and found satisfactory by a surveyor prior to re-coating
— the coating was applied according to the manufacturer's recommendations.

Special consideration as used in this context is taken to mean, as a minimum, that sufficient close-up examination and thickness measurements are carried out to confirm the actual average condition of the structure under the protective coating.

A 300 Extent of hull survey

301 The In-service Inspection Program (IIP) for units of column-stabilised and self-elevating types (see Sec.1 A105) is developed on the basis of a general, experience-based scope in combination with design and fabrication particulars for the actual unit as well as experience from in-service surveys of units of similar type.

302 The basic scope for development of IIP for units of column-stabilised type is given in Table A2.

303 The basic scope for development of IIP for units of self-elevating type is as given in Table A3.

304 Relevant survey requirements for units of ship-shaped types additional to those stated in the Rules for Classification of Ships are summarised in Table A4.

305 The extent of examination specified in the Tables A2 through A4 may be modified based on design documentation evaluation, inspection results / crack history and experience with similar units /details.

306 The extent of examination specified in the tables A2 through A4 may be refined by use of RBI / RCM methodologies.

Guidance note:

At the 1st Annual or intermediate survey after construction, column-stabilised and self-elevating units may be subject to examination of major structural components including non-destructive testing, as deemed necessary by the Society. If the Society deems such survey to be necessary, the extent should be agreed to by the Society and the owner or customer prior to commencement of the Survey.

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Table A2 Column-stabilised Units

		TYPE OF SURVEY											
		AS				*IS*				*RS*			
		INT		*EXT*		*INT*		*EXT*		*INT*		*EXT*	
		V	*NDT*	*V*	*NDT*	*V*	*NDT*	*V*	*NDT*	*V*	*NDT*	*V*	*NDT*
Special Areas for Inspection [1] *(SP) – Connections;*													
SP1	Horizontal bracing connections	A				A				A	A	A	A
	Pontoon to pontoon connection	A				A				A	A	A	A
SP2	Vertical diagonal bracing connections	B				A				A	A	A	A
SP3	Columns to pontoon connections	X				C				A	X	A	C [3]
	Column to deck connections	X				C				A	X	A	C [3]
Attachments of:													
SP5	Crane pedestals and top flange	A		A		A		A		A	A	A	A
SP6	Anchor windlasses	X		A		X		A		A		A	C[4]
SP7	Anchor chain fairleads	C				B		C		A		A	C[4]
SP8	Helideck and derrick support	X		X		X		C		A		A	X
SP9	Other attachment/support connections	X		X		X		X		A		A	X
Primary Areas for Inspection (PR); [2]													
PR1	Horizontal bracings	A				A				A		A	
PR2	Vertical diagonal bracings	C				C				A		A	
PR3	Column and pontoon shell	X				C				A		A	
PR4	Upper hull girders/bulkheads	X		X		X		X		A		A	
PR5	Drill floor with substructure	X		X						A		A	
PR6	Crane/gangway pedestal	X		A		A		A		A		A	
PR7	Lifeboat platforms support			A				A				A	
PR8	Helideck support structure	X		X		X		A		A		A	
PR9	Other support structures	X		X		X		X		A		A	

A = 100% [6]
B = 50% [5]
C = 25% [5]
X = Spot check 2-5% [5]
V = Visual Inspection including Close Visual Inspection of Special Areas
NDT = Non-destructive Testing, normally Magnetic Particle Inspection (MPI) and/or Eddy Current (ECI) of selected stress concentrations and fatigue sensitive details

Notes

1) **Special Area for Inspection (SP)** is those sections of the Structure which are in way of critical load transfer point, stress concentrations, often special steel selection etc. Ref. DNV-OS-C101 Ch.1 Sec.4. See also, DNV-OS-C103 Sec.2 B and DNV-OS-C201 Sec.11 B.

2) **Primary Area for Inspection (PR)** are elements which are essential to the overall structural integrity of the unit. See also DNV-OS-C103 Sec.2 B and DNV-OS-C201 Sec.11 B.

3) As a minimum centre bulkheads and corners to be covered.

4) May be waived if unit operating on DP.

5) - of the total number of these parts.

6) The inspection extent might be reduced (be less than 100%) if based on design documentation, ref. A305 above.

Table A3 Basic scope for development of IIP for self-elevating units

		TYPE OF SURVEY											
		AS				*IS*				*RS*			
		INT		*EXT*		*INT*		*EXT*		*INT*		*EXT*	
		V	*NDT*	*V*	*NDT*	*V*	*NDT*	*V*	*NDT*	*V*	*NDT*	*V*	*NDT*
Special Areas for Inspection [1] *(SP) – connections:*													
SP1	Leg to Spudcan							A		A	A	A	A
SP2	Leg Nodes			X				A				A	X [3]
SP3	Connections of primary members in Jack House			A				A	X			A	A
SP4	Main Barge girder/bulkhead connections	X		X		X		X		A		A	
Attachments of:													
SP5	Crane/gangway pedestals and top flange	A		A		A	X	A	X	A	A	A	A
SP6	Support of Drill Floor			A				A				A	A
SP8	Helideck support	X		X		X		C	X	A	X	A	C
SP9	Other attachment/support connections	X		X		X		X	X	A	X	A	X
Primary Areas for Inspection (PR): [2]													
PR1	Spudcans							A		A		A	
PR2	Legs			X				A				A	X
PR3	Jack Houses			A				A				A	X
PR4	Main Barge (deck structure) girders/bulkheads	X				X				A		A	
PR5	Drill floor with substructure	X		X						A	X	A	X
PR6	Crane/gangway pedestal	X		A		A		A		A		A	
PR7	Lifeboat platforms support			A				A				A	X
PR8	Helideck support structure	X		X		X		A		A	X	A	X
PR9	Other support structures	X		X		X		X		A		A	

A = 100% [5]
B = 50% [4]
C = 25% [4]
X = Spot check 2-5% [4]
V = Visual Inspection including Close Visual Inspection of Special Areas.
NDT= Non-destructive Testing, normally Magnetic Particle Inspection (MPI) and/or Eddy Current (ET) of selected stress concentrations and fatigue sensitive details.

1) **Special Areas for Inspection (SP)** are those sections of the structure which are in way of critical load transfer point, stress concentrations, often special steel selection etc. Ref. DNV-OS-C101 Ch.1 Sec.4.
See also DNV-OS-C103 Sec.2 B and DNV-OS-C201 Sec.11 B.

2) **Primary Areas for Inspection (PR)** are elements which are essential to the overall structural integrity of the unit.
See also DNV-OS-C103 Sec.2 B and DNV-OS-C201 Sec.11 B.

3) At levels which have been in way of lower guided in operation, upper guides in transit and in way of spudcans.

4) - of the total number of these parts.

5) The inspection extent might be reduced (be less than 100%) if based on design documentation, ref. A305 (above)

Table A4 Relevant structural survey requirements for ship-shaped units

		TYPE OF SURVEY											
		AS				*IS*				*RS*			
		INT		*EXT*		*INT*		*EXT*		*INT*		*EXT*	
		V	*NDT*	*V*	*NDT*	*V*	*NDT*	*V*	*NDT*	*V*	*NDT*	*V*	*NDT*
Special Areas for Inspection [1] *(SP) – connections:*													
SP1	Moonpool openings	C				A		A		A	A	A	A
SP2	Turret	A				A		A		A	A	A	A
Attachments of:													
SP5	Crane pedestals and top flange	A		A		A	X	A	X	A	A	A	A
SP6	Anchor windlasses	X		A		X		A		A		A	X
SP7	Anchor chain fairleads	C				B		C		A		A	C
SP8	Helideck support	X		X		X		C	X	A	X	A	C
SP9	Other attachment/support connections	X		X		X		X	X	A	X	A	X
Primary Areas for Inspection (PR): [2]													
PR 5	Drill floor with substructure	X		X						A	X	A	X
PR 6	Crane pedestal	X		A		A		A		A		A	
PR 7	Lifeboat platforms support			A				A				A	X
PR 8	Helideck support structure	X		X		X		A		A	X	A	X
PR 9	Other support structures	X		X		X		X		A		A	

A = 100% [4]
B = 50% [3]
C = 25% [3]
X = Spot check 2-5% [3]
V = Visual Inspection including Close Visual Inspection of Special Areas.
NDT= Non-destructive Testing, normally Magnetic Particle Inspection (MPI) and/or Eddy Current (ECI) of selected stress concentrations and fatigue sensitive details.

1) **Special Areas for Inspection (SP)** are those sections of the structure which are in way of critical load transfer point, stress concentrations, often special steel selection etc. Ref. DNV-OS-C101 Ch.1 Sec.4.
See also DNV-OS-C103 Sec.2 B and DNV-OS-C201 Sec.11 B.

2) **Primary Areas for Inspection (PR)** are elements which are essential to the overall structural integrity of the unit.
See also DNV-OS-C103 Sec.2 B and DNV-OS-C201 Sec.11 B.

3) - of the total number of these parts.

4) The inspection extent might be reduced (be less than 100%) if based on design documentation, ref. A305 (above).

B. Annual Survey

B 100 Survey extent

101 The survey will normally cover systems and parts for:

— structure and equipment
— machinery and safety systems
— temporary equipment as defined in Ch.1 Sec.1 B200.
— The survey for the temporary equipment shall only confirm class involvement as specified in Ch.1 Sec.5 B700.

B 200 Structure and equipment for ship-shaped units

201 Survey requirements for ship-shaped structures and related equipment are given in the Rules for Classification of Ships, Pt.7 Ch.1. Sec.2.

202 The following items shall, however, be surveyed in accordance with mobile offshore unit requirements:

— stability (recording for lightweight)

— moorings
— tank level measurements
— helicopter fuel
— external corrosion
— bottom surveys
— sea valve inspection
— thruster and tailshaft surveys

B 300 Structure and equipment for column-stabilised and self-elevating units

301 The survey may be performed on location provided that the structure, including submerged parts, can be thoroughly inspected as specified in the in-service inspection programme. If required, underwater inspection shall be in accordance with an approved procedure, and using approved personnel and equipment.

302 Units or installations with submerged primary structural members allowing internal access for inspection may be omitted from external survey, subject to satisfactory results from the internal survey.

303 Primary structural members which are flooded shall be subject to external survey unless otherwise agreed. The extent of survey is given in the in-service inspection program, and will comprise visual inspection of vital parts and may include non-destructive testing of highly stressed areas.

304 The means for leakage detection of dry bracings shall be function tested.

305 Internal surfaces in ballast tanks may be subject to survey, including thickness measurements. The permissible reduction in thickness is as given for the renewal survey, see also D208.

Condition of protective coating according to A201 to be reported.

For areas with general breakdown of the protective coating, close-up examination and thickness measurements shall be carried out to an extent sufficient to determine both general and local corrosion levels.

306 Accessible and visible parts of the unit's permanent towing arrangement and temporary mooring system shall be inspected. If the temporary mooring system is part of the mooring system for position keeping on location, then accessible and visible parts of the position mooring system shall also be inspected.

307 Items which are important for the reserve buoyancy in connection with stability of the unit shall be surveyed. The survey shall include inspection of external and internal closing appliances, ventilators, air pipes, side scuttles etc., as well as an external inspection of scupper valves and sanitary valves.

308 Remote controls and alarm systems for doors, hatches and watertight dampers shall be surveyed and function tested.

309 Guard rails shall be examined.

310 For units or installations subjected to annual load line inspections by DNV, the requirements in 307 and 309 are considered covered by this inspection.

311 The «Appendix to the classification certificate» and the documents referred to therein, shall be verified as kept available onboard the unit.

B 400 Machinery and safety systems for ship-shaped units

401 Survey requirements for machinery and safety systems on ship-shaped units are given in the Rules for Classification of Ships, Pt.7 Ch.1, Sec.2 C.

402 Tank level measurements and helifuel systems shall, however, be surveyed in accordance with offshore unit requirements, see 503 and 507, respectively.

B 500 Machinery and safety systems for column-stabilised and self-elevating units

501 The survey shall include examination of spaces for machinery, boilers and incinerators, and equipment located therein, with particular attention to fire and explosion hazards. As the DNV surveyor deems necessary, running tests and/or opening of machinery, and tests of safety devices and equipment may be required.

502 Boilers shall be externally surveyed. The general condition of the boiler including mountings, piping and insulation shall be ascertained and the surveyor may require opening, removal of insulation etc. if found necessary. Safety valves, instrumentation and automation systems shall be tested in operating condition when found necessary by the surveyor.

503 The bilge and ballasting system and related subsystems, such as remote valve operation and tank level indications for column-stabilised units shall be visually surveyed and tested.

504 The brake torques of jacking machinery on self-elevating units shall be checked. Where provided, the fixation rack system shall also be checked.

505 For steering gears and/or propulsion thrusters applied for steering purposes, steering functions and alarms shall be tested.

Steering gears for azimuth thrusters, providing the main and/or auxiliary steering function, shall be surveyed as given in Sec.7 Table A1.

506 For units granted a survey arrangement based on an approved planned maintenance system (PMS), an annual survey of the PMS is required to prolong the validity of the arrangement. The purpose of this survey is to review and evaluate the previous period's maintenance activities and experience. The annual survey shall consist of the following main elements:

a) The maintenance history will be examined in order to verify that the PMS has been operated according to the intentions and that the system is kept up to date.
b) Evaluation of the maintenance history for main overhaul jobs on the components covered by the continuous machinery survey (CMS) scheme carried out since last annual survey.
c) Details of corrective actions on components in the CMS scheme shall be made available.
d) If condition monitoring equipment is in use, function tests of this equipment and verification of the calibration will be carried out as far as practicable and reasonable.

If found necessary by the surveyor, opening or testing of machinery may be required.

507 In hazardous areas the following equipment and systems shall be surveyed or tested:

— ventilation systems shall be function tested. The tests shall include emergency stop systems and alarms for lost ventilation
— alarms and shutdown functions for pressurised equipment shall be function tested
— gas detection equipment shall be function tested
— electrical equipment shall be visually inspected.

C. Intermediate Survey

C 100 General

101 The survey shall normally be carried out in sheltered waters. Survey on location may be acceptable provided that the underwater inspection is performed in accordance with an approved procedure, and using approved personnel and equipment.

102 The survey shall, in general, be carried out as the annual survey, but with extended visual inspection and non-destructive testing of the structure as given in relevant rules and in-service inspection programme (where relevant), see A300.

C 200 Structure and equipment for ship-shaped units

201 Survey requirements for ship-shaped structures and related equipment are given in the Rules for Classification of Ships, Pt.7 Ch.1. Sec.3.

202 The following items shall, however, be surveyed in accordance with mobile offshore unit requirements:

— stability (recording for lightweight)
— mooring
— tank level measurements
— helicopter fuel
— external corrosion
— bottom surveys
— thruster and tailshaft surveys
— sea valve inspection
— ballast tanks and tanks used as bilge water holding tanks.

For the ballast and bilge water holding tanks table D1 shall be followed.

C 300 Structures and equipment for column-stabilised and self-elevating units

301 The survey shall, in general, be carried out as the annual survey, but with extended visual inspection and non-destructive testing of the structure as given in the in-service inspection programme.

302 The cathodic protection system shall be surveyed by visual inspection of sacrificial anodes and extent of corrosion. Corrosion in welds of vital parts which may be subject to fatigue shall be particularly considered.

303 For column-stabilised units, the survey shall, at minimum, cover accessible areas at light ballast draught.

304 For self-elevating units, survey of the full height of the legs is normally required. Potential measurements will also be required if found necessary.

305 If the temporary mooring system is part of the mooring system for position keeping on location, then the position mooring system shall also be inspected. The mooring system shall be function tested during typical anchor handling operations.

C 400 Machinery and safety systems for ship-shaped units

401 Survey requirements for machinery and safety systems on ship-shaped units are given in the Rules for Classification of Ships, Pt.7 Ch.1, Sec.3 C.

402 Temporary equipment as defined in Ch.1 Sec.1 B200 shall be surveyed.

C 500 Machinery and safety systems for column-stabilised and self-elevating units

501 The survey shall generally be carried out as for the annual survey.

502 The fire protection arrangement shall be surveyed. For units being inspected by national authorities with respect to fire protection arrangement, the survey for classification may normally be considered as covered by this inspection.

503 Temporary equipment as defined in Ch.1 Sec.1 B200 shall be surveyed.

D. Renewal Survey, Structure and Equipment

D 100 Ship-shaped units

101 Survey requirements for ship-shaped structures and related equipment are given in the Rules for Classification of Ships, Pt.7 Ch.1 Sec.4 B.

102 The following items shall, however, be surveyed in accordance with mobile offshore unit requirements:

— stability (recording for lightweight)
— moorings
— tank level measurements
— helicopter fuel
— external corrosion
— bottom surveys
— thruster and tailshaft surveys
— sea valve inspection.

103 Alternative survey arrangements given in D300 may be applied also for ship-shaped units.

D 200 Column-stabilised and self-elevating structures

201 The renewal survey includes the requirements given in B and C. The extent of the survey is given in the in-service inspection programme, and will additionally include the requirements given in 202 to 216.

202 Survey of pipes, valves, couplings, anodes, equipment for level indication, etc. inside tanks and spaces.

203 Tanks shall, as a minimum, be internally surveyed in accordance with Table D1, as far as applicable.

Table D1 Tank survey and pressure testing [1), 2)]

Tank	*Age of unit in years*			
	0-5	*5-10*	*10-15*	*above 15*
Sea water [3)]	all	all	all	all
Fresh water	one	one	all	all
Fuel and sludge	one	one	two	half
Lubricating oil	none	none	one	half

Notes:

1) Tanks of integral type

Guidance note:

Integral tanks form a part of the unit's hull and are influenced in the same manner and by the same loads that stress the adjacent hull structure.
Independent tanks within machinery spaces (non-integral, self-supporting tanks which do not form part of the unit's hull) are normally surveyed as part of the renewal survey for machinery, see E.

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2) If selection of tanks is accepted to be surveyed, then different tanks shall, as far as practicable, be surveyed at each survey, on a rotational basis.

3) Tanks used as bilge water holding tanks, shall be examined as required for sea water tanks.

204 Remote level indicating systems for ballast tanks shall be surveyed and function tested.

205 Remote control system for valves in bilge, ballast and cooling water systems shall be surveyed and tested.

206 Tank bulkheads and tank decks integral with the unit structure shall, as a minimum, be hydraulically tested from at least one side to the maximum pressure they can be subjected to in service. The number of tanks to be tested shall be in accordance with Table D1, as far as applicable.

207 Thickness measurements shall be carried out as deemed necessary by the surveyor at the first and second renewal surveys after delivery. At the third renewal and subsequent renewals, in addition to the above, mandatory thickness gaugings are to be taken as a minimum in the following areas:

Column Stabilised Units:

— column base tanks which are used for trimming the vessel.
— main horizontal braces at the connection to column / pontoon or diagonal braces (K-nodes).
— selected areas of exposed upper hull where 'box' or 'I' beams receive major concentrated loads.
— pump room bilge wells.

Self Elevating Units:

— major connections of leg to mat
— lattice leg chord at connections to spudcan
— spudcan bulkheads at connections to leg chord
— leg chords in way of splash zone
— load transfer area in way of jack house (external and in way of pre load tanks).

Average corrosion is defined as the average corrosion rate for a typical structural member.

Local corrosion is defined as the local corrosion limited by an area of 500 × 500 mm within a plate-field defined by two stiffeners and adjacent web-frames.

Average corrosion

— 5% reduction is allowed in “special” areas subject to high fatigue loads. These areas are normally identified in the In-Service Inspection Program (IIP)
— 10% reduction is allowed in areas taking part in the global structural strength, or being part of the watertight integrity of the unit
— 15% reduction is allowed in areas not taking part in the global structural strength and not being part of the watertight integrity of the unit.

Local corrosion

— 5% reduction is allowed in “special” areas subject to high fatigue loads. These areas are normally identified in the In-Service Inspection Program (IIP)
— 15% reduction is allowed for plates in areas taking part in the global structural strength, or being part of the watertight integrity of the unit
— 20% reduction is allowed in areas not taking part in the global structural strength and not being part of the watertight integrity of the unit.

Detailed locations for thickness gaugings will be included in the vessels In-service Inspection Programme.

208 The jacking systems, including shock pads, shall be examined. A selected number of jacking gear units (about 10%, but not less than one unit per leg) shall be opened up for inspection. Oil analysis shall be presented for all the jacking gear units.

209 For self-elevating units, all parts of the legs shall be examined.

210 The towing and mooring equipment shall be surveyed as follows:

— all chain lockers and anchor stowage arrangements shall be surveyed
— the permanent towing arrangement of the unit shall be surveyed
— the temporary mooring systems shall be surveyed
— if the temporary mooring systems are part of the mooring system for position keeping on location, the complete mooring system for position keeping shall be subject to a comprehensive survey. This will include thorough visual examination and extensive non-destructive testing of mooring chain or wire rope. This inspection shall include dismantling and non-destructive testing of all joining shackles that have been in service for more than 5 years.
— Function testing of the mooring systems shall be performed.

211 Sea chests and other sea inlets and discharges (above and below the waterline) with valves, including sanitary valves and scupper valves, shall be opened for survey.

Alternative survey methods may be accepted upon special consideration and approved procedures.

212 The unit is to undergo a weight or displacement survey and the weight record will be checked in order to verify the current lightweight and centre of gravity. Where the weight survey indicates a difference from the calculated lightweight in excess of 1% of the operating displacement, an inclining test should be conducted. For self-elevating units deviations up to 5% of the operating displacement may be accepted upon special considerations. It is a provision that the weight difference is positioned at the most unfavourable position when calculating the vertical centre of gravity (VCG).

The above mentioned requirements may be considered complied with where the national authorities enforce similar requirements. In such cases a copy of the report on the weight survey, or on the new inclining test, endorsed by the national authorities, shall be submitted.

213 The presence of required signboards shall be verified.

214 The cathodic protection system of the submerged zone shall be surveyed. The efficiency of the system for the forthcoming 5-year period shall be confirmed.

215 The unit shall be dry docked at the third renewal survey and at each renewal survey thereafter, unless acceptable equivalent alternatives are agreed. See also D300.

216 Fixation of major appurtenances to the main structure shall be surveyed. These may typically include crane pedestals, helicopter decks, drilling derricks, lifeboat platforms and heavy deck modules or skids.

D 300 Alternative survey

301 Renewal surveys may be carried out on location without interrupting the function of the unit, provided that they are based on approved procedures outlined in a maintenance system and survey arrangement.

See also Ch.2 Sec.2 G for matters that will be taken into consideration for acceptance of surveys on location.

302 Provisions regarding fatigue safety factors and corrosion protection shall be in accordance with the following requirements:

— DNV-OS-C103 Appendix A for column-stabilised units
— DNV-OS-C104 Appendix A for self-elevating units
— DNV-OS-C102 for ship-shaped units.

E. Renewal Survey, Machinery and Safety Systems

E 100 General

101 Machinery systems and equipment are covered by a survey arrangement if not part of a separate survey. The available machinery survey arrangements are based on the inventory list (see Sec.7 Table A1) established for the unit.

The conditions for:

— obtaining and maintaining the survey arrangement, and
— the corresponding survey methods to verify that the machinery system is in an acceptable condition are different for each of the available machinery survey arrangement. If a survey arrangement is not specified, Machinery renewal is set as default.

The following survey arrangements are available:

— machinery renewal, see Sec.7 B
— machinery continuous, see Sec.7 C
— machinery PMS (Planned Maintenance System), see Sec.7 D
— machinery CM (Condition monitoring), see Sec.7 E
— Offshore CM (Condition monitoring), see Sec.7 E
— PMS RCM (Planned Maintenance System, RCM based), see Sec.7 D.

102 Propulsion systems containing components or elements may change characteristics during the lifetime and hence influence the torsional behaviour of the system.

Such components may be:

— vibration dampers
— elastic couplings
— speed governor or quick passing through device.

The mentioned components shall be maintained and inspected as approved by DNV or as recommended by the manufacturer.

As an alternative to opening up for inspection, measurements may be carried out to confirm the correct dynamic conditions.

The torsional vibration measurements shall be carried out and reported to DNV. The results shall be compared with the approved limits (torsional vibration calculations).

If an elastic coupling is replaced by another type, new torsional vibration calculations shall be submitted for approval.

103 *Auxiliary thrusters* shall be examined and tested as follows:

— oil analysis of gear house oil and oil for the CP mechanism

— examination of gear and bearings through inspection openings or by other means
— examination of external piping systems
— examination of bearings, gear and shafts and other relevant parts if any indications of abnormalities are observed. Satisfactory maintenance according to manufacturer's recommendations to be documented and considered as a base for extent of possible opening.
  Opening to be carried out normally at least every 10 years. Any opening up of a thruster shall be witnessed by a surveyor of the Society
— function testing of sealing arrangements
— function testing of lubrication and hydraulic oil system
— function testing of CP mechanism
— function testing of thruster unit including alarm system.

Guidance note:

It is advised to take oil analysis at regular intervals and always prior to docking in order to ensure that there is no need for opening of the thruster (e.g. water in the oil).

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104 Temporary equipment is included as long as it is part of the areas and systems covered by class scope and detailed in the remaining of this chapter. Otherwise the survey shall only confirm class involvement as specified in Ch.1 Sec.5 B700.

E 200 Electrical installations

201 The survey shall comprise examination of the electrical installations with regard to fire and explosion hazards and injury from accidental touching. The survey is also to include testing of correct functioning of equipment covered by class requirements.

202 The insulation resistance of the complete installation shall be measured, and the results presented to the surveyor. For vessels Survey arrangement PMS and with continuous earth fault monitoring of all distribution systems and alarm to a continuously manned control station, the following alternative may be accepted:

— megger test of all generators and main electrical motors
— test of all earth fault monitoring devices
— verification that the vessel have regular maintenance routines for test of earth fault monitoring devices.

203 As far as practicable, the following equipment shall be examined for satisfactory condition:

— main and emergency switchboards
— generators
— distribution boards
— motor starters
— electrical motors
— converters (e.g. transformers, rectifiers, chargers)
— cable installations
— enclosures for electrical equipment
— lighting equipment
— heating equipment
— battery installations.

204 The following tests shall be carried out to the extent deemed necessary by the surveyor to ascertain the proper functioning of the equipment:

— generator full load test
— generator parallel operation
— generator protection relays including non-important load trip, if fitted
— generator remote speed control
— generator synchronising equipment
— power plant interlocking systems
— insulation resistance indicating device
— emergency generator including switchboards
— battery chargers
— mechanical ventilation of battery rooms and lockers
— navigation lights, with controllers including alarms
— electrical motors for essential and important use, e.g. for jacking system at full load
— interlocking and/or alarms for pressurised rooms and equipment.

E 300 Instrumentation and automation

301 Correct functioning of the various parts of the following systems shall, as far as applicable, be verified:

— alarm and safety system
— fire and gas detection systems
— manual control of machinery
— remote control of propulsion machinery
— remote control of position keeping machinery.

302 It shall be verified that the remote control can be transferred to stand-by manual control in the engine room in case of power supply failure to the remote control system.

303 When cancelling of automatic load reduction and/or automatic stop of engine are provided, these functions shall be demonstrated to the satisfaction of the surveyor.

304 Remote shutdown for fuel-oil transfer service pumps and ventilating equipment, together with oil tank outlet valves where required to be capable of being remotely closed are to be proved satisfactory. Emergency switch(es) for all electrical equipment including main and emergency generators, except alarm and communication systems and lighting in vital areas such as escape routes and landing platforms, are to be proved satisfactory (by a combination of testing and review of maintenance records).

(IACS UR Z15)

F. Renewal Survey, Tailshaft Survey

F 100 Standard requirements

101 For renewal survey, the tailshaft shall be withdrawn and the following parts examined, where relevant:

— propeller nut and threaded end of tailshaft
— cone, key and keyway, including examination of the fore part of the taper and keyway by magnetic particle inspection method
— tailshaft bearing areas
— stern tube bushes or bearings. Clearance measurements shall be included
— shaftsealing arrangement, including lubricating oil system.

F 200 Alternative survey

201 The following alternative requirements do not apply to tailshafts covered by additional class notations **DYNPOS-AUTS**, **DYNPOS-AUT**, **DYNPOS-AUTR** and **DYNPOS-AUTRO**.

202 Subject to 201, an alternative tailshaft survey may be accepted for oil lubricated tailshafts with approved sealing arrangement, provided that the number of service hours encountered is relatively low, e.g. less than 5 000 hours since the last tailshaft survey.

203 At the first renewal survey, the lubricating oil for each of the stern tubes shall be analysed and the results forwarded to DNV. Acceptable analysis results, together with satisfactory survey of accessible parts of the shafts including clearance measurements, will normally be considered sufficient.

204 From the fourth renewal survey and onwards, a complete tailshaft survey shall be carried out.

F 300 Tailshaft condition monitoring survey arrangement

301 See Sec.6 U200.

G. Survey of Geared Thrusters for Main Propulsion and positioning

G 100 Definitions

101 Thrusters for dynamic positioning are thrusters incorporated in systems for dynamic positioning of units, where the unit has been granted the additional class notation **DYNPOS-AUTS**, **-AUT**, **-AUTR** or **-AUTRO**.

102 Thrusters for position mooring are thrusters incorporated in systems for thruster assisted position mooring of units, where the unit has been granted the additional class notation **POSMOOR-TA** or **POSMOOR-ATA**.

103 Thrusters for propulsion are defined as thrusters which are intended for propulsion or propulsion and steering of the unit during sea voyage.

G 200 Survey extent

201 Thrusters for main propulsion and positioning shall be subjected to oil samples at regular intervals of not more than 3 months and analysed by recognized laboratories. The result shall be presented in a way that makes it is easy to read the trends from the previous analyses. Record of results shall be available on board at all times.

A representative oil sample shall be taken before the filters and with the unit in its normal running condition. Oil analysis shall detect iron (Fe) and other solid contamination in addition to possible water content. The water content due to condensation is normally not to exceed 0.5%. The oil analysis shall if applicable cover all of the following areas:

— lubrication oil for gears, bearings
— sealing boxes
— steering gear
— propeller.

If the propeller shafts seal oil systems do not allow for sampling unless the unit is in dry dock, a representative oil analysis is to be taken in connection with the Bottom Survey.

202 Outboard (wet) parts of the thruster accessible from the outside are covered by the bottom surveys.

203 Thrusters for main propulsion and positioning shall be subjected to survey every 5 years. The complete survey shall include:

1) evaluation of oil analysis of gear lubrication oil, propeller hydraulic system oil and sealing system oil. See 102
2) opening up of protection covers
3) inspection of power transmission gear (gear clearance to be measured), bearings (axial play to be measured), visible parts of shafts and general condition of housing internally.
4) examination of controllable pitch mechanism oil transmission system and feedback system for wear down and damage
5) full stroke ahead and astern to be verified and correct blade position feed-back and indication verified
6) examination of steering column and related sealing and bearing
7) running test at MCR.

If an approved thrusters Conditioning Monitoring (CM) survey arrangement is in place, opening is required only if any indications of abnormalities are observed provided.

204 Inboard parts of the thruster accessible from the inside, such as drive motors, shafting system, gear transmissions, pumps and piping systems, alarm, safety and control systems are covered by the main class surveys of machinery. In addition to geared thrusters this will be applicable for e.g. Voith-Schneider and pump type thrusters.

205 At each overhaul of the thruster unit the following shall be carried out in the presence of a surveyor to the Society:

— all relevant parts of the components made accessible during overhaul shall be surveyed using adequate methods, such as visual inspection MPI or DP, wear down measurements
— NDT for sub-surface cracking of the tooth flanks
— MPI shall be carried out of gear teeth and at least in way of stress raisers in the shafts
— proper assembly of the thruster shall be verified
— proper gear mesh shall be documented in same extent as required for new thruster.

At the first complete survey after a successfully overhaul, provided:

— the scheduled oil sampling has been done (see 102) showing no significant development of particle and/or water contents.
— an approved thrusters Conditioning Monitoring (CM) survey arrangement is in place. Ref. Sec.7 E100.

The scope described in 103 from 2 incl.4 can be rescheduled to every alternate complete survey.

Mounting of the thruster on board shall be verified and function tested.

H. Survey of Podded Thrusters for Main Propulsion and positioning

H 100 General

101 The requirements in this sub-section apply to thrusters of podded design, here after denoted pods, for propulsion and positioning of the unit.

102 Pod survey implies a survey of the pod's internal power transmission elements and driving motor enclosed in the pod, strut and steering column.

Pods have two scheduled surveys:

— annual
— complete.

For some pod sizes it will be limited access from inside the unit and annual survey should be done to the extent that is practically possibly. Complete survey might require some dismantling.

103 Parts of the survey may be replaced by an approved condition monitoring arrangement, see Classification Note 10.2 Appendix H

104 At each overhaul, all relevant parts of the components made accessible shall be presented for survey by the Society, see 203.

Assembly and mounting on board shall be verified and tested.

H 200 Scheduled surveys

201 *Annual survey*

Scope of the annual pod survey by the Society shall include:

— evaluation of lube oil analysis from recognized laboratory
— survey of functionality and calibration of onboard control and monitoring system (incl. alarm functions if fitted for continuous monitoring systems)
— review of insulation resistance (megger-test) records
— maintenance records for various items, such as alarm tests for bilges, bearing inspections, pod inspections, maintenance of the slip rings electrical connections, etc
— visual inspection of pod motor air cooling system
— record of running hours.

202 *Complete survey*

The complete survey shall include:

— same as for annual
— examination of drive motor rotor and stator condition and associated equipment, shafts, and stator fixation arrangement
— internal overall survey, check for cleanliness, oil leaks, general condition
— verification of seal tightness
— verification of bearing condition (e.g. Boroscopic examination to be carried out)
— external survey in dry dock, check housing for cracks, corrosion, damage
— verification of seals condition (pod/ship)
— verify condition of slewing gears and bearing.

203 At overhaul of the thruster unit the following shall be included in addition to the survey requirements given in 202:

— all relevant parts of the components made accessible during overhaul shall be surveyed using adequate methods, such as visual inspection and MPI or DP, wear down measurements
— MPI shall be carried out in way of stress raisers in the shafts
— proper assembly of the thruster shall be verified.

Mounting of the thruster on board shall be verified and function tested.

I. Boiler Survey

I 100 General

101 Survey of boilers, steam drums, steam generators and/or pipe arrangements shall be carried out according to the Rules for Classification of Ships, Pt.7 Ch.1 Sec.5 F.

These requirements are also applicable to steam/thermal oil heated steam generators.

J. Thermal Oil Heater Survey

J 100 General

101 Survey of thermal oil heaters shall be carried out according to the Rules for Classification of Ships, Pt.7 Ch.1 Sec.5 G.

K. Survey of the Unit's Bottom and Related Items

K 100 Schedule

101 The outside of the unit's bottom and related items are to be examined two times in any five (5) year period, with an interval not exceeding three (3) years between examinations.

102 Consideration may be given at the discretion of the Society, to any special circumstances justifying an extension of the interval.

K 200 Parts to be examined

201 *Ship-shaped Units (ship or barge type units)*

External surfaces of the hull, keel, stem, stern frame, rudder, nozzles, and sea strainers are to be selectively cleaned to the satisfaction of the attending surveyor and examined together with appendages, the propeller, exposed parts of stern bearing assembly, rudder pintle and gudgeon securing arrangements, sea chest and strainers, and their fastenings (as applicable).

Propeller shaft bearing, rudder bearing, and steering nozzle clearances (as applicable) are to be ascertained and reported upon.

202 *Self-elevating Units*

External surfaces of spudcans, mat, underwater areas of legs, together with their connections as applicable, shall be selectively cleaned to the satisfaction of the attending surveyor and examined.

At each dry-docking survey or equivalent, after renewal survey No. 2, the surveyor is to be satisfied with the condition of the internal structure of the mat or spudcans. Leg connections to mat and spudcans are to be examined at each dry-dock survey or equivalent.

203 *Column-stabilised Units*

External surfaces of underwater areas of columns, sea chests, and propulsion units as applicable, shall be examined.

K 300 Survey planning and record keeping

301 Plans and procedures for underwater inspection shall be submitted for review in advance of the survey and made available on board. Submitted data, after review by the Society, will be subject to revision if found to be necessary in light of experience.

Guidance note:

The Society may consider alternative methods for providing adequate assurance that a unit's bottom is in a satisfactory condition at the mid-term class period survey.
A survey based on such alternative methods is subject to acceptance by the relevant flag administration.

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L. Survey of Towing, Temporary and Position Mooring Equipment

L 100 Types of survey

101 *Annual survey* is a visual examination to ascertain the general condition of the relevant items. The survey is normally carried out on location with the unit at operational draft and the mooring system in use. No special inspection aids are required and no disruption to the unit’s operation is intended.

102 *Intermediate survey* is normally carried out on location when the unit is carrying out anchor-handling operations at a rig-move. No special aids are required and minimal disruption to anchor handling operation is intended.

103 *Renewal survey* will require appropriate cleaning with good access and adequate lighting, i.e. the special inspection aids and facilities usually associated with a sheltered water visit.

Alternatively, the owner may opt for a continuous survey by providing an extra mooring line which is regularly inspected in special facilities onshore and exchanged with lines installed on the unit. This arrangement is normally noted by an MO which gives the last/next survey date of each mooring line.

L 200 Annual survey

201 Towing and Temporary Equipment are to be subject to visual inspection.

202 Position Mooring Equipment is to be inspected as follows:

There is to be carried out visual inspection of the accessible part of the mooring lines, on or adjacent to the windlass. Particular attention to be paid to:

— the proper support of links in the pockets, i.e. contact is made at only the four shoulder areas of the link to avoid critical bending stresses in the link

— wear on the chain shoulders in way of the chain stopper and windlass pockets
— condition of wire or fibre rope
— condition of anchor.

Where severe damage or neglect of maintenance is observed, e.g. missing studs, worn cable lifters causing damage to the anchor chain, damage to wire or fibre rope, a more extensive survey should be required, ref. renewal survey.

The surveyor shall ascertain if any problems have been experienced in the previous 12 months period with the mooring system, e.g. chain breaks, jumping, mechanical damages, loose joining shackles.

If available, visual inspection of the anchors shall be carried out. If anchors have experienced any problems and/or been replaced, the anchor certificate shall confirm suitability.

L 300 Intermediate survey

301 Towing and Temporary Equipment are to be subject to visual inspection.

302 Position Mooring Equipment is to be inspected as follows:

There is to be carried out 100% visual inspection of the working lengths of all mooring lines. The length of lines which normally remains in the chain lockers or on spools during operations can be excluded.

Particular attention to be paid to those lengths of line which, in the period from the last survey, frequently have been in contact with the windlass and fairleads when the mooring system was in operation.

The looseness and pin securing arrangements of joining shackles shall be checked on anchor chains.

L 400 Renewal survey

401 The towing and mooring equipment shall be surveyed as follows:

— all chain lockers and anchor stowage arrangements shall be surveyed
— the permanent towing arrangement of the unit shall be surveyed
— the temporary mooring systems shall be surveyed
— if the temporary mooring systems are part of the mooring system for position keeping on location, and covered by **POSMOOR** or flag state-requirements (MODU-code), the complete mooring system for position keeping shall be subject to a comprehensive survey. This will include thorough visual examination and extensive non-destructive testing of mooring chain or wire rope and inspection/assessment testing of fibre ropes. This inspection shall include dismantling and non-destructive testing of all joining shackles that have been in service for more than 5 years.
— function testing of the mooring systems shall be performed
— the anchor shackle or swivel, anchor head, flukes and shank shall undergo close visual inspection. If found necessary, NDT shall be carried out with particular attention to the bolts fitted to certain designs for altering the fluke angle.

402 For chain which is less than 20 years old with proper documentation and service history, and no previous failures the extent of examination shall be:

— 100% visual examination
— 5% NDT on general chain
— 20% NDT on chain which has been in way of fairleads over last 5 years
— 20% NDT on chain which will be in way of fairleads over next 5 years.

403 If no documentation or history is available, the examination shall be increased to include mechanical testing of each length of chain and NDT increased to cover 20% of the whole chain.

404 For a chain which is more than 20 years old the following apply:

— If all documentation is available, and historical information including previous reports showing no failures and only minor repairs, then survey extent given in 402 can remain in place.
— If no documentation is available (i.e. no certificates, unable to identify the chain, unable to ascertain orientation of the chain, which parts have been over the fairleads etc.) then the chain shall be subjected to minimum 20% NDT and mechanical testing of all lengths
— If documentation review reveals history of defects, then NDT shall be increased to 100% in the areas where defects are found.

405 All joining shackles of Kenter or similar design which have been in service for more than five years, are to be dismantled and magnetic particle (MT) or liquid penetrant testing (PT) is to be carried out on all the machined surfaces.

Guidance note:

Abrasive blasting prior to MT or PT may damage the machined surfaces and should be avoided. Alternative methods of cleaning should be used, e.g. high pressure water washing.

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406 The survey of steel wire ropes consists of a 100% visual control, and the following items shall be covered:

— the nature and number of wire breaks
— wire breaks at the termination
— localised grouping of wire breaks
— fracture of strands
— reduction of rope diameter including breaking of core
— external wear and corrosion
— deformation
— termination area.

407 It is advised that checkpoints are made for every 100 m. If areas of special interest are detected, the distance should be significantly reduced.

408 Re-certification of stranded wire ropes shall be carried out. It shall be based on a visual examination of the wire rope and a condition assessment and/or a section shall be cut from the end of the rope and inspected.

409 Certification of fibre ropes shall be carried out. It shall be based on a visual examination of the rope and assessment of the in-service load history or, if this information is not available, testing of a cut-off section from the end of the rope.

410 The survey of fibre ropes consists of a 100% visual control, and the following items shall be covered:

— external wear
— deformation
— termination area.

411 For acceptance/rejection criteria the following standards may be used as guideline:

— for wire rope: ISO Standard 4309-2004 (E), API RP 2I
— for fibre rope: DNV-RP-E304
— for chain: as stated in L600.

L 500 Anchor chains; renewal survey examination guide

501 Magnetic particle testing (MT) shall basically cover the whole link, but concentrate on the following areas:

— shoulders of link where mechanical damage may occur
— flash butt weld for defects in way of weld
— ends of stud for cracks propagating into main part of link
— inner bend region where adjacent links bear on each other stud less chain: outer bend region at the crown and inner surfaces where the links start to bend
— any other area where there have been chain breaks or mechanical damage.

502 The diameter in way of the bend region and any area with excessive wear or gouging is to be measured on approximately 1% of the links distributed through the working length. The links are selected by the attending surveyor based on the findings of the visual inspection. The percentage may be increased or decreased if the visual inspection indicates excessive or minimal deterioration.

503 The length over five links should be measured approximately once every 100 m. However, measurements can be waived by the attending surveyor provided:

— it is confirmed that there have been no in-service problems with chain twisting/jumping or miss-match between links and windlass/fairlead pockets
— no indications of stretched links observed during the visual inspection.

504 Supplementary requirements for MT and diameter measurements are to be applied to those lengths of each chain, which have been in contact with the windlass and fairleads when the mooring system was in operation.

MT is to be carried out on approximately 20% of the links and the diameter is to be measured on approximately 3% of the links distributed through the 150 m length.

505 Appropriate identification marks are to be placed on the surveyed lengths of chains. The identification marks are to:

— uniquely identify each individual length of chain
— identify the common links which are fitted adjacent to joining shackles.

Alternatively, accurate reliable records equivalent to the above markings are to be available onboard.

506 *Background information to be supplied for the renewal survey:*

The service history of the chain should be supplied beforehand to the attending surveyor. The following information is to be provided:

— DNV chain certificate
— year entering service
— bar chart; length of chain out versus time
— information on chain breakages, e.g. position, year entering service, certificate
— identification marks on chain
— summary of previous repairs
— summary of previous survey findings
— information on the likely future service of the chain, e.g. if plans to head-to-tail chain, expected length to be over fairleads and windlass, likely area of operations.

L 600 Anchor chains; acceptance criteria and repair

601 *Diameter loss due to abrasion and corrosion*

Temporary Mooring Equipment: Links or joining shackles with minimum cross-sectional area less than 81% of the original nominal area are to be rejected. The equivalent reduction in diameter is 10%. Two perpendicular measurements are to be taken and the average compared to the allowable 10% reduction.

Position Mooring Equipment: Links or joining shackles with minimum cross-sectional area less than 90% of the original nominal area are to be rejected. The equivalent reduction in diameter is 5%. Two perpendicular measurements are to be taken and the average compared to the allowable 5% reduction.

Lengths over five links should be 23.25 D as a maximum.

602 *Missing studs*

Missing studs on stud link chains are not acceptable. Links are to be removed or studs are to be refitted, using an approved procedure.

603 *Corroded studs*

As guidance, if the measured stud cross-sectional area is less than 40% of the nominal link (bar) cross-sectional area, links should be removed or studs should be refitted using an approved procedure.

604 *Studs secured by fillet welds*

Grade 3 chains are sometimes fitted with studs secured by fillet welds. In service the welds may crack. The following applies:

— any axial or lateral movement is unacceptable. Links are be removed or studs are to be re-welded using an approved procedure
— links with intact fillet welds but with gaps exceeding 3 mm between the stud and the link should be removed or repaired using an approved procedure. This because the stud welds will eventually crack due to vibrations when chain is running over fairlead at speed during anchor handling
— existing links which are found to have the stud fillet welded at both ends are subject to special consideration.

605 *Studs secured by press fitting and mechanical locking*

With this design of stud there is little prospect of the stud falling out even if it is loose. However, loose studs have caused fatigue at the edge of imprints. The following applies:

— axial stud movement up to 1 mm is acceptable
— axial stud movement greater than 2 mm is unacceptable. Links are to be removed or studs are to be pressed using an approved procedure
— acceptance of axial stud movement from 1 to 2 mm must be evaluated based on the environmental conditions of the unit's location and expected period of time before the chain is again available for inspection
— lateral movement up to 4 mm is acceptable provided there is no realistic prospect of the stud falling out
— welding of studs is not acceptable.

606 *Cracks, gouges, and other surface defects*

Defects may be removed by grinding to a depth of 7% of original nominal diameter provided the resulting cross-sectional area is at least 81% (90% for Position Mooring Equipment) of the original nominal area.

The resulting grooves are to have a length along the link of approximately six times the depth and a bottom radius of approximately three times the depth. Grooves are to be blended into the surrounding surface to avoid any sharp contours.

Complete elimination of defects is to be verified by MT or PT.

607 *Gross-distortion*

Links showing distortion/ miss-shape are to be rejected.

608 *Joining shackle defects and repair*

Experience has shown a number of anchors and chains lost due to joining shackle failure. Joining shackle is to be rejected if cracks and other defects are found on the machined surfaces. In addition, all joining shackles on that chain which are of the same design and which have an equal or greater service life are also to be considered carefully with a view to rejection.Cracks and other defects on the remaining surface may be removed by grinding.

609 *Distortion*

Shackles showing distortion/ miss-shape are to be rejected.

610 *Tapered pins*

Tapered pins holding the parts of joining shackles together must make good contact at both ends and the recess of counter-bore at the large end of the pin holder should be solidly plugged with a peened lead slug to prevent the pin from working out.

611 *Replacement of links and joining shackles*

Links or shackles beyond repair are to be replaced with joining shackles in compliance with current Rules and guided by the following good marine practice:

— joining shackles should pass through fairleads and windlasses in the horizontal plane
— since joining shackles have much lower fatigue lives than ordinary chain links as few as possible should be used
— if a large number of links meet the discard criteria and these links are distributed in the whole length, the chain should be replaced with new chain.

Any other type of replacement links are subject to special approval.

612 *Anchors acceptance criteria and repair*

The anchor shackle pin shall be renewed if excessively worn or bent.

Bent flukes or shanks may be heated and jacked back in place according to an approved procedure, followed by magnetic particle testing.

If swivels are fitted to the anchor, the threads engaging the swivel nut shall be examined. If significant corrosion is found, the swivel should be removed or replaced.

L 700 Winches and fairleads, renewal survey

701 The fairleads shall be inspected visually and by ROV as far as possible. All fairleads are to be inspected.

702 Visual inspection of windlass and fairlead pockets shall be carried out. Particular attention shall be paid to:

— rate of wear on pockets, including relative rate of wear between links and pockets
— mismatch between links and pockets, including improper support of the links in the pockets.

703 Special attention shall be given to the holding ability of the windlass. The chain stopper and the resultant load path to the unit's structure should be inspected and its soundness verified.

704 Special attention shall be given to the holding ability of the winch and the satisfactory operation of the pawls, ratchets and braking equipment. The soundness of the resultant load path to the unit's structure shall be verified.

705 Proper spooling of the wire on the winch drum shall be verified and drums and spooling gear adjustments made if required.

SECTION 5
PERIODICAL SURVEY EXTENT FOR ADDITIONAL SERVICE NOTATIONS

A. General

A 100 Introduction

101 This section presents the standard extent of surveys for retention of additional service notations applicable to offshore drilling and support units. The requirements shall be applied in addition to those for main class notation presented in Sec.4.

B. Drilling Units

B 100 Application

101 The requirements in this sub-section apply to units with class notation:

Drilling Unit.

B 200 Annual survey

201 The requirements given shall be regarded as supplementary to those given for the main class.

202 The drill floor and substructure shall be surveyed with emphasis on structural integrity and supporting structure for equipment applied in drilling operations.

203 Where cross connections between piping system for drilling or well testing operation and safe piping system exist, the means for avoiding possible contamination of the safe system with the hazardous medium shall be surveyed.

204 In hazardous area the following equipment and systems shall be surveyed and tested:

— ventilation including overpressure or flow and alarms
— self-closing gastight doors and airlocks including other openings or accesses
— alarms or shutdown of pressurised equipment
— electrical equipment and cables
— devices for monitoring of insulation resistance or earth leak monitoring including alarms
— protection devices for combustion engines
— emergency shutdown facilities.

205 The following systems shall be surveyed and tested for correct functioning if found necessary by the surveyor:

— fire detection system
— gas detection system, both flammable and toxic
— alarms for abnormal drilling condition
— general alarm system and communication between control stations.

206 The apparatus for breathing protection and gas measuring devices shall be surveyed.

207 Owners are required to operate a system for planned inspection and maintenance of highly pressurised equipment related to the drilling plant. The surveyor shall verify the satisfactory implementation of this system.

B 300 Complete periodical survey

301 The requirements given in 200 apply with the additional amendments given in 302 to 305.

302 Function test of instrumentation and safety devices for equipment and system in 205 shall be carried out.

303 It shall be verified that required signboards are in order.

304 The drainage system of hazardous area shall be surveyed.

305 Industrial equipment included in class according to Ch.2 Sec.2 F200 shall be surveyed. Attention is to be paid to fire and other hazards. Thickness checking of pipe work shall be carried out and records reviewed by the surveyor, as applicable. Hydrostatic testing may be requested by the surveyor.

C. Well Intervention Units

C 100 Application

101 The requirements in this sub-section apply to units with the class notation:

Well Intervention Unit 1 or **2**.

C 200 Annual survey

201 The requirements given are to be regarded as supplementary to those given for the main class.

202 Supporting structures are to be surveyed with emphasis on structural integrity.

203 Where cross connections between piping system for well intervention operation and safe piping system exist, the means for avoiding possible contamination of the safe system with the hazardous medium are to be surveyed.

204 In hazardous area the following equipment and systems are to be surveyed and tested, as applicable:

— ventilation including overpressure or flow and alarms
— self-closing gastight doors and airlocks including other openings or access
— alarms or shutdown of pressurized equipment
— electrical equipment and cables
— devices for monitoring of insulation resistance or earth leak monitoring including alarms
— protection devices for combustion engines
— emergency shutdown facilities.

205 The following systems to be surveyed and tested for correct functioning if found necessary by the surveyor:

— fire detection system
— gas detection system, both flammable and toxic
— alarms for abnormal condition
— general alarm system and communication between control stations.

C 300 Complete periodical survey

301 The requirements stipulated in 200 apply with the additional amendments as given in 302 to 305.

302 Function test of instrumentation and safety devices for equipment and system in 205 shall be carried out.

303 It shall be verified that required signboards are in order.

304 The drainage system of hazardous area shall be surveyed.

305 System and equipment related to well intervention shall be surveyed. For units being inspected by national authorities with respect to such items, the survey for classification may normally be considered as covered by this inspection. Statement of survey by national authorities shall be available to the surveyor.

D. Accommodation Unit

D 100 Application

101 The requirements in this sub-section apply to units with class notation:

Accommodation Unit.

D 200 Annual survey

201 The requirements shall be regarded as supplementary to those given for the main class.

202 The accommodation shall be surveyed with attention to structural strength. The connections of accommodation modules between the modules and to the main supporting structure shall be surveyed.

203 Where the emergency source of power is a generator, the temporary source of emergency power shall be surveyed and supply of consumers tested. The automatic operation shall be tested.

204 Gangways intended for transfer of personnel to/from other installations which are permanently fitted to the unit shall be surveyed with respect to structural integrity and proper functioning.

D 300 Complete periodical survey

301 The requirements in 200 apply.

E. Crane Unit

E 100 Application

101 The requirements in this sub-section apply to units with class notation:

Crane Unit.

E 200 Annual survey

201 The requirements shall be regarded as supplementary to those given for the main class.

202 An overall survey shall be carried out with particular emphasis on structural integrity, including examination of:

— wire ropes and end attachments
— blocks and sheaves
— hooks with accessories
— shackles
— bearings of boom heel and eyebolt connections
— securing arrangement for crane during passages
— support structure.

203 The slewing system (slewing bearing or hook rollers) including tightness of bolts shall be examined as required by the surveyor.

204 Examination and functional testing of the following shall be performed as found necessary by the surveyor:

— correct adjustment of brakes
— resistance measurement of electrical systems
— leakages in hydraulic system
— safety devices
— emergency stop function
— fire extinguisher.

205 The load charts, marking and components certificates shall be verified as available and in order.

E 300 Complete periodical survey

301 The requirements given in 200 apply, with the additions in 302 to 305.

302 Structural parts shall undergo thickness measurements as deemed necessary by the surveyor.

303 The following components shall be dismantled (opened up) and/or checked by MPI (magnetic particle inspection):

— boom heel bearings
— fixed sheaves
— blocks
— axle pin and housing
— eyebolt connections
— hooks, ring and balls.

The slewing ring shall be opened up, and internal fillets, raceway and bolts shall be subjected to MPI.

Alternatively:

— slewing bearings may be subject to relevant accepted non- destructive examination in order to check for defects in fillets and raceways
— crane with approved securing device (retainer) fitted, opening up is not required
— at least 50% of the holding down bolts shall be drawn and subjected to MPI.

304 Flatness and condition of bearing mounting flanges shall be checked.

305 Load testing shall be performed as outlined on Form No. CG 2 in DNV Standards for Certification No. 2.22 Lifting Appliances.

F. Offshore Support Unit

F 100 Survey arrangement

101 Main class requirements as given in Sec.4 shall be complied with.

102 Requirements to surveys for applicable additional notations are given in Sec.6.

SECTION 6
PERIODICAL SURVEY EXTENT FOR ADDITIONAL CLASS; SPECIAL EQUIPMENT AND SYSTEM NOTATIONS

A. Introduction

A 100 General

101 This section presents the standard extent of surveys for retention of additional system and special facility class notations applicable to drilling and offshore support units.

B. Position Mooring Equipment

B 100 Application

101 The requirements in this sub-section apply to units with class notations:

POSMOOR

POSMOOR-V

POSMOOR-TA

POSMOOR-ATA.

102 If the unit is in DP mode and not in **POSMOOR** mode at time of survey and hence equipment's functionality related to the **POSMOOR** notation is not available for survey/testing a reduced survey scope may be accepted. Annual, intermediate or complete survey depending on time since last survey is to be carried out before the mode is taking into use.

B 200 Annual survey

201 Accessible and visible parts of the unit's mooring system for position keeping on location shall be inspected. In addition, Sec.4 K200 applies.

202 The unit or installation log shall be reviewed in order to verify that the unit or installation has been operating within the environmental conditions specified for **POSMOOR** in the "Appendix to the classification certificate". The anchor chain records shall also be reviewed.

203 Thruster operation shall be function tested for units with system notation letters: **POSMOOR-TA** or **POSMOOR-ATA**.

B 300 Intermediate survey

301 The requirements given in 200 apply with the additions given in 302 to 303.

302 The mooring system for position keeping on location shall be inspected.

The mooring system, including static and dynamic brakes, during typical anchor handling operations shall be function tested. In addition, Sec.4 L300 applies.

303 Units with system notation letters **POSMOOR-ATA** are to be surveyed as given in C as far as is applicable.

B 400 Complete periodical survey

401 The requirements given in 200 and 300 apply with the additions given in 402 and 403.

402 The complete mooring system for position keeping on location shall be subject to comprehensive survey, including opening up and NDT of selected parts of windlasses and winches and fairleads. Critical parts of all mooring chains or wires and accessories shall be thoroughly visually examined and subjected to extensive NDT. In addition, Sec.4 L400, 500 and 600 apply.

403 Windlasses and winches and fairleads, including brake torques, shall be function tested. In addition, Sec.4 K700 applies.

C. Dynamic Positioning Systems

C 100 General

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

102 The requirements in this sub-section apply to units with class notation:

DYNPOS-AUTS or **DYNPOS-AUT** or **DYNPOS-AUTR** or **DYNPOS-AUTRO** and to units with previous corresponding class notations.

103 For units with qualifier **(A)** given as:

DYNPOS-AUTR(A) or

DYNPOS-AUTRO(A)

notation, also the annual survey shall be carried out in accordance with the requirement for complete survey, as given in C300 as applicable.

104 For class notations with the qualifier **(A)** an updated FMEA report with a corresponding FMEA test program shall be kept onboard, and shall be used as basis for the testing.

105 If the unit is in **POSMOOR** mode and not in **DYNPOS** mode at time of survey and hence equipment's/ functionality related the **DYNPOS** notation is not available for survey/testing a reduced survey scope may be accepted. Annual, intermediate or complete survey depending on time since last survey is to be carried out before the mode is taking into use.

C 200 Annual survey

201 System maintenance documentation, including information regarding hardware and software changes, shall be reviewed.

Guidance note:

This requirement includes, in addition to the DP control system, the joystick control system and other systems necessary for performing position keeping, e.g. thruster control system.

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202 The electrical installation in excess of the main class requirements shall be visually inspected, i.e. installations comprising the dynamic positioning system, e.g. controllers and operating stations for DP and independent joystick, references systems, sensors and mode change system.

203 The technical condition of the DP system shall be verified during the survey.

Guidance note:

Verification of the technical condition of the DP system denotes testing to verify that the DP system is capable of positioning the unit, and thus validating that system functionality is in place.

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Guidance note:

Testing should preferably be done during a sea trial. However, in the case where this is inconvenient (e.g. the unit is in the middle of a long term operation) the survey may be performed during regular operations. This may imply that it may not be possible to test all different operational modes.

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204 If the survey is carried out when the unit is undergoing regular operations, then tests that possibly can introduce unacceptable risks shall not be performed.

205 Capacity of UPSs and other battery systems serving the DP control system, including its peripherals, shall be verified.

The alarm for loss of charging power shall be verified.

Guidance note:

If the survey is carried out during regular operations, then the capacity of the batteries need not be proven by testing.

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206 For class notation **DYNPOS-AUTRO**, normal working condition of the back-up DP control system shall be verified.

Guidance note:

If the survey is carried out during regular operations, then control need not be transferred to the back-up DP control system.

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207 Emergency stop of thrusters from the DP control centre shall be tested. If the survey is carried out when the unit is undergoing regular operations, then testing shall not be performed if there is any possibility of introducing unacceptable risks.

C 300 Complete survey (5 years)

301 With the unit in DP mode, a sea trial shall be performed.

302 The complete system shall be tested in all operational modes. The testing shall include simulation of different failure conditions to verify switching of modes, back-up systems and the alarm system.

303 The different modes of thruster control from the DP control centre(s) shall be tested:

— manual control
— joystick control (independent joystick, if installed)
— DP control
— transfer of control.

Manual override i.e. by thruster lever control and independent joystick control shall be demonstrated during normal operation and during failure conditions.

304 Emergency stop of DP thrusters from DP control centre to be tested.

305 All sensors, peripheral equipment and reference systems shall be tested:

— verify correct operation and adequate accuracy
— failure of sensors and reference systems shall be simulated to check the alarm system and the switching logic
— switch-over between reference systems as input to controller shall be carried out to assure that warnings, alarms and information to operator are satisfactory.

Guidance note:

Due to practicalities some reference systems may be unavailable during the tests. In such cases the testing can be performed by the crew as soon as possible after survey. When testing is left to the crew this must be recorded in the survey report, and a condition of class or memo to owner must be issued. The condition of class or memo to owner can be deleted based on a signed test report from the master.

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Guidance note:

The survey of the thruster unit shall be carried out as for thrusters for propulsion and dynamic positioning. Surveys of the thrusters are separate survey elements and these surveys do not need to take place at the same time as the DP survey.

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306 Alarm for loss of position and heading out of limit shall be demonstrated.

307 The electrical installation in excess of the main class requirements, shall be visually inspected, i.e. installations comprising the dynamic positioning system, e.g. controllers and operating stations for DP and independent joystick, references systems, sensors and mode change system.

308 Single failures in thruster control systems including signal wire breaks of thruster command and feedback signals shall be tested in order to verify safe response on the thrust output. Equivalent testing may also be required for rudders controlled by the DP control system.

309 Overload prevention shall be tested.

Guidance note:

If it is possible to induce overload by setting out thrust command from the DP control system (e.g. by use of joystick function) then the overload protection function (e.g. pitch reduction) shall be tested. System configuration and/or available power considerations may lead to this test being omitted.

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310 Capacity of UPSs and other battery systems serving the DP control system including it peripherals shall be verified by testing. Alarm for loss of charging power shall also be verified.

311 For class notations **DYNPOS-AUTR** and **DYNPOS-AUTRO** the required redundancy with respect to defined single failures modes shall be verified by redundancy testing.

312 For class notations **DYNPOS-AUTR** and **DYNPOS-AUTRO** the FMEA report and FMEA test program shall be verified to ensure that they have been updated when alterations have been done.

Guidance note:

This requirement is only valid for units with class request after 1. July 2004.

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313 For class notations **DYNPOS-AUTR** and **DYNPOS-AUTRO** correct functioning of the Consequence Analysis facility shall be verified as far as possible.

314 For class notation **DYNPOS-AUTRO** testing shall also be performed on the back-up DP control system. Switchover to back-up shall be tested, and monitoring of back-up control system status on the main control system shall be verified.

D. Drilling Plant

D 100 Application

101 The requirements in this sub-section apply to units with class notation: **DRILL**, **DRILL(N)** and **DRILL(US)**.

102 *Scope*

The systems covered in the survey are in accordance with Ch.2 Sec.6 D and include the following:

— drilling structures
— well control systems
— heave compensation and tensioning systems
— hoisting and rotating systems
— drilling and well intervention equipment handling systems
— bulk storage, drilling fluid mixing and circulation, and cementing systems
— well testing systems
— other drilling equipment (winches, gear transmissions, man-riding equipment).

103 Specific survey and test items only required for **DRILL(US)**, and **DRILL(N)** are followed by the specific notation names in bold.

104 Where third party equipment (TPE) is used to support the drilling operation it is to be surveyed with regard to its inherent safety and the interface between the rig and the equipment and the equipment and the rig.

Guidance note:

The following equipment may fall into this category:

- mud logging
- wireline
- casing running equipment
- measurement/logging while drilling
- ROV.

Further guidance can be found in DNV publication OTG 05 regarding TPE

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105 *Drilling equipment PMS RCM*

For units with an PMS RCM survey arrangement and **DRILL** notation, the survey scope of D200 and D300 is as replaced with the scope outlined in Ch.3 Sec.7. PMS RCM.

106 *Drilling equipment condition monitoring survey arrangement (DCMSA)*

For units with an approved condition monitoring arrangement, condition monitoring replaces the scope in D200 and D300, for applicable equipment and failure modes.

107 *Drilling equipment continuous survey arrangement (DCSA)*

For units with a continuous **DRILL** survey arrangement the scope, as described in D200 and D300, is covered on a continuous basis, with the same intervals. The attending surveyor is to update the drilling machinery list after each survey onboard.

D 200 Annual survey

201 *Objective*

The intent of the annual survey is to get a sufficient understanding of the condition of the equipment without intrusive interventions, given that the unit is in operation. It is assumed that normal operations are ongoing

202 *Scope*

The extent of the Annual Survey shall be as follows:

— Spot check review of the unit's records of the routine inspections/ tests, the planned maintenance system and the/repair/overhaul records.
— Spot check review of equipment/system certificates.
— Visual examination and testing of the drilling equipment as specified in 203-228.

Non-destructive testing may be required, as considered necessary by the surveyor.

Where records are available showing that the items listed below have been recently tested by the crew these will be considered by the surveyor.

203 *General requirements*

During annual survey it is acceptable that the test pressure to which the BOP and the HP pipelines, choke and kill manifold have been tested to is limited to that appropriate to the well conditions, i.e not maximum working rated pressure.

204 Any changes to the systems (new equipment and overhauls, repairs and modifications) are to be surveyed and the relevant documentation to be reviewed.

205 The surveys are to be based on the maker's recommendations and recognised standards. Any deviations from these are to be justified by technical arguments.

206 *Drilling structures*

A general visual survey is to be carried out with attention to damaged members.

207 *Blowout Preventing Equipment*

BOP systems shall be surveyed visually as far as practicable. Test records for periodical function and pressure testing of the blowout preventer system, including the choke and kill manifold and piping, shall be reviewed.

208 *Blowout Preventing, Control Equipment*

Records of the precharge of the accumulators are to be reviewed. Spot check review of calibration certificates for safety valves shall be carried out.

209 Review records of inspections and test in case the blind-shear or casing shear rams have been activated in a well control situation during the past year – **DRILL(US).**

Guidance note:

In order to verify the compliance of BOEMRE's requirement 30 CFR part 250 par. 250.451(i).

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210 Check existence and proper maintenance of a ROV – **DRILL(US)**.

Guidance note:

Ref. BOEMRE 30 CFR part 250, par. 250.442(c), 250.515(e), 250.615(e).

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211 *Diverter unit, equipment and control equipment*

The diverter system shall be visually surveyed and inspected for corrosion, cracks and wear. Records of maintenance on the rubber goods to be reviewed, records of functioning and testing to be reviewed.

212 *Choke & Kill Equipment and control equipment*

High pressure choke and kill piping systems including flexible hoses shall be externally surveyed for corrosion and damage. Thickness measurement records shall be available upon request.

Guidance note:

High pressure piping is defined in Chapter IX of ANSI/ASME B31.3 to be piping with a piping class larger than ASME B16.5 CL2500 (PN420) classes. The API piping classes are all high pressure piping. Typical high pressure piping is choke and kill lines.

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213 Test records for periodical function and pressure testing of the blowout preventer system, including the choke and kill manifold and piping, shall be reviewed.

214 HP flexible hoses are to be inspected and tested in accordance with the maker's recommendation. The documentation of this testing is to be reviewed.

215 *Marine Riser, Equipment and control equipment*

Marine riser joints, telescopic joint, ball joint, spider and support ring (as far as accessible) shall be visually surveyed and inspected for leakages, corrosion, cracks and wear.

216 *Heave Compensation*

Pressure vessels, including mountings, piping and possible insulation, shall be externally surveyed. Spot check review of calibration certificates for safety valves shall be carried out.

217 *Tensioning Systems*

All tensioning systems, including wire ropes and sheaves and cylinders, shall be visually surveyed during normal operation as far as possible.

218 *Hoisting System - Hydraulic Cylinder Based (Ramrig/Cylinder Hoisting Rig) or Conventional*

Main hoisting systems shall be surveyed visually during normal operations. Spot checks of safety devices and emergency stop functions shall be carried out. Wire ropes (including end attachments) and sheaves shall be surveyed. Record of NDT/inspection of the "loose gear" is to be reviewed.

219 *Hoisting and Rotating Equipment*

Drilling related structures shall be surveyed, with particular attention to the structural integrity and personnel protection. For units where the drilling related structures are included in the in-service inspection program (IIP), the extent shall follow the IIP.

Visually survey of the crown block, travelling block, top drive, dolly, elevators, elevator links and rotary table

shall be carried out. Review maintenance records on equipment, calibration reports for dead line anchor, crown and travelling block sheave groove measurements and NDT reports (i.e elevator links and load carrying equipment. Review certificates on loose gear (lifting gear).

220 *BOP & xmas tree handling*

BOP handling systems shall be surveyed visually as far as practicable. Spot checks of safety devices and emergency stop functions shall be carried out. Review NDT reports on load carrying equipment.

221 *Miscellaneous Equipment for Drilling*

Pipe handling systems shall be surveyed visually as far as practicable. Spot checks of safety devices and emergency stop functions shall be carried out. Review NDT reports on load carrying equipment.

222 *Drilling Fluid Circulation & Mixing*

High pressure piping systems for well circulation systems including flexible hoses shall be externally surveyed for corrosion and damage. Thickness measurement records shall be available upon request. Spot check review of calibration certificates for safety valves shall be carried out.

Guidance note:

High pressure piping is defined in Chapter IX of ANSI/ASME B31.3 to be piping with a piping class larger than ASME B16.5 CL2500 (PN420) classes. The API piping classes are all high pressure piping. Typical high pressure piping is choke and kill lines.

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223 Mud pumps and mud return system shall be visually surveyed during normal operation. Spot checks of calibration of tank level indicators, flow meters and alarms shall be carried out.

224 The maintenance and test records on the Inside BOP valves are to be reviewed.

225 The low pressure mud pumps and mud return system shall be visually surveyed during normal operation. Spot checks of calibration of tank level indicators, flow meters and alarms shall be carried out.

226 *Cementing*

Review maintenance records, pressure test records and calibration certificates for safety valves. Certificates of cement pump equipment as described in DNV-OS-E101 to be reviewed. Emergency stops to be tested (as far as practicable, if not review records).

227 *Well testing Equipment*

It is normal that the installation of the Well Testing Package is surveyed immediately prior to Well Testing start up. This should be confirmed from records onboard or followed up as per an installation survey.

228 Review records of installation/maintenance/replacements for the Well Testing Package. It is recognised that the well testing package is normally temporarily leased to vessel by 3rd party and operated/maintained by the 3rd party. Confirm satisfactory routine testing of the Safety Systems, ESD System and the Blow-down Systems

229 An overall survey of well testing equipment and systems with particular attention to structural integrity, fire or explosion hazards, safety systems and personnel protection shall be carried out. If deemed necessary by the surveyor running test, NDT, and/or opening up of equipment may be required.

230 Pressure vessels and heat exchangers shall be externally surveyed. Safety valves, instrumentation and systems on tanks or separators shall be surveyed and tested in operating condition as found necessary by the surveyor.

231 High pressure or capacity pumps and compressors shall be externally surveyed and function tested as deemed necessary by the surveyor.

232 Piping systems including flexible pipes shall be surveyed as deemed necessary by the surveyor.

233 Pressure relief and depressurising valves shall be surveyed and tested as deemed necessary by the surveyor.

234 Survey of accessible parts of the following structures shall be carried out to confirm structural integrity and condition of securing arrangement:

— burner boom
— skids.

235 The well testing and utility safety systems shall be surveyed during operation and tested for correct functioning as found necessary by the surveyor with particular emphasis on:

— shutdown valves
— shutdown instrumentation
— shutdown sequence and logic
— interconnection with emergency shutdown system

— regulation or control system
— alarm system.

A review of the maintenance manual or test log is an acceptable survey method provided a satisfactory recording system and an acceptable maintenance procedure exist.

236 It is to be confirmed that no connection exists between the unit's compressed air system and the well test (flare) system.

237 It is to be confirmed that means are to be provided to prevent hydrocarbons from entering the boilers with the condensate return from steam operated heat exchangers.

238 Drainage system for produced liquids for hazardous areas shall be surveyed.

239 Water protection system in well testing area shall be surveyed and function tested as deemed necessary by the surveyor.

240 *Manriding Equipment*

Personnel hoisting equipment and utility winches for lifting purposes, including wires and sheaves, shall be visually surveyed. Spot checks of safety devices and emergency stop functions shall be carried out. SWL marking is to be confirmed to be legible.

241 *Control Systems*

At the annual survey a review of documentation of alarm testing of the control systems is to be carried out. In addition, random testing of alarms that can be tested without interfering with operations to the surveyors satisfaction.

D 300 Complete periodical survey

301 *Objective*

The intent of the complete survey is to get a sufficient understanding of the equipment that it is fit for the next 5 years. It is expected that some intrusive surveys will be carried out.

302 *Scope*

The requirements given in 200 apply, with the additions given in 300. More intrusive inspections and more rigorous testing will be carried out. Normally items will be tested to their original design limits.

Review maintenance records, pressure test records and calibration certificates for safety valves. Certificates of cement pump equipment as described in DNV-OS-E101 to be reviewed. Emergency stops to be tested (as far as practicable, if not review records).

303 *DRILL(N)*

For the additional survey requirements as required by the Norwegian authorities is referred to OSS-201, Ch.3 Sec.E.

304 *Drilling structures*

Derrick /guiding tower installations shall be examined, with emphasis on the structural condition of footings, bracings and with respect to deformation and loose bolts (if of bolted design). Reports for derrick bolt torque/ pre-tension checks shall be presented. Thickness measurements may be required. 100% NDT of derrick/ guiding tower footings shall be carried out. The torque of the foundation bolts is to be confirmed. If the derrick has welded foundation NDT is to be carried out.

Guidance note:

NDT and foundation bolt check may be waived depending on design.

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Padeyes in the derrick for sheaves etc are to be visually surveyed/confirmed to be in order. NDT may be required according to surveyors satisfaction.

305 NDT of the main structural parts of overhead drilling equipment shall be carried out.

Thickness measurements may be required. API RP 8B may be used as reference. Any deviations from API RP 8B are to be agreed with the OEM and DNV.

306 For main structural parts of overhead drilling equipment and lifting appliances where NDT is normally carried out, this NDT may be omitted if it can be documented that the following conditions are fulfilled:

— Accumulated fatigue damage must be less than the calculated fatigue life of the component at the end of the 5 year period, based on logging of actual load cycles.
— Fatigue calculations and logging of load cycles are to be evaluated by DNV Høvik
— The fatigue calculations shall comply with DNV-OS-C101, FATIGUE LIMIT STATES. The calculations should include the Design Fatigue Factors (DFF) as given in Sec.6 A200
— There must be no previous history of cracks in the particular area.
— The remaining fatigue life must be sufficient for the period until next renewal survey

— If NDT has been omitted at one renewal survey then it will normally have to be done at the next renewal survey.

Guidance note:
If NDT is to be omitted the logging equipment and the fatigue calculations must be made available for review at the fourth annual survey or earlier.

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307 Lifting appliances (except overhead drilling equipment) shall be load tested, as specified in DNV-OS-E101.

308 *Blowout Preventing Equipment*

Overhaul of the BOP assembly shall be carried out at intervals of 5 years, in accordance with an overhaul plan based on the condition of the BOP. The overhaul plan is to be presented for review prior to the work being carried out. Records of overhaul shall be kept onboard and shall be reviewed. The blow-out preventer system shall be subject to complete strip down, internal visual inspection and dimensional check, reassembly and performance test, including pressure testing of each pipe ram, annular, choke and kill valves and piping systems to the maximum allowable working pressure. Typically the BOP will be stripped down, internally inspected, dimensionally checked to the OEM's specification, full pressure test and pressure test of the control system both to max WP (unless weld repairs have been carried out).

Clamps – 25% of the clamps are to be opened and inspected dimensionally and by NDT.

Test stump is to be NDT checked.

Guidance note:
See also DNV-RP-E101 and E102 for further guidance especially where the items are overhauled away for the unit, and weld repairs are needed.

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309 *Blowout Preventing, Control Equipment*

Pressure vessels shall be surveyed internally. If internal survey is not practical, thickness measurements shall be taken and compared with the min strength thickness. Pressure vessel related equipment, such as valves, pipes, etc., shall be examined. Pressure testing to the maximum allowable working pressure shall be performed.

310 Thickness measurements are to be carried out and compared with the minimum strength thickness. Piping systems including flexible hoses shall be pressure tested to the maximum working pressure.

311 The capacity test of the pump unit with accumulators is to be carried out. The time to recharge the unit from precharge pressure to normal operating pressure is to be measured using both the power systems one at a time (cf API 16D).

312 All BOP control panels are to be function tested, incl the acoustic panel (where fitted). Sample alarms are to be tested, including:

— low accumulator pressure,
— loss of power supply,
— low levels in the control fluid storage tanks
— loss of communication (multiplex control systems)
— UPS alarms;
— loss of input power and internal failure.
— Loss of battery back-up of BOP.

313 Where fitted "Autoshear" and "Deadman" systems should be tested on subsea stacks.

Guidance note:
For DRILL(US) autoshear and deadman system are expected iaw Ch.2 Sec.6 D. The above test is iaw BOEMRE's requirement 30 CFR part 250 par. 449(k), 516(d)(9) and 250.616(h)(2).

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314 On subsea BOPs where Remote operated ROV intervention capability exists it should be tested

315 The above test is to be performed during stump test covering at least one set of rams during the initial test on the seafloor – **DRILL(US)**.

Guidance note:
Ref BOEMRE 30 CFR part 250 par. 449(j), 516(d)(8) and 250.616(h)(1)

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316 *Diverter Unit and control equipment*

The diverter system shall be visually surveyed. Liquid penetrant or MPI methods shall be used to investigate critical areas such as for instance connector/main pipe welds for cracks. Full function testing from all Diverter

panels to be carried out. Test of interlocks to be carried out from all control panels. Verify the response time is within acceptable limits, e.g. API Spec 16 D.

317 *Choke & Kill Equipment*

Thickness measurements of choke and kill equipment are to be carried out and compared with the minimum strength thickness. Choke and kill lines, hydraulic lines and booster line, shall be pressure tested to the maximum allowable working pressure.

318 Choke and kill manifold and piping shall be subject to complete performance test to maximum allowable working pressure of each applicable valve configuration. Function testing of remote operated valves and chokes to be carried out. Opening of valves (approx 10%) for internal inspection by the surveyor is to be carried out. All choke valves (manual or remote) to be opened for internal inspection.

319 *Marine Riser, Equipment and control equipment*

The marine riser system, including choke and kill lines, shall be surveyed. Liquid penetrant or MPI methods shall be used to investigate critical areas such as for instance connector/main pipe welds for cracks. Choke and kill lines, hydraulic lines and booster line, shall be pressure tested to the maximum allowable working pressure. Thickness measurements are to be carried out and compared with the minimum strength thickness. The riser is to be surveyed with the buoyancy elements removed.

320 For units where the riser joints are sent ashore routinely for overhaul the records of the overhauls ashore are to be presented.

321 Slip joint rubber goods and packers are to be replaced following the manufacturer's recommendation. Records to be reviewed show that this has been done at the proper intervals. Thickness measurements of the barrel shall be taken and compared with the min strength thickness. Function test of packers and locking dogs to be carried out.

322 For a riser joint with fill valve the inspection is as for a standard joint plus NDT of the cut-out for the fill valve. Review records of testing of the valve are to be reviewed.

323 On the riser support ring NDT of high stressed areas is to be carried out and the last overhaul report is to be reviewed.

324 For the goosenecks on the riser thickness measurements shall be taken and compared with the min strength thickness.

325 Ball joint and flex joint are to be striped down, NDT of the critical areas and dimension checks to be carried out and compared with OEM dimensions.

326 The control system is to be tested to prove that riser break and/or riser tensioning cylinder break (on in line type) indicators are in order.

327 *Heave Compensation*

Pressure vessels shall be surveyed internally e.g by boroscope. Thickness measurements shall be taken and compared with the min strength thickness. Pressure vessel related equipment, such as valves, pipes, etc., shall be examined. Pressure testing to the maximum allowable working pressure shall be performed. Calibration certificates for all safety valves shall be presented.

328 Piping systems including flexible hoses shall be thickness checked; measurements being carried out and compared with the min strength thickness. Flexible hoses shall be visually surveyed internally. The system shall be pressure tested to the maximum working pressure.

329 On compensators with chains the chain extension is to be checked, where fitted wires are to be examined.

330 For active heave compensation (crown compensation) system the overload protection system is to be surveyed. NDT of the fixation of the foundation is to be carried out,

331 Where fitted, anti recoil valves (e.g “Olmsted”/slingshot valves) are to be overhauled and tested.

332 Sheaves are to be visually surveyed and checked by NDT.

333 For active heave drawworks performing a motion compensation function see OEM recommendations for the drawworks.

334 Check the records of refilling of the hydraulic system to confirm the condition of the system regarding the internal leakage rate.

335 Tensioning Systems

The tensioner oil analysis results are to be reviewed (for lack of explosive capability), the records of sheave wear measurement are to be reviewed, and the ton mile records for the rope are to be reviewed. The termination of any tensioner ropes are to be surveyed. The foundations of the tensioners are to be surveyed and NDT is to be carried out at surveyor’s discretion.

336 Pressure vessels and pipework are to be thickness checked, and the results compared with the min strength thickness.

Compressors are to be run tested and the record of overhaul of the relief valves is to be checked.

Where fitted, anti recoil valves (e.g "Olmsted"/slingshot valves) are to be overhauled and tested.

Pistons are to be fully extended to allow examination of the surface condition of the piston rod.

For cylinder type/direct acting tensioners the foundations are to be NDT checked. Turn down sheaves are the be examined and NDT checked,

337 All tensioner control panels are to be visually examined.

338 Where a top tension system is fitted (e.g on a jack up or a floater with a surface BOP) the system shall be surveyed. The hang off support points on the units structure are to be NDT inspected. The hydraulic system shall be surveyed and the control panel checked.

339 *Hoisting System - Hydraulic Cylinder Based (Ramrig/Cylinder Hoisting Rig) Or Conventional*

NDT of overhead drilling equipment and lifting appliances shall be carried out.

Thickness measurements may be required. API RP 8B may be used as reference.

340 Lifting appliances (except overhead drilling equipment) shall be load tested, as specified in DNV-OS-E101.

On the guide track check for wear, bent members, carry out NDT of structural supports and check for wear of rollers on the dolly. Check the centring of the drill pipe into the rotary when the dolly is extended. Review alignment reports.

341 The FMECA (where applicable) for the drawworks is to be reviewed and inspections carried out based on the info in this doc.

342 On the top drive the gooseneck is to be thickness checked, and the results compared with the min strength thickness. The overhaul reports are to be reviewed, and it is to be confirmed that the main load path has been checked by NDT every 5 years.

343 The crown saver to be tested.

344 *Hoisting Equipment in Derrick*

On the riser spider NDT of high stressed areas is to be carried out. Review overhaul report.

345 *Rotating Equipment*

The top drive is to be overhauled. The main load path is to be checked by NDT. OEM recommended measurements are to be taken and compared with the allowable.

346 *Pipe handling*

Horizontal to Vertical equipment is to be visual inspected. Runway beams to be checked. Load testing, function test of limits/safety functions and NDT is to be carried out as required.

347 Anti collision functions of the pipe handling system with the top drive to be confirmed.

348 The gripper function/head is to be specially surveyed.

349 On pipe handling systems spot checks of safety devices and emergency stop functions shall be carried out. Loss of main power battery back-up pipehandling magnets to be tested.

350 *BOP & Xmas tree handling*

NDT for main structural parts of overhead drilling equipment and lifting appliances shall be carried out. Thickness measurements may be required. API 7L may be used as guidance.

351 Lifting appliances (except overhead drilling equipment) shall be load tested, as specified in DNV-OS-E101.

352 Where the BOP is lifted from the top in order to be moved this lifting device is to be overload tested. The hooks are to be NDT checked. The condition of the hoisting and transport system is to be confirmed. NDT may be required on the support structure for the BOP hoist/transport system.

353 However, where the BOP is supported at its base i.e skidded BOP handling device need not be overload tested.

354 *Miscellaneous Equipment for Drilling*

NDT for main structural parts of overhead drilling equipment and lifting appliances shall be carried out. Thickness measurements may be required. Wear readings are to be compared with the maker's recommendation. API RP 8B may be used as guidance. Safety features (i.e. brakes, slack wire detection, limit switches, etc. as applicable) on winches to be tested. Personnel protection shielding on winches to be surveyed.

355 *Bulk Storage*

Pressure vessels shall be surveyed internally. If internal survey is not practical, thickness measurements shall be taken and compared with the min strength thickness. Pressure vessel related equipment, such as valves, pipes, etc., shall be examined. Pressure testing to the maximum allowable working pressure shall be performed. Calibration certificates for all safety valves shall be presented.

356 Foundations to be visually surveyed and NDT checked as required.

357 A function test of the bulk control system is to be carried out.

358 Piping systems for bulk transport including flexible hoses shall be pressure tested to the maximum working pressure. Thickness measurements shall be taken and compared with the min strength thickness. Flexible hoses shall be visually surveyed internally. The routing of the exhaust line from the safety valve is to be surveyed. The system for ensuring the relief line is unobstructed is to be checked.

359 *Drilling Fluid Circulation & Mixing*

Thickness measurements of the low pressure systems shall be taken and compared with the min strength thickness. Flexible hoses shall be visually surveyed internally. Piping systems including flexible hoses shall be pressure tested to the maximum working pressure.

360 The mud pump system maintenance records are to be reviewed with particular attention to the power transmission system from the el motor to the pump. The bearing clearances on the crankshaft are to be reviewed. The records of mud pump discharge safety valve testing are to be reviewed.

Records of the documentation of the replacement mud pump modules are to be reviewed.

Where pulsation dampers are welded NDT shall be carried out of any welding (e.g. circumferential weld on the damper body). Records of the check of the pre-charge are to be reviewed.

361 10% of the standpipe manifold valves are to be opened for inspection, thickness check and NDT of welds. If the standpipe is heat traced then check for corrosion under the tracing.

362 Review replacement records of the rotary hoses. The gooseneck on the standpipe thickness measurements shall be taken and compared with the min strength thickness.

363 On Kelly cocks and inside BOP valves NDT and pressure testing to max WP shall be carried out, and LP testing sealing to be confirmed. The operability of these valves to be confirmed.

364 Dump valves in the mud return system are to be confirmed operable, thickness checks of mud pits is to be carried out. On the trip and active tank the level alarms are to be confirmed to be in order.

365 *Cementing*

Cement pump fluid ends shall be surveyed and checked for cracks in critical areas. Thickness measurements to be carried out. Calibration certificates for all safety valves shall be presented. Safety functions to be tested, including running the cement system as emergency mud circulation system, where applicable.

366 Function test to maximum working pressure to be carried out.

367 Documentation of maintenance of articulated piping is to be reviewed. Thickness measurements shall be taken and compared with the min strength thickness. Flexible hoses shall be visually surveyed internally. Piping systems including flexible hoses shall be pressure tested to the maximum working pressure.

368 Since cement pumping units are often rented in from specialist third parties the records of the third party's maintenance are to be reviewed, with attention to shut downs etc. The location and arrangement of the discharge of the relief valves is to be surveyed with regard to avoiding danger to people working near the unit. Where the cement unit is also the emergency mud pumping system the independence of the start air system from the unit's air system is to be confirmed.

369 The remote control system (if fitted) on the cement pump unit is to be confirmed to be in order.

370 *Miscellaneous Equipment being part of the Drilling Installation*

The flare boom installations shall be examined, with emphasis on the structural condition of footings, bracings and with respect to deformation and loose bolts (if of bolted design). Thickness measurements may be required. 100% NDT of flare boom footings shall be carried out.

371 Load test of the flare boom to be carried out.

Guidance note:

See DNV-OS-E101 (2009) Ch.2 Sec.7 D308 for the overload factors.

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372 *Well testing*

Where well test equipment is "permanently" installed on the unit the individual items are to be surveyed using the survey scope typically for the equipment listed in this document.

373 The well testing equipment shall be subject to internal inspection to the extent necessary to reveal current condition. Satisfactory functioning and pressure integrity shall be confirmed.

374 Pressure vessels and heat exchangers shall be subjected to internal surveys. If this is not practical then use of thickness measurements may be considered. Examination of related equipment such as valves, piping and fittings shall be carried out. Pressure testing to rated working pressure shall be carried out.

375 Pressure testing to max. WP of installed piping. Spot-check wall thickness checks in way of the bends/ fittings/constrictions subject to potential erosion or corrosion and precautionary inspection of pipe supports particularly in way of the bends/constrictions. Correct setting of valves shall be confirmed.

376 High pressure or capacity pumps and compressors shall be surveyed by opening up fully or partly as deemed necessary by the surveyor. Pressure testing to be carried out when relevant and found necessary by the surveyor.

377 Overhead lifting equipment and lifting devices shall be dismantled to the extent necessary to evaluate current condition. Main loading parts shall be checked by NDT. Thickness measurements as deemed necessary to be carried out. Wire ropes shall be surveyed.

378 The fixed water protection systems in well testing area shall be surveyed and tested for correct functioning.

379 Function test of ESD System, safety devices and instrumentation. Confirm gauges and instrumentation correctly calibrated.

Where well test equipment is "temporarily" installed on the unit it is to be confirmed that the individual items have been surveyed using the survey scope typically for the equipment listed in this document. Typically this occurs prior to installation onboard.

380 *Manriding Equipment*

Personnel hoisting equipment and utility winches for lifting purposes shall be load and function tested as specified in DNV-OS-E101 (2009) Ch.2 Sec.7. Safety devices described in DNV-OS-E101 (2009), Ch.2 Sec.5 I to be tested. Foundation of the winches to be NDT inspected. Adjustment of the regulator for the tension to be checked. Emergency recovery to safe position to be confirmed.

E. Helicopter Deck

E 100 Application

101 The requirements in this sub-section apply to units with class notation:

HELDK

E 200 Complete periodical survey

201 All surveys of the helicopter deck arrangement shall be concurrent with the complete periodical survey of the hull.

202 An overall survey shall be carried out with particular emphasis on the structural integrity of the deck with supporting structure, and is normally to include examination of the following components and arrangements:

— drainage arrangements
— surface protection on wooden decks
— safety net
— lashing arrangements for the helicopter
— arrangements for the prevention of sliding
— helicopter deck including support
— fire safety installation (for qualifiers **S**, **SH**)
— communication equipment (for qualifiers **S**, **SH**)
— obstacles and marking (for qualifiers **SH**).

F. Well Test

F 100 Application

101 The requirements in this sub-section apply to units with class notation:

WELLTEST.

F 200 Surveys

201 Survey requirements given for well testing equipment in class notation **DRILL** in D226 to D238 and D375 to D382 shall be applied, as applicable.

G. Temporary Oil Storage

G 100 Application

101 The requirements in this sub-section apply to units with class notation:

TEMPSTORE.

G 200 Annual survey

201 The surveys required in 202 and 203 shall be carried out concurrently with the annual survey for main class.

202 The survey shall include a general examination of:

— tanks
— pumping and piping systems
— ventilation system
— bulkheads with respect to tightness
— electrical equipment in gas dangerous zones
— inert gas arrangement, if installed.

203 The following components and systems shall be surveyed and tested for correct functioning:

— pressure/vacuum relief valves
— emergency stop of pumps
— quick release of transfer hose
— tank high level alarms.

204 Insulation resistance of electrical cables shall be measured. The measurement may be omitted provided a record of testing is available showing that measurements have been taken during the last 12 months with satisfactory results.

G 300 Complete periodical survey

301 The requirements in 200 apply with the additions given in 302 to 305.

302 All storage tanks shall be internally examined. The tanks shall be hydrostatically, hydropneumatically or otherwise pressure tested to their MARVS (Maximum allowable relief valve setting).

303 If fitted, heating coils, anodes, tank cleaning apparatus and other equipment in cargo tanks and cofferdams shall be surveyed. Heating coils shall normally be pressure tested.

304 Cargo pumps, pipes, valves, inert gas arrangement, etc. together with the pump's prime movers shall be surveyed as specified in Sec.4.

305 Electrical equipment in gas-dangerous zones shall be surveyed and insulation resistance checked.

H. Crane

H 100 Application

101 The requirements in this sub-section apply to units with class notation:

CRANE.

H 200 Annual survey

201 The following survey requirements shall be carried out concurrently with the annual survey for main class.

202 An overall survey shall be carried out with particular emphasis on structural integrity, including examination of:

— wire ropes and end attachments
— blocks and sheaves
— hooks with accessories
— shackles
— bearings of boom heel and eyebolt connections
— securing arrangement for crane during passages
— support structure.

203 The slewing system (slewing bearing or hook rollers) including tightness of bolts shall be examined as required by the surveyor.

204 Examination and functional testing of the following shall be performed as found necessary by the surveyor:

— correct adjustment of brakes
— resistance measurement of electrical systems
— leakages in hydraulic system
— safety devices

— emergency stop function
— fire extinguisher.

205 The load charts, marking and components certificates shall be verified as available and in order.

H 300 Complete periodical survey

301 Structural parts shall undergo thickness measurements as deemed necessary by the surveyor.

302 The following components are to be dismantled (opened up) and/or checked by MPI (magnetic particle inspection):

— boom heel bearings
— fixed sheaves
— blocks
— axle pin and housing
— eyebolt connections
— hooks, ring and balls.

The slewing ring shall be opened up, and internal fillets, raceway and bolts shall be subjected to MPI.

Alternatively:

— slewing bearings may be subject to relevant accepted NDT in order to check for defects in fillets and raceways
— crane with approved securing device (retainer) fitted, opening up is not required
— at least 50% of the holding down bolts shall be drawn and subjected to MPI.

303 Flatness and condition of bearing mounting flanges shall be checked.

304 Load testing shall be performed as outlined in Form No. CG 2 in DNV Standards for Certification No. 2.22 Lifting Appliances.

I. Diving Systems

I 100 Application

101 The requirements in this sub-section apply to units with class notations:

DSV-SURFACE

DSV-SAT.

I 200 Annual survey

201 The survey shall normally include:

— calibration of essential instrumentation (depth gauges, gas analysers etc.)
— switching from main to emergency electrical power supply
— emergency systems including bell emergencies (buoyancy if applicable)
— function test of the handling system
— partly dismounting of heat protection and penetrators on the bell may be required.

Detailed specification of test requirements are given in the relevant sections of DNV-OSS-305 and DNV-OS-E402.

I 300 Intermediate survey

301 The requirements given in 200 apply subject to the following addition:

The following tests are to be carried out:

— gas leak tests
— testing of safety valves
— functional test of fire detection-, alarm- and extinction systems
— functional tests of life support systems
— functional tests of alarm systems
— functional tests of mechanical and electrical systems.

I 400 Complete periodical survey

401 The requirements given in 200 and 300 apply with the additions given in 402 to 407.

402 Bell buoyancy materials, heat protection, penetrators, windows and attached members shall be dismounted for inspection for possible corrosion and deterioration.

403 Pressure tests and inspections shall be carried out according to Table I1. The test pressure shall be as stamped on the pressure vessels.

Table I1 Pressure tests

Component	*Maximum interval between each inspection and pressure testing (years)*
Gas containers	5 or 10 [1)]
Bell, chambers	5 or 10 [2)]

1) Interval for hydraulic pressure testing of gas containers may be extended to 10 years if the internal inspection reveals no corrosion.

2) Interval for hydraulic pressure testing of bell and chambers may be extended to 10 years if a pneumatic leakage test to 1.1 times the maximum working pressure is carried out at the complete periodical survey.

The pressure tests and inspections of gas containers shall be carried out according to an approved test program.

Guidance note:

Hydro-test covers thorough visual inspection, internally and externally.

For decompression chambers and diving bells, provided a satisfactory internal inspection is carried out, the first interval may be extended to 10 years following a 1.1 x maximum working pressure pneumatic pressure test adopting the safety precautions in PD 5500, 5.8.4.1. Note that there may be a fire risk with air at high pressure.

For gas storage cylinders, provided the internal inspection reveals no corrosion, the interval may be prolonged to 10 years. See BS 5430, Part 1.

Acoustic emission testing in lieu of hydrostatic testing of gas storage tubes may normally not be accepted.

Procedures for testing along with qualifications etc. should be submitted well in advance for review.

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404 The working mass of the bell shall be checked.

405 Diving bell handling systems shall be subject to static load testing.

406 If applicable, the bell's releasable ballast system with attachments shall be structurally tested with a static load of 1.5 times the mass of the ballast in air.

407 Viewports, 10 years old or more, shall be replaced.

J. Not In Use

K. Periodically Unattended Machinery Space and Machinery Centrally Operated

K 100 Application

101 The requirements in this sub-section apply to units with class notations:

E0

ECO.

K 200 Annual survey

201 The surveyor shall verify that systematic maintenance and functional testing of instrumentation has been performed and documented.

The general condition of the following shall be to the satisfaction of the surveyor:

— installation of instrumentation equipment with regard to electrical and mechanical condition, labels, signboards, etc.
— control panels
— local indicating instruments.

202 Correct functioning of the following systems shall be verified:

— alarm systems
— safety systems
— remote control systems
— automatic control systems
— emergency lighting systems in engine room
— communication systems
— fire alarm and fire protection systems.

K 300 Complete periodical survey

301 The requirements given in 200 apply, subject to the additions given in 302 to 305.

302 Correct functioning of the various parts of the following systems shall be verified to the satisfaction of the surveyor:

— each alarm system
— each safety system
— each fire detector
— automatic control loops
— manual control of machinery.

303 The following manoeuvres shall be undertaken for survey of remote control of propulsion machinery:

— from stop to ahead
— from ahead to astern
— stop
— from stop to astern
— stop by operating the emergency device.

304 The surveyor shall verify effective transfer from remote control to stand-by manual control in the engine room in case of power supply failure to the remote control system.

305 Where provided, cancelling of automatic load reduction and/or automatic stop of engine functions shall be demonstrated to the satisfaction of the surveyor.

L. Loading Computers for Damage Control

L 100 Application

101 The requirement in this sub-section applies to units with class notation:

LCS-DC.

L 200 Annual survey

201 The survey required in the following shall be carried out concurrently with the annual survey for main class.

202 It shall be checked that the approved in-service test programme for all sensors has been followed.

M. Fire Fighters

M 100 Application

101 The requirements in this sub-section apply to units with class notations:

Fire Fighter I

Fire Fighter II

Fire Fighter III.

M 200 Complete periodical survey Fire Fighter I

201 Water spray plant for self protection, including pumps, pipes and nozzles, shall be surveyed and tested.

202 Pumps for water monitors including their prime movers shall be surveyed and tested at maximum capacity. Remote control of monitors including valve operation shall be tested.

203 Hoses with their equipment shall be surveyed and tested.

204 Fire-fighter's outfit and compressors for charging the air bottles shall be surveyed.

205 Floodlights shall be tested.

206 It shall be verified that the required operation manual is in order.

M 300 Complete periodical survey Fire Fighter II

301 In addition to the requirements in 200, the mobile generator for foam production with its equipment shall be surveyed.

M 400 Complete periodical survey Fire Fighter III

401 In addition to the requirements given in 300, the fixed foam monitors with foam production equipment and remote control shall be surveyed.

N. Well Intervention System

N 100 Application

101 The requirements in this sub-section apply to units with class notation:

WELL-1 or **2**.

N 200 Annual survey

201 Well intervention related equipment, structures and systems shall be surveyed, with particular attention to the structural integrity, fire or explosion hazards and personnel protection. Running tests, NDT and/or opening of equipment shall be performed as considered necessary by the surveyor.

202 Lifting equipment for running in equipment and associated operations shall be surveyed, with particular emphasis on structural integrity. Examination and functional testing shall be carried out as found necessary by the surveyor, for example safety devices and emergency stop function. The marking (SWL) shall be verified as acceptable.

203 Wire ropes (including end attachments) and sheaves and associated systems shall be surveyed. If deemed necessary by the surveyor, checking by NDT shall be carried out.

204 Pressure vessels shall be externally surveyed. The general condition of the pressure vessel including mountings, piping and possible insulation shall be ascertained. The surveyor may require opening or internal survey or thickness measurements and/or crack detection test, if found necessary.

Safety valves, instrumentation and automation systems shall be surveyed and tested in operating condition as required by the surveyor. Liquid level controls on tanks or separators shall also be tested.

205 Piping systems including flexible pipes shall be surveyed. Thickness measurements shall be carried out as deemed necessary by the surveyor. Safety valves shall be surveyed and tested as deemed necessary by the surveyor.

206 The high pressure fluid systems shall be surveyed. Pumps shall be externally surveyed and function tested.

207 Riser joints (as far as accessible) and diverter system shall be visually surveyed and inspected for corrosion, cracks and wear. Thickness measurements may be required by the surveyor.

208 The blowout preventers (coiled tubing, wire line, EDP,LRP) shall be surveyed and pressure tested according to a recognised code or, if not accessible, a review of records or test log shall be performed.

N 300 Complete periodical survey

301 The requirements given in 200 apply, with the additions given in 302 to 308.

302 Derrick or lifting towers shall be examined, with emphasis on the structural condition of bracings and with respect to deformation and slack or loose bolts (if of bolted design). Thickness measurements and/or NDT of main structural components and checking of bolts after dismantling may be required as deemed necessary by the surveyor.

303 Main loading parts of lifting equipment shall be checked by MPI (magnetic particle inspection). Structural parts shall undergo thickness measurements deemed necessary by the surveyor.

API RP 8B may be used as guidance.

Thickness measurements and NDT for main structural parts of the lifting appliances shall be carried out as deemed necessary by the surveyor. Lifting appliance shall be load tested, as stated in DNV Standards for Certification No. 2.22 Lifting Appliances.

304 Pressure vessels shall be surveyed internally. If internal survey is not practical, thickness measurements shall be taken. Pressure vessel related equipment, such as valves, pipes, etc., shall be examined. The correct setting and any remote operation of safety valves shall be examined. Pressure testing to the maximum allowable working pressure shall be performed.

305 The high pressure pump fluid ends shall be surveyed and checked for cracks in critical areas.

306 The riser system, including choke and kill lines (if applicable), shall be surveyed. Liquid penetrants or MPI methods shall be used to investigate critical areas for cracks. Thickness measurements may be required if found necessary by the surveyor. Choke and kill lines shall be pressure tested to the maximum allowable working pressure.

307 The blowout preventer system shall be subject to complete performance test, including pressure testing to the maximum allowable working pressure. Records of overhaul shall be reviewed.

308 Piping systems including flexible pipes shall be pressure tested to the working pressure.

O. Hull Monitoring System

O 100 Application

101 The requirements in this sub-section apply to units with class notation:

HMON (...)

O 200 General

201 The purpose of the survey is to ensure the maintenance of the hull monitoring system as specified for the class notation.

202 The operation manual shall be available to the attending surveyor during periodical surveys. In addition to the manual the following documents shall be available:

— arrangement and layout
— test program for software
— in-service test program
— maintenance procedures.

O 300 Annual survey

301 The operation of the hull monitoring system shall be verified by a DNV surveyor:

— to ensure that the value of the stress as defined is compatible with the output of the loading instrument for the current condition
— by examination of the recorded data for compliance with the requirements.

302 The monitoring system shall be calibrated annually. The calibration shall be verified by a DNV surveyor.

303 It shall be verified that the following items are available and in order:

— calibration certificates and recommendations for all relevant components of the monitoring system
— operations manual.

P. Fatigue Methodology for Ship-Shaped Mobile Offshore Units

P 100 Application

101 The requirement in this sub-section apply to ship-shaped units with class notation:

FMS.

P 200 General

201 The purpose for the survey is to ensure that the fatigue critical details have no indications of fatigue damage.

202 The fatigue critical areas given in the drawings of fatigue critical areas or in accordance with the inspection program shall be surveyed.

P 300 Annual survey

301 The extent of inspections for annual survey shall be in accordance with the in service inspection program.

P 400 Intermediate survey

401 The extent of inspections for intermediate survey shall be in accordance with the in service inspection program.

P 500 Complete periodical survey

501 The extent of inspections for complete survey shall be in accordance with the in service inspection program.

Q. Noise, Vibration and Comfort Rating

Q 100 General

101 *Application*

The requirements in this sub-section apply to units with the class notations: **VIBR** and/or **COMF**.

102 *General*

If major modifications to the vessel, which may influence the vibration conditions onboard, are carried out, new measurements may have to be taken in order to maintain the notation. This will be decided by the Society.

Otherwise requirements for survey of these additional class notations are considered covered by the renewal survey main class.

R. Winterization, Cold Climate and Ice

R 100 Winterization

101 *Application*

These requirements apply to units with the following class notations: **WINTERIZED** or **WINTERIZED ARTIC**.

102 *Annual survey*

Anti-icing and de-icing switchboards shall be surveyed. It shall be verified that the heating load on each circuit is according to relevant marking on the switchboards.

103 The equipment for de-icing and anti-icing shall be examined, including the following items:

— heaters
— covers
— equipment for manual de-icing
— radar equipment
— heating coils
— steam tracing lines.

104 Thermal protection suits including face masks, gloves and boots in sufficient number for all crew members to be verified on board.

105 The ice search light on wheelhouse top shall be tested.

106 For units with class notation **WINTERIZED ARCTIC** (design temp.) the annual survey requirements for class notation **CLEAN** shall be carried out, see T200.

R 200 Deicing and anti-icing systems

201 *Application*

These requirements apply to units with the following class notations:

DEICE or **DEICE-C**.

202 *Annual survey*

Visual inspection of anti-icing and de-icing switchboards and confirm heating load on each circuit according to marking on the switchboards.

203 Examination of equipment for de-icing and anti-icing including:

— heaters
— covers
— equipment for manual de-icing
— radar equipment
— heating coils
— steam tracing lines.

S. Safety and Environmental Protection Management System

S 100 Application

101 The requirements in this sub-section apply to units with class notation:

SBM.

S 200 Survey requirements

201 Surveys shall be in compliance with the Rules for Classification of Ships, Pt.7 Ch.3.

T. Environmental Notations

T 100 Additional oil pollution prevention measures - fuel oil systems

101 No specific survey requirements. Complete periodical survey is considered covered by renewal survey of main class.

T 200 CLEAN or CLEAN DESIGN

201 *Application*

The requirements in T200 apply to units with class notations: **CLEAN** or **CLEAN DESIGN**.

202 *Annual surveys*

The basic requirement is that the unit holds a valid international pollution prevention certificate.

For the oil pollution prevention certificate, the following shall be checked onboard during survey:

— certificates for type approved oily water separating or filtering equipment, process unit and oil content meters
— oil record book entries
— approved SOPEP manual
— means of control of sludge
— standard discharge connection.

Additionally, the following shall be examined and tested, as applicable:

— oil filtering equipment (15 ppm) and process unit with alarm
— automatic stopping device (15 ppm)
— separation of oil fuel and water ballast system
— sludge tank and discharge arrangement externally.

203 In addition the following shall be checked or verified as applicable:

— all refrigerant consumption figures
— consumption figures for fire fighting substances with global warming potential (GWP) > 0
— garbage record book
— oil record books and cargo record book
— fuel oil log
— NOx emission control equipment log, where applicable
— ballast water management log
— documentation of antifouling used during dry-dockings since last review.

T 300 Vapour Control Systems (VCS)

301 *Application*

The requirements in 302 and 304 apply to units with notation **VCS-3**.

The requirement in 303 applies to units with the class notations:

VCS-1 or **VCS-2**

302 *Annual survey VCS-3*

The following shall be covered:

— the VOC module shall be surveyed with respect to general condition
— gas tight bulkheads, piping systems, pressure vessels with mountings and equipment, regulating valves, deck tank safety relief valve sealing, electrical cables and equipment as applicable shall be visually examined
— pressure testing and piping thickness measurements shall be performed if deemed necessary by the surveyor
— the hydrocarbon gas detection system shall be tested
— the ventilation system shall be tested
— air locks, if fitted, shall be examined and tested
— the calibration of fixed or portable instruments for ensuring oxygen content in the VOC plant shall be checked
— an operation manual for the VOC plant shall be verified on board, and checked updated if new software has been installed
— alarm and safety systems shall be examined and tested.

303 *Complete periodical survey*

Requirements for survey of the additional class notations **VCS-1** and **VCS-2** are considered covered by the renewal survey main class.

304 For **VCS-3** the details of periodical survey requirements details will be specified in the unit's “Appendix to the classification certificate”.

U. Special Feature Notations

U 100 Non self-propelled units

101 The requirements in U100 apply to units with special feature notation **NON-SELF PROPELLED**.

102 Extent of surveys of the following items will be restricted to the main safety facets:

— tailshafts
— thrusters
— motors and other equipment for propulsion
— steering gear.

103 For these items the scope of classification is to ensure that the equipment does not pose a threat to the unit by its presence onboard when in use. This means the watertightness should be considered and the safety of the equipment for people working in the vicinity must be taken care of. The operation of the equipment is of secondary importance.

U 200 Tailshaft monitoring

201 *Application*

The requirements in U200 apply to units with class notation: **Tailshaft monitoring** (**TMON**).

202 *General*

For oil lubricated tailshafts that are monitored to ascertain the condition of the tailshaft system during operation, and that fulfils the design requirements in Ch.2 Sec.6 U400 the Society will not require any specific time interval between complete tailshaft surveys.

In such cases a tailshaft condition monitoring survey arrangement (class notation **TMON**) will be granted.

The class notation is applicable to conventional, podded and thruster propulsion systems. Other arrangements will be subject to special consideration.

Units with more than 3 years since the last tailshaft withdrawal are normally to carry out a complete tailshaft survey in connection with the initial **TMON** implementation survey.

Guidance note:

The requirement for a complete survey at **TMON** implementation may be waived provided the following:

1) Complete records are presented to the Society containing relevant measurements concerning **TMON** for a period covering the last 3 years, showing satisfactory results.
2) Such records shall at least include monthly measurements of stern tube bearing temperatures with corresponding sea water temperatures, oil consumption, water content in oil, and in case of roller bearing, recordings of vibration or shock pulse measurements or trend analysis.
3) Where fluid film bearings are applied, bearing clearances from last dry docking and wear down measurements taken since last shaft withdrawal shall be presented.

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203 *Annual Survey*

The following conditions for **TMON** operation must be verified during annual survey:

1) On board oil analysis for checking of water content in the stern tube oil shall be performed monthly and recorded in the **TMON** record file by the chief engineer/ maintenance supervisor.
2) At least two oil samples per year shall be submitted to a recognized laboratory for analysis testing of water content, iron, chromium, copper, tin, silicon, natrium and magnesium.
3) The documentation of the laboratory analysis shall be kept on board, and shall contain a conclusion regarding the condition of the oil and its suitability for further use.
4) The report from the oil analysis presented to the surveyor at annual surveys shall be less than three months old.

204 *Dismantling of propellers*

Dismantling of keyed propellers will be required at intervals of maximum 5 years, and keyless propellers every 15 years. The following parts shall be surveyed as applicable:

— propeller nut
— tailshaft threaded end
— key and cone including examination of the keyway and the fore part of the taper by an approved crack detection method.

SECTION 7
MACHINERY ALTERNATIVE SURVEY ARRANGEMENTS

A. General

A 100 General

101 Machinery systems and equipment listed in Table A1 shall be surveyed according to one of the five machinery survey arrangements if not part of a separate survey.

Table A1 Machinery surveys

Item		*Machinery Renewal and Machinery Continuous*	*Machinery PMS*	*Machinery CM*	*PMS RCM*
		Survey method 1)			
Main propulsion and ***DYNPOS***					
Prime movers	Diesel engine	1	3	3 and 4	5
	Steam turbines 2)	1	1	4*16)	5
	Gas turbines	See F	See F	See F	See F
	Electrical main motors, including frequency converters	2	3	3 or 4*	5
Shafting	Thrust-and intermediate shaft including bearings, clutch, couplings and torsional and axial vibration damper	2	3	3 and 4	5
	Tailshaft	Separate survey Sec.4 F	Separate survey Sec.4 F	Separate survey Sec.4 F	Separate survey Sec.4 F
Gears 3)	Shafts, pinions, gear wheels, couplings and bearings, clutch	1	3	3 and 4*	5
	Power Take Off /In (PTO/ PTI)	1	3	4*	5
Power consumption	Propeller	Separate survey Sec.4 G	Separate survey Sec.4 G	Separate survey Sec.4 G	Separate survey Sec.4 G
	Thruster, Pods	Separate survey Sec.4 G	Separate survey Sec.4 G	Separate survey Sec.4 G	Separate survey Sec.4 G
Steering					
Power actuating system	Actuator	2	3	3 or 4	5
	Hydraulic pumps	2	3	3 or 4	5
	Electric motors	2	3	3 or 4	5
	Pipes, valves and filters	2	3	3	5
Auxiliary machinery					
Prime movers	Diesel engine	1	3	3 and 4	5
	Turbines 2)	1	3	4*	5
	Electrical motors, including frequency converters	2	3	3 or 4*	5
	Hydraulic motors	2	3	3	5
Thruster	Shafts, pinions, gear wheels, couplings and bearings 12) 13) 14) 15)	Separate survey Sec.4 G	Separate survey Sec.4 G	Separate survey Sec.4 G	Separate survey Sec.4 FG
Generators		2	3	3 or 4*	5
Shafting	Shaft, couplings, clutch and torsional and axial vibration damper	2	3	3	5
Gears 3)	Shafts, pinions, gear wheels, couplings and bearings	2	3	4*	5
	Power Take Off (PTO)	2	3	4*	5

Table A1 Machinery surveys (Continued)

Item		*Machinery Renewal and Machinery Continuous*	*Machinery PMS*	*Machinery CM*	*PMS RCM*
		Survey method [1]			
Sea water cooling system	Pumps, Electrical motor and starter	12	3	4	5
	Heat exchangers	1	3	3 or 4	5
	Pipes, valves and filters [5] [10]	2	3	3	5
Fresh water cooling system	Pumps, electrical motor and starter	2	3	4	5
	Heat exchangers	1	3	3 or 4	5
	Pipes, valves and filters [10]	2	3	3	5
Lubricating oil system	Pumps, electrical motor and starter	2	3	4	5
	Heat exchangers	1	3	3 or 4	5
	Pipes, valves and filters [4] [9] [10]	2	3	3	5
Fuel oil system	Pumps, electrical motor and starter	2	3	4	5
	Heat exchangers	1	3	3 or 4	5
	Pipes, valves and filters [9] [13]	2	3	3	5
Bilge and ballast system	Pumps, Electrical motor and starter	1 or 2	3	4	5
	Ejectors/ Eductors	1	3	3	5
	Pipes, valves and filters inside machinery space [5] [8] [10]	2	3	3	5
Steam system	Boiler, main and auxiliary	Separate survey Sec.4 H	Separate survey Sec.4 H	Separate survey Sec.4 H	Separate survey Sec.4 H
	Thermal oil	Separate survey Sec.4 I	Separate survey Sec.4 I	Separate survey Sec.4 I	Separate survey Sec.4 I
	Heat exchangers	1	3	3 or 4	5
	Pipes, valves and filters inside machinery space [6] [10]	2	3	3	5
Feed water and condensate system	Pumps, electrical motors and starters	2	3	4	5
	Turbines [2]	1	1	4*	5
	Evaporators and condensers with ejectors	1	3	3	5
	Heat exchangers	1	3	3 or 4	5
	Pipes, valves and filters [10]	2	3	3	5
Compressed air system	Air compressors, piston	2	3	3 or 4*	5
	Air compressors, screw	2	3	3 or 4	5
	Emergency compressors	2	3	3 or 4	5
	Compressed air receivers [7]	1	3	3	5
	Pipes, valves and filters inside machinery space [10]	2	3	3	5
Hydraulic system	Pumps, electrical motor and starter	2	3	4	5
	Pipes, valves and filters inside machinery space [10]	2	3	3	5
	Controllable pitch propeller oil distribution box	2	3	3	5
	Controllable pitch propeller inboard actuators	2	3	3	5
	Hydraulic motors	2	3	3 or 4	5

Table A1 Machinery surveys (Continued)

Item		*Machinery Renewal and Machinery Continuous*	*Machinery PMS*	*Machinery CM*	*PMS RCM*
		Survey method [1)]			
Cargo handling systems					
	Piston pumps Centrifugal pumps Screw pumps	2 2 2	3 3 3	4* 4 4	5 5 5
	Electrical motors and starters	2	3	3 and 4	5
	Turbines [2)]	1	1	4*	5
	Heat exchangers	1	3	3 or 4	5
	Pipes, valves and filters [10)]	2	3	3	5
	Gas compressors	1	3	3 or 4*	5
	Diesel engine	1	3	3 and 4	5
Control, alarms, safety systems and indications					
Control systems	Propulsion	2	3	3	5
	Steering	2	3	3	5
	Auxiliary machinery	2	3	3	5
	Cargo handling systems	2	3	3	5
Alarms	Propulsion	2	3	3	5
	Steering	2	3	3	5
	Auxiliary machinery	2	3	3	5
	Cargo handling systems	2	3	3	5
Safety systems	Propulsion	2	3	3	5
	Steering	2	3	3	5
	Auxiliary machinery	2	3	3	5
	Cargo handling systems	2	3	3	5
Indicating systems	Propulsion	2	3	3	5
	Steering	2	3	3	5
	Auxiliary machinery	2	3	3	5
	Cargo handling systems	2	3	3	5
Electrical installations					
	Switchboards	2	3	3	5
	Distribution board	2	3	3	5
	Electrical equipment	2	3	3	5
	Cable installations	2	3	3	5
	Navigation light controllers	2	3	3	5
	Mechanical ventilation of battery lockers or rooms	2	3	3	5
Miscellaneous					
	Forced draught fan	2	3	4	5
	Other turbines [2)]	1	1	4*	5
	Sea and sanitary valves	1	1	1	1
	Incinerator arrangement	1	3	3	5
	Inert arrangement for vessels without notation INERT	1	3	3	5
	Instrumentation and automation for vessels without notation E0 or ECO	2	3	3	5

Table A1 Machinery surveys (Continued)

Item		*Machinery Renewal and Machinery Continuous*	*Machinery PMS*	*Machinery CM*	*PMS RCM*
		Survey method 1)			
Drilling Systems and equipment					
	Drilling related structures	Separate survey section 6 D	Separate survey section 6 D	Separate survey section 6 D	5
	Well control systems	Separate survey section 6 D	Separate survey section 6 D	Separate survey section 6 D	5
	Heave Compensation and tensioning system	Separate survey section 6 D	Separate survey section 6 D	Separate survey section 6 D	5
	Hoisting and rotating system	Separate survey section 6 D	Separate survey section 6 D	Separate survey section 6 D	5
	BOP and pipe handling	Separate survey section 6 D	Separate survey section 6 D	Separate survey section 6 D	5
	Bulk storage, drilling fluid circulation, mixing and cementing	Separate survey section 6 D	Separate survey section 6 D	Separate survey section 6 D	5
	Well testing and associated well control system	Separate survey section 6 D	Separate survey section 6 D	Separate survey section 6 D	5
	Other systems (Winches, non redundant gear transmissions, man riding)	Separate survey section 6 D	Separate survey section 6 D	Separate survey section 6 D	5

1) The survey methods are defined as follows:
Survey method No. 1: Visual inspection by opening up fully or partly. Function testing and or pressure testing to be carried out when relevant and found necessary by the surveyor.
Survey method No. 2: Visual inspection without dismantling and performance test to be carried out. Opening up if found necessary. Last overhaul to be verified.
Survey method No. 3: Audit of maintenance history in the planned maintenance system and selected spot checks.
Survey method No. 4: Audit of condition monitoring results.
Survey method No. 4:* Audit of condition monitoring results. FFT analysis mandatory.
Survey method No. 5: Verification of maintenance records, assessment of maintenance handling, review of management, safety incidents and continuous improvement processes and fully or partly opening of equipment, if found necessary by surveyor.

2) As an alternative to Survey method No.1, a performance test and a condition analysis may be carried out.

3) Selected bearings shall be examined. Gears and roller bearings may as far as practicable be inspected without dismantling complicated assemblies.

4) Strainers to be opened. Selected pipes and main engine(s) system tanks to be surveyed for sludge.

5) Valves, cocks and strainers to be opened.

6) For steam pipes with temperature 450°C and above: Crack detection and/or thickness examination may be required. Selected pipes to be pressure tested to 1.5 times working pressure. Steam pipes of copper to be pressure tested to 2 times working pressure

7) To be pressure tested to 1.2 times working pressure if internal survey not possible.

8) For piping systems outside machinery spaces, see Rules for Classification of Ships Pt.7 Ch.1 Sec.4 B114.

9) Settling tank and daily service tanks for both heavy fuel oil and diesel oil as well as lubrication oil circulation tanks shall be internally surveyed for assessment of tank condition and presence of sludge. If inspection and cleaning of above mentioned tanks have been carried out by the crew during the last 12 months and relevant log extracts are provided and confirmed, this may be credited as surveyed at the surveyor's discretion.

10) Valves where the function in the piping system is not evident are to be adequately and readably marked.

11) Filters to be opened and system oil tanks internally surveyed for presence of sludge, dirt and particles.

12) It is advised to take oil analysis at regular intervals and always prior to docking in order to ensure that there is no need for opening of the thruster (e.g. water in the oil).

13) Survey of gear and bearings through inspection openings or by other means (may be carried out concurrent with bottom survey).

14) Opening up and Survey of bearings, gear and shafts and other relevant parts if any indications of abnormalities are observed. Satisfactory maintenance according to manufacturer's recommendations to be documented and considered as a base for extent of possible opening. Any opening up of a thruster to be witnessed by a DNV surveyor.

15) Hydraulic oil, lubrication oil, alarm and safety systems are to be surveyed as applicable for respective systems.

16) In addition to the renewal survey for Machinery CM, a limited internal inspection shall be carried out on main steam turbines.(ref. CN 10.2 Ch.3.1)

A 200 Machinery survey arrangements

201 The different machinery survey arrangements are based on the same inventory list established for the vessel. The difference is the conditions for obtaining and maintaining the survey arrangement. If a survey arrangement is not specified, Machinery Renewal is set as default.

The following survey arrangements are available:

— Machinery Renewal, see B
— Machinery Continuous, see C
— Machinery PMS (Planned Maintenance System), see D
— Machinery CM (Condition Monitoring), see E
— PMS RCM, see G.

B. Machinery Renewal

B 100 General

101 Machinery renewal is the default survey arrangement for machinery.

102 Machinery systems and equipment with corresponding survey method for this arrangement see Table A1.

B 200 Annual survey

201 Annual survey of the machinery and safety systems shall be carried out according to Sec.4 B400 and B500.

B 300 Renewal survey

301 The survey shall include the machinery systems and equipment given in the vessels Inventory List at least to the extent specified in Table A1.

C. Machinery Continuous

C 100 General

101 Machinery continuous is a survey arrangement based on surveys during the class period.

102 Machinery systems and equipment with corresponding survey method for this arrangement see Table A1.

103 Machinery continuous is operated under the following conditions:

1) The machinery systems are to be surveyed according to Table A1.
2) General requirements for intervals for continuous surveys are given in the Rules for Classification of Ships Pt.7, Ch.1 Sec.8 C.

104 Machinery continuous allows that some machinery systems and equipment are credited based on documented maintenance history presented by the chief engineer under the following conditions:

1) The following information shall be available:

   — name of the chief engineer
   — licence number, date of issue and validity
   — name of the Administration that issued the licence.

   The manager shall confirm, through a statement signed by a designated person in the company, the chief engineers that can carry out surveys based on sub-items 2 to 5. This statement shall be found onboard.

   Guidance note:

   A template for such a statement is available from DNV. For the definition of a designated person, see the Rules for Classification of Ships Pt.7 Ch.3 Sec.2 A500.

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2) Half of all items covered by the vessels inventory list, of which there is more than one, can be surveyed by the chief engineer.
3) Documented maintenance history shall include extract of engine logbook, maintenance history, wear measurements forms etc.
4) The surveyor can, if found necessary, require a re-survey of items surveyed by the chief engineer.

5) All surveys taking place at ports where the Society is represented shall be carried out by surveyors of the Society.

C 200 Annual survey

201 Annual survey of the machinery and safety systems are carried out according to Sec.4 B400 and B500.

C 300 Renewal survey

301 Renewal survey is not a part of this survey arrangement.

D. Machinery PMS (Planned Maintenance System)

D 100 Machinery PMS (Planned Maintenance System) requirements

101 *General requirements:*

a) Machinery PMS is a survey arrangement based on audits of an approved and implemented planned maintenance system onboard which shall cover all component surveys in the machinery list for the vessel.

b) The audits shall be part of the main class annual survey.

c) The Owner/Manager is responsible for ensuring that the Chief Engineer is qualified to register and carry out maintenance on all class related machinery items.

Guidance note:

In reference to Res. 741 (18) ISM Code, 1995 STCW A-III as amended.

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d) The Chief Engineer shall be the responsible person on board in charge of the Machinery PMS.

e) If the conditions for the survey arrangement are not complied with, or in case of change of technical management of the vessel, the Survey Arrangement Machinery PMS will be cancelled and substituted by Survey Arrangement Machinery Continuous or Survey Arrangement Machinery Renewal, as applicable.

102 The Survey Arrangement Machinery PMS shall be operated under the following conditions:

a) The surveyor may credit relevant component surveys in the machinery list based on the recorded maintenance, except for the following, that shall be surveyed by the Society:

— main steam piping
— feed water piping
— steam turbines for propulsion and power generation
— reduction gears in steam driven propulsion plants.

b) Change or a major upgrade of planned maintenance system shall always be notified to the Society and will be subject to new approval.

Guidance note:

Major upgrade meaning changes that affects reporting of maintenance on machinery items, or changes that might implicate additional training of crew.

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c) Back up of the PMS database, making it possible to restore all data, shall be taken at least once a week.

d) The surveyor can, if found necessary, require a re-survey of items reported by the Chief Engineer.

e) All damage/break-downs on class related machinery items shall be reported to class and included in the system.

103 The planned maintenance system onboard shall comply with the following requirements:

a) The system shall be computer based.

b) The system shall be able to produce a maintenance history report of all main overhauls carried out for a specific time period.

c) Corrective maintenance shall be possible to be especially identified in the system and traceable.

d) The system shall include at least the applicable machinery and equipment listed in Table A1 All these components shall be identified with their belonging the Society's machinery item code or alternatively the full name of the component survey according to the machinery list for the specific ship.

e) All main overhaul jobs on class related components shall be identified as class related jobs in the maintenance system.

f) For ships with class notation **E0** or **ECO**, the system shall include the periodical testing of control, alarm and safety components and systems required by Rules for Classification of Ships Pt.6 Ch.3 Sec.1. These jobs shall be especially identified in the system and include test routines and set-points based on Rules for Classification of Ships Pt.6 Ch.3 Sec.3 Table A1 to Table A10.

g) The system is subject to approval by the Society, either a Type Approved system or non-Type Approved system.

h) Changes to the system (maintenance intervals, job descriptions, etc) shall be traceable and documented and presented to the attending surveyor at the next annual survey for acceptance.

Guidance note:

Documentation in order to adjust maintenance intervals, job descriptions etc, may be accepted by attending surveyor on the basis of maintenance reports, wear measurement forms, service letters from maker, etc.

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i) The job descriptions for the main overhaul for all the machinery and equipment subject to class shall be available either as part of the planned maintenance system and/or as specific reference to makers' manuals. The extent of the job descriptions either within the PMS or in the referred manual, shall be self-explaining to a surveyor. When references to makers' manuals are made, these shall be ready available onboard.

j) Job intervals shall be based on maker's recommendations, adjusted for prevailing operational conditions. Deviations from initial intervals shall only be accepted when documented experience can justify changes.

Guidance note:

For items with few running hours (compared to makers maintenance recommendations) in one class period (e.g. standby functions), or with no running hours recommendations, calendar-based maintenance are recommended.

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k) The job descriptions and maintenance history shall be in English.

104 The approval process for the Machinery PMS survey arrangement is a two step process: The first step, called "Management Approval", is a review by the Society of the set-up of the planned maintenance system prior to the initial survey onboard the first vessel in a fleet. The final step is the initial survey onboard each applicable vessel, see 105. This process applies to each type of planned maintenance system used by the management company.

The "Management Approval" includes, but is not limited to:

— examination of examples of points 103 a) to k)
— document describing how to handle periodical surveys ("User Guide" for the C/E) for the Society.

The "Management approval" is valid until cancelled in writing from the Society.

105 An initial survey shall be carried out onboard the vessel in order to verify that the system has been implemented in accordance with the approved documentation and that the system is used as intended. It is recommended that the planned maintenance system has been operated for at least 6 months before the initial survey is carried out.

During the initial survey, it will be verified that:

a) The Chief Engineer is familiar with the planned maintenance system and is able to demonstrate the different functionalities in the system to the attending surveyor.

b) The general condition of the machinery and the machinery systems in the engine room is good.

c) All the requirements in 103 except h) are complied with.

Provided the initial survey is carried out with a satisfactory result, the Survey Arrangement Machinery PMS will be granted and a certificate will be issued stating system name and conditions for the survey arrangement for the specific vessel.

Guidance note:

Prior to the initial survey onboard, requirements listed under 105 c) may be carried out in the owner's/ manager's office, if found convenient both to the Society and owner/manager. This requires that the onboard database is available in subject office. Results of this review must be given to the attending surveyor onboard.

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106 The components in the machinery list are credited at the first annual survey after their main overhaul is carried out.

This also applies if the maintenance interval is based on running hours and the time between main overhauls for this reason exceeds 5 years.

107 An annual survey shall be carried out onboard the vessel in order to verify that the conditions for maintaining the Survey Arrangement Machinery PMS are complied with.

During the annual survey, in addition to 106, the following will be verified:

a) The vessel Machinery PMS certificate is valid for present management.
b) The Chief Engineer is familiar with the planned maintenance system and is able to demonstrate the different functionalities in the system to the attending surveyor.
c) Reasons for overdue/ postponed (deferred) jobs shall be explained.
d) General maintenance is satisfactory, including an in depth examination of reported maintenance history since last annual survey, to the extent deemed necessary by attending surveyor.
e) The general condition of the machinery and the machinery systems in the engine room is good.
f) The onboard machinery list is reflecting the machinery list of the Society.

Documented changes to the system (maintenance intervals, job descriptions, etc) shall be presented to the attending surveyor for acceptance.

D 200 Annual survey

201 To prolong the validity of the survey arrangement an annual survey of the implemented PMS system onboard is required. The purpose of this survey is to review and evaluate the previous period's maintenance activities and experience. If found necessary by the surveyor, opening or testing of machinery may be required.

202 Annual survey of the machinery and safety systems are carried out according to Sec.4 B400 and B500.

D 300 Renewal survey

301 Renewal survey is not a part of this survey arrangement.

E. Machinery CM (Condition Monitoring)

E 100 General

101 Machinery CM is a survey arrangement based on audits of the implemented and approved condition monitoring programme. It is required to be operating according to a condition based maintenance strategy when applying for the DNV survey arrangement Machinery CM. Machinery CM allows the manager to adjust maintenance intervals based on condition monitoring of applicable components onboard his vessels. See also Classification Note 10.2.

102 The following conditions must be fulfilled before the survey arrangement is valid:

— Approved CM programme (see 200)
— Successful implementation survey (see 300).

103 Machinery systems and equipment with corresponding survey method for this arrangement see Table A1.

104 In case of change of manager, the survey arrangement is automatically cancelled.

Guidance note:
It is required that the applicant is operating according to a condition based maintenance strategy. It is therefore recommended that an assessment of the condition based maintenance system is performed prior to submission of application.

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E 200 Approval of CM programme

201 Following conditions must be fulfilled before applying:

— valid survey arrangement Machinery PMS
— condition monitoring strategy successfully implemented onboard
— condition monitoring shall be an implemented part of a planned maintenance system
— programme for fuel oil bunker analysis to be followed and documented onboard, if applicable
— programme for lubricating oil analysis to be followed and documented onboard.

202 Following to be provided and in use onboard:

— computer based diesel engine performance analyser
— vibration measuring equipment and software.
— when operating on regular ports with intervals no longer than 36 hours, measuring equipment can be shore based with the operator or the condition monitoring company performing the measurements for shearing between ships.

203 Approval of the CM programme is based on a description of the following:

— maintenance strategy
— monitoring methods for components, including baseline*
— condition monitoring equipment*
— Implementation of condition monitoring in the planned maintenance system*
— training programme/plan
— programme for fuel oil bunker analysis, if applicable*
— programme for lubricating oil analysis*.

Guidance note:

When documentation as required in E203 is approved and the vessel is ready for implementation survey, a company approval letter stating the company's overall condition based maintenance strategy will be issued. For subsequent vessels within the same company, only documentation marked with * in E203 is subject to approval.

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E 300 Implementation survey

301 An implementation survey onboard the vessel is required in order to verify that the CM programme is properly implemented onboard. It is recommended that the CM programme have been implemented and operated for at least 6 months before the implementation survey is carried out. In order to verify baseline readings and the crew's general knowledge, the implementation survey is to be carried out during normal operation (voyage survey). Provided a successful implementation survey, a certificate for the Machinery CM will be issued stating conditions for the survey arrangement.

E 400 Annual survey

401 To maintain the validity of the survey arrangement Machinery CM, an annual survey of the implemented condition monitoring programme is required. This survey replaces the annual and renewal surveys of machinery for components included in the condition monitoring scheme. The purpose of this survey is to review and evaluate the previous period's maintenance activities and experience.

The annual survey shall consist of examination of:

— condition monitoring records
— maintenance records
— assessment of CM handling onboard.

If found necessary by the surveyor, opening or testing of machinery may be required.

E 500 Renewal survey

501 To prolong the validity of the survey arrangement a renewal survey of the implemented CM programme during normal operation (voyage survey) is required. The purpose of this survey is to verify that:

— procedures for taking condition monitoring readings are followed
— the vessel's crew are familiar with recording and handling of results
— re-evaluation of baseline data.

F. Gas Turbines

F 100 General

101 The Society accepts that complete gas turbine units, or modules, are taken ashore for complete overhaul by a qualified company.

102 Complete replacement turbines shall be certified. The company performing the work shall be either the original equipment manufacturer (OEM), or OEM-approved, equipped with the recommended common shop tools and special tools and facilities. Attendance of surveyor during overhaul as considered necessary.

103 Documented history regarding maintenance, running hours and preservation during storage for the unit installed shall be available for examination.

104 Maintenance of gas turbine rotating components, or components in the gas path, shall be carried out using only original spare parts, or spare parts accepted by the OEM.

105 Maintenance carried out in the form of module replacement (e.g. hot section change-out), shall utilise replacement modules that are of identical design and construction, and either possess the appropriate DNV certification (i.e. originate in another DNV certified engine used for a similar application), or are new and produced in accordance with type approved design and under a valid manufacturing survey arrangement (MSA). Modules with other origins will normally not be accepted.

106 A written agreement shall be established between the maintenance company and the local DNV station regarding the practical details surrounding the class surveys and reviews.

F 200 Annual survey

201 All ships equipped with gas turbines shall have the maintenance of the gas turbines properly implemented in the ship's maintenance system. The maintenance system shall reflect the maintenance activities and intervals, as agreed upon, between the operator and the turbine manufacturer, or as necessary.

202 Annual survey consists of external and internal inspection and documentation review of operational and maintenance records.

203 At each annual survey the extent and criteria specified in Table F1 apply.

204 The survey items may be covered through inspection or overhaul at a service or maintenance centre provided the requirements defined in F100 are adhered to.

205 Further inspections (i.e. through opening up) and tests can be required at annual survey if indications of abnormalities are observed.

Table F1 Gas turbine annual survey

Survey item	*Extent*	*Acceptance criteria*	*Remarks*
Survey of records	Maintenance records check	Maintenance activities shall have been carried out in accordance with manufacturer recommendations	Review of maintenance reports
Survey of gas turbine	Visual inspection and boroscope inspections	No indications of wear or degradation, beyond manufacturers acceptance criteria	Boroscope inspection either performed in surveyor presence, or records 1) of boroscope inspection performed within last month to be available
Monitoring, control and emergency shut-down system	System functionality testing	Software version(s) to be in accordance with certificate. No deviations in functionality	Spot-checks of functionality. May be performed in combination with machinery and safety systems survey, or **E0** survey

1) The report shall describe boroscope extent, findings (if any), and conclusions or evaluation. If inspection is performed in surveyor's presence, such a report shall be prepared subsequently, and submitted to the Society

F 300 Renewal survey

301 Renewal survey involves internal inspection requiring dismantling. The survey intervals should be specified in each individual case, and conform to the refurbishment or overhaul intervals and extent defined by the manufacturer. Generally, a DNV surveyor shall witness the inspection or overhaul work, verifying that it is carried out in accordance with the manufacturer's own recommendations and criteria. In special cases an agreement can be made with the Society allowing witnessing to be substituted by a review of maintenance or overhaul documentation, showing that the unit has been inspected or overhauled in an appropriate manner complying with the manufacturer's maintenance recommendations.

302 Renewal survey activities are in general of such a nature that they should be performed at a maintenance depot. Upon special request to the Society the survey activities may be carried out onboard, provided the requirements defined in F100 are adhered to.

303 Upon completion of onboard overhaul, or installation of overhauled unit or module, the gas turbine shall be tested. The testing shall cover alarms and shutdown functionality, as well as engine control (i.e. single engine control, backup control) and general performance. Test procedure shall be agreed with the Society. System behaviour and measured parameters are all to satisfy manufacturer acceptance criteria.

Guidance note:

Original operations documentation retained on board will reflect the original manufacturer alarm or acceptance limits and set points as established through the type approval.

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304 Further inspections can be required at renewal survey if any indications of abnormalities are observed.

G. PMS RCM

G 100 General

101 PMS RCM allows the owner to arrange surveys as part of his planned maintenance system, based on analysis of applicable functions onboard the vessel. PMS RCM is a survey arrangement based on review of the company management, the RCM analysis and the implemented maintenance system. It is required to be operating according to an RCM analysis or equivalent maintenance strategy and to comply with the Machinery

PMS before entering PMS RCM. Condition Monitoring may be implemented. PMS RCM survey arrangement is applicable to main class machinery. For vessels with **DRILL** notation it also applies to the drilling systems.

102 The following conditions must be fulfilled before the survey arrangement is valid:

— approved RCM analysis (see 200)
— successful management review (see 200)
— successful implementation survey (see 300).

103 Machinery systems and equipment with corresponding survey method for this arrangement see Table A1.

104 In case of change of manager, the survey arrangement is automatically cancelled.

Guidance note:

It is required that the applicant is operating according to a RCM based maintenance strategy. It is therefore recommended that an assessment of the RCM based maintenance system is performed prior to submission of application.

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G 200 Approval of RCM based maintenance programme

201 Following conditions must be fulfilled before applying:

— compliance with the specifications for Machinery PMS, except Ch.3. Sec.7 D104, Pt.4
— management and organisation in place to support continuous improvement and maintenance of a high safety level
— procedures and systems for performing the RCM analysis.

202 Following to be verified during management review:

— operational and maintenance philosophy and organisation supporting an RCM PMS survey concept.
— organisational chart has the necessary resources and responsibilities defined for an RCM PMS strategy to be supported adequately
— a continuous improvement methodology is implemented
— adequate skill level on involved personnel.

203 Approval of the analysis is based on the following:

— a Reliability Centred maintenance analysis must have been performed according to IECF 60300-3-11, Application Guide Reliability Centred Maintenance or alike.
— the RCM team must consist of experienced people related to the asset that is analysed. If the asset analysed is a new asset, the analysis process should be performed by the use of substitution of experience from comparable assets.
— team members representing all relevant operational and Maintenance discipline (electrical, electronic, mechanical) should have been involved.
— experienced RCM facilitator coming from outside the asset organisation should have been used
— a documented and approved RCM methodology is in place describing the RCM analysis methodology applied, relevant input data, decision logic and risk matrix.
— references to documentation used are provided
— methodology used for selecting systems
— an inventory list, sorted after unit no or tag no that shows the criticality of all units shall be produced.

Guidance note:

It is recommended that the analysis is performed on a level in the equipment hierarchy where it is possible to identify a suitable failure management policy. For most system this will typically imply that most of the analysis is performed at the level where individual pumps, racking arms, motors etc can be found.

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204 If condition monitoring of equipment is to be carried out as part of the RCM system, this is to be carried out in accordance with an approved programme. See DNV-OSS-101 Ch.3 Sec.7 E. Machinery CM for further details. Condition monitoring of equipment will normally be approved on an individual equipment.

G 300 Implementation survey

301 A survey of the maintenance system is carried out when the RCM based preventive maintenance routines have been implemented. After approximately 6 months of operation the proper operation of the system is surveyed onboard. In order to verify the crew's general knowledge, the implementation survey is to be carried out during normal operation (voyage survey). Provided a successful implementation survey, a certificate for the Machinery PMS RCM will be issued stating conditions for the survey arrangement.

G 400 Annual Survey

401 To maintain the validity of the survey arrangement PMS RCM, an annual survey of the implemented maintenance programme is required, preferably during normal operation. This survey replaces the annual and renewal surveys of machinery for components included in the PMS RCM scheme. The purpose of this survey is to review and evaluate the previous period's maintenance activities and to ensure that the system is operated correctly.

The annual survey shall consist of:

— spot check of equipment included in the scheme
— verification of maintenance records
— assessment of maintenance handling onboard.

If found necessary by the surveyor, opening or testing of machinery may be required.

G 500 Renewal survey

501 To prolong the validity of the survey arrangement a renewal survey of the implemented PMS RCM. Survey arrangement is required. This can be done during normal operation or during renewal survey. The purpose of the survey is to ensure that the conditions for approval of the system are still adhered to and that the results of the maintenance work achieve acceptable results. The following will normally be reviewed, in addition to scope of annual survey:

— management
— safety incidents
— continuous improvement processes
— functional testing of critical equipment
— verification of critical piping and structures.

The survey scope of each of these topics is outlined in 502 to 505.

502 The management of the unit is to be surveyed during renewal survey in order to verify that the basis of the survey arrangement is still intact. This will include review of procedures, verification of crew training and interviews.

Guidance note:

During the implementation of PMSRCM a review has been made of several parts of the owner's organization. During renewal survey the same topics will normally be covered as spot checks. However major changes of the organization could give rise to an increase in the survey scope.

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503 The review of safety incidents is conducted on a spot check basis. It is to be ensured that maintenance related incidents result in traceable improvement actions and that the maintenance work itself is conducted in a safe manner.

504 The systematic continuous improvement effort is to be evaluated during the renewal survey. It is to be verified that the company procedures are complied with. Additionally it must be verified that the effort actually causes traceable improvements in the preventive maintenance system.

Guidance note:

It is required that the continuous improvement work utilizes input from safety reports, feedback from maintenance personnel and analysis of relevant systems. Furthermore the results of the improvement actions shall be evaluated by the owner in order to ensure that real improvements are achieved.

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505 The functional testing is intended to verify the physical results of the maintenance work by observing the function of the equipment.

506 The critical structures are verified by review of NDT jobs in the maintenance system. However, if other tasks have been identified by the RMC analysis for the relevant failure modes, these tasks will normally be accepted as an alternative to NDT.

G 600 Work survey

601 When Category 1 equipment (see Table A1. in DNV-OS-E101 Ch.3 Sec.3) is overhauled the DNV surveyor shall be contacted in order to agree the extent of his participation during the work.

H. Offshore CM (Condition Monitoring)

H 100 General

101 Offshore CM is a survey arrangement based on use of an approved service provider for execution of condition monitoring. A comprehensive approval process of the service provider is conducted in order to verify the procedures, competence and resources of the company. The implementation survey and the annual survey of this arrangement take place onshore or offshore. The survey arrangement is based on compliance with ISO 17359 and can be applied to main class machinery and "DRILL" equipment.

102 The following conditions must be fulfilled before the survey arrangement is valid:

— approved service provider
— successful implementation survey (see 200)
— it is normally required to have survey arrangement PMS implemented, see D.

103 Machinery systems and equipment with corresponding survey method for this arrangement see Table A1.

104 In case of change of manager/owner, the survey arrangement is automatically cancelled. The arrangement is also cancelled if the service provider loses his approval.

Guidance note:

Generally it is necessary to comply with ISO17359 or similarly recognised standard.

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105 In order to facilitate continuous improvement within the service provider organisation the vessel owner must provide feedback at intervals not exceeding 12 months. Also the user is to inform DNV if the service is not delivered in a competent way.

H 200 Implementation survey

201 An implementation survey is required in order to verify that the CM programme is properly implemented and operated. It shall be demonstrated that the onshore and offshore maintenance and administrative systems ensure a proper operation of the survey arrangement. The survey normally consists of an offshore part and an onshore part. The survey should take place when the system has been operating for approximately 6 months. Based on similar recent survey with the same owner the onshore or offshore survey may be omitted.

202 Approval of the CM programme is based on a description of the following:

— maintenance strategy
— implementation of condition monitoring in the planned maintenance system
— training programme/plan for involved crew. If the crew does measurements certification to ISO category 1 is normally required
— name and address of the appointed service provider
— a list of the machinery included in the arrangement
— drawings that show the measuring points and an overview of the installed equipment
— communications plan that outlines the owner's communication with DNV and the service provider
— EX certificates are to be provided if equipment is installed in hazardous areas.

Guidance note:

The choice of conditioning monitoring strategy has substantial influence on the scope of work of the crew. For instance an online system requires another level of involvement than use of handheld measuring equipment. This must be reflected in the maintenance system, training manuals etc. It shall be verified that the process complies with ISO17359.

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H 300 Annual survey

301 To maintain the validity of the survey arrangement Offshore CM, an annual survey of the implemented condition monitoring programme is required. Normally the survey takes place onshore, based on submitted documentation from the owner. This survey replaces the annual and renewal survey of machinery and components included in the condition monitoring scheme. The purpose of this survey is to ensure that the system is operated correctly and that the safety integrity level of the vessel is kept intact. Where more than one vessel follow the same scheme, the annual survey can be based on spot checks of a representative selection of vessels

The annual survey shall consist of examination of:

— condition monitoring records
— maintenance records
— CM handling onboard, for instance collection of data and response to recommendations from service provider

— reports and maintenance records from breakdowns.

If it is not properly demonstrated that the system is correctly operated and that it serves to ensure the technical integrity level of the asset, opening or testing of machinery may be required.

H 400 Approval of service provider

401 The approved service provider is granted a general authorisation to carry out condition monitoring in order to cover the scope of annual and renewal survey of machinery and equipment. This authorisation is valid for three years. In order to obtain this authorisation an audit of the service provider is done. The following shall be covered:

— compliance between knowledge level and responsibility of involved personnel
— routines for informing vessel operator and other relevant stakeholders of potential problems
— equipment and methods for conducting the conditioning monitoring.

Guidance note:

Generally it is necessary to comply with ISO17359 and the personnel responsible for the service should be certified to ISO level 3 or 4.

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H 500 Renewal audit of service provider

501 To prolong the validity of the authorisation an audit of the service provider is arranged. The following shall be covered:

— handling of quality cases
— handling of non-conformities
— handling of fault indications
— general compliance with the basis of the approval
— review of condition monitoring results
— plans for continuous improvement.

Guidance note:

Non-conformities refer to the cases where the system has been operated outside the intention in the procedures. Quality cases refer to the cases where the condition monitoring system has failed to reveal defects or where false failure indications have been reported.

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H 600 Random audit

601 DNV may initiate random audits if deemed necessary. The Supplier shall on request provide access to relevant records, supplier's people and facilities, for DNV's auditing personnel.

APPENDIX A
INTRODUCTION TO OFFSHORE CLASSIFICATION

A. Introduction

A 100 Purpose

101 This appendix is informative and should not be understood as rule requirements. The appendix explains the system of classification, how it works, conditions of validity, and its interaction with statutory control. This information is to a large extent implied by the rules, but a brief clarification of the essential points in one place is considered useful.

B. The Classification System

B 100 The classification process and its limitations

101 Classification is a system for safeguarding life and property at sea, and the environment due to operational consequences. It implies a process of verifying offshore objects against a set of requirements. The requirements are laid down in the rules and standards established by DNV. Classification has gained worldwide recognition as an adequate level of safety and quality.

102 Classification implies an activity, in which a unit is surveyed during construction based on design approval, tested before being taken into service, and surveyed regularly during its whole operational life until it is scrapped. The aim is to verify that the required rule standard is built in, observed and maintained.

103 Classification is not performed as a substitute for the customer's own quality and safety control and related duties, or the customer's obligations to third parties, nor to relieve the customer of any consequences of default. Classification implies that rule requirements are verified at regular intervals. It is the owner's responsibility to maintain the unit so as to comply with the rules at all times.

104 DNV keeps complete files on all classed ships and units covering the documentation required by the rules. Reports will not be disclosed to any party, apart from the national authorities involved, without the owner's consent. DNV also undertakes all reporting to national authorities required in connection with the safety certificates.

B 200 Who needs classification?

201 Classification serves as verification system for a number of parties who have special interest in the safety and quality of units, such as:

— National authorities, who accept units for registry, or let units into their territorial waters, need assurance that they are safe and represent a minimum hazard to their surroundings.
— Insurance underwriters require units to be classed in order to give insurance.
— Owners, who need the technical standard of the rules as basis for building contracts and to document the unit's standard when seeking insurance or financing, or when hiring out or selling the unit.
— Building yards and sub-contractors use the rules as a tool for design and construction, as required by their customer.
— Finance institutions use classification as a documented indicator of the unit's value.
— Charterers require confirmation of the unit's standard before hire.

B 300 Recognition of DNV

301 DNV is recognised as an international classification society by virtue of its position in the marine industry, founded on the following criteria:

Independence

— By classing a substantial share of the world fleet and through high equity and financial independence, the economic basis for independent decisions in classification matters is ensured.

High technical competence

— Extensive research and development in class related fields sustain a process where the rules and standards are continuously extended and improved in pace with new technology and experience gained. Research and development also contributes to a high level of staff competence.
— Continuous monitoring of a large classed fleet ensures valuable feedback from casualties, damage incidents and operational experience in general. Analyses of these data are one important source of improvements of the rules.
— DNV runs a scheme for training and qualification of its technical personnel to ensure correct, uniform quality of approval and survey work throughout the organisation.

Worldwide survey station network

— DNV operates survey stations all over the world. Efficient reporting and information systems support the operations, and provide service to customers and national authorities.

B 400 Responsibility for safety at sea

401 National law institutes national authorities' responsibility for the total safety control of units flying the national flag. Classification cannot in any way relieve the national authorities of that responsibility.

402 National authorities may use the classification system and DNV's worldwide survey station network as their executive branch for safety control. The convenience of this arrangement is proved by the fact that DNV has been delegated extensive authorisation to work and certify on behalf of the majority of the maritime nations of the world.

403 The classification system applied to delegated, statutory work offers the national authorities regular monitoring of survey and certificate status of units flying their flag. Verification of DNV's work process and quality systems may also be carried out. In this way, national control is retained at the discretion of the authority involved.

B 500 Classification of newbuildings

501 The builder initiates the process by submitting a request for classification to DNV. In response to a list of documentation issued by DNV for the specific class notations requested, the builder and sub-suppliers submit drawings, specifications, related technical descriptions and data, including specification of materials as required by class, for approval.

After examining the above documents, DNV informs the builder and sub-supplier whether the design and arrangement of structure, machinery and equipment is acceptable. If not, DNV may propose modifications needed to meet the classification requirements.

502 During the building period DNV carries out surveys at the building yard and its suppliers. To assess compliance with the rules the Society may require additional documentation and carry out an assessment of yard's processes, systems and personnel related to classification projects. The results of the assessment should be used as a basis to decide on the extent of the involvement of surveyors of the Society. They should be clearly reflected in the Quality Survey Plan (QSP).

The purpose of the surveys is to verify that the construction, components and equipment satisfy the rule requirements and are in accordance with the approved plans, that required materials are used, and that functional tests are carried out as prescribed by the rules.

503 When DNV is satisfied that the requirements specified for the unit in question have been met, the appropriate class notation will be assigned and confirmed by the issuance of a classification certificate. Provided the requirements for retention of class are complied with, the certificate will normally have a validity of five years.

B 600 Classification in the operational phase

601 Compliance with the rule requirements in the operational phase is verified by DNV through a system of periodical surveys. The most comprehensive survey is the one carried out in connection with the renewal of the five-yearly classification certificate. During the five year period the unit undergoes annual and intermediate surveys covering various parts, equipment and systems, depending on the class assigned.

602 In order to confirm retained validity of class, DNV evaluates the extent of possible sustained damage and verifies ensuing repairs. Deferred repairs may be accepted by DNV, but always associated with a maximum time limit.

603 The Rules allow periodical surveys to contain an element of sampling. This sampling must be sufficient to enable the surveyor to obtain a proper assessment of the condition of the unit. This assessment is based amongst other things on type, age and technical history of the unit.

604 Results of the surveys are reported to the owners and to DNV's central office for updating records. Special findings are also recorded and used as basis for updating and development of the Rules.

605 “The register of vessels classed with DNV” is available for supplying information on ship's and unit's main particulars and details of their classification.

B 700 Owner's duties

701 In order to maintain valid class the classification system specifies the following to be observed by the owner:

— The unit has to be competently handled in accordance with the Rules.
— The unit has to be maintained to rule standard at all times. Any conditions of class have to be carried out as specified.
— The unit has to undergo prescribed periodical and renewal surveys, as well as surveys of damage, repairs, conversions and alterations.
— DNV must be furnished with all information that may influence its decisions in connection with classification.

Failure to meet any of these requirements may lead to termination of valid class and withdrawal of all class and statutory certificates.

702 To assist the owner in this regard DNV supplies regular status reports on certificates, surveys carried out and becoming due, and possible conditions of class.

C. Remuneration

C 100 Fee system

101 Remuneration is normally based on a fee system, in which DNV invoices each type of survey according to a basic scale of fees. The basic scale of fees is developed by taking into consideration the amount of work needed to execute, process and follow up the survey in question, as well as the items surveyed. The fees also cover investment and development costs of the Rules as well as maintenance of a worldwide survey network, central service support system, etc. Price level and costs vary from country to country and are therefore reflected in the fees charged.

D. Classification Support

D 100 General

101 The staff of DNV represents a significant accumulation of knowledge and practical experience in offshore-related technical fields. This is an asset often drawn on by the industry in matters related to classification.

102 The expertise of DNV is available to the owner at any time when needed in connection with operating problems, damage and casualties.

D 200 Pre-contract support

201 Co-operation with DNV early in the design stage, before classification is requested and any contract is signed, is usually very beneficial to both yard and owner. Different technical solutions may be evaluated, thus contributing to a more efficient unit, and ensuring that all safety aspects as specified by the Rules are taken care of. In this way, expensive changes late in a project may be avoided.

D 300 In-service support

301 Similar services are given in connection with units in operation. Alternative ways of repairs may be indicated, acceptable distributions of crude cargo and ballast to alleviate overstressing may be computed in case of damage, stability may be investigated, etc. These are typical examples.

D 400 Limitations

401 Two main restrictions prevail on DNV when undertaking classification support work:

— DNV does not carry out complete, conceptual design of units. In cases where DNV has been involved in design support, the plans and calculations must still be independently evaluated by DNV before being accepted for classification purposes.
— Information received from customers in connection with assignment of class is not disclosed and used in classification support work.