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OFFSHORE SERVICE SPECIFICATION  
DNV-OSS-202

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VERIFICATION FOR COMPLIANCE  
WITH  
UK SHELF REGULATIONS

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MARCH 2001

DET NORSKE VERITAS

# 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 Offshore Codes consist of a three level hierarchy of documents:

- *Offshore Service Specifications*. Provide principles and procedures of DNV classification, certification, verification and consultancy services.
- *Offshore Standards*. Provide technical provisions and acceptance criteria for general use by the offshore industry as well as the technical basis for DNV offshore services.
- *Recommended Practices*. Provide proven technology and sound engineering practice as well as guidance for the higher level Offshore Service Specifications and Offshore Standards.

DNV Offshore Codes 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

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Computer Typesetting (FM+SGML) by Det Norske Veritas.  
Printed in Norway by GCS AS.

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## CONTENTS

<p><b>Sec. 1 General..... 5</b></p> <p>A. Introduction ..... 5</p> <p>A 100 General..... 5</p> <p>A 200 Background..... 5</p> <p>A 300 Scope and objective ..... 5</p> <p>B. Application ..... 5</p> <p>B 100 General..... 5</p> <p>C. Interface with Classification ..... 6</p> <p>C 100 General..... 6</p> <p>D. Responsibilities..... 6</p> <p>D 100 General..... 6</p> <p>E. References ..... 6</p> <p>E 100 UK Regulations..... 6</p> <p>F. Definitions and Terminology..... 6</p> <p>F 100 General..... 6</p> <p>F 200 Definitions ..... 6</p> <p><b>Sec. 2 Hazard Management and Safety Case        (Consultancy Services)..... 8</b></p> <p>A. General..... 8</p> <p>A 100 Introduction..... 8</p> <p>B. UK Requirements ..... 8</p> <p>B 100 Hazard Management ..... 8</p>	<p>B 200 Safety cases..... 8</p> <p>C. Consultancy Services..... 8</p> <p>C 100 General..... 8</p> <p>C 200 Interface with classification ..... 9</p> <p><b>Sec. 3 Written Schemes (Verification Services)..... 10</b></p> <p>A. Introduction..... 10</p> <p>A 100 General..... 10</p> <p>B. Requirements for Verification ..... 10</p> <p>B 100 General..... 10</p> <p>B 200 Verification of safety-critical elements ..... 10</p> <p>B 300 Examination of PFEER plant..... 10</p> <p>B 400 Examination of personal protective equipment ..... 10</p> <p>C. Verification Services ..... 10</p> <p>C 100 Appointment as ICP..... 10</p> <p>C 200 Combined scheme..... 11</p> <p>C 300 Scheme revision and review ..... 11</p> <p>C 400 Performance assurance ..... 11</p> <p>D. Application for Classed Units..... 11</p> <p>D 100 General..... 11</p> <p>D 200 Application to installations ..... 11</p> <p>D 300 Class Notation..... 12</p> <p><b>App. A Summary of Key UK Safety Compliance        Milestones ..... 13</b></p>
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## SECTION 1 GENERAL

### A. Introduction

#### A 100 General

**101** DNV Offshore Classification aims to assure safety and reliability of offshore units and installations with regard to design, construction and operation. Wherever possible DNV offers additional, integrated services to assist clients toward fulfilling regional statutory requirements, including credit for classification standards and activities.

**102** This Offshore Service Specification document gives a general statement of DNV services related to the core compliance issues for owners and operators of units and installations wishing to enter and operate in UK waters.

#### A 200 Background

**201** The UK Safety Case Regulations (SCR) and Prevention of Fire and Explosion, and Emergency Response Regulations (PFEER) require that all major accident hazards pertaining to an offshore installation are identified and adequately managed throughout the installation lifecycle. This is achieved by a combination of assessing and verifying an acceptable standard of integrity of the installation, safety of operation and protection of personnel.

**202** The regulations establish a ‘goal setting’ (non-prescriptive) approach which enables appropriate effort to be focused on those items which provide the greatest contribution to safety. The principal aims of the regulations are to:

- a) Identify all credible hazards relating to an installation, and eliminate hazards through design where possible.
- b) Assess and reduce risks from major accident hazards to a level that is as low as reasonably practicable (ALARP).
- c) Identify, implement and maintain an appropriate combination of inherent safe design, prevention, detection, control, and mitigation measures, for the management of these risks throughout the lifecycle of the installation.
- d) Ensure that systems and equipment provided to protect personnel in an emergency are suitable and capable of responding to all foreseeable safety-related incidents.
- e) Ensure that design, operation, maintenance and verification of safety measures and systems are undertaken by competent people who understand the significance of the systems in the management of hazards and possible escalating events.
- f) Assess changes to the installation which may affect the risks, and revise the systems where necessary to take account of the changes.

**203** To demonstrate compliance with the above requirements, the duty holder must formally document:

- safety case(s) and background assessments
- PFEER assessment and performance standards
- record of safety-critical elements
- verification scheme for safety-critical elements
- PFEER written scheme of examination.

A summary of the key requirements is given in Appendix A.

The PFEER written scheme of examination, the SCR record of safety-critical elements, and the SCR verification scheme require the input of an independent and competent person.

**204** Industry practice and work processes have led to a “Combined Scheme” to satisfy both PFEER and SCR written scheme requirements, although the duty holder may choose to write two separate schemes. Both individual and combined schemes are addressed by this document.

#### A 300 Scope and objective

**301** As the UK regulations are now fully “goal setting” and aim for continuing safety improvement, the regulations cannot be fully transferred into standardised technical requirements. However, it is possible to identify major points to be considered, and to provide services toward fulfilment. The objective of this document is to provide a general statement of the services DNV can provide for UK compliance, with reference to how these services can be used with classification. This includes:

##### a) *Consultancy Services:*

Safety engineering during design and construction, risk analysis and assessment, PFEER assessment, identification of safety-critical elements and performance standards, ALARP methodology, safety case preparation.

##### b) *Verification Services:*

Actions as appointed independent and competent person (ICP) for identification and review of list of safety-critical elements and performance standards, writing or review of written schemes, implementation of verification activities, maintenance and revision of written schemes.

Detailed information on these services can be obtained based on discussions for specific installations and/or client needs.

### B. Application

#### B 100 General

**101** DNV independent verification and/or consultancy services can be applied for any unit or installation which is located, or intended to be located, in UK waters. This includes fixed installations, floating installations to be located at a specific location, and mobile units (e.g. MODU).

**102** The services can be applied to verification of existing facilities or new build installations (project phase). However, as many of the key compliance issues concern adequacy of specification, design and construction, it is recommended that compliance be considered as early as possible in the unit/installation lifecycle.

The specific UK requirements for timing of compliance aspects to different installations is stated where applicable in the separate sections of this document.

**103** The services can be applied in isolation or can be used to give a combined approach to DNV classification and UK compliance.

**104** DNV UK compliance services are directly applicable to verification of offshore installations for operation in UK waters. The approach may, however, also be suitable for verification of units/installations outside of UK waters.

**105** This document does not include DNV services related to well verification. Please contact DNV directly for information on such services.

## C. Interface with Classification

### C 100 General

**101** UK offshore compliance requires that design, construction, and operation of offshore installations is as safe as reasonably practicable, in line with current industry good practice and technology. Compliance is installation specific and cannot be based upon prescriptive requirements alone.

Classification can contribute to, or be based on, UK compliance, in the following ways:

#### 102 Risk Based Classification

DNV can award classification based on risk assessment and independent verification, as detailed in DNV-OSS-121. This approach is similar to that for UK compliance. Units/installations classed by this method will have fulfilled many of the initial steps for UK compliance. Conversely, units/installations achieving UK compliance through DNV will also have fulfilled the key requirements for classification as detailed in DNV-OSS-121.

#### 103 Traditional Classification

Units and installations following a traditional classification approach can credit classification for UK compliance. The most significant benefits are:

- rules are based on experience and current good practice and are frequently updated
- requirements apply to the key structures and systems which are important for safety and integrity
- the approval (independent verification) process is systematically applied and documented from design through to operation.

Classification input is particularly valuable input to verification schemes for mobile offshore units coming to the UK from operation in other areas of the world.

Some additional work will be required in the form of risk assessments, safety case(s), and UK written schemes. The key items of additional work and relevant DNV services are identified in this document.

**104** It should be noted that deviations from traditional class which are required in the UK regime may be acceptable under class.

## D. Responsibilities

### D 100 General

**101** Under UK regulations, the duty holder is responsible for offshore safety compliance. This covers a broad area of compliance from design through to operations, including matters such as technical design, risk assessment, ensuring risks are ALARP, development and implementation of written schemes.

DNV can assist the duty holder in work for compliance with UK legislation, but cannot assume the duty holder's responsibility for the safety and integrity of the installation.

Where requested, DNV can issue an opinion of the state of compliance. DNV cannot guarantee or issue to compliance on behalf of the UK authorities.

## E. References

### E 100 UK Regulations

**101** The services contained in this guidance are interpreted from, or include reference to, the requirements of the following regulations shown in Table E1:

Table E1 UK Regulations referred to, and used under, this Service Description		
Formal Regulation Title	Abbreviation	Statutory Instrument
Offshore Installations (Safety Case) Regulations 1992	SCR	SI 1992/2885
Offshore Installations (Prevention of Fire and Explosion, and Emergency Response on Offshore Installations) Regulations 1995	PFEER	SI 1995/743
Offshore Installations (Design and Construction etc.) Regulations 1996	DCR	SI 1996/913
Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995	MAR	SI 1995/738
Note: All UK regulations are part of the general duties required under The Health and Safety at Work Act 1974.		

## F. Definitions and Terminology

### F 100 General

**101** The following terms and definitions are provided in accordance with UK regulations and guidance, and apply specifically to this service specification.

### F 200 Definitions

**201 ALARP:** Refers to the principle of reducing risks to As Low As Reasonably Practicable. This means that once risks are considered to be tolerable, further risk reduction measures are balanced against the cost (in money, time or trouble) of implementing such measures. The emphasis is to implement improvements unless they can clearly be shown to be "not reasonably practicable", i.e. cost of implementation is unacceptable and disproportionate to safety benefit.

ALARP is a significant driver in the "non-prescriptive" approach of the UK regime, and hence affects the acceptability of installations for UK operation. Further information on ALARP and tolerability are given in SCR Guidance Notes and the HSE publication *The Tolerability of Risk from Nuclear Power Stations*.

**202 Combined operation:** Refers to two or more installations, when an activity is carried out from, by means of or on one installation which:

- a) is carried out temporarily for a purpose related to the other installation (s); and
- b) could affect the health and safety of persons on any of the installations.

**203 Combined Scheme:** Refers to a single written scheme which combines the written scheme and verification requirements for examination, testing, assessment and review under PFEER and SCR.

**204 Competence:** Relates to relevant theoretical and practical knowledge and practical experience to enable a professional judgement to be made regarding the importance and suitability of plant to be assessed.

**205 Duty Holder:** Means (a) in relation to a fixed installation, the operator; and (b) in relation to a mobile unit, the owner. The duty holder is responsible for discharging the duties under UK regulations. Further information regarding operator and owner is given in SI 1995/738 (MAR) Regulation 2.

Where a duty holder is not yet appointed, or work is to be contracted between separate parties, e.g. designer, shipyard, owner, it is important that individual roles in fulfilling UK requirements be carefully considered.

**206 Escape:** The process of leaving the installation in an emergency. Means of escape includes items which assist with descent to the sea, such as davit launched life rafts, chute systems, ladders, and individually controlled descent devices; and items in which personnel can float on reaching the sea, such as throw-over life-rafts.

**207 Evacuation:** A planned and controlled method of leaving an installation and its vicinity without directly entering the sea. Means of evacuation offer protection from the hazard, and have their own motive power to enable persons to move quickly away from the installation.

**208 Fixed Installation:** Under the terms of UK law and this service specification means an offshore installation other than a mobile offshore unit.

**209 Floating offshore installation:** A buoyant construction engaged in offshore operations including drilling, production, storage or support functions, and which is designed and built for installation at a particular offshore location.

**210 HSE:** The UK Health and Safety Executive, which is the regulator for health and safety on offshore installations in UK waters.

**211 Independent:** A person is regarded as independent only where he has had no involvement or responsibility related to the aspect or thing to be verified, nor any financial interest, which might compromise his objectivity; and he is sufficiently independent of any management system which bears responsibility for the aspect or thing to be examined, that he will be objective in discharging his function.

**212 Major Accident:** Defined in Regulation 2(1) of SCR, as:

- a) A fire, explosion or other release of a dangerous substance involving death or serious injury to persons on the installation or engaged in an activity on or in connection with it.
- b) Any event involving major damage to the structure of the installation or plant affixed thereto or any loss in the stability of the installation.
- c) The collision of a helicopter with the installation.
- d) The failure of life support systems for diving operations in connection with the installation, the detachment of a diving bell used for such operations or the trapping of a diver in a diving bell or other subsea chamber used for such operations; or

- e) Any event arising from a work activity involving death or serious injury to five or more persons on the installation or engaged in an activity in connection with it.

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

A MOU which is moving into UK waters for production purposes is treated as a fixed installation under the terms of UK law and this service specification.

**214 Offshore installation:** Offshore installation is as defined in Regulation 3 of SI 1995/738 (MAR). This also deems an offshore installation to include any part of a pipeline or any apparatus or works that are connected to the installation and within the 500 m zone.

**215 Performance Standard:** A statement which can be expressed in qualitative or quantitative terms, of the performance required of a system, item of equipment, person or procedures in order to manage a hazard.

The performance standard should contain sufficient information against which to assess the suitability and condition of the item to which it applies. This is expected to include the purpose of the measure(s), and the associated requirements of *functionality, reliability, availability and survivability*.

Performance standards applies both to safety-critical elements and PFEER measures.

**216 Safety Case:** The formal document prepared pursuant to Regulation 2(2) of SCR.

**217 Safety-Critical Elements:** Means such parts of an installation and such of its plant (including computer programs), or any part thereof:

- a) The failure of which could cause or contribute substantially to; or
- b) A purpose of which is to prevent, or limit the effect of, a major accident hazard.

This definition also applies to temporary equipment brought onto the offshore installation.

**218 SMS:** Safety Management System.

**219 UK written schemes or combined scheme:** Refers to the written schemes required under PFEER and SCR.

**220 Verification scheme:** Refers to a suitable written scheme provided to ensure that selected items are appropriate for the intended use, dependable and effective when required, and able to perform as intended. SCR Verification Scheme refers to the scheme provided under SCR regulation 15.

## SECTION 2

### HAZARD MANAGEMENT AND SAFETY CASE (CONSULTANCY SERVICES)

#### A. General

##### A 100 Introduction

**101** DNV has gained substantial experience throughout the development of UK offshore legislation, and can provide consultancy services to designers, builders, owners and operators requiring UK compliance.

**102** These consultancy services include matters such as risk assessment, technical studies, and safety case management as indicated in this section.

#### B. UK Requirements

##### B 100 Hazard Management

**101** UK regulations require the systematic avoidance and control of hazards in order to reduce risks to be acceptable and as low as reasonably practicable (ALARP). This will include demonstration by risk assessment.

ALARP is particularly important for fixed installations and floating installations located at a fixed location. However, mobile units coming to the UK will also have to demonstrate an acceptable level of safety including reasonable application of the ALARP principle.

**102** The basic principles for hazard management are:

- systematic identification of major hazards on the installation
- taking action to design out, avoid and reduce hazards at source
- risk analysis and assessment of major accident hazards, including PFEER Regulation 5 assessment
- establishing appropriate prevention, detection, control and mitigation measures, including safety-critical elements and their performance standards, to manage remaining hazards
- providing suitable evacuation, escape and recovery resources
- demonstration of fulfilment of the ALARP principle.

The above work forms the basis for development of the safety case(s).

##### B 200 Safety cases

**201** A safety case is the formal demonstration of the safety of the unit or installation by design, construction and operation. Detailed requirements for the content of the safety case are stated in the SCR and Guidance.

**202** The safety case must be submitted to, and accepted by the HSE prior to operation in UK waters, as shown in Table B1. It is against UK law to operate a unit/installation in UK waters without written HSE acceptance of the safety case.

**203** Safety Cases must be revised in the event of any material change to operation of the unit/installation in UK waters, or within 3 years of the previous safety case acceptance.

<b>Table B1 Safety Case Requirements</b>		
<i>Statutory Safety Case</i>	<i>SI 1992/2885 Reference<sup>1)</sup></i>	<i>Minimum submission period</i>
<b>Fixed Offshore Installations, including FPS</b>		
Design Safety Case <sup>2)</sup>	Regulation 4 <sup>1)</sup>	In sufficient time before completion of design as will enable account of issues raised by HSE within 3 months of safety case submission <sup>3)</sup> .
Operational Safety Case <sup>4)</sup>	Regulation 4 <sup>2)</sup>	6 months prior to operation <sup>5)</sup>
<b>Mobile Offshore Units</b>		
Operational Safety Case <sup>6)</sup>	Regulation 5	3 months prior to entry into UK waters with intention to operate <sup>5),7)</sup>
<ol style="list-style-type: none"> <li>1) Modifications or amendments under other regulations may also apply as necessary</li> <li>2) There is no requirement for this to be formally accepted, but the Duty Holder should ensure that any HSE issues are addressed prior to submission of the operational safety case.</li> <li>3) HSE assessment of design safety case may result in design modifications. Late submission should be avoided in order to reduce the effect of design changes.</li> <li>4) It is an offence to operate a fixed offshore installation in UK waters without HSE acceptance of a governing Operational Safety Case.</li> <li>5) "Operation" of the installation is taken as defined in SCR Regulation 4<sup>3)</sup>.</li> <li>6) It is an offence for a mobile unit to enter UK waters, with a view to operating there, without an accepted Operational Safety Case.</li> <li>7) Mobile units in transit or only entering UK waters for repairs or refitting do not require to satisfy these regulations.</li> </ol>		

Further details of the required content of safety cases and supporting documents can be found in SCR and associated HSE guidance.

#### C. Consultancy Services

##### C 100 General

**101** DNV can provide consultancy services to assist the client with UK hazard management compliance issues. These include:

- directing of HAZID, HAZOP and hazard reviews
- concept assessment and assistance in selection of options and issues
- risk, reliability, survivability and other safety related analyses and assessments, including the specific PFEER assessment
- identification of *safety-critical elements* and *performance standards* \*)
- identification of improvements and demonstration of ALARP.

\* can also be performed as a verification service

**102** DNV can provide safety case related services such as:

- safety case preparation, co-ordination, and management
- safety management systems and audit
- demonstrating assessment and control of major accidents, and ALARP within the safety case

- safety case review and revision
- communication and discussion of safety matters with HSE on behalf of the client.

**103** DNV can also provide comprehensive safety engineering services, including attachment to the duty holders organisation to deal with lifecycle safety compliance issues for offshore assets.

#### **C 200 Interface with classification**

**201** DNV Classification will contribute to UK compliance in terms of recognised good practice, and is particularly valuable for demonstrating adequacy of marine systems.

Traditional prescriptive classification does not require risk assessment or safety case documentation. All the above assessment and safety case activities therefore need to be documented. It should be noted that deviations from traditional class which are acceptable in the UK regime are likely to be acceptable under class.

Risk-based classification based on DNV-OSS-121 will considerably contribute to requirements for hazard management, but will need additional emphasis on evacuation, escape, rescue and recovery and demonstration of ALARP. A formal safety case will also be required.

## SECTION 3 WRITTEN SCHEMES (VERIFICATION SERVICES)

### A. Introduction

#### A 100 General

**101** This section describes the UK requirements for written scheme(s) of verification/examination required by SCR and PFEER.

The written scheme(s) are for verification that important plant and equipment is suitable to keep risks as low as reasonably practicable, throughout the unit/installation operation in UK waters.

### B. Requirements for Verification

#### B 100 General

**101** Verification schemes are formally required as:

- *verification scheme* for safety critical elements (SCR)
- *written scheme of examination* for measures against fire and explosion (PFEER).

Both written schemes are to ensure that important safety measures are, and remain, suitable to keep risks acceptably low throughout the installation operation in UK waters.

**102** There is considerable overlap between the schemes. Industry practice and work processes have therefore led to a *combined scheme* to satisfy both PFEER and SCR, although the duty holder is free to apply separate schemes if desired.

**103** The separate requirements are briefly discussed in B200 and B300. DNV verification services for separate SCR and PFEER schemes, and for a combined scheme are given in C.

#### B 200 Verification of safety-critical elements

**201** SCR regulation 15 requires that a record of safety-critical elements be established. The record of safety-critical elements shall be subject to comment by an independent competent person, and any comments or reservations noted.

**202** The safety-critical elements are subject to a verification scheme which is a written scheme drawn up by, or in consultation with, an independent competent person. Verification activities under the scheme shall be performed by an independent and competent person, although he may take credit for other work. (See Sec.3 C401).

**203** The verification scheme applies to the specification, design, construction, installation, operation and condition of safety-critical elements.

*For fixed installations, and installations at a fixed location, a verification scheme shall be available before completion of final design, and shall be operated and maintained throughout the installation life.*

#### Guidance note:

For the maximum benefit from verification it is recommended that the scheme is in operation as early as possible during design and procurement.

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*For mobile units with intent to operate in UK waters, a verification scheme shall be in place prior to entry to UK waters.*

#### Guidance note:

Mobile offshore units are recommended to retain appropriate documents for future entry to UK waters, see SCR and guidance

requiring that the adequacy of the written scheme through design and construction be demonstrated.

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**204** The scheme must kept under review and revised as necessary to ensure the suitability of safety-critical elements.

#### B 300 Examination of PFEER plant

**301** PFEER Regulation 19 requires that plant for detection, control and mitigation of fires and explosions, for escape and evacuation, and for certain emergency alarms and communications, be subject to a Written Scheme of Examination to be performed by an independent, competent person. Examination should include checking against performance standards identified from the PFEER assessment.

*For fixed installations, and installations at a fixed location, the PFEER written scheme applies throughout the installation life-cycle.*

*For mobile units the PFEER written scheme must be in place before operation in UK waters. The requirement do not apply to mobile units in transit between stations.*

**302** Plant included under the PFEER written scheme will be also be selected as safety-critical elements. Therefore work for performance standards and verification under each regulation can be combined (see C200).

#### B 400 Examination of personal protective equipment

**401** PFEER Reg 18 requires a written scheme for examination and, where required, testing, of personal protective equipment (PPE) to be performed by competent person. PPE includes equipment which protects persons against the effects of fire, heat, smoke, fumes, toxic gas, or immersion in the sea.

Much PPE will be identified as safety-critical elements and will be part of the scheme for verification by an independent and competent person according to DCR Regulation 15. The scheme for verification of PPE can therefore be considered in conjunction with other verification schemes under this service description.

### C. Verification Services

#### C 100 Appointment as ICP

**101** UK regulations SCR and PFEER require comment and verification by a demonstrably independent and competent person(s). As an entirely independent foundation, working with all technical aspects of offshore safety, DNV can provide suitably independent and competent personnel to meet UK verification requirements at all stages of the installation lifecycle.

**102** This includes:

- comment on record of safety critical elements
- preparation and consultation for SCR and PFEER written schemes
- performing and reporting SCR and PFEER written schemes activities
- review and revision of SCR verification scheme through phases such as design and construction, in-service, modification.

## C 200 Combined scheme

**201** In addition to acting as ICP for the separate SCR and PFEER schemes (B200 and B300), DNV can combine the written scheme requirements to a single combined scheme.

**202** The combined scheme will address all the requirements of separate schemes. The written scheme will primarily address SCR verification of safety-critical elements, with work for PFEER included only where not already covered as verification of safety-critical elements.

**203** The combined scheme will contain all activities and information as necessary to enable the ICP to verify the initial and continuing suitability of the safety-critical elements and other plant.

**204** DNV will prepare a combined scheme to include, at minimum:

- list of SCE and PFEER measures
- type and frequency of activities under the scheme, including reference to activities credited under class and duty holder's own schemes
- findings from activities under the scheme
- remedial action recommended based on findings under the scheme
- remedial action performed in connection with the scheme
- reporting lines between ICP and duty holder
- arrangements for revision and review of scheme.

Other aspects, such as interface of the scheme with management of major accidents, can be included as agreed.

Activities under the scheme will be an appropriate selection of:

- examination, testing and test witnessing
- documentation review, e.g. design, specification, certificate, CE marking or other standards applied
- visual examination of ongoing suitability of equipment, through inspection, maintenance
- assessment of any relevant quality and management systems
- assessment and credit for work performed under classification or duty holder's own scheme.

These activities shall be performed at suitable times and intervals to ensure that the equipment continues to meet the performance requirements.

**205** During operation of the scheme, DNV can act as the ICP and record:

- findings of activities under the scheme
- remedial action recommended
- remedial action performed
- ICP reservations.

Note that temporary equipment which is, or affects, a safety-critical element will also be subject to verification for initial suitability, safe placement and hook-up, and continuing suitability (as necessary).

**206** DNV will report any findings to the duty holder, who is then required to ensure that the findings are notified and addressed at an appropriate level of management.

If the duty holder wishes, these matters can be closed out by DNV when suitably addressed and resolved with the duty holder.

## C 300 Scheme revision and review

**301** Where required under SCR, DNV will review and revise the effectiveness of the scheme throughout operation. Reviews will address:

- the record of SCE and performance standards is valid and suitable
- the written scheme is effective in verifying and maintaining the SCE and performance standards.

Modifications or additions to activities under the scheme will be made where appropriate.

**302** Further information regarding practical interpretation and implementation of the combined regulations can be obtained from DNV on request.

## C 400 Performance assurance

**401** Other activities intended to ensure the safety and operability of a unit or installation can be reviewed and credited in a written scheme wherever appropriate. These can include:

- duty holder's own "performance assurance" such as planned maintenance, safety tests and exercises etc.
- classification
- other 3<sup>rd</sup> party certification and verification type activities.

## D. Application for Classed Units

### D 100 General

**101** Work under UK written scheme requirements and classification can be combined wherever possible to:

- take advantage of the experienced systematics and resources of DNV classification
- improve cost efficiency through avoiding unnecessary duplication of work.

### D 200 Application to installations

#### *All installations*

**201** DNV offshore classification includes independent design and construction approval, and ongoing approval through survey, of important safety features of installations. Where appropriate, this can be directly credited into the UK scheme. This can be particularly useful in consideration of the following:

#### *Conversions to floating production installations (Fixed Installations)*

**202** Floating Production Installations are fixed installations under UK regulations, and written scheme must address original design and construction, as well as modifications, such as offshore production systems. DNV classification can be useful for some of this retrospective verification.

**203** Design and construction verification of topsides can take credit for additional DNV class notations, such as PROD and DRILL.

#### *Mobile Units*

**204** Written schemes must be in place when a mobile unit enters UK waters. These schemes must include demonstration of adequate design and construction, as well as ongoing operations.

**205** Similar to floating production installations above, classification can be useful for some of this retrospective design and construction verification under classification. Further design and construction verification will only be required where not originally identified or suitable under classification, or where systems require modification for use in the UK.

**206** UK regulations therefore recommend that mobile offshore units are designed and built with verification requirements in mind. These will simplify acceptance for operation in UK waters, and avoid the need for major remedial action by duty holder.

**D 300 Class Notation**

**301** Classed units/installations for which DNV provides verification services for establishing and performing a UK written scheme including all safety-critical elements may be assigned a class notation

**UKVS**

Details of the verification services shall be stated in the appendix to the class certificate.

## APPENDIX A SUMMARY OF KEY UK SAFETY COMPLIANCE MILESTONES

### A. Key UK Safety Compliance Milestones

<b>Table A-1 Key UK Safety Compliance Milestones</b>	
Design Principles SCR, PFEER	Provide Quantitative Risk Assessment. Provide PFEER Assessment. Justify selection of PFEER measures and performance standards as suitable against all relevant major accident hazards, i.e. consistent with assessment. Demonstration of ALARP.
Safety Case SCR	Submit formal safety case document. (Fixed installations will be required to justify design through design safety case). Comply with specific SMS and audit requirements.
Verification of Safety-critical elements SCR Regulation 15	Identify full range of safety-critical elements. Produce a formal record of elements and standards. Draw up formal written scheme for specific installation. Scheme to include initial and ongoing verification, and DNV reservations. Establish and include arrangements for review and revision of scheme. Operate scheme and verify safety-critical elements.
Examination of PFEER Measures PFEER Regulation 19	Establish written scheme of examination for measures provided against fire and explosion and for emergency response. Verify PFEER measures and additional items as required under PFEER Reg. 19
Examination of Personal Protective Equipment PFEER Regulation 18	Establish written scheme for examination and, where required, testing, of personal protective equipment (PPE) to be used in an emergency. Examination and testing to be performed by a competent person.
Emergency Response Facilities PFEER Regulations 8, 14, 15, 16, 17	Emergency response must be shown to be effective for foreseeable hazards. Provide additional protection/means wherever required by assessment. Provide rescue and recovery plan, including function and suitability of standby facilities.
Communications PFEER Regulation 11	Comply with specific requirements as given in Regulation.

