North West European HSE Case Guidelines for MODU’s

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International Association of Drilling Contractors
(North Sea Chapter)

North West European
HSE Case Guidelines for MODU’s

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- American Bureau of Shipping
- Det Norske Veritas
Introduction to NWE HSE Case Guidelines

Welcome

Welcome to the International Association of Drilling Contractors (IADC) North Sea Chapter (NSC) Health Safety & Environmental (HSE) Case Guidelines. These Guidelines have been prepared with the support of the NSC members to:

- Assist Drilling Contractors in preparing HSE Cases that will enable the Mobile Offshore Drilling Units (MODUs) to move between North West European (NWE) Coastal Areas without having to amend existing generic HSE Case documentation.
- Establish a harmonised foundation and framework to enable mutual acceptance of HSE Cases by NWE Coastal States.
- Demonstrate compliance with the International Safety Management (ISM) Code requirements.
- Capture the good practices and experience from ten years of operating within HSE Case regimes.

The Guidelines are not compulsory. While they are intended to provide an example of good practice, Drilling Contractors should select the format and content for their HSE Case that suits their organisational and operational needs.

IADC trust that the user will find the Guidelines useful and easy to follow. If errors, or inconsistencies are identified, or there are suggestions for improvement, then please submit relevant information to the IADC. (See details at end of this introduction – “Guideline Updates”).

Scope

The Guidelines have been developed to address the requirements of the:

- Extractive Industries Directive (EID) 92/91/EEC.
- Framework Directive (FD) 89/391/EEC.
- UK & Norwegian regulatory requirements which, while being very similar to the EID requirements, have been derived from separate backgrounds.
- IMO’s International Safety Management (ISM) Code.

With regard to the title of the document, each regime use different terms. For consistency these guidelines are referred to as the Health, Safety and Environmental (HSE) Case Guidelines to reflect the:

- Trend towards integrating the management of health, safety and environment.
- Requirements of the ISM Code and those North West European Coastal Area regulatory regimes that address environment in the same way as health and safety, (i.e. Denmark, Netherlands and Norway).

The guidelines may also be used as the basis for developing HSE Cases for operations outside Northwest Europe. However, when developing such a Case care should be taken to ensure that it reflects the relevant regulatory requirements and the operating culture.
Background

The North West European Coastal Area is a significant but geographically small exploration and production area. There are differing sets of national legislation and different authorities regulating offshore activities. With differing administrative requirements to satisfy, many Drilling Contractors find it daunting each time they move their units from one continental shelf to another.

The North Sea Offshore Authorities Forum (NSOAF), (i.e, the offshore regulators exercising jurisdiction over offshore oil and gas development activities within Europe), have targeted some areas that caused problems for effective regulations of health, safety and environment. The coastal states that moved away from highly prescriptive legal requirements, to more “goal setting” regimes, enabled them to exploit common ground in areas such as the HSE Case process.

The NSOAF established the MODU HSE Case Working Group in 1992, primarily to develop a mutual understanding of the law and assessment arrangement in each nation, with the view to ensuring the MODU owners did not need to submit entirely different “HSE Cases” to each of the national authorities.

It was decided that “HSE Case” commitments made by the owner or operator of a MODU whilst in one country could be communicated, subject to any legal restrictions, to each relevant North Sea authority. Thus, when MODU’s move across national boundaries, compliance to earlier commitments can be more effectively monitored.

Guideline Application & Status

The Guidelines are intended as a benchmark to assist Drilling Contractor, in preparing and reviewing HSE Cases that should satisfy the relevant requirements of all North West European Coastal States.

The Guidelines seek to identify specific Coastal State regulatory requirements that may be unique or are in addition to those normally accepted by other NSOAF member States.

It hoped that the Guidelines will be recognised by the Regulator as a reference on good practice and play a significant part in the regulatory assessment and acceptance processes.

While the Guidelines seek to offer advice on good practices and regulatory compliance, they are not an authoritative interpretation of each Coastal States regulatory requirements. Where questions of regulatory compliance arise, they must be resolved between the Drilling Contractor and the relevant Regulator.

Guideline Structure & Contents

The Guidelines have been developed in six parts and reflect a typical HSE Case structure, i.e.

Part 1 HSE Case Introduction
Part 2 Health, Safety & Environmental Management System – (HSE MS)
Part 3 MODU Description & Supporting Information
Part 4 Risk and Environmental Impact Assessments
Part 5 Emergency Response
Part 6 Justification for Continued Operation
Appendices:
1 – Reference Documents
2 – Abbreviations and Definitions
3 – Drawings & Schematics
4 – Coastal Area Legislative & ISM Code Index Indexes.

The Coastal State Regulatory and ISM Indexes have been prepared to link the various regulatory and code requirements with the relevant sections within the guidelines.

Presentation
One of the underlying principles of a HSE Case is that it is “owned” by the senior management, with input from members of the workforce and is accessible to all those who have responsibility for day-to-day operation of the MODU.

Therefore “owners” of the HSE Case need to develop and present a document that is compatible with their organisational needs and aligns with the company’s documentation systems.

IADC are not advocating a standard format for MODU HSE Cases. However, the Guidelines structure lends itself to be adopted as a template that can be used in developing or revising HSE Cases.

An HSE Case is generally presented as a stand-alone document. However, with the development of technology, other presentational means are also available and acceptable. While regulators generally require a HSE Case to be presented as a paper document much of the supporting material may be in electronic format.

Where electronic presentation of information is being considered, it is essential that details are discussed and agreed with the regulators prior to submission.

Assessment & Acceptance
Each of the NSOAF member states has their own requirements for assessing and accepting MODU HSE Cases. While the desire is for mutual recognition of HSE Case acceptances, this is not yet the reality.

The Regulatory Indexes contain information on the NSOAF member state assessment and acceptance arrangements.

Guideline Updates
Having invested in the development of the Guidelines, IADC (NSC) wish to further develop and maintain them so they remain a useful and respected source of information.

All users of the Guidelines are asked to notify IADC NSC of any errors or suggested improvements using the suggested format below.
The IADC NSC contact details are as follows:

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Suggested Format for Advising of Errors/Improvements:

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<td>Regulatory Authority Concerned (if applicable):</td>
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<td>Details of NWE HSE Case Error/Improvement</td>
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| Date: |
1 HSE CASE INTRODUCTION

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Introduction
Part 1 forms the introduction to the HSE Case.
It provides a brief overview of the Drilling Contractor, the MODU and the assessments that have been carried out. It also contains details of which Coastal State regulatory requirements the document complies with.
Part 1 also serves as a summary. It therefore needs to contain a sufficient level of information to provide an accurate overview of the more detailed information contained in the rest of the document.

NOTE: The Guidelines refer to HSE to reflect the:

➢ Trend towards integrating the management of health, safety and environment.
➢ Requirements of the ISM Code and those North West European Coastal Area regulatory regimes that address environment in the same way as health and safety, (i.e. Denmark, Netherlands and Norway).

Drilling Contractors who elect not to adopt an integrated system approach for their Case, do not need to address the “environmental” requirements and the term Health & Safety should be used in place of HSE.
Introduction

1.1.1 HSE Case Scope and Purpose

Objective
To describe the scope and purpose of the HSE Case in relation to it being a demonstration that:
- there is an effective management system in place for managing all hazards and environmental aspects
- all hazards have been identified
- risks associated with these hazards have been assessed and are ALARP
- relevant regulatory requirements are being complied with

What should be in the Case?
- Statement of the overall objectives as outlined above.

1.1.2 Drilling Contractor Overview

Objective
To provide an overview of the Drilling Contractor structure, culture and values.

What should be in the Case?
- Brief summary of the Drilling Contractor including:
  - name and address of head and field offices
  - history and relationships with parent company
  - global experience
  - experience of European operations
  - range of services provided
- Other relevant information relating to the company’s HSE values and vision.

1.1.3 MODU Details

Objective
To provide a brief description of the MODU to which the HSE Case refers to.

What should be in the Case?
- Brief details of:
  - MODU type
  - year and place of build
  - principal dimensions and capabilities
  - Flag State and Classification
  - types of operation carried on or from the MODU
  - maximum numbers of personnel on board
  - major upgrades

1.1.4 HSE Case Responsibilities

Objective
To define organisational, individual and team roles and responsibilities in relation to the development, implementation and review of the HSE Case.

What should be in the Case?

- Senior management position in the organisation with overall ownership and responsibility for the HSE Case.
- Position with responsibility for ensuring that the HSE Case is implemented and complied with.
- Position with responsibility for updating and periodically reviewing the HSE Case.
- Brief description of the scope of each of these responsibilities.

Additional Coastal State Requirements

UK

Under UK Safety Case Regulations the “owner” in relation to a mobile installation means the person who controls the operation of the installation; UK legislation places specific duties on that person.

1.1.5 HSE Case Revisions

Objective
To define criteria and arrangements for reviewing and updating the HSE Case.

What should be in the Case?

- Statement of the Drilling Contractor’s commitment to maintain the HSE Case as a living document.
- Criteria which would initiate a review of the HSE Case, e.g.:
  - changes in MODU operation or equipment which significantly change the overall risk levels
  - change in ownership or significant changes to manning levels or the organisational structure
  - significant changes in MODU equipment or layout
  - significant changes to the Drilling Contractors HSE MS
  - developments in risk assessment methodology or lessons learnt from an accident or incident that bring into question the results of existing risk assessments
  - a number of smaller changes which collectively merit a review of the HSE Case
  - changes in legislation
  - significant changes to company or industry standards and/or procedures referred to in the Case
  - maximum of a 3 year time interval between reviews.

1.1.6 HSE Case Structure

Objective
To provide an overview of the HSE Case document structure and content.

What should be in the Case?

- Very brief description of the content of each Part and Appendices that make up the HSE Case.
Where the HSE Case document is presented in electronic format, description of content structure and access arrangements.

1.2 SUMMARY OF COMPLIANCE

1.2.1 General

Objective
To provide a statement of compliance with the relevant Coastal State regulatory requirements.

What should be in the Case?
- List of Coastal States regulatory requirements that the HSE Case complies with.
- Reference to Appendix 4 containing the relevant “Coastal State Regulatory Indexes”.

1.2.2 HSE Management System

Objective
To confirm that an effective HSE management system has been implemented.

What should be in the Case?
- Statement confirming that an effective HSE management system has been implemented and is maintained.
- References to Part 2 of the HSE Case.

1.2.3 Hazard and Aspect Assessments

Objective
To provide confirmation that the Drilling Contractor has systematically:
- identified and assessed all hazards, (including major accident hazards), and environmental aspects associated with the MODU operations.
- reduced the risks to ALARP.

What should be in the Case?
- Confirmation that a systematic hazard and aspect identification and assessments have been carried out and risks are tolerable.
- Confirmation that risks have been reduced to ALARP.
- References to Part 4 of the HSE Case.

1.2.4 Fire & Explosion and Emergency Response

Objective
To provide summary of the detailed fire & explosion and emergency response assessments which have been undertaken.

What should be in the Case?
- Summary of the fire & explosion and emergency response studies which have been carried out.
- Details of the main recommendation and conclusions of these studies.
- Reference to the individual studies and relevant information contained in Parts 4 and 5 of the HSE Case.
**Additional Coastal State Requirements**

**UK & Netherlands**

Require as part of the assessment to define performance standards for equipment and systems. In UK legislation a performance standard is defined as: "a statement, which can be expressed in qualitative or quantitative terms, of the performance required of a system, item of equipment, person or procedure, and which is used as the basis for managing the hazard".

Performance standards should be described in terms of:

- **General Description** – An overview of the system (including their boundaries).
- **Functionality** – The systems purpose and how it works.
- **Availability** – Requirement to work on demand.
- **Interaction/Dependency** – Other systems that are required in order to function properly.
- **Survivability** – The ability to survive the incident that the system is designed to mitigate, control or detect.

The summary should include sufficient information of the assessments and in particular:

- Fire and explosion hazardous events and risks,
- Measures which have been selected to reduce these risks to ALARP,
- The performance standards which have been established to show that the arrangements are adequate.

This information may be provided by reference to other parts of the Case.

**1.2.5 Verification**

**Objective**

To confirm that there are suitable arrangements in place for independently verifying that the MODU’s HSE critical equipment and systems:

- have been identified
- are suitable for their intended purpose
- are maintained and are available for intended use and will achieve stated level of performance.

**What should be in the Case?**

- Summary of the arrangements that are in place for independent verification of the identification and suitability of safety critical systems and equipment.

**Additional Coastal State Requirements**

**UK**

Require the duty holder, i.e. Drilling Contractor who owns the MODU, to prepare and maintain a Written Scheme for the Verification of “safety critical elements”.

Further details of these requirements can be found in:

“IADC North Sea Chapter Guidelines for Preparing a MODU Verification Scheme”.

The Verification Scheme arrangements should be summarised in the Case.

**Netherlands**

The Netherlands requires an owner / operator of a MODU to identify their methodology for verifying the integrity, reliability and availability of all critical elements, in terms of required performance and how they will be maintained.
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Introduction

Today’s operating environment demands high standards of HSE performance. Drilling Contractors are required to have effective management systems in place, not only to ensure compliance with the relevant regulatory requirements, but also, to promote and develop a culture of continuous improvement.

One of the primary purposes of the HSE Case is to demonstrate that the Drilling Contractor has implemented arrangements for managing health safety and the environment.

The ISM Code, along with the Norwegian, Danish and Dutch regimes, also require demonstration that environmental aspects of the MODU operations are being effectively managed. Therefore, where the Drilling Contractor has an integrated health, safety and environmental management system, the integrated arrangements should be described within the HSE Case.

There are a number of options as to how the HSE MS can be presented within the HSE Case, all of which are equally valid. It is left to the Drilling Contractor to select the approach that suits the existing management structure and arrangements.

These Guidelines consider the HSE MS under the following elements:

**Policy & Objectives:**
The policy sets clear direction for the organisation to follow and the objectives provide targets against which HSE performance can be measured.

**Organisation:**
The organisation provides the structure, roles and responsibilities and arrangements for delivering the policy and planning provides the processes for achieving the objectives.

**Planning & Operations:**
Arrangements and processes which develop and implement the plans for providing and maintaining a safe working environment.

**Monitoring:**
Arrangements for line management and supervisors to ensure procedures are being complied with and for “measuring” performance.

**Audit & Review:**
Assessing the overall effectiveness of the HSE MS and reviewing performance against the objectives.

The HSE Case needs to contain sufficient information on each of these elements to demonstrate that effective HSE MS arrangements are in place. This is achieved through breaking each element up and defining for each sub element:

- **Objectives** - i.e. the relevance of the sub-element in respect of the overall HSE MS.
- **How can it be achieved?** – i.e. guidance on the way in which the objective can be achieved.
- **What should be in the Case?** – i.e. guidance on what should be described within the Case.

**NOTE:** The Guidelines refer to HSE to reflect the:
- Trend towards integrating the management of health, safety and environment.
- Requirements of the ISM Code and those North West European Coastal Area regulatory regimes that address environment in the same way as health and safety, (i.e. Denmark, Netherlands and Norway).

Drilling Contractors who elect not to adopt an integrated system approach for their Case, do not need to address the “environmental” requirements and the term Health & Safety should be used in place of HSE.
2.1 POLICY & OBJECTIVES

2.1.1 Policies

Objective
To demonstrate that there is clear organisational direction on HSE related issues.

How can this be achieved?
- By having Policy(ies) which clearly state the company’s direction and expectations.
- Through commitment to comply with the relevant HSE legislative requirements and recognised standards.

What should be in the Case?
- Details of the corporate health, safety & environmental policy(ies).
- Details of any “local” or “regional” policy(ies) and their relationship with the corporate policy.

2.1.2 Purpose of the Policy

Objective
To demonstrate that the purpose and relevance of the policy in relation to the overall management of the business is recognised.

How can this be achieved?
- By recognising the policy(s) as one of the company standards.

What should be in the Case?
- Statement recognising the relevance and significance of these policy(s) in the overall management of the business.

2.1.3 Objectives

Objective
To demonstrate that the organisation maintains HSE objectives against which it can assess its performance.

How can this be achieved?
- Developing strategic HSE objectives and cascading them through the organisation.
- Maintaining annual HSE programmes and plans that show how objectives are to be achieved.

What should be in the Case?
- Information on how HSE objectives are established and updated.
- The arrangements for cascading the objectives through the organisation.
2.2 ORGANISATION

2.2.1 Control

2.2.1.1 Organisation

Objective
To demonstrate that there is an organisational structure with sufficient resources to deliver the policy(ies) and achieve the HSE objectives.

How can this be achieved?
- Having a clearly defined organisational structure.
- Defining and assigning HSE responsibilities to positions within the organisation.
- Providing adequate resources for the continual and effective operation of the HSE MS.
- Regular review of the resource allocations.

What should be in the Case?
- Organisation charts showing the management and support team structure for delivering the policy and achieving the objectives.
- Details of responsibilities assigned to organisational positions.
- Arrangements for reviewing the structure and resource allocation.

2.2.1.2 Senior Management Responsibility & Accountability

Objective
To demonstrate senior management’s commitment to continuous development in HSE performance.

How can this be achieved?
- Senior management placing HSE on an equal footing with other aspects of business performance.
- Appointing a senior management representative who, irrespective of other responsibilities, shall have defined roles, responsibility & authority for: development & implementation of the HSE Management System; and reporting on HSE performance to senior management.
- Management demonstrating commitment by providing the resources to develop, operate and maintain an effective HSE MS.
- Management displaying visible commitment, through active participation in HSE initiatives and thereby ensuring it is embedded into the company culture.
- Recognising and sharing industry best practices through participation in industry initiatives.
- Interaction with clients, contractors and other external stakeholders on HSE related issues.

What should be in the Case?
- A summary of senior management's pro-active involvement in HSE activities including information on the Senior HSE Manager role(s).
- Assurance that sufficient resources will be provided for HSE activities by line management and individuals.
- Senior management signature of acceptance of responsibility for the HSE Case.
2.2.1.3 Line Management Responsibility

Objective
To demonstrate that HSE is an integral part of the line management's responsibility and accountabilities.

How can it be achieved?
➢ By defining line management's responsibilities, accountabilities and authorities for HSE.

What should be in the Case?
➢ Details of line management HSE responsibilities and accountabilities.

2.2.1.4 Individual Responsibility

Objective
To demonstrate that all individuals know their responsibilities for HSE issues.

How can it be achieved?
➢ Ensuring individuals are informed of their assigned responsibilities and accountabilities.

What should be in the Case?
➢ The arrangements for ensuring employees, contractors and 3rd parties are informed of their individual responsibilities.

2.2.1.5 Support on H, S & E Matters

Objective
To demonstrate there are adequate HSE support resources available to the organisation.

How can this be achieved?
➢ Appointing competent individuals to carry out specialist HSE functions.
➢ Providing appropriate documentation, training and development for line managers and supervisors in industry and company HSE standards and practices.

What should be in the Case?
➢ The arrangements and responsibilities for providing HSE support.

2.2.1.6 Document Management

Objective
To demonstrate that relevant, correct and up to date HSE documentation is readily accessible.

How can this be achieved?
➢ Maintaining an effective document management system.
➢ Having clearly defined criteria for developing and revising documents.
➢ Allocating responsibilities and authorities for reviewing and issuing documents.
➢ Establishing arrangements for issuing, accessing and withdrawing documents.
➢ Provision of arrangements to retain obsolete documents for legal and/or knowledge preservation purposes.
What should be in the Case?
- Description of the document management system.
- Arrangements and responsibilities for ensuring that HSE documentation is revised and updated to reflect changes in organisation, systems, equipment etc.

2.2.1.7 Complying with Legislation

Objective
To demonstrate that relevant regulatory requirements are complied with.

How can this be achieved?
- Identifying relevant regulatory requirements.
- Ensuring arrangements are in place to comply with the requirements.

What should be in the Case?
- Arrangements and responsibilities for identifying and advising on relevant regulatory requirements.
- Arrangements for ensuring that the requirements are being complied with.

2.2.2 Co-operation

2.2.2.1 Workforce Involvement

Objective
To demonstrate that the requirements and benefits of active workforce participation in HSE are recognised.

How can this be achieved?
- Promoting and recognising active staff involvement and participation in HSE.

What should be in the Case?
- Statement recognising the requirements and benefits of active workforce participation in HSE.
- Arrangements for encouraging and promoting workforce participation.

2.2.2.2 Safety Representatives & Safety Committees

Objective
To demonstrate that suitable safety representative and safety committee arrangements have been established and effectively implemented.

How can this be achieved?
- Encouraging and supporting the establishment of formal safety representative and safety committee arrangements.

What should be in the Case?
- Arrangements for selection of Safety Representatives.
- Training and other support given to Safety Representatives.
- Role of the Safety Representative.
- Frequency of formal Safety Committee Meetings and arrangements for keeping minutes and tracking follow up actions.
Additional Coastal State Requirements

Each Coastal State has specific requirements regarding the selection and roles of the Safety Representatives.

2.2.2.3 Clients and 3rd Parties

Objective

To demonstrate that safe and effective working relationships are established with clients and 3rd Parties with regard to HSE Management.

How can this be achieved?

- On contract award, identifying and agreeing HSE interfaces and responsibilities.
- Communicating the agreed arrangements to the relevant personnel so they know their responsibilities on the interface arrangements.
- Monitoring and regularly reviewing the effectiveness of the interface arrangements jointly with the client and 3rd parties.
- By providing systems for receiving, documenting and responding to relevant communications from external interested parties (clients, regulator, stakeholders, etc).

What should be in the Case?

- Arrangements for identifying and agreeing HSE interfaces at each stage of the contract.
- Arrangements for communicating and involving relevant personnel at the appropriate levels in the interface arrangements.
- Arrangements for ensuring that interface arrangements are monitored and reviewed with the client and 3rd parties.

2.2.3 Communication

2.2.3.1 HSE Meetings

Objective

To demonstrate that there is a suitable meeting structure for communicating HSE information throughout the organisation.

How can this be achieved?

- Establishing an HSE meeting structure for cascading HSE information and promoting intra-company learning.

What should be in the Case?

- Description of the HSE meeting structure.

2.2.3.2 Industry Liaison

Objective

To demonstrate that the organisation participates in cross industry learning through active participation with industry bodies and events.

How can this be achieved?

- Membership of recognised industry bodies, e.g. IADC, and participation in industry initiatives and events.

What should be in the Case?

- Information on membership of industry bodies.
2.2.3.3 HSE Alerts & Bulletins

Objective
To demonstrate that there are arrangements for processing HSE alerts and bulletins.

How can this be achieved?
- Establishing arrangements for obtaining and distributing HSE alerts issued by equipment manufacturers and other outside sources.
- Sharing HSE information with others.

What should be in the Case?
- Arrangements for evaluating, handling and responding to HSE alerts and bulletins.

2.2.4 Competence

2.2.4.1 Selection of Personnel

Objective
To demonstrate that there is a staff selection process that ensures personnel have the appropriate qualifications, experience and ability to perform their job safely and effectively with regard to HSE management.

How can this be achieved?
- Identifying the positions with HSE critical responsibilities.
- Defining the HSE competencies required for each of these critical positions.
- Assessing the individual competency as part of the selection process.

What should be in the Case?
- Details positions that have a critical impact on HS&E e.g. OIM, Toolpushers etc..
- Information on the selection process for personnel filling these positions.

2.2.4.2 Selection of Contractor Personnel

Objective
To demonstrate that only contractors with similar HSE values and standards will be used.

How can this be achieved?
- By applying the same selection criteria and standards to the selection of contractor staff filling critical HSE positions.

What should be in the Case?
- Statement that the same selection criteria are used for contract staff filling critical HSE positions as is used for company personnel.

2.2.4.3 Competence Assessment & Records

Objective
To demonstrate that personnel have the necessary knowledge, skills, abilities and attitudes to perform their job safely and effectively and with due regard for the environment.

How can this be achieved?
- Establishing arrangements for identifying both the general and specific (e.g. man-riding, well control, fire team leader etc) competencies required for each job function.
- Assessing individual competencies against those defined for the job.
Identifying those individuals assessed as being “not yet competent” and who require training as a result.

Establishing a performance appraisal system for personnel holding critical HSE positions.

Maintaining records of each assessment and appraisal.

What should be in the Case?

- Description of the competence assessment arrangements.
- Description of the performance appraisal system, including details of the positions covered by the system.

### 2.2.4.4 Training

**Objective**

To demonstrate that relevant training is provided as part of personal competency development and that this training complies with industry standards.

**How can this be achieved?**

- Defining compulsory and advisable training requirements for each job function.
- Identifying individual training needs from the competence assessments.
- Establishing arrangements for providing relevant training.
- Maintaining records of training undertaken.

**What should be in the Case?**

- Details of how training needs are identified.
- Arrangements for ensuring that relevant training is provided and recorded.

### 2.2.4.5 Induction Programme

**Objective**

To demonstrate that there is a structured induction program to ensure all personnel are informed of the Drilling Contractor’s HSE policy, commitment and arrangements.

**How can this be achieved?**

- Identifying the key HSE information that all personnel must know.
- Developing an induction programme to communicate the information.
- Developing a system for monitoring checking that information has been communicated and understood e.g. individual assessments.

**What should be in the Case?**

- Details of the induction programme for all new staff.
- Arrangements for refresher training for existing staff.
2.3 PLANNING & OPERATIONS

2.3.1 Planning

2.3.1.1 HSE Case Preparation

Objective
To demonstrate that the significance of the HSE Case in relation to the overall management of HSE is recognised.

How can this be achieved?
- Applying hazard identification and risk and impact assessment studies as described in Part 4.
- Using the studies in assessing the suitability of the arrangements for managing risks and impacts and identifying opportunities for continuous improvement.
- Periodically updating the identification and assessment of risks and impacts.

What should be in the Case?
- Recognition of the HSE Case as a key document in the management of HSE.

2.3.1.2 Safe Working Practices

Objective
To demonstrate that HSE issues associated with tasks, activities and working areas are being effectively managed.

How can this be achieved?
- Developing and implementing procedures which enable the organisation to identify hazards, assess risks and establish controls to ensure that the risks are as low as reasonably practicable (ALARP).
  (Note These procedures are often referred to as Task Risk Assessments, TRA’s, Job Hazard Analysis, JHA’s, or Job Safety Analysis JSA’s).
- Training personnel on the application of the procedures.
- Referring to relevant sources of information and experience for carrying out similar job e.g. procedures, HSE alerts, industry guidance etc.
- Applying the procedures as appropriate for all routine and non-routine MODU activities and operations involving, where appropriate, client and 3rd party representatives.
- Establishing arrangements for recording, communicating and reviewing the assessments.

What should be in the Case?
- See Part 4.3.

2.3.1.3 Environmental Protection.

Objective
To demonstrate sound environmental performance by controlling the environmental impact of activities and services, and taking into account defined environmental policies and best available practices and technology.
How can this be achieved?

- Ensuring that there are policies, objectives and plans (see Part 2.1) that address the need to:
  - comply with relevant environmental legislation and standards
  - manage any significant adverse environmental impacts

- Ensuring environmental requirements are adequately addressed in the shared HSE management processes and supporting documentation, e.g.:
  - HSE plans and programmes
  - job descriptions and responsibilities
  - training and competence
  - internal communication processes
  - operational control procedures and work instructions
  - identification of appropriate Key Performance Indicators

- Developing specific processes to support the implementation and delivery of the environmental plans and programmes, e.g.:
  - environmental monitoring plans
  - measurement and estimation of discharges (inc. laboratory & calibration procedures and identification of appropriate ‘emissions factors’, etc).
  - spill preparedness and response plans

- Establishing a process for identifying all elements of the MODU services and activities that can interact with the environment (environmental aspects).

- Recognising the significance of the nature and location specific sensitivities of the receiving environment in identifying significant adverse environmental impacts.

- Clarifying responsibilities with the client for identifying and assessing site-specific environmental conditions.

- Co-operating with the client on establishing location, or well specific, significant adverse environmental impact criteria.

- Reviewing the MODU environmental aspects against the site specific criteria and highlight those that may result in a significant adverse environmental impact.

What should be in the Case?

- Confirmation that environmental policies, objectives and targets are clearly defined either as part of the organisations integrated HSE policies and objective statements, or as separate documents.

- Confirmation that the shared HSE management processes and documentation take account of the environment.

- Details of any environmental specific management processes and programmes.

- Reference to the MODU environmental aspects registers - (See Part 4).

- Arrangements for liaising with the client for:
  - identifying the nature and sensitivities of the location specific receiving environment
  - establishing location specific significant adverse impact criteria
  - reviewing the MODU and well specific aspects against the established criteria

2.3.1.4 Management of Wastes

Objective

To demonstrate compliance with legal requirements and company policies and standards in relation to waste management.
How this can be achieved?
- Identifying regulatory requirements.
- Development of generic ‘waste inventories’.
- Identifying waste minimisation opportunities.
- Evaluating other waste management and disposal options.
- Developing and implementing location and well specific waste management plans.
- By establishing processes to review and update the plan.

What should be in the case?
- Details of the company’s waste management policies and objectives.
- Details of the waste management plan.

2.3.1.5 HSE Procedures

Objective
To demonstrate that relevant operating procedures are available which define how critical HSE tasks and activities should be conducted.

How can this be achieved?
- Defining criteria for determining the critical HSE tasks and activities that require written procedures.
- Developing procedures that are relevant and developed from recognised good industry practices and ensuring that they are clear, concise and unambiguous.
- Ensuring that procedures are effectively implemented and used.
- Periodically reviewing procedures.

What should be in the case?
- Arrangements for developing, maintaining, implementing and reviewing written procedures.
- An annex containing details of relevant HSE procedures.

2.3.2 Operations Management

2.3.2.1 MODU Organisation

Objective
To demonstrate that there is a defined structure for managing HSE on the MODU in which roles and responsibilities are defined.

How can this be achieved?
- Developing a structure in which the OIM has overall control and responsibility for HSE.
- Providing adequate organisational support for the OIM in which individual roles and responsibilities are defined.

What should be in the Case?
- An organisation chart showing the OIM and his management/supervisory team.
- Roles and responsibilities for the members of the management/supervisory team.
2.3.2.2 Shore-base & Divisional Support

Objective

To demonstrate that there is an adequately resourced onshore support organisation.

How can this be achieved?

- Defining the key onshore support functions required for safe and efficient operations and environmental protection.
- Ensuring these support functions are staffed by competent people with access to the resources necessary to do their job.

What should be in the Case?

- Description of the onshore support organisation.

2.3.2.3 Drilling

Objective

To demonstrate that suitable arrangements are in place to ensure all drilling and well control operations will be carried out safely and efficiently and with minimum impact on human health & the environment.

How can this be achieved?

- Ensuring personnel involved in the operations are competent.
- Providing relevant drilling and well control procedures.

What should be in the Case?

- Information on the key competency or training requirements for members of drill crew, including well control qualifications.
- Arrangements for reviewing and agreeing with the client the drilling and well control procedures to be used.
- Arrangements for communicating with client representatives and 3rd party service crews.

2.3.2.4 Maintenance

Objective

To demonstrate that arrangements are in place which ensure that the MODU and its equipment, and in particular those systems/elements which are HSE critical, are effectively maintained.

How can this be achieved?

- Establishing a maintenance management system that includes the MODU structure, systems and equipment.
- Identifying the HSE critical systems/elements.
- Defining the performance required from each HSE critical system.
- Developing schedules and routines that ensure that the HSE critical performance will be maintained.
- Performing and documenting maintenance as per the schedule.

What should be in the Case?

- Description on the maintenance management system.
- Arrangements for identifying the HSE critical systems and determining their performance requirements (See Part 1.7.5).
Detail on how the testing intervals within the Preventive Maintenance System are determined.

2.3.2.5 

**Engineering Projects**

*Objective*

To demonstrate that HSE is a key consideration in engineering projects.

*How can this be achieved?*

- Ensuring hazard and aspect identification and risk and impact assessments are included as part of the project planning and review process.
- Developing and establishing appropriate performance standards.
- Developing project plans and work packs that include relevant HSE information.

*What should be in the Case?*

- Description on the engineering project management process, including details of hazard and aspect identification and risk and impact assessment requirements.

2.3.2.6 

**Marine Operations**

*Objective*

To demonstrate that suitable arrangements are in place to ensure all marine operations will be carried out safely and efficiently and with minimum impact to the environment.

*How can this be achieved?*

- Performing location specific assessments e.g. seabed, mooring etc.
- Ensuring personnel involved in the operations are competent.
- Providing relevant marine operating procedures.
- Providing supervision for critical activities.

*What should be in the Case?*

- Arrangements for carrying out location specific assessments.
- Information on the key competency requirements for members of marine crews.
- Information on the marine procedures manuals.

2.3.2.7 

**Lifting Operations & Material Handling**

*Objective*

To demonstrate that all lifting operations and material handling on the MODU are carried out safely and with minimum risk to personnel and the environment.

*How can this be achieved?*

- Providing suitable lifting equipment.
- Proper maintenance, inspection, testing, marking and colour coding of lifting equipment.
- Training of personnel involved in lifting operations.
- Proper planning, with risk assessments, of lifting operations.

*What should be in the Case?*

- Summary of how lifting operations are managed including reference to:
  - the competence of crane operators, banksmen, slingers, etc.
  - inspection and colour coding systems
- scope of risk assessments carried out
- communication and supervision arrangements for different types of lifting operations.
- manual handling procedures.

2.3.2.8 Medical Support

Objective
To demonstrate that suitable medical support arrangements are in place.

How can this be achieved?
- Establishing arrangements for provision of onshore medical support.
- Providing suitably qualified Rig Medic and first-aiders with appropriate facilities, equipment and drugs with onshore medical back up.

What should be in the Case?
- Details of the onshore medical support arrangements.
- Information on the MODU’s medical & first aid arrangements.

Additional Coastal State Requirements
Each Coastal State has specific requirements regarding medical support arrangements, including, qualifications of the medic, drugs etc.

2.3.2.9 Catering & Accommodation

Objective
To demonstrate that suitable arrangements are in place for looking after the health and welfare of all personnel while onboard the MODU and minimising environmental harm.

How can this be achieved?
- Providing clean and comfortable accommodation and rest facilities.
- Controlling noise levels, air quality and other environmental factors.
- Storing and preparing food in high standard hygienic conditions.
- Providing drinking water of appropriate quality and quantity.
- By appropriate disposal of food wastes and scraps.

What should be in the Case?
- Arrangements for ensuring accommodation and rest facilities are maintained to appropriate standards.
- Arrangements for ensuring high standards of hygiene for storage, handling and preparation of food and drink.
- Arrangements for disposal of food wastes and scraps.

2.3.2.10 Helicopter Operations

Objective
To demonstrate that suitable arrangements are in place to ensure all helicopter operations on, or in connection with, the MODU will be carried out safely and efficiently.

How can this be achieved?
- Appointing suitably qualified Helicopter Landing Officers to supervise and co-ordinate all heli-deck operations.
- Providing relevant heli-deck procedure manuals addressing both routine and emergency heli-operations.
- Maintenance & Inspection of heli-deck and associated safety equipment.

What should be in the Case?
- Information on the heli-deck operation arrangements

2.3.3 Management of Change

Objective
To demonstrate HSE implications associated with changes in organisation, procedures or equipment are assessed as part of the change control process.

How can this be achieved?
- Ensuring there are good reasons for change, e.g. as part of continuous improvement.
- Applying hazards and risk management principles as part of the change process.
- Defining the roles and responsibilities for initiating and authorising changes.
- Ensuring open consultation and effective communication with those affected by the change.
- Ensuring acceptance and ownership of those identified as being responsible for critical HSE activities.

What should be in the Case?
- Description of the change management procedures.

2.3.4 Permit to Work System

Objective
To demonstrate that there is an effective PTW system for managing non-routine and higher risk tasks and activities.

How can this be achieved?
- Defining responsibilities and administrative arrangements for the system.
- Defining the criteria for determining the tasks and activities requiring a PTW.
- Ensuring hazards and controls identified during the TRA/JHA/JSA process are recorded on the PTW.
- Communicating PTW requirements through pre-tour meetings and “toolbox talks”.
- Training personnel in the application of the system.

What should be in the Case?
- A summary of the PTW arrangements.
- Criteria determining when a PTW is required.
- Arrangements for pre-tour meetings and “toolbox talks”.
- Details of the PTW training provided.

2.3.5 Simultaneous & Combined Operations

2.3.5.1 Bridging Document

Objective
To demonstrate that when one or more companies have to co-operate, that the management system interfaces will be assessed and documented in a bridging document.
**2.3.5.2 Risk Assessments**

**Objective**
To demonstrate that any changes to risk profiles caused by simultaneous or combined operations will be identified, assessed and reduced to ALARP.

**How can this be achieved?**
- Carrying out a hazard and aspect identification exercise of the proposed operations to identify new or additional hazards not already addressed in the HSE Case.
- Reviewing and revising existing risk assessments to reflect circumstances created by the simultaneous or combined operations.
- Assessing the revised risk results in relation to the principles of ALARP.
- Determining if operations can proceed.
- Communicating relevant information to personnel involved in the operations.

**What should be in the Case?**
- Arrangements for carrying out reviews and revisions of risk assessments when planning simultaneous or combined operations not covered by Part 4 of the HSE Case.

**2.3.6 Logistics Management**

**2.3.6.1 Personnel Tracking**

**Objective**
To demonstrate that there are administrative arrangements in place to control and coordinate the movement of people to/from the MODU.

**How can this be achieved?**
- Maintaining an onshore administrative capability to plan and co-ordinate the personnel movements with the MODU, client, Drilling Contractor and helicopter carrier.
- Maintaining administrative capability to record arrivals and departures of people on board (POB) and provide related information.

**What should be in the Case?**
- Description of the administrative arrangements for maintaining personnel movements and POB data.
2.3.6.2 Adverse Weather Policies

Objective
To demonstrate that there are clearly defined adverse weather policies on limiting logistic operations.

How can this be achieved?
- Establishing criteria for implementing precautionary measures and imposing operational restrictions.

What should be in the Case?
- Summary of adverse weather policy.

2.3.6.3 Attendant Vessels

Objective
To demonstrate that hazards and environmental aspects associated with attendant vessels are effectively managed.

How can this be achieved?
- Co-operating with the client on the management of support vessels.
- Co-ordinating vessel movements in and around the MODU’s safety zone.
- Involving the standby vessel in regular drills and exercises.

What should be in the Case?
- Arrangements for co-operating and co-ordinating support vessels activities.

2.3.7 Hazardous & Radioactive Substances

Objective
To demonstrate that suitable arrangements are in place for storing, handling and use of hazardous substances.

How can this be achieved?
- Ensuring relevant Material Safety Data Sheets are supplied with all hazardous substances.
- Providing dedicated storage facilities, including appropriate bunding/secondary containment for liquids.
- Carrying out suitable risk assessments on how substances are to be stored, used and transported to reduce potential exposure.
- Ensuring existence of a system to track and document usage and discharge of chemicals in line with national requirements.
- Ensuring suitable equipment, including personal protective equipment, provided to minimise exposure is maintained, available for use and used when appropriate.

What should be in the Case?
- Arrangements for storing, handling and using chemicals and other hazardous substances.
- Arrangements for the selection, maintenance and use of PPE.
Additional Coastal State Requirements

Denmark

Paints and similar chemicals must be supplied with a number code indicating the hazards of inhalation and ingestion.

2.3.8 Procurement & Contractor Management

2.3.8.1 Procurement Process

Objective

To demonstrate goods and services satisfy the relevant HSE standards.

How can this be achieved?

- Assessing vendor HSE/QA arrangements as part of selection process.
- Reviewing of purchased goods and services against defined standards.

What should be in the Case?

- Arrangements for selection and monitoring of vendor performance.
- Arrangements for reporting design or manufacturing defects to vendors.

2.3.8.2 Contractor Management

Objective

To demonstrate that contractor HSE performance is effectively managed.

How can this be achieved?

- Assessing contractor HSE standards and performance as part of the contractor selection process.
- Identifying, agreeing and communicating the interfaces and responsibilities with contractors.
- Monitoring and auditing of contractor performance.

What should be in the Case?

- Information on contractor HSE selection criteria.
- Arrangements for ensuring HSE MS interfaces between the Drilling Contractor and contractor are identified and agreed.
- Arrangements for monitoring and auditing contractor performance

2.3.9 Emergency Response

Objective

To demonstrate that emergency plans and arrangements are in place to provide effective response to all foreseeable emergencies and spillages.

How can this be achieved?

- Identifying foreseeable emergency scenarios (See Part 4).
- Ensuring that for each scenario, emergency plans and procedures for both onshore and offshore are developed and maintained.
- Establishing arrangements for calling on support from external agencies and resources.
- Ensuring personnel are properly trained in crisis management and emergency/oil spill response as appropriate.
Establishing and maintaining a programme of drills and exercises to ensure that arrangements are regularly practised and tested.

What should be in the Case?

- Arrangements for developing and maintaining the emergency and oil spill plans and procedures, highlighting links to the assessment studies (Part 4).
- Details of arrangements for establishing contact with external agencies and resources.
- Arrangements for ensuring the competence of personnel with emergency response responsibilities.
- Details of the emergency drills and exercise programme.

2.4 MONITORING COMPLIANCE & EFFECTIVENESS

2.4.1 Active Monitoring

Objective
To demonstrate arrangements are in place for monitoring HSE performance.

How can this be achieved?

- Ensuring HSE performance is an item on the agenda at senior management meetings.
- Line managers and supervisors monitoring compliance with procedures and standards.
- Establishing programmes of workplace inspections.
- Identifying proactive and reactive performance measures which provide an indication of current performance and act as indicators of future performance.
- Regularly assessing the performance, identifying trends and implementing improvements.

What should be in the Case?

- Information on line managers and supervisors responsibilities for continuous monitoring of compliance with HSE procedures and standards.
- Details of workplace inspection schemes.
- Arrangements for monitoring legislative compliance.
- Details of the proactive (leading) HSE performance indicators that have been adopted.
- Details of arrangements for recording and analysing HSE performance.
- Details of the arrangements for discussing and reviewing performance at the different levels within the organisation.

2.4.2 Incident Reporting & Investigation

Objective
To demonstrate that there are arrangements for reporting, investigating and learning from accidents, incidents, and work related diseases.

How can this be achieved?

- Maintaining procedures for reporting incidents including those to do with environmental management (spillage, waste non-conformance, etc).
- Developing criteria for establishing incident potential.
 Establishing procedures for investigating and analysing incidents, and work related diseases.
Providing relevant training to personnel involved in investigation.
Identifying immediate and root causes of an incident.
Implementing recommendations arising from investigations.

What should be in the Case?
- A summary of the incident reporting and investigation arrangements.
- Details of the incident potential criteria that is used.
- Information on the training provided for investigation team members.
- Information on the methodology adopted to identify root causes.
- Description of the arrangements for tracking actions arising from investigations.

2.4.3 Observation Systems

Objective
To demonstrate that members of the workforce are encouraged to monitor HSE practices through a structured observation system.

How can this be achieved?
- Implementing a suitable observation and monitoring system.
- Providing training and instruction on the application of the system.
- Taking action on the issues identified through the system.
- Providing feedback to people raising issues through the system.

What should be in the Case?
- Details of the observation system.
- Training and instruction given to staff and contractors on its application.
- Details of the arrangements for processing and reviewing issues identified through the system.

2.4.4 Verification

Objective
To demonstrate that arrangements are in place for verifying HSE critical systems remain effective.

How can this be achieved?
- Establishing a suitable verification scheme.

What should be in the Case?
- See Part 1.2.5.

2.4.5 Certification

Objective
To demonstrate that:
- The MODU complies with flag state and classification requirements.
Where applicable the management system has been audited and certified to recognised standards.

How can this be achieved?

- Maintaining classification and flag state standards and requirements.
- When considered appropriate, maintaining independent certification of the HSE MS.

What should be in the Case?

- Details on current status of both MODU and management system accreditation/certification.

2.4.6 Environmental Monitoring & Measurement

Objective

To demonstrate that the environmental impact of discharges & emissions are being adequately monitored & measured

How can this be achieved?

- Where discharges and emissions are measured by the use of laboratory techniques; to ensure that such techniques (including calibration) are documented and adhered to.
- Where discharges & emissions are estimated; to ensure that the methods of estimation (emissions factors, dispersion models, etc) are documented and appropriate.
- Where discharges are directly measured, to ensure that measurement equipment is being correctly operated and calibrated according to documented procedures.
- Where background environmental monitoring is taking place (transect-based sampling, etc); to ensure that sampling and analysis procedures are documented and based on sound scientific principles.

What should be in the Case?

- Details of the arrangements for monitoring any discharges and emissions which have the potential to cause significant adverse environmental impacts.

2.5 AUDIT & REVIEW

2.5.1 Audit

Objective

To demonstrate effective arrangements are in place for auditing the HSE MS arrangements.

How can this be achieved?

- Developing and maintaining an audit programme.
- Ensuring competent auditors are appointed to lead audits.
- Establishing arrangements for following up and implementing audit findings.
- Communicating results of audits to senior management.

What should be in the Case?

- Details of the audit programme.
- Criteria for selection and training of audit team members.
- Details of the arrangements for planning, execution and reporting HSE audits.
- Details of the arrangements for tracking actions arising from audits.
2.5.2 Review

Objective
To demonstrate that senior management periodically review the effectiveness of the HSE MS arrangements against the policies, objectives and plans.

How can this be achieved?

➢ Establishing arrangements for senior management to periodically review the overall HSE MS performance.
➢ Ensuring that the review has ready access to all relevant information and data.
➢ Ensuring the review findings is a key input to the development of the following year’s HSE objectives and plans.
➢ Documenting the results of the Review.

What should be in the Case?
➢ Details of the arrangements for carrying out the management review of the HSE MS.
➢ Arrangements for reporting the review findings, evaluating outcomes and processing recommendations.

ATTACHMENTS

• Document Control System & Document Hierarchy
  i.e. Description or diagram showing the hierarchy of HSE documents.
• Listing of HS & (E) MS Support Documents & Manuals
  i.e. Titles of the companies main HS&E procedures, manuals, etc
• Organisation Charts
  i.e. Organigrams showing the MODU and onshore support organisations.
## 3 MODU DESCRIPTION & SUPPORTING INFORMATION

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Introduction
The HSE Case should contain supporting information about the MODU, its systems and equipment, the activities likely to be carried out and the environmental conditions in which it can operate. The information should relate to the hazards and environmental impacts that have been identified in Part 4 of the HSE Case and the listing of HSE critical equipment and systems.

In drafting this part of the HSE Case a balance has to be struck between providing sufficient relevant information without extensive descriptions.

The HSE Case should provide sufficient detail to enable an informed reader to recognise:
- the source and nature of the hazards with the potential to cause an accidents, diseases and those aspects which have the potential to give rise to a significant adverse impact on the environment.
- the arrangements and equipment that have been provided to control or mitigate against an accident or environmental impact.

To avoid extensive descriptions references should be made to other supporting documents.

NOTE: The Guidelines refer to HSE to reflect the:
- Trend towards integrating the management of health, safety and environment.
- Requirements of the ISM Code and those North West European Coastal Area regulatory regimes that address environment in the same way as health and safety, (i.e. Denmark, Netherlands and Norway).

Drilling Contractors who elect not to adopt an integrated system approach for their Case, do not need to address the “environmental” requirements and the term Health & Safety should be used in place of HSE.
3.1 GENERAL INFORMATION

3.1.1 MODU Details

Objective
To provide an overview of the MODU to which the HSE Case refers to.

What should be in the Case?
- MODU type.
- Where and when built.
- Description of the activities normally performed on, or from the MODU.
- Manning levels.

3.1.2 Classification and Registration

Objective
To demonstrate that the MODU complies with internationally recognised Classification and Flagstate standards.

What should be in the Case?
- Details of the Class Society and MODU’s Classification.
- Country of registration.
- Status of the Flag State statutory certification, including, where appropriate, ISM Code compliance.

3.1.3 MODU Layout

Objective
To provide information of the general layout, and relative positions of primary equipment and HSE systems.

What should be in the Case?
- Description of the MODU layout with specific reference to features that significantly influence the overall risk.
- Layout drawings showing relative positions of the main equipment and HSE systems.

3.1.4 Modifications & Upgrades

Objective
To provide information of any modifications or upgrades which have significantly changed the MODU’s operating capabilities or enhanced its HSE standards.

What should be in the Case?
- Description, with approximate dates, of any modifications or major upgrades.

3.1.5 Selection of Equipment

Objective
To describe how the Drilling Contractor selects equipment that is considered to be HSE critical.
What should be in the Case?

- Summary of how HSE critical equipment and systems have been identified (See Part 1.7.5).
- Description of arrangements for ensuring HSE critical systems comply with relevant codes and standards e.g. API, ISO, NACE, EC, etc.

3.2 PRIMARY STRUCTURE

3.2.1 Environmental Operating Limits/Design Criteria

Objective
To state the range of environmental operating conditions that the MODU has been designed to operate within.

What should be in the Case?

- Information of the Codes and Standards to which the MODU was designed and constructed.
- Limiting environmental conditions i.e. wind, temperature, sea states and water depths.

Note: Other operating limits e.g. drilling, helicopter, lifting operations are considered under the relevant headings.

3.2.2 Structural Integrity

Objective
To show that the MODU’s structures have been designed for the stated operating and environmental conditions.

What should be in the Case?

- Description and, where appropriate, fire ratings of the main structural components.
- Details of:
  - MODU’s design life expectancy.
  - primary dimensions and construction materials.
  - integrity analyses including, where appropriate, fatigue studies.
  - corrosion monitoring and protection systems.
  - leak detection systems.
  - inspection/NDT and survey programmes.

3.2.3 Marine Integrity - Self Elevating Units (Jack Ups)

3.2.3.1 Stability (Jack Ups)

Objective
To demonstrate that the MODU’s stability characteristics are suitable for the stated operating environment.

What should be in the Case?

- Details of standards and criteria used in determining the intact and damage stability characteristics.
- The intact stability results.
- Damage stability limits and conditions.
Information on weather and watertight closures, with details of the open/close status monitoring.

3.2.3.2 Ballast and Bilge Systems (Jack Ups)

Objective
To describe the arrangements for both normal and emergency ballasting and bilge operations.

What should be in the Case?
- Description, with line drawings, of normal and emergency the ballast and bilge arrangements.

3.2.3.3 Foundation Stability (Jack Ups)

Objective
To describe the arrangements for assessing foundation stability.

What should be in the Case?
- Arrangements for:
  - carrying out seabed surveys.
  - calculating leg bending moments, penetration, pre-loading etc.
  - pre-loading when on location.
  - monitoring conditions while on location.

3.2.3.4 Towing (Jack Ups)

Objective
To describe the arrangements for moving the MODU between locations.

What should be in the Case?
- Details of pre-move procedures including securing of deck cargo.
- Description of MODU towing arrangements.
- Details of the pre-movement and contingency planning arrangements and criteria, including command structure.
- Details of the arrangements for selecting assisting vessels and equipment.

3.2.4 Marine Integrity - Column Stabilized Units (Semi-Submersibles)

3.2.4.1 Stability (Semi-Submersibles)

Objective
To demonstrate that the MODU’s stability characteristics are suitable for the stated operating environment.

What should be in the Case?
- Details of standards and criteria used in determining the intact and damage stability characteristics.
- The intact stability results for operating, survival and transit conditions.
- Details of the damage stability limits and conditions.
- Information on weather and watertight closures, with details of the open/close status monitoring.
3.2.4.2  **Ballast & Bilge Systems (Semi-Submersibles)**

**Objective**

To describe the arrangements for both normal and emergency ballasting and bilge operations.

*What should be in the Case?*

- Description, with line drawings, of the main and emergency ballast and bilge system which includes:
  - lay out and capacities of tanks
  - location and capacities of the pumps which can be used for ballasting and bilge operation with details of the pumps that can be powered from the emergency supply
  - operation of the primary control valves
  - minimum times required to change from operating and transit drafts to survival draft
  - arrangements for monitoring ballast conditions.

3.2.4.3  **Mooring & Station Keeping (Semi-Submersibles)**

**Objective**

To describe the mooring and station keeping equipment and arrangements.

*What should be in the Case?*

- For the mooring system:
  - arrangements for carrying out seabed surveys and mooring assessments
  - description of the components
  - arrangements for monitoring anchor tensions
  - arrangements for monitoring riser angles
- Where thrusters can be used to assist with station keeping, a description of the arrangements and capabilities.
- For dynamic positioning, description of the system arrangements highlighting the main safety features.
- Details of any emergency mooring release systems.

3.2.4.4  **Towing (Semi-Submersibles)**

**Objective**

To describe the arrangements for moving the MODU between locations.

*What should be in the Case?*

- Details of pre-move procedures including securing of deck cargo
- Description of the MODU towing arrangements.
- Where the MODU is capable of independent relocation, or in assisting in its movement, information on how and when the propulsion systems will be used.
- Details of the pre-movement and contingency planning arrangements and criteria, including command structure.
- Details of the arrangements for selecting assisting vessels and equipment.
- Description of the acceptance process for the new location based on the surveys and other relevant matters.
3.2.4.5 Propulsion Systems (Semi-Submersibles)

Objective
To describe the MODU's propulsion capabilities.

What should be in the Case?

- Details of the MODU propulsion system.

3.3 DRILLING & WELL CONTROL

3.3.1 Hoisting & Pipehandling

Objective
To describe the hoisting and pipe handling arrangements and capabilities.

What should be in the Case?

- General description, with details of ratings/capability and relevant standards of the:
  - derrick structure
  - hoisting system
  - compensators
  - top drive and rotary systems
  - pipe handling systems
- Details of the system/equipment HSE features which are intended to prevent or mitigate against risks, including the elimination of manual handling, and environmental impact.
- Details of how the Drilling Contractor aims to minimise manual handling.

Additional Coastal State Requirements

Norway
Requirement for remotely operated pipe-handling systems.

3.3.2 Mud & Cement System

Objective
To describe the mud system arrangements and capabilities.

What should be in the Case?

- Description, with details of ratings/capacities and relevant standards (API) of the:
  - mud pits
  - mud pumps
  - mud lines (including choke & kill manifold)
  - mud treatment system
  - trip tanks
  - mud/gas separators
  - cement unit
- Line drawings of the mud and cement system.
- Description of mud/well monitoring systems
- Identification of additional components preventing loss of containment / spillage (valve lockout / tagout, spades, blanks, etc).
### 3.3.3 BOP Systems

**Objective**
To describe the BOP and diverter arrangements and capabilities.

**What should be in the Case?**
- Description, with details of ratings of the:
  - BOP
  - BOP control systems
- Statement that the BOP system was designed to API Standard 6A or equivalent.
- Confirmation that BOP system is maintained in accordance with API RP 53 or equivalent.
- Details of Diverter Systems.
- Details of any control systems that vent control fluid to the marine environment.

### 3.4 PLANT & UTILITIES

#### 3.4.1 Lifting Equipment and Material Handling

**Objective**
To describe the material handling arrangements and capabilities and how they were determined.

**What should be in the Case?**
- Details, with ratings of the:
  - main deck cranes
  - pipe handling equipment
  - BOP crane
  - utility and manrider winches
  - other material handling equipment
- Details of safety devices.
- Confirmation that the material handling equipment is subject to periodic independent inspection and testing.

#### 3.4.2 Power Generation & Distribution

**Objective**
To describe the power generation and distribution systems for both normal and emergency operation.

**What should be in the Case?**
- Description and ratings of the main power generation arrangements.
- Information on atmospheric emissions factors used to estimate emissions, including source (API, manufacturer, etc).
- Details of the main power distribution protective systems
- Details of the emergency generator(s), including:
  - rating and endurance at rated and anticipated emergency load
  - start up arrangements
  - equipment powered from the emergency system
load shedding arrangements
- Single line diagrams of the main and emergency power arrangements.
- Information on Uninterruptible Powered Systems (UPS).
- Arrangements for recovering from “dead ship” conditions.

3.4.3 Fuel Oil System

Objective
To describe the fuel oil storage and transfer arrangements.

What should be in the Case?
- Description of the fuel oil storage tanks and transfer arrangements.
- Details of safety and shut-off devices fitted to the system.
- Identification of key components preventing loss of containment / spillage (valve lockout / tagout, bunded hose storage areas, hose inspection etc).

3.4.4 Rig Air System

Objective
To describe the MODU rig air arrangements.

What should be in the Case?
- Description of the rig air compressors, storage and distribution systems.
- Details of the safety critical equipment fed from the rig air system.

3.4.5 Heating Ventilation & Air Conditioning (HVAC) Systems.

Objective
To describe the MODU HVAC systems which are provided to:
- prevent flammable and toxic gasses accumulating in enclosed spaces
- prevent smoke or gas ingress to the temporary refuge
- maintain acceptable environmental conditions for living and working in

What should be in the Case?
- Description of the HVAC system which includes details of the:
  - ventilation of enclosed spaces, including local extraction of fumes, etc. at workplaces
  - location of smoke and gas detection systems on air intakes to TR and other normally manned work areas
  - automatic and manual shutdown arrangements

3.4.6 Drain, Effluent & Waste Systems

Objective
To describe the arrangements for handling:
- routine accumulations of fluids in deck and mud handling areas.
- machinery space drainage
- heli-deck drainage, if equipped for refuelling
- cuttings and other accumulations of solids (including ‘skip & ship’, re-injection equipment where applicable).
- sewage and grey water
- segregation & storage of other wastes (e.g., hazardous waste segregation, netting for open skips, drumsavers, etc).

**What should be in the Case?**

- Description of the drain system(s).
- Arrangements for handling cuttings.
- Arrangements for separation of hazardous/non-hazardous drains.
- Arrangements for handling other segregation & storage of wastes.
- Description of sewage and grey water treatment and overboard monitoring facilities

### 3.4.7 Communications

**Objective**

To describe the communication systems that are available for both normal and emergency communications.

**What should be in the Case?**

- Details of both the main and back-up systems for communication:
  - within the MODU e.g., alarms, signals, public address, telephones, radios, drill crew communication systems
  - between the MODU and other installations, supporting aircraft and vessels
  - between the MODU and onshore support

### 3.4.8 Helideck Facilities

**Objective**

To describe the heli-deck facilities.

**What should be in the Case?**

- Description of heli-deck facility.
- Details of lighting and markings.
- Confirmation that the heli-deck complies with Civil Aviation Standard CAP 437, or equivalent.
- Details of the emergency equipment provided to handle helicopter incidents.
- Details of operational conditions that limit the use of the heli-deck.

### 3.4.9 Emergency Lighting

**Objective**

To describe the emergency lighting arrangements.

**What should be in the Case?**

- Description of the emergency lighting systems including how they are powered, their area of coverage and duration.
3.4.10 Storing and Handling of Explosives/Flammables & Other Hazardous Substances

**Objective**
To describe arrangements and procedures for storing and handling explosives, flammable materials and other hazardous materials.

**What should be in the Case?**
- Description and location of the explosive storage facility.
- Reference to procedures for handling explosives onboard the MODU.
- Details of facilities provided for storing flammables and other hazardous substances.
- Details of the fire detection and protection in these areas.
- Details of equipment and materials provided for containing accidental spills and releases.

**Additional Coastal State Requirements**

**Denmark**
Toxic chemicals (classified as ‘T’ or ‘Tx’ must be locked up separately). All dangerous chemicals must be registered by the authorities and supplied with a registration number before use.

3.5 FIRE & EXPLOSION PROTECTION

3.5.1 Hazardous Area Classifications

**Objective**
To define the areas which have been classified as hazardous and significance of the classification.

**What should be in the Case?**
- Details of the criteria adopted to identify hazardous areas.
- Significance of the hazardous areas in relation to use of Ex equipment and location of temporary equipment.
- Drawing(s) of the designated hazardous areas.

3.5.2 Detection Systems

**Objective**
To describe systems available for early detection of incidents.

**What should be in the Case?**
- Description of the fire detection systems, including details of:
  - sensors types and distribution
  - indicator panel locations
  - executive actions automatically initiated on fire detection
  - frangible head sprinkler systems
- Description of the fixed and portable Hydrocarbon (HC) and Hydrogen Sulphide (H₂S) detection systems including details of:
  - distribution of gas detection heads
  - indicator panels locations
3.5.3 Emergency Shut Down Systems

*Objective*
To describe the emergency shutdown systems.

*What should be in the Case?*
- Description of the ESD philosophy.
- Details of the automatic and manually activated shut down arrangements.
- The shutdown hierarchy arrangements and definitions of the different levels of shutdown and the equipment effected at each level.

3.5.4 Active Protection

*Objective*
To describe the active fire protection systems.

*What should be in the Case?*
- Description and drawings, of the active fire fighting systems including:
  - fire pump capacities and locations
  - fire main isolation arrangements
  - hydrant and monitor locations
  - deluge systems
  - heli-deck foam systems
  - other fixed systems e.g. CO₂.

3.5.5 Passive Protection

*Objective*
To describe the passive fire protection systems.

*What should be in the Case?*
- Description of passive fire protection systems including:
  - drawing showing location and rating of fire resistant bulkheads
  - details of any structural fire protection for load bearing structures
  - details of unprotected non-loading bearing structures and decks which have a role in controlling fires
  - details of any critical equipment that has passive protection
  - the use of non flammable materials in accommodation and other relevant occupied areas.

3.5.6 Temporary Refuge

*NOTE:* Although the term TR is a UK legislative requirement it is now used universally to define a protected muster point where command and control functions can be carried out

*Objective*
To describe the Temporary Refuge arrangements which offer protection against an escalating major accident event.

*What should be in the Case?*
- Description of the TR integrity requirements (See Part 5).
3.6 EVACUATION & ESCAPE SYSTEMS

**Objective**
To describe the Evacuation & Escape systems that are provided in the event of a major accident that results in the evacuation of the MODU.

**What should be in the Case?**
- Drawing showing the main routes of access/egress between the TR and designated evacuation and escape points.
- Confirmation that these routes are equipped with suitable main and emergency lighting.
- Description of the TEMPSC/Lifeboat arrangements.
- Description of life raft arrangements and other alternative escape routes to the sea.
- Confirmation that evacuation and escape equipment complies with the IMO MODU Code standards.
- The provision of stand-by vessels and logistical support vessels role in evacuation (See Part 5).

3.7 ACCOMMODATION

**Objective**
To provide information on the accommodation and recreational facilities for personnel working on the MODU.

**What should be in the Case?**
- Details of number of bed spaces available, including number of beds per cabin and number of personnel assigned to each cabin.
- Description of accommodation and recreational facilities.
- The maximum number of persons expected to be on the installation.

**Additional Coastal State Requirements**
Each coastal state has minimum accommodation requirements.

3.8 WELL TESTING

**Objective**
To describe the normal arrangements for installing well testing equipment on the MODU.

**What should be in the Case?**
- Description of well testing set up and lay outs that have been assessed in the case.
- Details of the typical interfaces between the 3\(^{rd}\) party well testing equipment and the MODU detection and protection systems.

3.9 DIVING SUPPORT (WHERE APPLICABLE)

**Objective**
To describe the normal arrangements for locating diving spread equipment on the MODU.

**What should be in the Case?**
- Description of a typical diving spread set up which have been assessed in the HSE Case.
Details of the interfaces between the 3rd party diving spread and the MODU detection and protection systems.

### 3.10 OTHER THIRD PARTY EQUIPMENT

**Objective**
To describe the normal arrangements for locating 3rd party equipment on the MODU.

**What should be in the Case?**

- Arrangements for:
  - reviewing the status/condition of 3rd party equipment prior to installation
  - checking interfaces between the 3rd party equipment and MODU systems.

**RECOMMENDED DRAWING LIST**

A list has been developed and displayed in Appendix 3, it only intended as a guide to the drawings that should be included in the HSE Case.

One drawing may contain relevant information for more than one title on the list, e.g. the General Arrangement drawings may contain sufficient detail on Temporary Refuge lay out.
4 RISK & ENVIRONMENTAL IMPACT ASSESSMENTS

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Introduction

The primary purpose of the HSE Case is to demonstrate that the:

- hazards and aspects have been systematically identified
- associated risks and impacts have been assessed
- controls have been identified to reduce the risks and impacts to as low as reasonably practicable.

This Part of the Guidelines provides guidance on the types of identification and assessment studies that are relevant for a MODU wishing to operate in any of the North West Europe Coastal States. If the Case is being developed for compliance with a specific Coastal State requirements then all the assessments may not be required e.g. there is no requirement in UK legislation for environmental assessments as part of the Safety Case submission.

With regard to the health and safety of workers, the Guidelines address the assessment of the workplace risks as required by EC Directive 89/391/EEC, and address both:

**Major Hazards** - i.e. hazards with potential to cause multiple fatalities, fire/explosion etc.

**Other Workplace Hazards** - i.e. those that have potential to cause serious injury or ill health, including single fatalities. Within the Guidelines these hazards are referred to as “Other Workplace Hazards” and include “Area” and “Task Hazards”.

The term workplace is derived from the EC Directive 92/91/EEC and is defined as:

“Workplace shall mean the whole area intended to house workstations, relating to the immediate and ancillary activities and installations of the mineral-extracting industries through drilling, including accommodation, where provided, to which workers have access in the context of their work. I.e. all areas on the MODU.”

With regard to the **environment**, the Guidelines address the identification of environmental aspects and assessment of impacts associated with standard MODU operations.

Environmental assessments relating to specific wells and well locations are outside the scope of this document.

**NOTE**: The Guidelines refer to HSE to reflect the:

- Trend towards integrating the management of health, safety and environment.
- Requirements of the ISM Code and those North West European Coastal Area regulatory regimes that address environment in the same way as health and safety, (i.e. Netherlands, Denmark and Norway).

Drilling Contractors who elect not to adopt an integrated system approach for their Case, do not need to address the “environmental” requirements and the term Health & Safety should be used in place of HSE.
4.1 RISK & ENVIRONMENTAL IMPACT ASSESSMENTS

Objective
To describe how risk and environmental impact are addressed within the Case.

How can this be achieved?
- Recognising the contribution of both major and other workplace hazards in determining the risks incurred by workers on the MODU.
- Defining how major hazards and other workplace hazards are addressed within the Case.
- Determining whether the Case should include environmental impact assessments.

What should be in the Case?
- Summary of how major and other workplace hazards are addressed within the Case.
- Where relevant, a summary of the environmental impact assessment content of the Case.

4.2 MAJOR HAZARDS

4.2.1 Major Hazards Identification

Objective
To identify the major hazards and eliminate those that do not merit detailed risk assessment because they are deemed to have a negligible effect on the risk levels.

How can this be achieved?
- Defining the major hazard criteria used.
  (See Appendix 4.A.3.1 for example criteria and major hazards definitions).
- Systematically identifying the major hazards.
- Developing the list of major hazards.
- Carrying out a high level qualitative assessment of each major hazard.
- Selecting the major hazards that merit detailed risk assessment.

What should be in the Case?
- Details of the major hazard criteria that has been used.
- A description of the hazard identification process that has been followed.
- A list of the major hazards that have been identified.
- A list of the major hazards that have been screened out with supporting justification
  (See Attachment 1).

4.2.2 Inter-Relation of Hazards

Objective
To demonstrate that the inter-relation of the major hazards has been considered.

How can this be achieved?
- Consider how each major hazard event could escalate to create other major hazards
  e.g. helicopter crash which could result in a major fire.
What should be in the Case?

- Details of how the inter-relation of major hazards in the risk assessment process has been considered.
- A drawing or description of how the hazards are inter-related (See Appendix 4.A.3.3).

4.2.3 Risk Assessment Philosophy

Objective
To demonstrate that the risk assessment process adopted is transparent, systematic and consistent.

How can this be achieved?

- Establishing a risk assessment philosophy containing guidance on how the various qualitative and quantitative risk assessment techniques are used in the overall assessment.

What should be in the Case?

- Details of the risk assessment philosophy.
- A list of the studies that have been carried out (Refer Appendix 4.A.4 for guidance on the studies that may be relevant.)

4.2.4 Qualitative Risk Assessments

Objective
To qualitatively assess the major hazards that have been identified with the aim of reducing risk wherever reasonably practicable through the application of engineering judgement and good practice.

To develop a wider “ownership” of the HSE Case, by including as many offshore personnel as practicable in all phases of the studies.

To provide a study with which to compare results from the quantified risk assessment (QRA).

How can this be achieved?

- Carry out qualitative studies of:
  - major hazards
  - vulnerability of emergency systems to severe accidents
  - impairment of load bearing structures
  - smoke & gas ingress into Temporary Refuge (TR)
  - TR & escape routes
  - evacuation, escape & emergency response arrangements
- Establish a team(s) of suitably experienced and qualified MODU personnel and HSE specialists to carry out these studies.
- Each study should:
  - examine all initiating events and the controls in place to prevent these from happening
  - identify escalation scenarios and potential consequences of each major hazard, and examine control and mitigation arrangements
  - assess the evacuation, escape & emergency response arrangements for each of the consequences
- establishing a clear and auditable trail of how recommendations from each study were developed.

**What should be in the Case?**

- A summary of the qualitative assessments that have been carried out.
- Detail of how MODU personnel have been involved in the process and their engineering judgement and experience has been drawn upon.
- Details on how “good practice” and “sound engineering judgment” has been determined.
- Details of the recommendations arising out of each assessment.

### 4.2.5 Quantitative Risk Assessment

**Objective**

To demonstrate that the major accident risks have been suitably assessed using quantitative techniques to assist with the:

- understanding and reduction of risks,
- demonstration that risks levels are both tolerable and as low as reasonably practicable.

**How can this be achieved?**

- Develop fault & event trees for each of the major hazards that have been identified and qualitatively assessed.
- Using relevant data sources quantify the risk for each major hazard to determine:
  - overall risk levels,
  - individual risk by work group classification.
  - impairment of main safety functions, i.e. TR, evacuation routes, lifeboats/escape means and load bearing structures.
- Assessing potential escalation effects of each Major Hazard

**What should be in the Case?**

- Reference to the QRA study(ies).
- Results shown in a clear and understandable layout e.g. pie or bar charts, for:
  - Potential Loss of Life (PLL),
  - Individual Risk Per Annum (IRPA)
  - TR impairment frequency.
- Detail of worker category groups to enable the identification of workers exposed to higher risk levels.
- Discussion on the:
  - source data sets used in the QRA, e.g. WOAD, OREDA, Drilling Contractor databases, judgement values, uncertainties etc.
  - assumptions made in the assessment of each major hazard
  - QRA sensitivity studies that have been carried out to assess the effects of changes in operation to overall risk values, e.g. drilling close to a shipping lane, extended well testing etc.
  - evacuation, escape and rescue assumptions that have been made within the QRA, e.g. weather, helicopter proximity, standby vessel proximity, etc.
  - approach to considering human factor issues within the assessments.
- Recommendations and conclusions arising out of the QRA.
4.2.6 Explosion Analysis

Objective
To demonstrate that blast overpressures and potential consequences for compartments within the MODU identified as having high explosion risk, have been numerically quantified.

How can this be achieved?
- Identifying compartments in which there is potential for a significant quantity of hydrocarbon gases, flammable or explosive mixtures to accumulate.
- Qualitatively assessing the consequence of an explosion within the enclosed space.
- Using relevant computer modeling programmes, or numerical methodologies, to calculate the potential blast overpressures when the consequence of an explosion is considered to:
  - have an adverse effect on the structure
  - impair the Temporary Refuge
  - have an adverse affect the overall integrity of HSE critical systems
  - have a significant impact on overall risk.
Note: Due to errors and uncertainties in explosion modeling, only software that has been validated against experimental results should be used.
- Using the blast overpressure results to assess the structural response and the consequences from such events.
- Identifying measures for reducing the risks associated with explosions such as:
  - reducing the blast overpressure at source e.g. creating smaller compartments, reducing congestion,
  - strengthening or installing blast walls.

What should be in the Case?
- Details of how explosions are prevented, as prevention should be the primary risk reduction measure.
- Details of the identification and qualitative assessment of potential explosion sources.
- Summary of any blast overpressure studies that have been carried out with details of the methodology used and uncertainties within the obtained results.
- Summary of conservatisms and uncertainties for any numerical explosion studies that may have been completed.
- Recommendations and conclusions arising out of the study(ies).

4.3 OTHER WORKPLACE HAZARDS*

Objective
To demonstrate that other hazards associated with the workplace are being identified, assessed and effectively managed.

How can this be achieved?
- Systematically identifying the other hazards and assessing risks associated with each work area or space on the MODU, e.g. area layout, fixed equipment etc.

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1 Where the Case is being developed to comply solely with the UK regulatory requirements, the arrangements for managing non-major hazards may be described as part of the management system in Part 2.

Other Coastal States require the Case to address these hazards as part of the overall risk assessment process.
Implementing procedures for carrying out Task Risk Assessments, Job Hazard Analysis, Job Safety Analysis, for both routine and non-routine activities that include:
- the training personnel in the application of the procedures.
- reference to relevant information of MODU, Drilling Contractor and industry experience for carrying out similar job e.g. procedures, alerts, industry guidance etc.

Recording, communicating and reviewing the assessments.

Ensuring that the controls are implemented to reduce the risks to as low as reasonably practicable.

What should be in the Case?

- Details of the types of workplace risk assessments carried out that address the hazards associated with:
  - work areas e.g. ergonomic layout, fixed equipment, noise etc.
  - routine and non-routine tasks/jobs being carried out on the MODU.

Arrangements for performing and recording these assessments.

Arrangements for ensuring that the assessments are used in the workplace.

Details of the risk assessment training provided to MODU crews.

4.4 ENVIRONMENTAL IMPACT ASSESSMENTS

4.4.1 Identification of Environmental Aspects

Objective
To identify those environmental aspects relating to MODU activities and services that:
- are not well or location specific
- the drilling contractor has influence over.

Note: Environmental aspects of a drilling programme should be identified and assessed as part of the well planning process and be carried out in conjunction with the client.

How can this be achieved?

- Through a structured and systematic identification of the MODU activities and services which can interact with the environment.

- Using a process similar to the Hazard Identification Process and making use of checklists or other aspect listings which take into account:
  - relevant legislative requirements
  - existing environmental management practices & procedures
  - previous environmental discharges & incidents
  - planned operations as well as possible abnormal operations
  - potential emergency situations.

- Recording the findings within aspects lists or registers.

What should be in the case?

- A description of the aspect identification process.
- Details of the MODU aspects listing.
4.4.2 **Environmental Impact Assessments**

*Objective*

To determine those MODU environmental aspects that have, or potential to have, a significant adverse impact on the environment under routine operating conditions.

*How can this be achieved?*

- Recognising the minimum environmental standards and expectations with regard to offshore oil and gas operations in North West Europe (OSPAR, MARPOL etc).
- Establishing company criteria for “significant adverse environmental impacts” for routine MODU activities and services.
- By assessing the MODU aspects in relation to their impact on the receiving environment against the criteria for ‘significance’.
- By documenting objectives, targets and management programmes related to the management of those significant aspects over which the drilling contractor has influence.

*What should be in the case?*

- Details of company significance criteria for routine activities.
- Details of the MODU environmental aspects that have been identified as having, or potential to have, significant impact, i.e. significant aspects.
- Objectives, targets and management programmes in relation to these significant aspects.

4.5 **RISK REDUCTION & ALARP JUSTIFICATION**

*Objective*

To demonstrate that:

- risk reduction measures have been identified and implemented
- risks to personnel are tolerable and have been reduced to “as low as reasonably practicable” (ALARP).

*How can this be achieved?*

- Establishing arrangements for reviewing recommendations and confirming risks are ALARP.
- Comparing calculated risks with tolerability acceptance criteria (ALARP triangle) and Drilling Contractor standards (See 4.A.9).
- Collecting recommendations identified from the all risk assessment studies.
- Identifying other potential risk reduction measures based on industry practices, professional judgement and experience.
- Assessing the benefit of each recommendation in terms of benefits of risk reduction.
- Assessing the cost of each recommendation in terms money, time or effort.
- Rejecting recommendations where there is a gross disproportion between the cost of their implementation and risk reduction that would be achieved.
- Giving special consideration to groups of individuals (work groups), who are exposed to exceptional risk (if any).
- Establishing an auditable trail of the ALARP review documenting controls identified and justification for accepting/rejecting controls.
What should be in the Case?

- Details of the risk acceptance criteria that has been adopted.
- The arrangements for systematically reviewing each of the recommendations.
- References to the recommendations considered as part of the ALARP assessment.
- References to the review team decisions with justification for those that were rejected or postponed for consideration at a later date.
- Details of how relevant good practice and judgement based on sound engineering principles have been taken into account in deciding what is reasonably practicable.
- Proposed timescale for the implementation of accepted recommendations.

4.6 CONCLUSIONS

Objective

To demonstrate that the company has concluded that the HSE risks and impacts are both tolerable and ALARP and that this has been agreed and formally approved by senior management.

How can this be achieved?

- Judging the overall risk assessment results and ALARP review against the defined risk acceptance criteria.

What should be in the Case?

- Discussion on the interpretation of the results from the qualitative and quantitative studies.
- A statement concluding that the risks levels are tolerable and ALARP.
- A statement of commitment to implement recommendations accepted during the ALARP review.
4.A APPENDIX - FURTHER GUIDANCE ON HAZARD IDENTIFICATION & RISK ASSESSMENT

4.A.1 Introduction

With over 30 years of experience of operating in the North Sea, of which 10 have been within a goal setting HSE Case regime, the drilling industry has a good understanding of the hazards that are faced and how they are managed.

This appendix is based on the experience that has been gained over the last 10 years in determining suitable levels of risk assessment for MODU operations.

4.A.2 Hazard Identification & Risk Assessment

4.A.2.1 Workplace Risks

EC Directive 92/91/EEC requires a demonstration that the health and safety risks incurred by workers at the workplace have been determined and assessed.

The hazard groupings that contribute to the overall workplace risk levels are shown in figure A-1.

![Figure A-1 – Risks from MODU Operations](See section 4.A.5.3 for prevention principles)

4.A.2.2 Identification & Assessment

Hazard identification and risk assessment is a systematic process to answer the six basic questions:

- What can cause harm, i.e. identification of hazards
- What can go wrong? i.e. identification of the threats that can release the hazard to create harm
- How likely, and how bad could it be? i.e. estimation of risk.
- How do we prevent it happening? i.e. elimination or control.
If it goes wrong, how can we prevent it getting worse? i.e. mitigation and recovery.

Is there anything else we can reasonably do to make it safer? i.e. ALARP

Figure A-2 shows the steps normally associated with the process.

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**Figure A-2 - Hazard Identification & Risk Assessment Process**

### 4.A.2.3 Risk Hierarchy

The risk assessment process is hierarchical in that priority should be given to **Risk Avoidance**.

The best means of avoiding risk is by not carrying out the activity or through inherently safe design to prevent hazards from being realised. Therefore, the first question at the start of a risk assessment should be:

Is this task or activity absolutely necessary or can the design be improved to remove hazards at source?

If it is not then it should not be done. However, in reality most of the tasks and activities that are carried out on a MODU are necessary. Therefore the risk assessment priorities become:

- **Prevention** – i.e. identifying the hardware and procedural controls that are, or should be, in place to prevent the hazard being released – e.g. controlling ignition sources.
- **Mitigation** – i.e. if the hazard is released, the next priority is to ensure suitable controls are in place to prevent the incident escalating, e.g. smoke and fire detection systems.
- **Recovery** – i.e. in event of an escalating incident occurring, ensuring that there are suitable arrangements in place to protect people on the MODU e.g. fire fighting systems, standby vessels etc.
According to directive 89/391/EEC implemented in various national regulations:

“The principles of prevention and mitigation of risks are:

(a) avoiding risks;
(b) evaluating the risk which cannot be avoided;
(c) combating the risk at source;
(d) adapting the work to the individual, especially as regards the design of workplaces, the choice of work equipment and the choice of working and production methods, with a view, in particular, to alleviating monotonous work and work at a predetermined work-rate and to reducing their effect on health;
(e) adapting a technical progress;
(f) replacing the dangerous by the non-dangerous or the less dangerous;
(g) developing a coherent overall prevention policy which covers technology, organisation of work, working conditions, social relationships and influence of factors relating to the working environment;
(h) giving collective protective measures priority over individual protective measures; and giving appropriate instructions to employees. “

4.A.3 Major Hazards

4.A.3.1 Major Hazard Definition

As the primary purpose of the MODU HSE Case is to demonstrate that the major accident hazards are understood and being managed, the first step of the process is to define a major accident hazard.

The definition used in the UK legislation is widely recognized and is used within the Guidelines, i.e.:

- “fire, explosion or the release of a dangerous substance involving death or serious personal injury to persons on the installation or engaged in an activity on or in connection with it;
- any event involving major damage to the structure of the installation or plant affixed thereto or any loss in the stability of the installation;
- the collision of a helicopter with the installation; or
- any other event arising from a work activity involving death or serious personal injury to five or more persons on the installation or engaged in an activity in connection with it.”

As this definition is all encompassing and satisfies the general requirements of the NWE countries, it serves as good starting point for identifying the major hazards.

4.A.3.2 Major Hazards Associated with MODU Operations

As mentioned in the introduction, as an industry, there is a good understanding of the major hazards associated with MODU operations.

Attachment 1 contains details of the major hazards that are generally associated with MODU operations.

In practice some of these hazards can be screened and deselected if they are deemed to have a negligible effect on the overall risk in the early stages of the risk assessment. Attachment 1 identifies the hazards that are normally considered within a NWE HSE Case.

If the hazard listing is being used as part of the hazard identification study, the user must ensure that there are no other major hazards that are specific to the:
MODU design and equipment.
Range of operations undertaken from the MODU.
Locations and environments in which the MODU will operate.

4.A.3.3 Inter-relation of Hazards

A major accident rarely consists of a single isolated event. They generally consist of a chain of events e.g. a load dropped from a crane ruptures fuel tanks that in turn catch fire.

The risk assessment needs to address the inter-relation of hazards and look at how a major accident scenario could escalate.

Figure A-3 provides an example of potential inter-relation of major hazards. To demonstrate that the inter-relation has been considered, a diagram similar to this should be developed as part of the risk assessment and included in the HSE Case.

![Diagram of inter-relation of major hazards]

**Fig A-3 Inter-relation of Major Hazards**

4.A.4 Risk Assessment

4.A.4.1 Qualitative Assessments

Qualitative assessments are where hazards systematically assessed by a multi-disciplinary team using judgement and experience.

Qualitative risk assessments are generally higher level, table-top studies in which a multi-disciplinary team qualitatively examine each of the major hazards and identify the controls/barriers (both hardware & procedural) that are, or should be, in place to:
Prevent the major hazards from being realised.
Limit the consequences should they occur.
Assist in identifying the types and scopes of the other risk assessment studies that are required.

The assessment team should consist of representatives from both the MODU crew and onshore operations and engineering support teams, with a nominated facilitator who understands the qualitative risk assessment process.

The benefit of the team approach is in drawing together companies engineering judgement and operational experience to provide results that are Drilling Contractor and MODU specific.

More importantly, participating in the assessments gives the people who are managing and operating the MODU a much greater understanding of the hazards and their controls.

The results of the qualitative assessment also provides a good basis for:
Developing the fault and event trees required for the quantified risk assessments (QRA).
Comparing and evaluating the results from the QRA studies

There are software applications on the market that support qualitative assessments and present the results in formats that are readily understood by non-specialist.

Some of the more common qualitative assessment techniques that are appropriate for the assessment of a MODU's major hazards are described below.

4.A.4.2 Compartment Studies

Compartment Studies are a very practical and have proved to be an extremely powerful risk assessment tool.

The study consists of a team made up of MODU personnel and specialists going through each compartment and assessing them for fire, explosion, flood and other risks.

The team look for the potential causes and consequences of fire, flood and explosion in each compartment. They then identify and assess the prevention, mitigation and recovery arrangements that are in place and any additional controls that may contribute to reducing the risks.

The team may also make recommendation with regard to further detailed studies in a particular compartment e.g. explosion analysis of the shale-shaker compartment etc.

The team should make a record of any shortfalls or recommendations they identify for actioning or further consideration as part of the ALARP justification, see Section 4.A.9.

As the study is carried out on the MODU it enables a greater number of the crew to be involved in the process.

An example of a simplified compartment study sheet is shown in Attachment 2.

4.A.4.3 FMEAs (Failure Mode & Effect Analysis)

This study is used for detailed assessment of critical equipment or systems on the MODU. It examines how parts of a system can fail, how critical they are and the effects of failure of that part on the system.

Typical systems for which an FMEA could be carried out could include: ballast system, jacking system, power generation & distribution, BOP control etc.

FMEA’s are a more specialist type assessment requiring both knowledge of the technique and the systems being analysed.
4.A.4.4  HAZOPs (Hazard & Operability studies)

Being used by safety specialists since the 1960s, the use of HAZOP is well documented in many industries. They are mainly used in their process form; these assess process systems and allow a systematic assessment of events such as well testing and ballast systems and well fluid containment systems. An operational HAZOP may also be used to examine deck layout and the interaction between systems.

The basic concept of the hazard and operability study is to take a full description of the process and to question every part of it to discover what deviations from the intention of the design can occur and what their causes and consequences may be.

The HAZOP team is multi-disciplined and the brainstorming procedure relies on the broad experience of the team to identify potential hazards and operability problems. Individual or single discipline reviews are unlikely to be able to identify all the possible inter-departmental interfaces that are recognised as critical to the safety of complex plant. The HAZOP technique’s strength is that it allows personnel from all disciplines to interact and question aspects of the facilities beyond their usual sphere of activity.

4.A.4.5  Quantified Risk Assessment - QRA

Quantified risk assessment is a more specialised assessment process in which historical data is used to determine numerical risk levels.

The aim of this process is to numerically quantify the risks from the major hazards, so that they can be compared and the Drilling Contractor can focus its resources on the largest contributors to the overall risk. It can also highlight any deficiencies that may have not appeared in qualitative assessment and allows for a comparison with any risk ranking that may have been done in these studies.

Where a Drilling Contractor operates a number of MODU’s of the same type and design then the same QRA model may be used for each of them.

Many companies employ consultants to prepare their QRA’s. However, experience shows that in general the value of these studies in relation to the overall risk assessment process has been limited due to the complexity of the reports and inadequate scoping of the studies.

To ensure that these studies do add value, the Drilling Contractor needs to be able to:

- Specify the scope of the QRA study.
- Review the report prepared by the specialist consultant to assist the companies in this task. Attachment 3 provides a list of things to ask for and look for in a QRA study.

4.A.4.6  TR Impairment

The TR is required to provide protection for long enough to allow the workforce to muster, the emergency to be assessed, and decisions to be taken and implemented to remove the workforce from the hazard or bring the hazard under control.

The QRA should include a TR impairment analysis. The analysis should define the impairment criteria, e.g. levels of gas, smoke, heat levels etc. at which the TR is deemed to be impaired, which have been used in the study to determine the TR endurance time.

4.A.4.7  Explosion Analysis

From the QRA uncertainties, results or from qualitative assessments, there may be a requirement to understand and evaluate the consequence of an explosion in a compartment or area. For example, a compartment in which there is potential for hydrocarbon gas to accumulate, which if damaged could result in either loss of MODU stability or effect mitigation and recovery systems which would be required after an explosion.

There are a number of explosion models available on the market to predict blast overpressures. Recent research indicates that the results of these models may not be as
accurate as first thought. Therefore, care and sound engineering judgement is required in interpreting the results from explosion analyses.

4.A.5 Other Contributors to Workplace Risk (Workplace Assessments)

In addition to the major hazards, there are other hazards that have potential to affect the health and safety of personnel. They are the non-major hazards associated with working and recreational, environment and tasks being performed within these environments. For the purpose of these guidelines they have been referred to as Other Area Hazards and Other Task Hazards.

4.A.5.1 Other Area Hazards

Area related hazards are those that are present in the area irrespective of the work activity. The hazards are associated with the, specific locations, installed equipment and hazardous substances either stored or in regular use within the area. Typical examples of area hazards include:

<table>
<thead>
<tr>
<th>Location</th>
<th>Installed Equipment</th>
<th>Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ergonomic layout</td>
<td>Electrical</td>
<td>Chemicals</td>
</tr>
<tr>
<td>Access/egress</td>
<td>Pressure</td>
<td>Radioactive</td>
</tr>
<tr>
<td>Tripping</td>
<td>Noise</td>
<td>Biological</td>
</tr>
<tr>
<td>Confined spaces</td>
<td>Heat</td>
<td></td>
</tr>
<tr>
<td>Congestion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weather</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illumination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological hazards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>associated with location &amp; work schedules</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The risk assessment process should include:

- A systematic identification of these hazards for each work area on the MODU.
- Assessment of the health and safety risks associated with each hazard.
- Identification of the controls to reduce the risks to as low as reasonably practicable (ALARP).

The qualitative compartment study technique described in 4.A.4.2 is ideally suited for the identification and assessment of area related hazards. In some instances the qualitative assessment may identify hazards that require more detailed, specialist assessments e.g. ergonomic assessment of control room layouts, noise surveys etc.

If compartmental type studies are carried out, the record sheet, Attachment 2 can be adapted to record the assessment. The information should be recorded in such a way that it is readily available to people working, or planning to work, in these areas.

4.A.5.2 Other Task Hazards

These the hazards directly associated with the task or job being performed in the work area. Risks associated with these tasks are identified and assessed using techniques which are referred to as Task Risk Assessment (TRA’s), Job Hazard Analysis (JHA’s) or Job Safety
Analysis (JSA). These comprise of safety and health risk assessment connected with the performance of the task or job.

4.A.6 EER

The evacuation, escape, rescue & recovery assessment should assess all scenarios that require the possible abandonment of the MODU to evaluate how the systems will function for various scenarios. It should contain an overview of the escape strategies for abandonment and recovery to a place of safety. The integrity of the access and egress routes under accident considerations should be considered.

All modes of evacuation and escape should be included in the model, including helicopter availability, TEMPSC launch probability, personnel basket transfer, liferafts, ladders to sea and jumping.

4.A.7 Human Factors

All hazard identification exercises must consider the interface between the human operators and the systems they operate.

Persons performing risk assessments need to be aware of the human factors impact. Training for such persons can improve their ability to spot the potential for human contributions to risk.

The purpose is to identify the potential for human error and how the error is prevented e.g. due to:

- Inadequacies in Training and/or Competence Assurance.
- Lack of awareness.
- Conflicting goals or activities.
- Error enforcing conditions.
- Inadequacies in organisation structure and/or responsibilities of individuals.

4.A.8 Tolerability and ALARP

An important step in the risk assessment process is to ensure that the risks to individuals are both tolerable and “as low as reasonably practicable” (ALARP). Some Drilling Contractors have their own acceptability and tolerability criteria but many refer to the universally recognised triangle as shown in figure A-4.
A common misunderstanding is that “Tolerable” and “ALARP” are the same. This is not the case.

The first step is to determine that the risks are tolerable. This involves using the:

- QRA results and confirming that both Individual Risk Per Annum and TR impairment figures are less than $10^{-3}$ (Note: Netherlands expects to see IRPA values less than $10^{-4}$), and

- Professional judgement and experience to confirm that the qualitative assessment findings are acceptable.

Having confirmed that the risks are tolerable then the next step is to consider ALARP. This involves looking at the ways in which the risks can be further reduced. In practice this involves a review of each of the recommendations arising out of the risk assessment and other studies and assessing the benefits in terms of overall risk reduction.

If the recommendations do reduce risks then they must be implemented unless it can be demonstrated that there is “gross disproportion” between the benefit in reduction and the overall cost of implementing and maintaining the recommendation.

There are sophisticated cost benefit analysis techniques that can be applied in determining ALARP. However, for a normal MODU, reference to a combination of:

- assessing benefit in quantitative terms using QRA an semi-quantitative assessment of costs; and,

- qualitative assessment based on the Drilling Contractor’s operational and engineering judgement, recognised codes, standards, industry practices etc,

are generally adequate justification that risks are ALARP.
Further useful information on Tolerability and ALARP can be found in the HSE’s recent publication “Reducing risks, protecting people”.

The level of ALARP justification should be proportional to the risks, i.e. where risks are bordering on the intolerable, then a greater level of justification is required.

Where risks levels are low and in the broadly acceptable region ALARP justifications are not required.

4.A.9 Conclusions

The conclusions should contain an overall view of the Hazard Identification and Risk Assessment Process. Concentrating on the company’s views of the strengths and weaknesses throughout the exercise.
4.B FURTHER GUIDANCE ON ENVIRONMENTAL ASSESSMENTS

4.B.1 Introduction

In the context of a drilling operation, environmental aspects can be defined as ‘any element of the planned activity or service which can interact with the environment’. These interactions can take one of two forms:

- Aspects arising from the risk of accidental events taking place, e.g. crude oil spillage following a blow-out and to a lesser degree whole mud or fuel oil (bunkering) / chemical spillage etc.
- Aspects arising from planned discharges or disposal of wastes: For example, diesel generator emissions, discharge of grey water and sewerage, waste transportation & disposal.

For the purpose of these Guidelines environmental aspects have been classified into three groupings as shown in Figure B-1.

- **Accidental Aspects** i.e. aspects which, if accidentally released, could have adverse impact on the environment.
- **MODU Aspects** i.e. aspects associated with routine MODU operations.
- **Well Aspects** i.e are aspects associated with the drilling programme.

The process for identifying and assessing these aspects are summarised in Figure B-2.
4.B.2 Responsibilities

All parties involved in offshore drilling operations have a responsibility for protecting the environment in which they operate. Within that general obligation the client (Operator) has primary responsibility supported by drilling contractors and 3rd party specialist contractors as summarised below.

4.B.2.1 Clients

The main environment issues associated with offshore drilling operations relate to the well aspects, i.e:

- Geographical location of the well, particularly when it is in, or in close proximity to, an area of environmental significance e.g. close to land, fishing grounds etc.
- Nature of the drilling or well operations being carried out.
- Ability to respond to a major environmental incident/spillage, e.g. oil spill etc.

These are issues over which the client has prevailing influence. Therefore their responsibilities include:

- Identifying and assessing sensitivities associated with the receiving environment.
- Amending/adapting “significance criteria” to take account the nature of the drilling operations and the sensitivities of the receiving environment.
- Identifying and assessing the environmental aspects associated with the drilling programmes, and where possible reducing the potential impacts.
- Liaison with the relevant environmental Authorities regarding permissioning/licensing requirements.
4.B.2.2 Drilling Contractors

Drilling contractors are responsible for managing the environmental aspects associated with the MODU operations.

In the context of a MODU operations, environmental aspects can be defined as ‘any element of the planned activity or service which can interact with the environment’.

These responsibilities include:
- Identifying and assessing the environmental aspects associated with routine MODU operations, e.g. diesel generator emissions, discharge of grey water and sewerage, waste transportation & disposal etc.
- Satisfying any additional location or drilling programme specific requirements imposed by the client.
- Complying with International Maritime Organisation’s MARPOL requirements.
- Complying with the Convention for the Protection of the Marine Environment of the North East Atlantic - OSPAR requirements.

4.B.2.3 3rd Parties

Responsibilities include:
- Co-operating with the client and drilling contractors.
- Managing the environmental aspects associated with their activities and equipment being used on the MODU.

4.B.3 HSE Case Content

The MODU HSE Case should contain sufficient information to demonstrate that the drilling contractor:
- Recognises their responsibilities in relation to environmental management (See Part 2).
- Has identified and assessed the environmental aspects associated with MODU operations.
- Has identified and assessed the aspects with potential to harm the environment.
- Has established criteria for determining the significance of these aspects.
- Is managing the environmental aspects with potential to have a significant adverse impact on the environment.
- Recognises the need to revise these assessments in accordance with any additional clients criteria.
- Complies with the relevant MARPOL standards (See Part 3.1).

4.B.4 Environmental Aspect Identification and Assessment

This section provides guidance on the identification and assessment of the accidental and MODU aspects that are within the drilling contractors span of control.

4.B.4.1 Accidental Aspects

Accidental aspects can be identified and assessed using the same structured and systematic techniques used for workplace risk assessments, (See Appendix A).

The assessments should be structured to identify:
- Activities and equipment that could give rise to accidental releases.
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NWE HSE Case Guidelines Part 4 - Issue 1

- Scenarios that could lead to the release occurring.
- Spill response requirements to minimise the impact of the release.

The assessment should include a qualitative assessment of the environmental risks. In most instances a qualitative assessment using a risk assessment matrix, see Attachment 4. Attachment 4 includes sample consequence criteria for use with the matrix.

In the event of a minor spill occurring during MODU operations there should be suitable facilities and equipment stored onboard the MODU to prevent, or restrict, the spill entering the sea.

In the event of a major environmental incident, the response arrangements will generally be managed by the clients’ emergency response arrangements. Emergency response arrangements are addressed in Part 5.

4.B.4.2 MODU Aspects

The objective is to identify and assess the environmental aspects associated with routine MODU operations that could result in chronic releases.

The identification of MODU aspects associated with discharges and waste disposal requires an assessment of sources of marine and atmospheric emissions as well as the development of ‘waste inventories’. In some cases, this information may already have been compiled in previous studies and assessments and comprehensive aspects registers can be developed via desktop review of these studies. These assessments and reviews should be facilitated by environmental specialists with access to up-to-date MODU information, e.g. equipment listings, layout drawings, specifications procedures etc.

Unlike accidental events, where risks are a function of both probability and consequence, chronic releases are only assessed from the standpoint of their consequences.

Typically, consequences are identified in the context of a series of qualitative tests. These tests may have legislative, environmental and, more recently, reputational elements, see Attachment 5. The tests give rise to a ‘consequence rating’ for a particular aspect.

4.B.5 Determination of Significance

4.B.5.1 Establish Criteria

Due to potential diversity of environmental aspects and effects there is no single quantity or measure that can be used to prioritise management efforts in respect to environmental aspects and effects. However, it has become increasingly common to use a test of ‘significance’ as a basis for prioritisation of environmental and, more recently, health management efforts.

Within the ISO 14001 environmental management standard, ‘significance’ is a key criteria for any environmental aspect which has been identified.

At the most basic level, significance may simply be assigned only to environmental legislation requirements – this is basically a commitment to legislative compliance and nothing more. However, particularly for operations in areas where there are environmental sensitivities or public concerns a more comprehensive approach to significance may be appropriate. This will reflect a stronger commitment to both ‘continuous improvement’ and ‘pollution prevention’.

Consequently, for chronic releases, significance criteria may be adopted that go beyond legislative compliance; these can be developed based on consequence ratings. Within these criteria it may also be deemed appropriate to differentiate between ‘human health’ related consequences and ‘natural environment’ related consequences, and to recognise that company policies may exist on certain high profile issues. Reputation considerations may also be included in the significance criteria.
These criteria are often presented as a series of ‘yes/no’ tests. On this basis, a reasonably sophisticated set of significance criteria might be as follows:

**Sample ‘Significance’ Criteria**

<table>
<thead>
<tr>
<th>Environment Aspect Category</th>
<th>Test of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legislative Requirement</td>
<td>Any environmental aspect which is subject to legislative control or authorisation will be considered to be a ‘significant’ aspect.</td>
</tr>
<tr>
<td>MODU Owner Corporate Policy &amp; Objectives</td>
<td>The MODU owner has set various environmental policy objectives with regard to environmental management. Any environmental aspect which has direct relevance to these objectives shall be considered to be ‘significant’</td>
</tr>
<tr>
<td>Chronic Environmental Exposure</td>
<td>Any chronic environmental aspect which is assessed as having a consequence rating* of 4 or more shall be considered to be ‘significant’ (* see Attachment 4)</td>
</tr>
<tr>
<td>Chronic Health Exposure</td>
<td>Any chronic environmental aspect with implications for human health which is assessed as having a consequence rating of 3 or more shall be considered to be ‘significant’</td>
</tr>
<tr>
<td>Stakeholder Concern</td>
<td>The MODU owner &amp; operator interact with a number of external stakeholders (government, employees and special interest groups). Any issue raised by these groups which has a consequence rating of 4 or more shall be considered to be ‘significant’</td>
</tr>
</tbody>
</table>

4.B.5.2 Review of Significance Criteria

The significance criteria may need to be reviewed to satisfy a client’s requirements, particularly when drilling in an environmentally sensitive location.

In these cases, the listing of significant aspects will need to be reviewed, and where necessary revised.

4.B.6 Environmental Aspects Register

There are a number of ways of recording and documenting environmental aspects and their management. One of the more common is in an Environmental Aspect Register.

The registers should contain:

- a description of aspects
- provide information relating to ‘significance’; and also
- summarise, (with supporting references), the way in which significant aspects are being managed.

Headings that such registers may contain include:

**Aspect Source**
For each environmental aspect, identify the possible sources which relate to the relevant process, location or activity. For example:

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise</td>
<td>Emergency Generator</td>
</tr>
<tr>
<td>Waste management</td>
<td>Drill Cuttings</td>
</tr>
<tr>
<td>Spillage</td>
<td>Oil transfer</td>
</tr>
</tbody>
</table>

**Consequence**

Describe the Consequence of the aspect for people, the environment or reputation from the standpoint of any qualitative severity scale.

**Risk Level / Significance**

Qualitative risk levels may be identified as one of two or three categories (eg, Low, Medium, or High) based on probability & consequence.

Also note whether the aspect is ‘significant’ or ‘not significant’ based on defined guidelines.

**Management Programme Requirement**

Identify relevant environmental objectives and targets.

**Management Control System**

Identify which elements of the management system are relevant to the control of the aspect.

**Monitoring Programme Requirement**

Identify those environmental monitoring programmes, if any, that are being used to assess the actual consequence of the aspect.

**Standards & Legislation**

Identify those standards and legislation that apply to the control of the aspect.

**References**

Provide relevant references.
### ATTACHMENTS:

#### Attachment 1 - Major Hazards Associated with MODU Operations

<table>
<thead>
<tr>
<th>Major Accident Hazard</th>
<th>Description</th>
<th>Hazard Screened Out?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Blowout</td>
<td>An uncontrolled release of well fluids. It can occur at the Drill Floor, the BOP, at the seabed, or underground from one reservoir to another.</td>
<td>No</td>
</tr>
<tr>
<td>2 Explosion</td>
<td>A combustion explosion in air, either within a compartment, or a partially confined volume of the MODU.</td>
<td>No</td>
</tr>
<tr>
<td>3 Fire</td>
<td>The ignition and development of liquid and combustible solid fires, leading to generation of heat and the products of combustion, such as smoke and toxic fumes. This includes fires that could result from normal combustibles such as fuel, oil, paints, paper, and gas cylinders.</td>
<td>No</td>
</tr>
<tr>
<td>4 Toxic Release</td>
<td>Material emitted from the well, or because of materials handled in the course of drilling or other activities. The main toxic hazard is the release of hydrogen sulphide from a &quot;sour&quot; well.</td>
<td>No</td>
</tr>
<tr>
<td>5 Loss of Stability</td>
<td>An event that threatens to capsize or sink the MODU. It includes events leading to listing or to loss of buoyancy.</td>
<td>No</td>
</tr>
<tr>
<td>6 Mooring/Station Holding Failures (Semi);</td>
<td>Partial loss of anchoring and station keeping elements which can lead to further failure and possibly to a drifting MODU.</td>
<td>No</td>
</tr>
</tbody>
</table>
## ATTACHMENTS:

### Attachment 1 - Major Hazards Associated with MODU Operations

<table>
<thead>
<tr>
<th>Major Accident Hazard</th>
<th>Description</th>
<th>Hazard Screened Out?</th>
</tr>
</thead>
<tbody>
<tr>
<td>7  Foundation / Leg Failure (Jack-Up);</td>
<td>The buckling of a leg or punching through the seabed cratering is covered in blowout) or failure of the jacking system which can lead to listing and eventual toppling of the MODU.</td>
<td>No</td>
</tr>
<tr>
<td>8  Towing Incidents</td>
<td>Failure of a towline which cannot be recovered, possibly leading to grounding or collision.</td>
<td>No</td>
</tr>
<tr>
<td>9  Structural Failure;</td>
<td>Loss of ability of the primary structural members of the MODU to carry the design loads, including emergency or extreme loads, impairment from fire loads or explosions can cause structural failure of primary design loads.</td>
<td>No</td>
</tr>
<tr>
<td>10 Dropped Objects (Derrick &amp; Crane);</td>
<td>Dropped loads and impact, moving loads and side impacts, snagged loads, crane pedestal collapse or crane boom failure.</td>
<td>No</td>
</tr>
<tr>
<td>11 Major Mechanical Failure</td>
<td>Catastrophic failure of a mechanical system with the release of sufficient kinetic energy in fragments or other effect that could lead to escalation, it includes failure of pressure vessels or rotating machinery, and internal equipment explosions, but excludes failure of high pressure systems due to flame impingement. Drill riser failure should be considered in this scenario.</td>
<td>No</td>
</tr>
<tr>
<td>12 Ship Collision</td>
<td>Impacts to the MODU from service vessels and errant or drifting vessels.</td>
<td>No</td>
</tr>
</tbody>
</table>
### ATTACHMENTS:

#### Attachment 1 - Major Hazards Associated with MODU Operations

<table>
<thead>
<tr>
<th>Major Accident Hazard</th>
<th>Description</th>
<th>Hazard Screened Out?</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 Helicopter Crash</td>
<td>The impact of a helicopter, either on or off the heli-deck of the MODU, immediately before or after landing or takeoff.</td>
<td>No</td>
</tr>
<tr>
<td>15 Pipelines</td>
<td>A release of hydrocarbons from beneath or within the immediate vicinity of the MODU.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Presence of pipelines generally indicates that a form of combined operations would be in progress, and as such a combined operations HSE Case would be submitted. Prior to moving onto location, particular attention is given to mooring chain and anchor security while close to any seabed obstructions.</td>
<td></td>
</tr>
<tr>
<td>16 Seismic Activity</td>
<td>Possible effects on the MODU of an earthquake or other geological phenomenon.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Can usually be disregarded due to the remote possibility in the North Sea area. However the duty holder needs to consider what level of damage on Jack-ups could result from foreseeable events. The effects of any seismic activity would produce consequences similar to loss of stability, mooring failure and blowout.</td>
<td></td>
</tr>
</tbody>
</table>
### ATTACHMENTS:

#### Attachment 1 - Major Hazards Associated with MODU Operations

<table>
<thead>
<tr>
<th>Major Accident Hazard</th>
<th>Description</th>
<th>Hazard Screened Out?</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 Sabotage</td>
<td>Deliberate damage to the MODU structure or machinery by persons associated with the MODU or unknown.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>If a MODU is targeted for sabotage, there is no reasonably practicable means to avoid serious damage. However the potential consequences of any sabotage are covered under other major hazards such as explosion, loss of stability, structural failure, etc.</td>
<td></td>
</tr>
<tr>
<td>18 Aircraft/submarine Collision</td>
<td>Collision from a commercial/private aircraft or military submarine</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>These are extremely low frequency events that the duty holder has little control over. However could be considered if located in high volume areas e.g. close to airport/approach path or naval base.</td>
<td></td>
</tr>
</tbody>
</table>
## Attachment 2 - Example Compartment Study Sheet

### Compartment Description:

<table>
<thead>
<tr>
<th>Compartment</th>
<th>Causes / Initiating Events</th>
<th>Prevention / Control Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXPLOSION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FLOOD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compartment</th>
<th>Consequences</th>
<th>Mitigation/Limitation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXPLOSION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FLOOD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## RISK RANKING

<table>
<thead>
<tr>
<th>Minor</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>RISK No</th>
<th>Tolerable?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>Fire: 6</td>
<td>YES</td>
</tr>
<tr>
<td>Severe</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>15</td>
<td>Expl: 8</td>
<td>YES</td>
</tr>
<tr>
<td>Major</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
<td>Flood: 3</td>
<td>YES</td>
</tr>
<tr>
<td>Catastro</td>
<td>5</td>
<td>10</td>
<td>16</td>
<td>20</td>
<td>25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Comments/Recommendations

<table>
<thead>
<tr>
<th>Negligible</th>
<th>Improbable</th>
<th>Remote</th>
<th>Possible</th>
<th>Probable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Attachment 3 - Good Practice in QRA

1. Factors to consider during planning and execution of a QRA

The QRA is an important part of the HSE Case.
The Drilling Contractor should interface with the consultant as much as possible and have regular contact to discuss, review and agree:

- major hazards to be analysed
- provision of drawings & operating conditions
- event & fault tree modelling
- data sources being used
- typical PoB and working shifts
- assumptions used in the analysis
- agreement on worker groups
- presentation, interpretation and significance of the results

2. Reviewing QRA Report

Prior to accepting the QRA, the report should be reviewed. Points to look for during the review include:

2.1 Overall Presentation

QRA reports tend to give the results in a small management summary with most of the detail buried in a number of appendices, making it very difficult for non-QRA specialists to interpret and understand the concepts within.

The main report should be written in plain and simple terms with key information and data being clearly defined. With details of event & fault trees, and sensitivity studies etc. contained within supporting appendices.

2.2 Introduction

The background of the report should be covered in the introduction, along with a brief description of the MODU.

2.3 Process Overview

A high level overview of how the QRA process is carried out is required. A flow chart depicting the stages and links from initiating events to Escape, Evacuation and Emergency response can be very useful, especially to those unfamiliar with the usual processes.

It should also cover how worker groups will be created, examined and what proportion of the PoB is in each group.

2.4 Event & Fault Trees

The event and fault trees for each scenario being examined should be contained within the report with probabilities and decisions visible on the trees.

2.5 Assumptions

All assumptions going to be used within in the QRA should be clearly stated, and linked to the major hazards to which they are being used. They should be justified and documented, preferably in the form of a “rule set”

2.6 Data Sources
The report should make clear the data sources that have been used and the reasons behind their choice. Typical sources for information include WOAD, OREDA, Drilling Contractor databases, state databases and judgmental values.

2.7 Presentation of Results

One of the main aims of the QRA is to allow the Drilling Contractor to target their resources at the hazards that contribute most to the overall risk. By presenting the results in a graphical manner, pie charts and bar charts as opposed to tables of numbers, it allows non-technical personnel to understand the results and presents a much clearer picture of the results.

Graphical presentation of the results will also allow an easier comparison with the qualitative risk assessment if a risk ranking has been completed for the major hazards.

2.8 Overall values

The values presented in the report should be presented in a consistent manner. These typically include Individual Risk per Annum (IRPA) values for different worker categories and Potential Loss of Life (PLL).

2.9 Human Factors

The QRA study should explain how human factors have been modelled within the calculations and give reasoning behind the values chosen.

2.10 Temporary Refuge Impairment Assessment

This section of the assessment should include a description of the TR and the endurance time set by the Drilling Contractor. A list of the TR impairment criteria should also be provided, e.g. levels of gas, smoke, heat levels etc. at which the TR is deemed to be impaired.

2.11 Sensitivity Analysis

The QRA model should be examined to see how sensitive it is to various input data. Examples of typical sensitivity analysis could include drilling close to a shipping lane, extended well testing, large number of wild cats drilled, drilling in H2S area etc.

2.12 Evacuation, Escape, Rescue & Recovery Assessment

The evacuation, escape, rescue & recovery assessment should assess all scenarios that require the possible abandonment of the MODU to evaluate how the systems will function for various scenarios. It should contain an overview of the escape strategies for abandonment and recovery to a place of safety.

All modes of evacuation and escape should be modelled, including helicopter availability, TEMPSCE launch probability, personnel basket transfer, liferafts, ladders to sea and jumping.

2.13 Recommendations/Conclusions

All recommendations or conclusions from the study should be clearly stated, with a clear and auditable trail as to where they have arisen.

2.14 Terms & Definitions

The report should provide definitions for all terms that would be unfamiliar to a non-QRA specialist.

2.15 QRA Results

Results in QRA are often in mathematical form in terms of:

- **IRPA**: Individual Risk Per Annum, this is the chance of an individual becoming a fatality. If it was close to the upper bound of $1 \times 10^{-3}$, in real terms this would mean as an individual working on the MODU on a typical shift pattern, then every year there is a 1 in 1000 ($1/10^{-3}$) chance that you will become a fatality.
- **PLL**: Potential Loss of Life, this is the product of all the IRPAs. If a MODU had a typical PoB of 50 work 2 on & 2 off, with each person having an IRPA of $1 \times 10^{-3}$ then the PLL would be $10^{-1} (1 \times 10^{-3} \times 50 \times 2$ (two shifts)). Or this is equivalent of saying that the Drilling Contractor would expect a fatality on the MODU on average of 1 every 10 years ($1/10^{-1}$).

- **TR Impairment**: This is the chance per year that the TR will be unable to function as stated in the Case. It is represented in a frequency per year and it's upper boundary should be no higher than $1 \times 10^{-3}$ per year. In other words if a QRA stated this figure for the MODU, it would mean that the Drilling Contractor would expect an incident on average once every 1000 years ($1/10^{-3}$) that would prevent TR from functioning as stated.

- **FARs**: Fatal Accident Rates, this is another way at looking at risk to an individual but as opposed to looking at the chance of being a fatality every year it looks at the chance of being a fatality for every 100 million hours worked. This is similar to the IRPA values presented in a different format.

- **F-N Curves**: These curves plot frequency of incidents against the number of fatalities occurring from such an incident. The frequency of an incident causing 1 fatality is higher than one that can cause 10 and again from one that can cause 50.
Attachment 4 - Risk Assessment Matrix with Environmental Consequence Guidelines for Accidental Events

<table>
<thead>
<tr>
<th>Probability</th>
<th>Consequence</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Negligible</td>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Possible</td>
<td>Medium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Remote</td>
<td></td>
<td>High</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Probable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Improbable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Rating CONSEQUENCES**

**0**
- No environmental pollution is known at this time from the discharge/emission to the environment,
- No use or loss of natural resources
- No costs involved
- No breach of legislation.
- No disruption to general public or external stakeholders.

**1**
- Pollution released due to emission/discharge/incident is contained; no harm to environment.
- Measurable but low use or loss of natural resources.
- Minor clean up campaign, can be handled by MODU personnel. Minor clean up costs.
- Breach of legislation (eg ‘Notice of Violation’) served, but no Cease and Desist order served.
- Disruption to general public or stakeholders if problem persists.

**2**
- Pollution released due to emission/discharge/incident causes limited but reversible harm to the environment.
- Measurable, Moderate use or loss of natural resources.
- Clean up achieved by specialist contractor resources (eg oil spill response vessel). Moderate clean up costs.
- Breach of legislation ‘Notice of Violation’ served, Cease and Desist order served. Shut down MODU to investigate incident.
- Minor disruption to public and stakeholders. Some concern expressed by stakeholders.

**3**
- Pollution released due to emission/discharge/incident causes short term reversible harm to the environment.
- Measurable/Substantial use or loss of natural resources.
- Specialist contractors required. Response involves planning with regulator. High clean up costs.
- ‘Notice of Violation’ served Cease and Desist notice served. More extensive shut down to investigate.
- Extended disruption to public external stakeholders. Concern expressed by a range of stakeholders.

**4**
- Pollution released due to emission/discharge/incident causes long term but reversible harm to the environment.
- Measurable/Extensive use or loss of natural resources
- Clean up plan requires development of long term recovery program. Extensive investment required
- ‘Notice of Violation’ served Cease and Desist notice served. Operations shut down / well abandoned.
- Protracted disruption to public. Stakeholder concerns being publicly aired and reported.

**5**
- Pollution released due to emission/discharge/incident causes irreversible harm to the environment.
- Measurable/Unacceptable use or loss of natural resources
- Major and long clean up plan required with crippling costs
- ‘Notice of Violation’ served Cease and Desist notice served. Significant impact on businesses / assets.
- Unacceptable disruption to public and customer. Widespread, highly publicised concerns / campaigns initiated by stakeholder groups.
## Attachment 5 - Sample Environmental Consequence Guideline for Chronic Discharges & Wastes

<table>
<thead>
<tr>
<th>Rating</th>
<th>Consequences</th>
</tr>
</thead>
</table>
| 0      | • No environmental pollution is known at this time in relation to this discharge or waste stream.  
        • Issue not a concern either in cross-industry forums or from the standpoint of the regulator.  
        • No stakeholders (either internal or external) are concerned. |
| 1      | • Minor contributor to this form of pollution / waste on this MODU  
        • Issue has been raised for discussion in industry forums but not yet by regulator.  
        • Concerns expressed by 1 or 2 individuals amongst internal stakeholder (eg crew members) about this activity or discharge. |
| 2      | • Major contributor to this form of pollution or waste on this MODU.  
        • 'Industry-wide' issue vis a vis regulator.  
        • A number of internal stakeholders (crew, environmental specialists, etc) expressing some concern over discharge / proposed method of waste disposal. |
| 3      | • Unusually high level of emission / waste when compared to ‘peer’ facilities.  
        • Issue likely to require one-on-one discussions with regulator in order to justify.  
        • Issue has come to the attention of external stakeholders. |
| 4      | • Material contribution to company emissions / wastes from similar sources.  
        • Discharge likely to be seen as unacceptable by regulator. Other companies have had significant problems justifying similar actions.  
        • Stakeholder concerns being publicly aired and reported. |
| 5      | • Material contribution to oil industry pollution / wastes deriving from similar sources.  
        • Discharge will be seen as unacceptable by regulator. Standard of management on this and other company installations likely to be called into question.  
        • Discharge likely to initiate widespread, highly publicised concerns. Campaigns may be initiated by stakeholder groups. |
## 5 EMERGENCY RESPONSE

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Introduction

The Assessment Process, Part 4, takes credit for the ability to remove personnel from hazardous situations to a place of safety. This part of HSE Case is a demonstration that these emergency response arrangements have been systematically assessed and that suitable plans are in place to respond to all foreseeable emergency situations.

The Guidelines considers the Evacuation, Escape and Emergency Response under the following key elements:

- Overall philosophy.
- Command and communication.
- Training for emergencies.
- Temporary Refuge details.
- Details of evacuation and escape equipment.
- Means of recovery to a place of safety.

NOTE: The Guidelines refer to HSE to reflect the:

- Trend towards integrating the management of health, safety and environment.
- Requirements of the ISM Code and those North West European Coastal Area regulatory regimes that address environment in the same way as health and safety, (i.e. Denmark, Netherlands and Norway).

Drilling Contractors who elect not to adopt an integrated system approach for their Case, do not need to address the “environmental” requirements and the term Health & Safety should be used in place of HSE.
5.1 OVERALL PHILOSOPHY

5.1.1 Emergency Response Philosophy

Objective
To demonstrate:
- Commitment to maintaining and developing effective emergency response arrangements.
- Establishing objectives against which the arrangements can be assessed.

How can this be achieved?
- Senior management commitment through effective resourcing of emergency response arrangements.
- Establishing emergency response philosophy and objectives with regard to:
  - ensuring the safety of personnel during an emergency
  - provision of facilities and equipment for rescuing and treating the injured
  - rescuing personnel from the MODU and taking them to a place of safety
  - effective interfacing and communication between all parties

What should be in the Case?
- Details of emergency response policy.
- Emergency response philosophy and objectives.

5.1.2 ER Analysis

Objective
To demonstrate that the emergency response arrangements have been systemically analysed for each of the major hazards identified in Part 4.

How can this be achieved?
- Ensuring emergency response is considered either as:
  - an integral part of the hazard identification and risk assessment process (See Part 4.1); or
  - separate detailed analysis
- Ensuring that the analysis includes input from MODU crewmembers.

What should be in the Case?
- Summary of the analyses that have been carried out, including
  - means of evacuation and preferred hierarchy e.g. helicopter, TEMPSC
  - different means of escape, liferafts etc
5.1.3 Emergency Response Plan

Objective
To demonstrate that:
- relevant information from the analysis is included in the emergency response plan
- information contained within the plan is readily available to assist with decision making during a major accident.

How can this be achieved?
- Identifying the information in the analysis that is directly relevant to the command and control of an emergency.
- Presenting the information in such a way that it can be easily referenced during an emergency.
- Ensuring that MODU crews are fully involved in the development and revision of emergency response plans.
- Ensuring that all the MODU crew members who may be involved in the command and control of an emergency are fully aware of:
  - the content and relevance of the plan
  - their specific roles and responsibilities

What should be in the Case?
- Confirmation that the Emergency Response Plan contains relevant information from the analysis (See Part 5.1.2).
- Description of the process for revising and updating the emergency response plan.
- Details of the involvement of MODU personnel in the maintenance and development of the emergency response plan.
- Details or reference to the H₂S emergency procedures.

5.2 COMMAND & COMMUNICATION

5.2.1 Command during Emergencies

Objective
To demonstrate that there is an effective command structure for emergency situations.

How can this be achieved?
- Establishing a clearly defined emergency command structure for all major accident.
- Ensuring all key personnel are aware of their roles and responsibilities during an emergency.
- Ensuring all personnel with emergency command responsibilities are competent to perform their ER duties (See Part 5.3).

What should be in the Case?
- An organigram showing the command hierarchy in an emergency situation.
- Details of roles and responsibilities of key individuals.
5.2.2 External Support

Objective
To demonstrate that, in the event of a major accident, arrangements are in place to provide and co-ordinate external support.

How can this be achieved?
- Establishing an onshore emergency response support team.
- Establishing client and location specific arrangements at the commencement of a contract and prior to any MODU moves for:
  - onshore support responsibilities
  - standby vessels & helicopters
  - oil spill response.
- Updating emergency response plans and informing MODU crews.
- Periodically testing the arrangements through drills and exercises.

What should be in the Case?
- Description of the Drilling Contractor’s onshore emergency support arrangements.
- Details of arrangements for consultation and co-operation with other people who are likely to be involved with emergency response, e.g. coastguards.
- Details of the arrangements for agreeing and establishing emergency response arrangements with clients.
- Reference to Part 5.1.3 with regard to updating emergency response plans.
- Reference to Part 5.3.2 with regard to drills and exercises.

5.2.3 Communications

Objective
To demonstrate that there are sufficient and effective communications between all parties in an emergency situation.

How can this be achieved?
- By ensuring there are suitable systems and equipment, with back ups, for communicating in emergency between the:
  - MODU emergency control centre and all areas on the MODU
  - MODU emergency control centre and onshore support teams, helicopters and supporting vessels.
- Ensuring that personnel are competent in the use of the communication equipment.

What should be in the Case?
- Summary of the communication systems, including back ups, onboard or reference to Part 3.4.7.
5.3 TRAINING FOR EMERGENCIES

5.3.1 Emergency Training

Objective
To demonstrate that all personnel are competent to fulfil their emergency roles.

How can this be achieved?

- By ensuring all personnel working on the MODU have valid training certificates recognized by industry or required by regulations.
- By identifying the additional training & competency required by emergency response team members.
- Ensuring that emergency response training & competence requirements are complied with.

What should be in the Case?

- Details of the emergency response training and refresher training requirements for key personnel.
- Reference to the competence assessment arrangements in Part 2.

Additional Coastal State Requirements

Denmark
Requirements for Emergency Training are set by regulations.

5.3.2 Drills & Exercises

Objective
To demonstrate that there is a program of drills and exercises that:
- test and develop the command & communication arrangements, including onshore support,
- test emergency equipment under realistic conditions,
- maintain and develop individual competencies in emergency response,
- monitor the performance of individuals to identify areas of improvement and any training requirements
- verify data and assumptions used in the emergency response assessments, e.g. times to muster, man overboard recovery etc.

How can this be achieved?

- Developing and implementing a drills & exercise program that will ensure that all elements of the emergency response plan are practised and tested.
- Establishing arrangements for monitoring and reviewing the effectiveness of drills and exercises and of those performing in them.
- Identifying key information, which should be recorded to verify data used in the ER assessments.
**What should be in the Case?**
- Details of the drill & exercise program.
- Details of the arrangements for monitoring and reviewing the effectiveness of drills and exercises.

**Additional Coastal State Requirements**

**Denmark**
Requirements for Drills and Exercises are set by regulations.

5.3.3 **HSE Inductions**

**Objective**
To demonstrate that all personnel arriving on the installation are fully briefed on the MODU’s emergency response arrangements.

**How can this be achieved?**
- Ensuring that the MODU HSE induction program includes:
  - briefing on the MODU emergency response arrangements
  - demonstrations, as appropriate, of personal protective equipment, lifesaving appliances etc
  - familiarisation tour of the MODU showing relative location of station bill, muster points, TEMPSC and life raft locations etc

**What should be in the Case?**
- Reference to HSE Induction in Part 2.2.4.5.

5.4 **TEMPORARY REFUGE ASSESSMENT**

5.4.1 **TR Concept & Description**

**Objective**
To demonstrate that the TR is suitably designed, constructed and equipped to act as a command centre and refuge during emergencies.

**How can this be achieved?**
- Defining an area within MODU as the Temporary Refuge (TR).
- Ensuring that the TR is suitably constructed and equipped e.g. fire walls, smoke and gas detection systems etc.
- Ensuring TR is suitably equipped to act as an emergency command centre.
- Ensuring sufficient quantities of personal protective equipment e.g. immersion suits, floatation aids etc, are located within the TR for all personnel.
- Providing access/egress to evacuation points.
- Defining the TR integrity requirements in relation to the risk assessments (See Part 4.2.5).
What should be in the Case?

- Description of TR location and arrangements, including:
  - fire & explosion protection
  - HVAC system, smoke & gas detection and shutdown arrangements
  - facilities within the TR e.g. control rooms, muster areas, hospital, etc.
  - control and communication systems which are accessible from within the TR e.g. BOP control panel, ballast control etc.
  - personal protective equipment stored in TR.
  - access & egress routes to evacuation points.

- Details of the TR integrity criteria that has been used in the risk assessment studies. (See Part 4.2.5).

5.4.2 Impairment of the TR

5.4.2.1 Major Accidents with the Potential for Immediate Impairment of the TR

Objective
To demonstrate that the major accident events with the potential to impair the TR have been identified and alternative arrangements have been identified.

How can this be achieved?

- From the various risk assessment studies identify the major accident events that have the potential to impair the TR.
- Identify alternative actions to be taken in the event of immediate impairment of the TR.

What should be in the Case?

- A list of potential events with potential to impair the TR.
- Alternate actions to be taken, including other mustering areas should the TR be impaired or be inaccessible for some personnel.

5.4.2.2 Temporary Refuge Integrity Requirements

Objective
To demonstrate that the TR can withstand certain flame & heat, smoke & gas ingestion or explosion incidents for a stipulated period of time to allow for the abandonment of the MODU.

How can this be achieved?

- Through comparing mustering and evacuation times (See Part 5.5.1) with the analysis of fire and explosion events to ensure that the TR can carry out its function until evacuation has occurred.

What should be in the Case?

- A time requirement of how long the TR integrity needs to be maintained and confirmation that the TR has been designed to meet this requirement. (See 5.5.1).
5.5 DETAILS OF EVACUATION & ESCAPE EQUIPMENT

5.5.1 Evacuation & Escape Systems

Objective
To demonstrate that there is suitable and sufficient evacuation & escape systems onboard the MODU.

How can this be achieved?
- Providing equipment in accordance with SOLAS requirements.
- Carrying out an assessment of the evacuation and escape arrangements to:
  - evaluate the times required for mustering & evacuation
  - determine the suitability of the systems and equipment for all foreseeable major accident events.
- Providing additional evacuation systems and equipment to reduce risks to as low as reasonable practicable.

What should be in the Case?
Description of the evacuation and escape arrangements with reference to life saving equipment plans.
- Statement of compliance with Flag State requirements.
- Summary of evacuation and escape assessment including mustering & evacuation times
- Reference to Part 5.3.2 regarding the arrangements for verifying the times used in the assessments.
- Reference to Part 4 regarding the demonstration of ALARP.

5.5.2 Means of Recovery to a Place of Safety

Objective
To demonstrate that suitable arrangements will be established to take people evacuating/escaping from the MODU to a place of safety.

How can this be achieved?
- Identifying the preferred means of evacuation i.e. helicopter.
- Establishing means for rescuing personnel:
  - evacuating by TEMPSC
  - escaping by liferafts
  - escaping into the sea, including an assessment of survivability in the prevailing sea conditions, and recovering them to a place of safety
- Assessing and agreeing client and location specific arrangements for providing these means e.g. standby vessels, helicopters (reference Part 5.2.2).
What should be in the Case?

- Statement of preferred means of evacuation.
- Description of the arrangements for rescuing personnel evacuating from the MODU.
- Description of the arrangements for rescuing personnel escaping in liferafts or from the water.
- Arrangements for assessing client and location specific rescue arrangements.
- Estimated survival times in the sea and estimated recovery times from the sea for each reasonably foreseeable event likely to lead to the need for recovery or rescue from the sea. The margin between survival time and rescue time should be sufficient to clearly demonstrate there is a good prospect of recovery, taking into account the effects of uncertainty.
# JUSTIFICATION FOR CONTINUED OPERATION

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Introduction

This Part of the HSE Case contains:

- Details of the recommendations that the Drilling Contractor has committed to implement.
- Overall conclusions in relation to having:
  - an effective HSE MS in place
  - identified the hazards and environmental aspects, assessed the risks, and reduced them to as low as reasonably practicable
- Drilling Contractors commitment to:
  - operate in accordance with the arrangements stated in the HSE Case
  - maintain a programme of continuous improvement in reducing workplace and environmental risks

NOTE: The Guidelines refer to HSE to reflect the:

- Trend towards integrating the management of health, safety and environment.
- Requirements of the ISM Code and those North West European Coastal Area regulatory regimes that address environment in the same way as health and safety, (i.e. Denmark, Netherlands and Norway).

Drilling Contractors who elect not to adopt an integrated system approach for their Case, do not need to address the “environmental” requirements and the term Health & Safety should be used in place of HSE.
6.1 OVERVIEW

Objective
To demonstrate that the Drilling Contractor is committed to continually improving the management of risks and environmental impact associated with MODU operations.

How can this be achieved?
- By making a commitment to continuous improvement.
- Through the application of and contributing to the identification and development of industry standards and best practice.
- Reviewing and assessing new technology as part of ALARP demonstrations.

What should be in the Case?
- Statement of the Drilling Contractor’s commitment to continuous improvement.

6.2 ACTION PLAN/RECOMMENDATIONS

Objective
To develop an action plan of recommendations to be implemented.

How can this be achieved?
- Through listing all recommendations identified in the risk and impact assessment process and:
  - reviewing them for acceptance
  - assigning, responsibilities, timescales and costs for implementation.
- Leaving an auditable trail between the creation and close-out of all recommendations.

What should be in the Case?
- List of recommendations identified and accepted.
- References to the studies or sources from which recommendation originated.
- Persons/positions responsible for implementing the recommendations.
- Target dates for completion.
- Reference to recommendations from previous HSE Case Submissions.

6.3 JUSTIFICATION FOR CONTINUED OPERATION & CONCLUSIONS

Objective
To demonstrate that the Drilling Contractor believes that:
- that all justifiable measures have been taken, or are in the process of being taken, to ensure that the risks and environmental impacts have been reduced to ALARP
- the HSE Case objectives have been achieved

How can this be achieved?
- For the Drilling Contractor to provide assurance on justification for continued operation.
- Commitment to operate the MODU in accordance with the arrangements detailed in the HSE Case.
What should be in the Case?

- A statement that there is an effective HSE MS in place.
- A statement that following systematic assessments that the workplace risks and environmental impact are ALARP.
- A commitment to complete all recommendations as stated in the action plan.
- A statement on justification for continued operation.
- A statement of the commitment to operate the MODU in accordance with the arrangements detailed in the HSE Case.
A1 - REFERENCE DOCUMENTS

A.1.1 INTERNATIONAL STANDARDS & INDUSTRY GUIDELINES

9. European Standards, European Standards as appropriate - refer to www.cenorm.be.
10. International Association of Drilling Contractors, Deepwater Well Control Guidelines and Supplement.
14. NORSOK Standards, NORSOK Standards as appropriate - refer to www.nts.no.
15. American Burea of Shipping, Rules for Building & Classing Mobile Offshore Drilling Units.
16. Det Norske Veritas, Rules for Classifying Mobile Offshore Drilling and Support Units.
22. DNV, WOAD - World Offshore Accident Databank.


A.1.2 COASTAL STATE LEGISLATION & GUIDANCE

Netherlands
For information on Dutch Legislation, Standards and Guidelines see www.sodm.nl (In Dutch)
English translations available in Mining Regulations and Safety Rules available from Alescon e-mail info@alescon.nl

UK
For information on UK Legislation, ACOPs and Guidance see www.hsedirect.com
Note: this is a subscription service.

Norway
For information on Norwegian Legislation & Guidelines see http:npd.no.

Denmark
For information on Danish Legislation and Guidelines see www.ens.dk
Note: copies currently available by e-mail from safety@ens.dk.
### A2 ABBREVIATIONS & DEFINITIONS

#### A.2.1 ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tbody>
<tr>
<td>ACoP</td>
<td>Approved Code of Practice</td>
</tr>
<tr>
<td>ALARP</td>
<td>As Low As Reasonably Practicable</td>
</tr>
<tr>
<td>AoC</td>
<td>Acknowledgement of Compliance (Norway)</td>
</tr>
<tr>
<td>API</td>
<td>American Petroleum Institute</td>
</tr>
<tr>
<td>BA</td>
<td>Breathing Apparatus</td>
</tr>
<tr>
<td>Bbls</td>
<td>Barrels</td>
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<tr>
<td>BHA</td>
<td>Bottom Hole Assembly</td>
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<tr>
<td>BOP</td>
<td>Blow-out Preventer</td>
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<tr>
<td>BS</td>
<td>British Standard</td>
</tr>
<tr>
<td>CAA</td>
<td>Civil Aviation Authority</td>
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<tr>
<td>CO\textsubscript{2}</td>
<td>Carbon Dioxide</td>
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<tr>
<td>DCR</td>
<td>Design and Construction Regulations</td>
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<tr>
<td>DEA</td>
<td>Danish Energy Authority</td>
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<tr>
<td>DNV</td>
<td>Det Norske Veritas</td>
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<tr>
<td>DP</td>
<td>Dynamic Positioning</td>
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<tr>
<td>EEER</td>
<td>Escape, Evacuation and Emergency Response</td>
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<tr>
<td>ESD</td>
<td>Emergency Shutdown</td>
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<tr>
<td>ESDV</td>
<td>Emergency Shutdown Valve</td>
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<tr>
<td>FAR</td>
<td>Fatal Accident Rate</td>
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<tr>
<td>F&amp;G</td>
<td>Fire &amp; Gas</td>
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<tr>
<td>FMECA</td>
<td>Failure Mode, Effect and Criticality Analysis</td>
</tr>
<tr>
<td>FRC</td>
<td>Fast Rescue Craft</td>
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<tr>
<td>HAZID</td>
<td>Hazard Identification Study</td>
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<tr>
<td>HAZOP</td>
<td>Hazard and Operability Study</td>
</tr>
<tr>
<td>HC</td>
<td>Hydrocarbon</td>
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<tr>
<td>HLO</td>
<td>Helicopter Landing Officer</td>
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<tr>
<td>HP/HT</td>
<td>High Pressure/High Temperature</td>
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<tr>
<td>H\textsubscript{2}S</td>
<td>Hydrogen Sulphide</td>
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<tr>
<td>HSE</td>
<td>Health and Safety Executive</td>
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<td>HSE</td>
<td>Health, Safety and Environment</td>
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<td>HSE MS</td>
<td>Health Safety &amp; Environmental Management Systems</td>
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<tr>
<td>HVAC</td>
<td>Heating, Ventilation and Air Conditioning</td>
</tr>
<tr>
<td>IADC</td>
<td>International Association of Drilling Contractors</td>
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<tr>
<td>IMO</td>
<td>International Maritime Organisation</td>
</tr>
<tr>
<td>IRPA</td>
<td>Individual Risk Per Annum</td>
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<tr>
<td>LEL</td>
<td>Lower Explosive Limit</td>
</tr>
<tr>
<td>LTI</td>
<td>Lost Time Incident</td>
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<tr>
<td>MODU</td>
<td>Mobile Offshore Drilling Unit</td>
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<tr>
<td>MOB</td>
<td>Man Overboard</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>NCS</td>
<td>Norwegian Continental Shelf</td>
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<tr>
<td>NDT</td>
<td>Non destructive testing</td>
</tr>
<tr>
<td>NPD</td>
<td>Norwegian Petroleum Directorate</td>
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<tr>
<td>NSC</td>
<td>North Sea Chapter</td>
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<tr>
<td>NSOAF</td>
<td>North Sea Offshore Authorities Forum</td>
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<tr>
<td>OGP</td>
<td>International Association of Oil and Gas Producers</td>
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<tr>
<td>PA</td>
<td>Public Address</td>
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<tr>
<td>PLL</td>
<td>Potential Loss of Life</td>
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<tr>
<td>PM</td>
<td>Preventative Maintenance</td>
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<tr>
<td>PMS</td>
<td>Planned Maintenance Systems</td>
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<tr>
<td>POB</td>
<td>Persons on Board</td>
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<tr>
<td>PTW</td>
<td>Permit to Work</td>
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<tr>
<td>QRA</td>
<td>Quantitative Risk Assessment</td>
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<tr>
<td>SIMOPS</td>
<td>Simultaneous Operations</td>
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<tr>
<td>SMS</td>
<td>Safety Management System</td>
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<tr>
<td>SSoM</td>
<td>State Supervision of Mines</td>
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<tr>
<td>SOLAS</td>
<td>Safety of Life at Sea</td>
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<tr>
<td>TEMPSC</td>
<td>Totally Enclosed Motor Propelled Survival Craft</td>
</tr>
<tr>
<td>TR</td>
<td>Temporary Refuge</td>
</tr>
<tr>
<td>UEL</td>
<td>Upper Explosive Limit</td>
</tr>
<tr>
<td>UPS</td>
<td>Uninterruptable Power Supply</td>
</tr>
<tr>
<td>WOAD</td>
<td>World Offshore Accident Database</td>
</tr>
</tbody>
</table>
A.2.2 DEFINITIONS

Acceptance Criteria
The limits within which risks are acceptable.

Accident
Includes any undesired circumstances which gives rise to ill-health or injury, damage to property, plant, products or the environment.

Aspects (Environmental)
Element of an organisations activities or services that can interact with the environment.

Auditing
A structured independent assessment of the efficiency, effectiveness and reliability of the management system.

ALARP Principle
A principle for assessing the effort required to reduce risk.

Availability
Probability that a system will operate on demand.

Blow-out
An uncontrolled escape of gas/reservoir fluid.

Classification
A service provided by Classification Societies which establishes and administers standards, known as Rules, for the design, construction and periodic survey of merchant ships and other marine and offshore structures. Classification certifies adherence to these Rules, and means that a vessel possesses the structural and mechanical fitness required for its intended service.

Class Rules
Rules set by the Classification Societies and intended to ensure safety of lives, the protection of assets and the marine environment.

Control
Means of intervention permitted by the design (e.g. pressure relief valves, emergency power supplies), hardware (e.g. dump tanks, coolant sprays), or the presence of manually or automatically initiated ESD procedures which are intended to contain a developing situation so that escalation and a major accident may be avoided.

Cost Benefit Analysis
Analyses which evaluates the costs to be made versus the benefits obtained of an activity.

Diversity
The performance of the same function by a number of different and independent means.

Electrical Equipment and Power Systems
Electrical equipment and power systems include all plant and apparatus designed for the generation, conversion, storage, distribution, transformation or use of electricity.
Electrical Isolation
Electrical isolation is the secure, proven disconnection and separation of a circuit or item of equipment of every source of electrical energy.

Emergency (Major)
An event which requires mobilisation of all emergency response teams and key personnel and may involve support from external Agencies.

Environment
The surroundings and conditions in which an organization operates, including living systems (human and other) therein.

Environmental Aspect
Element of an organisations activities or services that can interact with the environment.

Environmental Impact
Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisations activities or services.

Environmental Monitoring
The repetitive and continued observation, measurement, and evaluation of health and / or environmental or technical data to follow changes over a period of time. Measurement of emissions of pollutant levels are made in relation to a set standard or to assess the efficiency of regulatory and / or control measures.

Environmental Significance
A threshold criteria for judging the significance of an environmental aspect.

Escape
The process of leaving an offshore installation in the event that part, or all, of an evacuation and / or communication system fails, whereby personnel on the MODU make their way directly to the sea.

Evacuation
The planned method for leaving an offshore installation in an emergency e.g. helicopter or TEMPSC.

Fatal Accident Rate
The number of calculated fatalities that will occur for every 100 million man-hours worked.

Failure Modes and Effects Analysis (FMEA)
A hazard identification technique in which known failure modes of components or features of a system are considered and undesired outcomes are noted.

Functionality
The ability of a system to perform its specified role. This may be characterised and demonstrated by identifying critical functional parameters.

Harm
The damage, injury or ill-health, whether physical or mental, inflicted upon animate or inanimate objects.
**Hazard**
The intrinsic property or ability of an agent with the potential to cause harm, including ill-health and injury, damage to property, plant, products or the environment, production losses or increased liabilities.

**Hazard Identification (HAZID)**
Systematic process for recognising the hazards and defining their characteristics.

**Health, Safety and Environmental Objectives**
The goals, in terms of health, safety and environmental performance, that an organisation sets itself to achieve.

**Health, Safety and Environmental Performance Criteria**
Standards or benchmarks, quantified where possible, that provide measures against which an organisation can determine the degree to which they are succeeding in managing risks, and hence in meeting their objectives.

**Health Surveillance**
Monitoring the health of people to detect signs of work related ill-health so that steps can be taken to reduce the probability of further damage.

**Human Error**
A behaviour, or its effect on a system which, by its very existence exceeds acceptable limits.

**IMO MODU Code**
Standards set by the International Maritime Organisation for the; design, construction and other safety measures for mobile drilling units in order to minimise the risks to the unit, to the personnel onboard and to the environment.

**Incident**
Includes all undesired circumstances and occurrences which have the potential to cause accidents.

**Individual Risk Per Annum**
The probability that an individual will become a fatality each year.

**Management Review**
The formal evaluation of the health and safety management system.

**Management System**
The organisational structure, responsibilities, procedures, processes, and resources for and arrangements established for controlling an undertaking.

**Mitigation**
Means taken to minimise the consequences of a major accident that has occurred.

**MODU HSE Case**
A formal document demonstrating that the Health Safety Environmental risks associated with the MODU have been assessed and are being effectively managed.

**Monitoring**
Line management activity to ensure the implementation and effectiveness of HSE performance and compliance.
**Muster**
Process of accounting for all personnel.

**Muster Point**
A muster point is a place of accounting for all personnel.

**Muster Time**
The time for personnel to assemble at their designated Muster Station and complete checks.

**Non-Hazardous Area**
Any area not classified as Zone 0, 1 or 2 and deemed to be non-hazardous with respect to the absence of any occurrence of a flammable atmosphere.

**Organisation**
An organisation body or establishment, for example, a business or Company with more than one site, each site may be defined as an organisation.

**PLL**
Potential Loss of Life – expected number of statistical fatalities per year.

**Pollution**
Pollution is the introduction into the environment of substances or effects that are potentially harmful or interfere with man’s use of his environment or interfere with species or habitats.

**Performance Standard**
A statement, which can be expressed in quantitative or qualitative terms, of the performance required of a system, item or equipment, person or procedure.

**Personal Protective Equipment**
Equipment intended to be held or worn by the worker to obtain protection from hazards.

**Quantitative Risk Assessment**
The evaluation of the extent of risk arising, incorporation of calculations based upon the frequency and magnitude of hazardous events.

**Risk**
Means the likelihood that a specified undesired event will occur due to the realisation of a hazard by, or during, activities, or by the products and services created by activities. The combination of the frequency, or probability, and the consequence of a specified hazardous event.

**Risk Acceptance Criteria**
A description of the target performance, to satisfy objective corporate policy, with regard to the safe and efficient operability and functionality of the installation, facility or unit as a whole, or major systems within it.
**Risk Analysis**

The systematic use of available information to:

Identify hazards.

Evaluate the associated risks.

Identify risk reduction measures.

**Risk Assessment**

The process of evaluating the risk to the health and safety of workers whilst at work or to the environment, arising from the occurrence of a hazard at the workplace.

**Risk Management**

The process whereby decisions are made to accept a known risk, or hazard, or to eliminate or mitigate it. The systematic application of management policies, procedures and practices to the tasks of analysing, evaluating and controlling risk.

**Safety Committee**

A committee of management and staff representatives with the remit to advise on and assess the adequacy of preventive measures affecting health, safety and environment.

**SOLAS**

International convention dealing with safety of life at sea.

**Survey**

An examination of a piece of equipment or a vessel in accordance with the appropriate Classification Society rules, guides, standards or other criteria of the Classification Society / Certifying Authority or in accordance with other specific standards. The examination may be required under classification or certification, or requested as a result of damage sustained by the piece of equipment or vessel.

**Temporary Refuge**

The facilities provided for monitoring and control of the incident and protecting personnel prior to evacuation.

**Workplace**

Workplaces include any place on the work premises to which workers have access to in the course of their work including the means of access and egress. I.e. all areas on a MODU.

**Working Environment**

The surroundings and conditions in which work is performed.

**Waste**

a). Any substance which constitutes a scrap material or an effluent or any other unwanted surplus substance arising from the application of any process; and

b) Any substance or article which requires to be disposed of as being broken, worn out, contaminated or otherwise spoiled.

**Work Equipment**

Work equipment includes all machinery, apparatus, tools or plant used in the course of work.
A3 DRAWING & SCHEMATICS

This list has been developed only as a guide to the drawings that should be included in the HSE Case.

One drawing may contain relevant information for more than one title on the list, e.g. the General Arrangement drawings may contain sufficient detail on Temporary Refuge lay out.

General Arrangements
1. Outboard Profile
2. Main Deck Plan View
3. General Arrangement Tween Deck Spaces
4. General Arrangement of Accommodation

For Column Stabilised Units
5. General Arrangement Columns
6. General Arrangement Pontoons

For Jack-Up units
7. General Arrangement of Leg/Spudcan
8. General Arrangement of Jacking System

Stability
9. Allowable VCG curves

Ballast & Bilge Arrangements
10. Ballast Piping Schematic
11. Bilge System

Drilling & Well Control
12. Mud Process Schematic
13. Choke and Kill Isometric

Power Generation & Distribution
14. Main Power Single Line Diagram with Switchboard layout
15. Emergency Power Single Line

Fire & Explosion
16. Hazardous Areas
17. Bulkhead Classification
18. Temporary Refuge
19. Fire Control Plan
20. Fire Main Schematic

Evacuation & Escape
21. Emergency Plan (Station Bill / Muster List)
22. Escape Routes
23. Lifesaving Equipment Plan
A4 COASTAL STATE LEGISLATION REFERENCE INDEX

This appendix contains information on:

- Contact details of the Regulatory Authorities in:
  - Netherlands
  - Denmark
  - UK
  - Norway
  - Germany
- Information regarding submission of the Cases for each regime.
- Reference indexes of the primary legislation as of August 2002.
- Reference index for ISM Code.
A.4.1 NETHERLANDS

Regulator: State Supervision of Mines (Staatstoezicht op de Mijnen)

Location: (visiting address) Princes Beatrixlaan 428
VOORBURG (CBS building)

Postal Address: Inspector General of Mines
(all) State Supervision of Mines
Postbus 8
2270 AA VOORBURG
The Netherlands

Telephone: +31 70 39 56 500 (reception)
Fax: +31 70 39 56 555
E-mail: info@sodm.nl
Web-site: www.sodm.nl

Safety and Health Document Submission Requirements:

For MODU’s entering the Dutch sector, a Safety and Health Document must be submitted to
the Inspector General of Mines at least eight weeks before entry and commencement of
operations.

Where a MODU already has an accepted Safety and Health Document, it must be revised,
updated and re-submitted based on the following criteria:

At least eight weeks prior to the 5th anniversary of acceptance of the current Safety and
Health Document;

Prior to carrying out any major modifications or material changes to the MODU or to any of
its safety critical systems; or,

Where the current Safety and Health Document is no longer representative of the MODU or
the operations it performs.

In this context, major modifications and material changes include, change of owner /
Management System, major structural changes, any change to protective and safety critical
systems as well as additional operations not covered by the current Safety and Health
Document.

Acceptance Regime:

Legislation requires that a Safety and Health Document be submitted to State Supervision of
Mines for review and assessment before operations commence.

A key condition for acceptability, is that the Safety and Health Document complies with the
requirements of the Mining Regulations 1964 and Mining Regulations continental shelf and
their respective Further Rules for such documents (State Gazette 1995, 181).

State Supervision of Mines has developed a three-phase review and assessment strategy to
determine whether an adequate “Case for Safety and Health” has been made. An overview
of this Strategy together with the key elements that assessors will examine is provided in the
“Report to Industry” issued by State Supervision of Mines. The first phase is an
administrative overview to ensure that the document is complete and generally complies with
legislation. The second phase is a detailed technical review to ensure that the demonstrated
case for safety is robust. The third phase is an on-site / location verification that the written word is put into practice. A guidance note is also available on the WEB.

Once satisfied that the Case for Safety and Health has been made, State Supervision of Mines will issue a letter of “no further questions” (acceptance). The date of the letter sets the anniversary date for future re-submissions of the Safety and Health Document.

State Supervision of Mines does not have a charging regime.

Other Information:

Dutch Safety and Health documents have to demonstrate compliance with all legislation applicable to the extractive industries. These documents must include an objective assessment of the adequacy and applicability of a drilling contractors management system to effectively control risks and manage operational and maintenance activities. These management systems must also comply with all legislation applicable to the extractive industries.

It is common practice in The Netherlands for companies to submit an integrated Safety, Health and Environment Document to State Supervision of Mines for review and assessment. Where risks to the environment caused by oil and gas activities are also addressed. Similarly, integrated Safety, Health and Environment management systems demonstrating adequate and effective management control of their business process(s).

State Supervision of Mines advocates and actively encourages all companies to address safety, health and environmental issues and risks in an integrated manner.

In the Netherlands it is acceptable to submit one hard copy plus one digital copy in “.pdf” format of the HSE Case.

A preface is required with a senior member of management signing for “acceptance” of the HSE case and thereby assuming legal responsibility for the case.
<table>
<thead>
<tr>
<th>Article</th>
<th>Requirement</th>
<th>HSE Case Reference</th>
<th>Other Relevant Article</th>
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<td>Mining Regulations Continental Shelf MRcs</td>
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<tr>
<td>Article 1</td>
<td>Requires companies to provide a list of definitions covering terms used.</td>
<td>Appendix 2</td>
<td></td>
</tr>
<tr>
<td>Article 7</td>
<td>Places an obligation on the manager of a MODU to ensure that measures concerning health and safety are followed.</td>
<td>2.2.4.4</td>
<td></td>
</tr>
<tr>
<td>Article 8a-1, 2&amp;3</td>
<td>Identifies specific requirements on Part 3 the design of work places/sites</td>
<td></td>
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<tr>
<td>Article 8b</td>
<td>Awareness and involvement of the workforce</td>
<td>2.2.2.1</td>
<td>Report to Industry 2.0</td>
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<td></td>
<td></td>
<td></td>
<td>5.0 – General – 1 &amp; 3 – Workforce awareness and workforce involvement</td>
</tr>
<tr>
<td>Article 10a</td>
<td>Workers who work on mining installations must be trained in performing activities required at a specific worksite</td>
<td>2.2.4.4</td>
<td></td>
</tr>
<tr>
<td>Article 13a &amp; 13i-2</td>
<td>The Managers of the relevant Drilling Contractor must coordinate all implementations of measures regarding safety and health of workers.</td>
<td>2.2.1.2 &amp; 2.2.1.3</td>
<td>Report to Industry 4.2 &amp; 5.4</td>
</tr>
<tr>
<td>Article 13b</td>
<td>Requirements regarding measures to protect the health and safety of workers.</td>
<td>Part 4</td>
<td></td>
</tr>
<tr>
<td>Article 13c</td>
<td>Objectivity and depth of the adopted risk identification process</td>
<td>4.1</td>
<td>Report to Industry 5.3</td>
</tr>
<tr>
<td>Article 13e</td>
<td>Requirements regarding evaluation of risks and protective measures</td>
<td>4.3, 4.4 &amp; 4.5</td>
<td></td>
</tr>
<tr>
<td>Article 13f-1</td>
<td>Requirement to prepare a health &amp; safety document</td>
<td>1.1</td>
<td></td>
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<tr>
<td>Article 13f-2a</td>
<td>Determine risks for workers on work site and evaluate these risks</td>
<td>4.2 &amp; 4.3</td>
<td>Other Publication OP-10 11-2, OP-10 C1.1 a,b Report to Industry section 5.0 – Risk Identification. Identification</td>
</tr>
<tr>
<td>Article</td>
<td>Requirement</td>
<td>HSE Case Reference</td>
<td>Other Relevant Article Process.</td>
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</tr>
<tr>
<td>Article 13f-2c</td>
<td>Design, use, maintenance, construction on worksite</td>
<td>3.1.5 &amp; 4.3</td>
<td>Report to Industry 2.0, OP-05 2ib</td>
</tr>
<tr>
<td>Article 13f-3</td>
<td>Revision to document whenever a worksite undergoes major alterations, extensions or renovations.</td>
<td>1.1.5</td>
<td></td>
</tr>
<tr>
<td>Article 13f-4</td>
<td>Mentioning of the measures that have been taken in order to prevent serious accidents, or situations that are dangerous</td>
<td>4.2 &amp; 4.5</td>
<td>OP-10 article 3.4</td>
</tr>
<tr>
<td>Article 13g</td>
<td>Requirements regarding the obligation to prepare a safety &amp; health document</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>Article 13h-2a</td>
<td>List of specific sources of risk related to the work site including each activity that would cause incidents</td>
<td>4.3</td>
<td>FRMRcs 102 Art. 5d, FRMRcs 102 Art 6d, Report to Industry 4.2 – Risk Evaluation – validity of Data Sources &amp; Report to Industry 5.0</td>
</tr>
<tr>
<td>Article 13h-2b</td>
<td>An evaluation of the risks of the specific sources mentioned under MRcs Art 13h-2a</td>
<td>4.3</td>
<td>FRMRcs 102 Art. 5d and 6.1d; Report to Industry section 5.0 – Risk Evaluation</td>
</tr>
<tr>
<td>Article 13h-2d</td>
<td>Proof that a safety and health care system is being used to assure that all identified safety critical elements are suitable and remain in good condition</td>
<td>1.2.5</td>
<td>Report to Industry 5.0 – Risk Control and Management - 3</td>
</tr>
<tr>
<td>Article 17b,c,e,f,g</td>
<td>Communication and involvement with the workforce</td>
<td>2.2.2.1 &amp; 2.2.3</td>
<td>Report to Industry 5.0 – General – 2. Workforce Communication, and 3. Workforce involvement</td>
</tr>
</tbody>
</table>
### Article Requirement HSE Case Reference Other Relevant Article

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<tr>
<th>Article</th>
<th>Requirement</th>
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<tbody>
<tr>
<td>Article 189-3</td>
<td>The emergency plan, that must be based on the Safety &amp; Health Document, must include the use of Stand-by vessels and helicopters, and must contain criteria for their capacity and reaction time. The required reaction time must be mentioned in the Safety and Health Document of each installation.</td>
</tr>
<tr>
<td>FRMRcs 102 Article 1</td>
<td>Requires companies to provide a list of definitions covering term used.</td>
</tr>
<tr>
<td>FRMRcs 102 Article 5a</td>
<td>Requires companies to provide a clear and precise description of the drilling or mining installation</td>
</tr>
<tr>
<td>FRMRcs 102 Article 5b</td>
<td>Provide a list of company acceptance criteria</td>
</tr>
<tr>
<td>FRMRcs 102 Article 5c</td>
<td>List of all identified risks</td>
</tr>
<tr>
<td>FRMRcs 102 Article 5d</td>
<td>A specification of the sources used for evaluating the risks</td>
</tr>
<tr>
<td>FRMRcs 102 Article 5g</td>
<td>A list of the risk reduction measures, including a summary of all the research conducted in this framework</td>
</tr>
<tr>
<td>FRMRcs 102 Article 5h</td>
<td>Details of performance standards for all protective and critical systems</td>
</tr>
<tr>
<td>FRMRcs 102 Article 5j</td>
<td>Provide a remedial action plan with time schedule</td>
</tr>
<tr>
<td>FRMRcs 102 Article 5k</td>
<td>Compare identified risks for compliance with their stated acceptance criteria</td>
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**Further Rules Mining Regulations Continental Shelf FRMRcs**

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<tr>
<th>Article</th>
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<tr>
<td>FRMRcs 102 Article 1</td>
<td>Requires companies to provide a list of definitions covering term used.</td>
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<td>Compare identified risks for compliance with their stated acceptance criteria</td>
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<tr>
<td>Article</td>
<td>Requirement</td>
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</tr>
<tr>
<td>FRMRcs 102 Article 5l</td>
<td>Testing the performances of a process installation, or its components, of equipment and control systems, with respect to the performance standards</td>
</tr>
<tr>
<td>FRMRcs 102 Article 5m</td>
<td>A written declaration from the Managers of the relevant Drilling Contractor that the risks at least fall within their previously established acceptance criteria and performance standards</td>
</tr>
<tr>
<td>FRMRcs 102 Article 9.2</td>
<td>The managers must regularly and systematically assess compliance with and effectiveness of a Safety and Health Document</td>
</tr>
<tr>
<td>FRMRcs 102 Article 9.3</td>
<td>If the results of the assessment referred to in FRMR-102 Art. 9.2, deem this necessary, the Managers must revise the Safety &amp; Health Document.</td>
</tr>
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</table>

Other Relevant Information

<table>
<thead>
<tr>
<th>Other Publication</th>
<th>Requirement</th>
<th>Report to Industry</th>
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<tbody>
<tr>
<td>OP-05 2ii</td>
<td>Potential major hazards of the installation and the risks to personnel have been identified</td>
<td>4.1</td>
</tr>
<tr>
<td>Report to Industry 4.2 &amp; 5.3</td>
<td>A justification for any assumptions, conclusions and decisions made.</td>
<td>4.2</td>
</tr>
<tr>
<td>Report to Industry 4.2 &amp; 5.5</td>
<td>Assessment and listing of the scenarios developed from escape, evacuation and rescue analysis</td>
<td>5.1.3</td>
</tr>
<tr>
<td>Report to Industry 5.6</td>
<td>The process by which risks have been analysed (operational activities and critical tasks)</td>
<td>4.2, 4.3 &amp; 4.4</td>
</tr>
<tr>
<td>Report to Industry 4.2</td>
<td>Determine the degree of compliance with the stated acceptance criteria</td>
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<tr>
<td>Report to Industry 4.2 &amp; 5.4</td>
<td>Details of all key items, critical or protective systems</td>
<td>Part 3</td>
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<tr>
<td>Article</td>
<td>Requirement</td>
<td>HSE Case Reference</td>
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<tr>
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</tr>
<tr>
<td>Report to Industry</td>
<td>The process by which the performance standards of such key items, critical or protective systems, has been verified</td>
<td>1.2.5</td>
</tr>
<tr>
<td>4.2</td>
<td>Risks to personnel have been eliminated or reduced to a level 'As Low As Reasonably Practicable'</td>
<td>4.5</td>
</tr>
<tr>
<td>Report to Industry</td>
<td>Advances in technology and technical knowledge are adopted to improve existing situation</td>
<td>6.1</td>
</tr>
<tr>
<td>2.0</td>
<td>A remedial action plan with priorities, dates and strategy for implementation</td>
<td>6.2</td>
</tr>
<tr>
<td>Report to Industry</td>
<td>A detailed assessment of the review, to determine the adequacy, appropriateness and effectiveness of the management system</td>
<td>2.5.2</td>
</tr>
<tr>
<td>4.2 &amp; 5.1</td>
<td>Details of all software measures, appropriate or necessary to control risks</td>
<td>2.5.1</td>
</tr>
<tr>
<td>Report to Industry</td>
<td>Details of the various independent, 2nd party and internal verification schemes in place and the frequency and type of examination selected for each safety critical element</td>
<td>1.2.5</td>
</tr>
<tr>
<td>4.2</td>
<td>Details of the verification scheme in place to monitor compliance with legislation and the safety and health document</td>
<td>1.2.5</td>
</tr>
</tbody>
</table>
A.4.2 DENMARK

Regulator: Ministry of Economic and Business Affairs

Danish Energy Agency (DEA)

44 Amaliegade

1256 Copenhagen K

Denmark

Telephone: +45-3392 6700

Fax: +45 3311 4743

e-mail: ens@ens.dk

Web-site; www.ens.dk

HSE Case Submission Requirements:

For MODUS entering the Danish sector, a safety case covering major hazards must be submitted to the DEA as part of the documentation needed for the application for an operation permit. The remaining part of the HSE case covering occupational and environmental hazards is not required to be submitted but need to be in place before operation commences.

The validity of the operation permit cannot exceed 5 years.

The HSE Case has to be revised when safety, health and environmental conditions change significantly, e.g. by structural changes to the MODU, change of owner, additional operations not covered by the current HSE case, etc.

Acceptance Regime:

The regulations require an operation permit granted by the DEA before any operation can commence. By granting the permit, the major hazard part of the HSE case is regarded as accepted.

The submitted case is assessed as part of consideration of the documentation submitted with the application for an operation permit.

Furthermore, the DEA visit the MODU and assess workplace and living quarter conditions and may require improvements of these as part of the conditions for the operation permit.

The occupational and environmental hazards part of the HSE case is assessed during the normal supervisory activities by the DEA. There is no formal acceptance of that part. If problems are found the DEA will issue an improvement notice to the employer responsible for the case.

The DEA charges fees for consideration of the application for the operation permit and the supervision of the HSE case.
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A.4.3 UK

**Regulator:** Offshore Safety Division  
**Health & Safety Executive**  
Lord Cullen House  
Frazer Place  
Aberdeen  
Telephone: +44-1224-252500

**Safety Case Submission Requirements:**

For MODU’s entering the UK sector, the Safety Case must be submitted to the regulator at least 3 months prior to entry.

Where a MODU already has an accepted Safety Case, the Safety Case must be revised, updated and re-submitted:

at least 3 months prior to the 3rd anniversary of the acceptance of the current Safety Case; or,

prior to carrying out any material changes to the MODU; or,

if there have been a number of changes occurring which results in the existing Case not being representative of current MODU or its operations.

**Note** Material change includes, changes of owner, major structural changes, additional operations not covered in the current Safety Case etc.

**Acceptance Regime:**

The regulations require a HSE Case is “Accepted” by the HSE prior to operations commencing.

HSE have developed a comprehensive “Acceptance” process in which Inspectors assessor will examine, sometimes in extensive detail, elements of a HSE Case to confirm that an adequate “Case for Safety” has been made.

In event of there being any issues, shortfalls or requirements for further information, the HSE will, in the first instance, raise the issue informally. If the issue cannot be resolved immediately then an Issue Note will be raised which is a formal record of concern which the Drilling Contractor must respond or the Case will not be accepted.

Once satisfied that that the Case for Safety has been made, the HSE will issue a formal letter of acceptance. The date of the letter sets the anniversary date for future re-submissions of the Safety Case.

The HSE operates a charging regime which includes the assessment of Safety Cases by HSE.

**Other Relevant Information:**

UK Safety Cases have to demonstrate compliance with the Offshore Installations (Safety Case) Regulations 1992 only. However, the SMS arrangements should define how the drilling contractor complies with all relevant statutory provisions.
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</table>
Smedvig Offshore AS have completed a comparison study of regulatory requirements for the UK and Norway on behalf of the HSE and NPD. It was noted that from its GAP analysis that the following UK regulations were not mirrored in Norwegian Legislation.

Safety Case Regulations
Regulation 5 – Safety Case
Regulation 6 – Safety case for combined operations
Regulation 15 - Keeping of documents
Regulation 15A-B - Verification Scheme - ICP
Management and Administration Regulations
Regulation 6 - Managers
Regulation 7 - Restraint and putting ashore
Regulation 9 - Personnel records
Regulation 13 - HLO
Prevention of Fire and Explosion and Emergency Response Regulations
Regulation 11 - Signal for toxic gas
Design and Construction Regulations
Pipeline Safety Regulations
The Provision and Use of Work Equipment Regulations

For drilling contractors moving MODUs from Norway to the UK it is recommended that these issues be examined in detail to ensure compliance. Further details from this report can be found ????
A.4.4 NORWAY

Regulator: Norwegian Petroleum Directorate
P.O. Box 600,
N-4003 Stavanger
Norway

Telephone: +47 51 87 60 00
E-mail: postboks@npd.no

HSE Case Submission Requirements:

Under Norwegian legislation the primary duty holder for offshore operations, including drilling, is the licensee. For each license, the Ministry appoints one of the licensees as operating company (operator). The operator has the day-to-day responsibility for satisfying the regulator that the regulatory requirements, including the Contractor HSE Cases, are complied with.

However, to assist with the process, the NPD now offers a service that enables a Drilling Contractor to obtain an “Acknowledgement of Compliance”, (AoC).

Further details of the AoC are available on the NPD web site (www.npd.no).

Acceptance Regime:

Prior to commencing specified project activities, the operator is legally obliged to obtain consent from NPD. The basis for such consent is a legally binding statement relating to the regulatory compliance of the activity in question. Examples of such activities are exploration drilling and commencement of production. Application for consent to petroleum activities shall be sent to NPD minimum 9 weeks prior to commencement of the activity.

Consents are related to activities, and do not imply approval of installations, equipment, etc. However, the operator may refer to documentation related to previous applications of a mobile unit as part of his documentation related to the activity in question. The operator must, however, assess the validity of this documentation with regard to the specific conditions in each case.

Likewise, if a mobile drilling unit has obtained an AoC from NPD, this may be referred to as part of the documentation.

Other Information:

The AoC mentioned above, is not a legal requirement, but a service offered to the rig owners to improve the predictability with regard to the rig’s potential to satisfy regulatory requirements when operating on the Norwegian shelf.

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<td>Use, maintenance and life span of barriers</td>
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Regulations relating to conduct of activities in the petroleum activities 3rd September 2001

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Chapter 13 Section 72-80 Drilling and well activities | Drilling & well control | 3.3 | |
Chapter 14 Section 81 Marine Operations | Positioning | 3.2.4 | |
Chapter 14 Section 83 Lifting Operations | Lifting Operations | 2.3.2.7 | 3.4.1 |

Smedvig Offshore AS have completed a comparison study of regulatory requirements for the UK and Norway on behalf of the HSE and NPD. It was noted that from its GAP analysis that the following Norwegian regulations were not mirrored in UK Legislation. Framework HSE Management

Section 11 - Favourable health, environment and safety culture
Section 14 - Qualification and follow-up of other participants
Section 16 - Use of the Norwegian language
Section 29-30 Emergency preparedness
Section 31 - Safety manning in the event of industrial disputes
Section 38 - Monitoring of safety zones
Section 44 - Several employers at the same workplace, principal enterprise
Section 46 - Right of the responsible safety delegate to stop dangerous work
Section 47-53 Working hours arrangements and off-duty periods
Section 54 - Minimum age

Management regulation
Section 7-9 Monitoring, decision making and planning
Section 10 - Work processes
Section 16 - Environmental risk and emergency preparedness analyses
Section 17 - Analysis of the working environment
Section 20 - Handling of non-conformities

Facility regulation
Section 4 – Design of facilities
Section 17 – System for internal and external communication
Section 22–23 - Noise and vibration
Section 24 - Lighting
Section 37 – Emergency power and emergency lighting
Section 38 – Ballasting systems
Section 39 - Open drainage systems
Section 47-51 Drilling and Well Systems
Section 55 - Remote operation of pipes and workstrings
Section 57 - Main loadbearing Structure
Section 59 - Living quarters
Section 60 - Health department
Section 61 - Emergency hospital
Section 62 - Occupational hygiene and drinking water
Section 63 - Stability
Section 67 - Loading and discharging facilities
Section 69 - Exhaust ducts
Section 73 - Marking of equipment and cargo
Section 77 - Aerosols
Activity Regulation
Section 4 - Control of employee's health
Section 5 - Recording of work hours
Section 6 - Doctor and educated nurse
Section 17 - Increase POB in special circumstances
Section 30 - Transfer of information
Section 48 - Specific requirements to testing of blowout preventer (BOP)
Section 56 - Testing and evaluation of chemicals
Section 80 - Remote operation of pipes and workstrings
Section 81 - Positioning
Section 83 - Lifting operations
Information duty regulation
Section 1-4 Material and Information
Section 11 – Alert and notification

For drilling contractors moving MODUs from the UK to Norway it is recommended that these issues be examined in detail to ensure compliance. Further details from this report can be found ???
A.4.5 GERMANY

Regulator: Landesbergamt Clausthal-Zellerfeld
Hindenburgplatz 9
Postfach 1153
D-Clausthal-Zellerfeld
Germany

Telephone: + 49-5323-723250
Telefax: + 49-5323-723258
E-Mail: Poststelle@Lba.niedersachsen.de

Revision: 1

Revision Date: 15.04.2002

Safety and Health Document Submission Requirements:
The Safety Case in Germany is called Safety and Health Document. This document is comparable with the Safety Case from the other North Sea Countries but has an other status within the German Legislation. The Safety and Health Document has to be prepared before the work on site begins. There is no requirement to submit the Safety and Health Document to the Landesbergamt and no approval of the document is necessary. The document has to be on bord of the installation and in the case of an accident/incident this document has to be made available for the investigators of the Landesbergamt.

Acceptance Regime:
See above.

Other Information:
The operator may only use platforms in the German Sector of the North Sea if the Landesbergamt has granted its approval or general certification (§ 10 Offshore Mining Directive, 21.03.1989, BGBl¹, I S. 2093). In addition to this further works plans (for example: Completion, Use of drilling mud and waste handling) need to be approved by the Landesbergamt before the work on site begins (§§ 50 ff. Federal Mining Law, 13.08.1980, BGBl. I S, 1310).

¹ BGBl = Bundesgesetzblatt (Offical gazette of Federal Law)
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<td>Allgemeine Bundes-Bergverordnung vom 23.10.1995 (BGBl.I S. 1466)</td>
<td>Identify and evaluate all risks for the workers and present the results of this evaluation</td>
<td>1.7.3, 4.1, 4.3</td>
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<td>Article 3 (1) Nr. 2</td>
<td>Demonstrate that the appropriate technical, organisational and personal measure are taken for the safety and health of the workers</td>
<td>2.2, 2.3.2.1</td>
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<tr>
<td>Article 3 (1) Nr. 3</td>
<td>Demonstrate that workplaces and equipment is properly designed, can be operated safely and is maintained</td>
<td>2.3.1.4, 2.3.2.4</td>
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<td>Article 3 (1) Nr. 4</td>
<td>Demonstrate that there is an appropriate induction program for the workforce concerning safety and health risks and safety measures</td>
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<td>Article 3 (2) Nr. 1</td>
<td>The risk evaluation under Article 3 (1) Nr. 1 has to consider risks that result out of the design of work places</td>
<td>2.3.1.3, 2.3.1.4</td>
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<tr>
<td>Article 3 (2) Nr. 2</td>
<td>The risk evaluation under Article 3 (1) Nr. 1 has to consider risks that result out of the design, selection and use of equipment, as well as the interaction with working material</td>
<td>1.7.3</td>
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<td>Article 3 (2) Nr. 3</td>
<td>The risk evaluation under Article 3 (1) Nr. 1 has to consider risks that result out of qualification, experience and ability of workers</td>
<td>2.2.1.4, 4.1</td>
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<td>Article 3 (3) Nr. 1</td>
<td>Revision to the document are necessary whenever a worksite undergoes major alterations, extensions or renovations</td>
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<td>Article 3 (3) Nr. 2</td>
<td>Revision to the document are necessary to prevent repetitions of major incidents/accidents</td>
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<td>Article 3 (4)</td>
<td>The safety and health measures has to be checked regular to control if they comply with the legislation. The result has to be documented</td>
<td>2.2.1.7, 6.1</td>
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<td>Describe the particular sources of danger for the work places which might lead to major accidents</td>
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<td>The precautions that are necessary to prevent major accidents, to minimize the consequences of accidents and to abandon the workplace/installation in the case of an emergency have to be described in detail</td>
<td>2.3.7, 4.1, 4.2.5, 5.1</td>
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A.4.6 INTERNATIONAL SAFETY MANAGEMENT CODE INDEX

Regulator: MODU’s Flag State Administration

Application:
ISM Code applies to self-propelled mobile offshore drilling units from 1st July 2002.

Submissions/Acceptance:
In consultation with Flag State Administrations authorised representatives.

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