

# Guidelines regarding the activities regulations

(Updated 20 December 2012)

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## **CHAPTER I INTRODUCTORY PROVISIONS**

### **Re Section 1 Scope**

The scope of the regulations is limited in comparison with the scope of the [Framework Regulations](#), so that they only apply to offshore petroleum activities.

The provision in the second subsection makes individual requirements in these regulations applicable also for facilities and equipment for conduct of manned underwater operations from vessels. For practical reasons, a choice has been made to have a general section on this, rather than repeating it in the individual provisions.

### **Re Section 2 Responsibilities**

No comments.

### **Re Section 3 Definitions**

No comments.

## **CHAPTER II ARRANGEMENTS PURSUANT TO THE WORKING ENVIRONMENT ACT**

### **Re Section 4 Coordinating working environment committees for fields, and joint, local working environment committees for mobile facilities**

The purpose of joint working environment committees is to ensure coordination of the individual enterprises' safety and environment work and to give all employees a genuine opportunity of taking part in and influencing the safety and environment work at their own workplace, regardless of their employment relationship. Reference is made to Section 7-2 of the [Working Environment Act](#) and provisions on safety delegates in [Regulations 6 December 2011 relating to organisation, management and participation \(in Norwegian only\)](#). These regulations also apply directly to the petroleum activities, with the specifications and limitations given in the regulations.

The duty to establish joint working environment committees does not reduce the duty of the individual employer to establish a working environment committee at its own enterprise, cf. [Section 34 of the Framework Regulations](#). The joint working environment committee will be superior to the working environment committees of the individual enterprises in matters related to the jurisdiction of the joint working environment committee.

The term "field" is continued in the new regulations, inter alia to ensure delimitation of the areas that naturally form an entity for such co-ordination.

Coordinating working environment committees for fields as mentioned in the first subsection, should be limited organisationally to ensure representation of all main activity areas, familiarity with the local conditions at the workplace and proximity to the work of the committee. If agreement cannot be reached among the operator, the contractors in the various main activity areas and the safety delegates as to establishing a coordinating working environment committee that comprises more than one field, cf. the requirement regarding general agreement as mentioned in the first subsection, one of the parties can submit the issue to the Petroleum Safety Authority Norway; which, after having considered all aspects of the matter, can decide if such a working environment committee is to be established.

The coordinating working environment committee should set up subcommittees for the individual facilities when the committee encompasses several facilities, cf. [Regulations 6 December 2011 relating to organisation, management and participation \(in Norwegian only\)](#). These regulations also apply directly to the petroleum activities, with the specifications and limitations given in the regulations.

The main activity areas mentioned in the second section, include drilling, well service, catering, construction, maintenance and production. What is to be considered as main activity areas, will depend on the actual activity on the various facilities.

In order to fulfil the requirement for participation as mentioned in the second subsection, the representatives should come from the principal undertaking and from the largest contractors in the various main activity areas. The employees' representatives should be elected by and among the safety delegates and main safety delegates for the various main activity areas. Two or more trade unions that together organise the majority of the employees in a main activity area can agree that the election will take place as a proportionate representation election or that these trade unions will appoint the employees' representatives for the area, cf. [Regulations 6 December 2011 relating to organisation, management and participation \(in Norwegian only\)](#). These regulations also apply directly to the petroleum activities, with the specifications and limitations given in the regulations. The coordinating working environment committee for the field should have at least one employee representative from each manned facility on the field. The operator's representative on a mobile facility can have status either as an observer or as a representative with voting rights. On the joint, local working environment committee on mobile facilities, a representative of the operator can represent the employer side for contractors that have been hired by the operator.

Coordination as mentioned in the last subsection, means coordination of safety and environment-related matters that are of significance for both mobile and permanently placed facilities on the field.

### **Re Section 5 Occupational health service**

Reference is made to Section 3-3 of the [Working Environment Act](#) as regards occupational health services. The new [Working Environment Act](#) does not have the same requirements related to safety personnel as earlier versions. However, there remains a need for safety personnel in the offshore petroleum activities, and these are defined as part of the occupational health service. The occupational health service shall be approved by the Norwegian Labour Inspection Authority and shall have a free and independent position in working environment matters, cf. Section 3-3, first and third subsections of the [Working Environment Act](#).

As far as the employers use of occupational health service is concerned, reference is, inter alia, also made to provisions on occupational health service in [Regulations 6 December 2011 relating to administrative schemes \(in Norwegian only\)](#) and [Regulations 6 December 2011 relating to organisation, management and participation \(in Norwegian only\)](#). These regulations also apply directly to the petroleum activities, with the specifications and limitations given in the regulations.

In order to fulfil the requirement for cooperation as mentioned in the second subsection, the operator or the party responsible for the operation of a facility, shall enter into agreements with the principal undertaking and the employers of the contractor employees regarding distribution of the working environment tasks carried out by the occupational health service on the facility.

### **Re Section 6 Medical examinations for employees**

Long-term effects of working environment factors as mentioned in the first subsection, include long-term effects of hazardous noise.

For requirements related to health examinations as mentioned in the third subsection, reference is made to Section 3-1, second subsection, litera g and Section 10-11, seventh subsection of the [Working Environment Act](#).

Health-hazardous exposure as mentioned in the fourth subsection, includes exposure to

- a) hazardous noise,
- b) isocyanates or air containing lead,
- c) heightened ambient pressure,
- d) asbestos dust,
- e) carcinogenic substances.

In order to fulfil the requirement for medical examination, the Norwegian Board of Health's guidelines regarding physicians in connection with examination of professional divers should be used for participants in manned underwater operations.

**Re Section 7**  
**Registration of working hours**

Working hours as mentioned in the first subsection, mean the actual time worked, including both normal working hours and any overtime.

To follow up working hours as mentioned in the first subsection, entails that the employer has a responsibility for own employees not working more than permitted, cf. [Chapter VI of the Framework Regulations](#).

The working time registers shall be available to the employee representatives, cf. Section 10-7 of the [Working Environment Act](#).

**CHAPTER III**  
**HEALTH RELATED MATTERS**

**Re Section 8**  
**The health service**

The health service means the organisation, the personnel and the resources that are necessary in order to attend to the health-related matters in the petroleum activities as mentioned in [Section 6 of the Framework Regulations](#).

When health personnel carry out tasks as mentioned in [Section 5](#), the responsibility, authority and prioritisation of work tasks shall be clearly defined as mentioned in [Section 13 of the Management Regulations](#).

In order to ensure satisfactory services, the rule stating that a physician shall have a special professional responsibility for the health service on the continental shelf, shall be continued. Physicians that participate in the health service, should have general medical experience and insight. The responsible physician shall have Norwegian authorisation or licence according to Sections 48 or 49 of the [Health Personnel Act \(in Norwegian only\)](#). The same applies to nurses.

In those cases where a nurse leaves the facility to accompany a patient to land, the requirement in the third subsection implies that compensating measures shall be implemented, and that the nurse returns to the facility as soon as possible.

In order to fulfil the requirement for adequate health services as mentioned in the first subsection, Chapter 5.1 of the [NORSOK U-100N](#) standard should be used for manned underwater operations.

**Re Section 9**  
**The health service's tasks**

When performing the duties described in [this section](#), the provisions relating to the health personnel's duty of secrecy, duty to report and to keep journals as stipulated in or pursuant to the [Act relating to health personnel \(in Norwegian only\)](#), will apply. When a mobile facility that is registered in a national ships' register is laid up, the journals should be stored by the shipping company's onshore health service.

The health emergency preparedness as mentioned in litera c, should include

- a) counselling and professional guidance for the health personnel on a facility or vessel,
- b) communication with other health services,
- c) prioritisation of transport for injured or ill personnel to land.

**Re Section 10**  
**Physician on-call**

The requirement relating to arriving at the facility on the shortest possible notice, implies that systems shall be set up to enable rapid and efficient organisation of helicopter transport.

**Re Section 11**  
**Medicines and medical equipment**

No comments.

## **Re Section 12**

### **Communicable diseases**

The physician should cooperate with personnel in the municipal health service with regard to following up actions in accordance with the legislation relating to dealing with communicable diseases.

## **Re Section 13**

### **Food and drinking water**

Production, packing, storage, transport and presentation of food products shall be in accordance with the Food Act and appurtenant regulations, cf. [Section 1-5 of the Petroleum Act](#).

The Ministry of Health and Care Services laid down [Regulations relating to water supply and drinking water \(in Norwegian only\)](#) for implementation of the Drinking Water Directive 98/83/EC, incorporated into the EEA Agreement on 25 January 2001. These regulations entered into force on 1 January 2001 and also apply to the petroleum activities.

The Norwegian Institute of Public Health's guideline materials for design and operation of drinking water systems are drawn up to clarify regulatory requirements for offshore drinking water systems and drinking water supplies. The guideline materials, in both Norwegian and English, can be found on [www.fhi.no/offshore](http://www.fhi.no/offshore).

In accordance with the [Framework Regulations](#) and pursuant to delegation from the Norwegian Food Safety Authority, the County Governor of Rogaland supervises that the provisions regarding food, water supply and drinking water are complied with in the petroleum activities.

According to the [Drinking Water Regulations \(in Norwegian only\)](#), the duty of the water supply system's owner in the petroleum activities rests with the operator and other participants in the petroleum activities, cf. [Section 7 of the Framework Regulations](#).

When a water supply system delivers water to another water supply system, it is important to identify what is included in the individual water supply system owner's responsibility.

## **Re Section 14**

### **Cleaning**

In connection with planning and execution of cleaning activities, the NS-INSTA 800 standard should be used, with the following additions:

- a) it is assumed that a decision regarding the level of quality is made as mentioned in [Section 11 of the Management Regulations](#),
- b) when planning the cleaning, the load in the various areas should, inter alia, be used as a basis.

In addition, the health service should take part in the planning. Cf. also [Section 29](#).

Cleaning is of great importance in preventing e.g. respiratory disorders. The relationship between dust and health problems in sensitive individuals and individuals with asthma and allergies is well documented. The purpose of cleaning is to reduce the occurrence of dust particles, allergens and infective agents. Another purpose of cleaning is to create general welfare and well-being.

Main cleaning of indoor areas should be carried out at least once per year.

## **CHAPTER IV**

### **PRELIMINARY SURVEYS AND INSTALLATION**

## **Re Section 15**

### **Preliminary surveys**

The following standards should be used in connection with preliminary surveys:

- a) the [NORSOK N-002](#) standard for **surveying natural conditions**,
- b) Section 3 of the [DNV OS-F101](#) standard should be used for **route surveys**,
- c) Chapter 7.9.1 of the [NORSOK N-001](#) standard, and the [NORSOK G-001](#) standard for **geotechnical surveys**, with the following addition: a quaternary geological description should be prepared if in a new area,
- d) in the event of **shallow gas surveys**, requirements are set as regards type, degree of coverage and interpretation,

- e) **subsidence** is calculated with the aid of geological models. As such models are associated with significant uncertainty, an upper 90 percentile should be used for the subsidence estimate. Consideration can be given to the stabilising effects of injection of gas or liquids.

If the surveys show that the probability of placing foundations above formations that contain gas is greater than one per cent, another location should be chosen.

In addition to preliminary surveys, baseline surveys shall be carried out as mentioned in [Section 53](#) to map the environmental status.

### **Re Section 16 Installation and commissioning**

In order to fulfil the requirement for **installation** as mentioned in the first subsection,

- a) Section 10, paragraph A through F of the [DNV OS-F101](#) standard should be used for steel pipeline systems,
- b) Chapter 11 of the API RP 17B guidelines should be used for flexible pipeline systems.

Commissioning as mentioned in the second subsection entails e.g. that safety systems shall be function tested and verified. To satisfy the requirement, the [NORSOK Z-007](#) standard should be used, with the following additions:

- a) Section 10, paragraphs G through J of the [DNV OS-F101](#) standard should be used for steel pipeline systems,
- b) Chapter 11.5.3 of the API RP 17B guidelines should be used for flexible pipeline systems,
- c) Appendix H to the [NORSOK R-003](#) standard should be used for lifting equipment,
- d) Chapters 4.7 and 5.12.8 of the [NORSOK D-001](#) standard should be used for drilling facilities,
- e) the result of function test are compared with performance requirements and relevant calculations,
- d) [Norwegian oil and gas' guideline no. 070](#) is used where electrical, electronic and programmable electronic systems are used in the construction of the functions.

In order to fulfil the requirement for **technical condition** as mentioned in the third subsection, the [NORSOK Z-006](#) standard should be used for preservation.

## **CHAPTER V TRANSPORT AND STAY**

### **Re Section 17 Transport**

No comments.

### **Re Section 18 Stay on facilities**

No comments.

### **Re Section 19 Accommodation and cabin sharing**

A physical barrier means a function that can prevent or limit harm in the event of an unwanted incident. Other acute situations may, inter alia, constitute hazard and accident situations that have occurred, weather conditions that reduce the possibility of transporting personnel from the facility etc.

A turnaround/revision stop is a pre-planned period in which the operations on the facility have been shut down in order to carry out an accumulated portfolio of extensive and necessary maintenance, modifications, improvements, inspections etc.

Hook-up and start-up is the period from a new facility is placed on the field to hydro carbons are contained in the processing systems, and production has started. In this period, the facility will be commissioned; all systems hooked up, tested and started.



Cabin sharing is contingent upon compensation being given to those affected by it directly. It is an established practice between the parties to come up with solutions as far as compensation is concerned, and reference can be made, for that matter, to existing arrangements in this respect.

## **CHAPTER VI OPERATIONAL PREREQUISITES FOR START-UP AND USE**

### **Re Section 20 Start-up and operation of facilities**

The operational organisation as mentioned in the second subsection litera a, also means the emergency preparedness organisation.

Governing documents as mentioned in the second subsection, litera b, also mean the guidelines, procedures, plans and programmes that are prepared according to these regulations and the [Management Regulations](#).

In order to fulfil the requirement for technical operations documents as mentioned in the second subsection litera b, Chapter 4 and Appendices A, C and D of the [NORSOK Z-001](#) standard should be used. For drilling and well technical equipment, Chapter 6 of the [NORSOK D-001](#) standard should also be used.

### **Re Section 21 Competence**

There are also requirements to qualifications and training in the field of working environment in [Regulations relating to conduct of work \(RCW\) \(in Norwegian only\)](#). They relate to

- work with chemicals, cf. RCW chapter 3, with the exception of sections 3-23, 3-24 and 3-27,
- work with asbestos, cf. RCW chapter 4, with the exception of section 4-4,
- work involving risk of being exposed to biological factors, cf. RCW chapter 6,
- work with work equipment that requires additional carefulness, cf. RCW chapter 10, with the exception of sections 10-1, 10-2 and 10-3,
- maintenance of work equipment, cf. RCW chapter 12,
- work involving risk of being exposed to health detrimental noise or mechanical vibrations, cf. RCW chapter 14, with the exception of sections 14-1 – 14-7 included, and section 14-10,
- work involving risk of being exposed to artificial optic radiation, cf. RCW chapter 16,
- safety signs and signalling, cf. RCW chapter 22,
- work imposing ergonomic strain, cf. RCW chapter 23.

The requirement relating to ensuring competence implies, inter alia, that requirements are set for the necessary competence, that the competence is verified, and that it is maintained through practice, exercises, training and education.

In order to fulfil the requirement for competence in the area of health, safety and working environment,

- a) Chapter 6 of the [NORSOK U-100N](#) standard should be used for **manned underwater operations**,
- b) Chapter 8 of the ISO 15544 standard should be used for **emergency preparedness and safety**, with the following addition: the [Norwegian Oil and Gas' guidelines for safety and emergency preparedness training No. 002](#) should be used for safety and emergency preparedness training for personnel on facilities and vessels,
- c) Chapter 4.9 of the [NORSOK D-010](#) standard and [Norwegian Oil and Gas' policy 024 regarding training of drilling and well personnel](#) should be used for general competence within drilling and well activities. In cases of underbalanced drilling and completion, Chapter 13.7.2 of the [NORSOK D-010](#) standard should also be used,
- d) the following regulations and guidelines should be used for **work on electrical installations**:
  - a) the [Regulations relating to qualification requirements for electrical professionals \(in Norwegian only\)](#) or [Regulations relating to qualification requirements and certificates for seamen \(in Norwegian only\)](#) for personnel on permanently placed facilities,
  - b) the [Regulations relating to qualification requirements and certificates for seamen \(in Norwegian only\)](#) for personnel on mobile facilities registered in a national ships' register,

- c) 059 – Norwegian oil and gas’ recommended guidelines for professional electrical workers’ competence (in Norwegian only)
- e) Appendix 3 to the [Civil Aviation Authority's Regulations relating to flight weather service \(in Norwegian only\)](#) should be used for weather observers who carry out routine weather observations (METAR),
- f) Appendix B to the [NORSOK R-003](#) standard should be used for **lifting operations**,
- g) the Norwegian Maritime Authority’s [Regulations relating to qualification requirements and certificates for seamen \(in Norwegian only\)](#) should be used for **maritime operations**,
  - a) the party responsible for operating the maritime systems on permanently placed, mobile facilities, should fulfil the qualification requirements for comparable positions in the regulations mentioned in litera g of these guidelines. Control room operators who operate maritime systems on such permanently placed, mobile facilities, should fulfil the requirements related to certificates for control room operators in the same regulations. The party responsible for stability on board, should have maritime competence equivalent to the offshore installation manager in the same regulations,
  - b) in the event of operations with dynamic positioning Equipment Classes 2 and 3, those operating the equipment, should have competence in accordance with the regulations as mentioned in litera g of these guidelines, cf. [Section 31](#). For operations in Equipment Class 1, one competent person is sufficient,

For facilities registered in a national ships' register, it is also assumed that maritime competence is documented in accordance with the requirements stipulated by the respective flag state authorities. The requirement in first subsection second sentence implies that jack-up facilities are staffed with personnel competent at and trained in operating the jacking systems in an emergency,

- h) in connection with the **use of communication equipment**, it should be ensured that the person responsible for communication, cf. [Section 80](#), second subsection, has sufficient experience as communications operator and valid GMDSS radio operator certificate (GOC or ROC depending on radio transmitting equipment on board), as well as necessary competence in areas such as emergency preparedness management, helicopter communication, meteorological observation and monitoring of the safety zones and maritime zones surrounding the facility.

As regards radio operators who operate maritime radio equipment, the competence requirements are specified in the licence terms set by the Ministry of Transport and Communications.

As regards certificates as mentioned in the second subsection, diving certificates issued by authorities in other countries are accepted if they document that the level of education corresponds with that which is recognised by Norwegian authorities. The reference used by the Petroleum Safety Authority Norway, is the "Diving Industry Personnel Competence Standards" 2003, issued by the European Diving Technology Committee (EDTC) in cooperation with the International Marine Contractors Association (IMCA).

## Re Section 22

### Safety and working environment training pursuant to the Working Environment Act

As regards training as mentioned in the first subsection, reference is made to relevant provisions on safety delegates and working environment committees in Regulations relating to organisation, management and participation (in Norwegian only). These regulations also apply, with the limitations given directly in the regulations, to the petroleum activities. In addition, reference is made to the [lawmirror \(in Norwegian only\)](#) of the Norwegian Labour Inspection Authority, in which the requirement of the regulations that are being repealed upon entering into force of the new regulations in pursuance of the Working Environment Act, are included.

The training as mentioned in the second subsection should include aspects that are of significance to the overall workload of the individual, cf. [Section 33](#).

In order to fulfil the requirement for radiation protection training as mentioned in the third subsection, the Norwegian Radiation Protection Authority's training requirements should be used.

As regards requirements for training of safety delegates and members of working environment committees, reference is made to relevant provisions in Regulations relating to organisation, management and participation (in Norwegian only). These regulations also apply, with the limitations given directly in the regulations, to the petroleum activities. In addition, reference is made to the [lawmirror \(in Norwegian only\)](#) of the Norwegian Labour Inspection Authority, in which the requirement of the regulations that are being

repealed upon entering into force of the new regulations in pursuance of the Working Environment Act, are included.

### **Re Section 23 Training and drills**

In order to fulfil the requirements for training and drills

- a) simulator training should be used for **monitoring and control functions**,
- b) personnel who have **emergency preparedness** functions, should practice their emergency preparedness tasks at least once during each period of stay. Everyone who takes part in emergency preparedness management and regional emergency preparedness against acute pollution, should practice their emergency preparedness functions at least once each year.

An emergency preparedness drill covering all personnel on the facility should be carried out at least once during a period of stay. Mustering and evacuation routines should be included in the drill. At least one annual drill should be carried out for the emergency preparedness management and for the regional emergency response against acute pollution. Drills related to the regional emergency preparedness against acute pollution should include skill training in the individual emergency preparedness functions and co-training between operators and any agreement parties. The result of the drill should be evaluated.

When hired facilities or vessels are used, a drill should be conducted at an early point in time in accordance with a coordinated emergency preparedness plan for the contractor and the operator. If the same facility is used for a lengthy consecutive period, a major annual drill should be held involving both unit and area resources, relevant external resources, the operator's and the contractor's onshore emergency preparedness organisations, as well as the supervisory authorities,

- c) Chapter 9.2 of the [NORSOK U-100N](#) standard should be used for **manned underwater operations**,
- d) Chapters 4.2.6, 4.9.1, 5.5.2, 6.5.2, 7.5.2, 9.5.2, 10.5.2, 11.5.2, 12.5.2.13.5.2, 13.7.2 and 14.5.2 of the [NORSOK D-010](#) standard should be used for drilling and well activities, with the following addition: regular drills should be carried out in well control, and the results should be evaluated.

### **Re Section 24 Procedures**

Procedure as mentioned in the first subsection, means a specified way of conducting an activity or a process, cf. Chapter 3.4.5 of NS-EN ISO 9000.

The formulation of procedures as mentioned in the second subsection, should be unambiguous, user-friendly and adapted to the users' competence.

The users of the procedures should take part in the formulation and revision of such procedures. The procedures should be tested before use to check design and contents with regard to the intended functions.

In order to fulfil the requirement for procedures as mentioned in the second subsection, Chapter 8.2 of the [NORSOK U-100N](#) standard should be used for manned underwater operations.

### **Re Section 25 Use of facilities**

Limitations for use as mentioned in the first subsection, can ensue from the loads that the facility and its individual parts shall be able to withstand, cf. [Section 11 of the Facilities Regulations](#). The loads can include chemical loads, environmental loads such as waves, wind and temperature and functional loads such as pressure, weight, temperature and vibration.

When conducting drilling and well activities with mobile facilities, the vertical movements of the facility and movements brought about by resonance between the wave frequency and the frequency of the facility itself should also be taken into account, as well as movements in the event of loss of position due to anchor line breakage or drift, or because of dynamic positioning failure. Cf. [Section 50 of the Facilities Regulations](#).

Facilities and parts thereof as mentioned in the first subsection, also include less complex facilities as mentioned in [Section 6 of the Facilities Regulations](#) and temporary equipment.

In order to fulfil the requirement for use as mentioned in the first subsection, the [NORSOK Z-015N](#) standard should be used for temporary equipment.

Status as mentioned in the second subsection, means, inter alia, the backlog of preventive maintenance and the outstanding corrective maintenance.

### **Re Section 26 Safety systems**

Measures and limitations as mentioned in the first subsection, can be activity limitations, full shutdown or other measures that compensate for the impairment of safety functions that follows from overriding or interruption.

To fulfil the requirements for measures and limitations as mentioned in the first subsection, Chapter 7.7 of the IEC 61508-1 standard and Chapter 7.6 of the IEC 61508-2 standard, and Chapters 10 and 11 of [Norwegian Oil and Gas' Guidelines 070](#) should be used for electrical, electronic and programmable electronic safety systems.

### **Re Section 27 Critical activities**

Critical activities can be

- a) work on pressurised, electrified or hydrocarbon-bearing systems,
- b) hot work,
- c) work with explosives or substances that self-ignite,
- d) work on radioactive sources,
- e) work that entails risk of acute pollution,
- f) work that entails disconnection of safety systems,
- g) lifting operations, cf. [Section 92](#).

When identifying important contributors to risk, one should, inter alia, use the results from the risk analyses performed and experience from hazard and accident situations.

The limitations can be requirements for implementing compensatory measures in connection with executing an activity, or duration or frequency limitations for executing a special type of activity.

In order to fulfil the requirement for critical activities, Chapters 4.5.1 and 4.5.3 of the [NORSOK D-010](#) standard should be used for drilling and well activities.

### **Re Section 28 Simultaneous activities**

Activities as mentioned in the first subsection, can be production activities, drilling and well activities, and maintenance and modification activities, including activities as mentioned in [Section 27](#).

Measures as mentioned in the second subsection, can be limitations or prohibitions that are to be implemented in connection with certain types of simultaneous activities during startup, operation and shutdown.

In connection with executing activities as mentioned in the second subsection, the effect of mutual dependence between different activities should, inter alia, be taken into account.

In order to fulfil the requirement for simultaneous activities, Chapter 4.5 of the [NORSOK D-010](#) standard should be used for drilling and well activities.

## **CHAPTER VII PLANNING AND EXECUTION**

### **Re Section 29 Planning**

The requirement for planning as mentioned in the first subsection entails, inter alia, ensuring that the activities are executed within the limitations mentioned in [Chapter VI](#).

### **Re Section 30**

#### **Safety clearance of activities**

In order to fulfil the safety clearance requirement, a work permit system should be used.

When activities are cleared in accordance with this section, a safe job analysis should be conducted when sub-activities are not covered by procedures, the procedures can conflict with each other, or the activities are new to the personnel involved.

As regards conducting safe job analyses, Appendix B.4 to the ISO 17776 standard and Chapter 4.4.3 of the [NORSOK standard S-002N](#) should be used in the area of health, safety and working environment. With regard to conducting a job safety analysis, see the last paragraph in the above-mentioned Appendix B.4, the party responsible for carrying out the work and the workers who actually carry it out, should participate, possibly also the persons responsible for the system and area.

To fulfil the requirements for measures, Chapter 3.3.5 of [Norwegian Oil and Gas' guidelines for safe management of offshore service and anchor handling operations](#) (NWEA) regarding drainage over board, should be used for discharge of drainage water.

To fulfil the requirements for measures, Chapters 4.10.3, 8.3 and 8.7 of the [NORSOK D-010](#) standard should be used for drilling and well activities in the event of handover of wells between units, with the following addition: the wells' barrier status should be tested and verified.

Handover of wells between units means handover between production, well service, operation, maintenance, etc.

### **Re Section 31**

#### **Monitoring and control**

Conditions as mentioned in the first subsection, can be conditions and parameters as mentioned in [Sections 17 and 33 of the Facilities Regulations](#), status for other safety systems, ongoing activities and implemented compensatory measures.

The requirement relating to continuous monitoring as mentioned in the first subsection, entails that the personnel shall not be assigned tasks that can impair their handling of the control and monitoring functions, cf. also [Section 21 of the Facilities Regulations](#) and [Section 18 of the Management Regulations](#).

For monitoring and control as mentioned in the first subsection, there should be at least two persons to handle the monitoring and control functions as mentioned in the third subsection,

- a) in the central control room on permanently manned facilities,
- b) for operation of equipment for dynamic positioning, Classes 2 and 3,
- c) for drilling and well activities.

To fulfil the requirement relating to monitoring and control, the [NORSOK U-100N](#) standard, Chapters 8.3 and 8.5.1, should be used for manned underwater operations.

For monitoring and control of the external environment, see [Chapter X](#).

### **Re Section 32**

#### **Transfer of information at shift and crew changes**

Shift and crew change means daily shift changes and replacement of personnel at the end of the period of stay on the facility, both for operator and contractor employees.

## **CHAPTER VIII**

### **WORKING ENVIRONMENT FACTORS**

### **Re Section 33**

#### **Organisation of work**

The organisation as mentioned in the first subsection, should, inter alia, take into account the need for individual adaptation, including work capacity and age. Cf. also [Chapter IV of the Facilities Regulations](#) and [Sections 18 and 19 of the Management Regulations](#).

Hazardous exposure and unfortunate loads as mentioned in first subsection, mean exposure and loads that result from ergonomic conditions, chemical influences, radiation, noise, vibrations, climatic conditions and psychosocial conditions. Factors that can influence the psychosocial working environment, can be the

interaction between requirements relating to work performance, the employee's perception of control over own work and social support in the working environment.

To avoid exposure that is hazardous to health as mentioned in the first subsection, measures or solutions should be selected at the highest of these levels:

- a) elimination of the causes of the exposure,
- b) technical measures that reduce the probability of exposure,
- c) technical measures that reduce exposure,
- d) operational measures that reduce exposure.

Organisation as mentioned in the first and second subsections, should be a continuous process where both employers and the employees strive to improve the working environment, cf. also [Section 23 of the Management Regulations](#).

Organisation of work should be based on accessible knowledge of the characteristics and needs of humans, so that the interaction between people, technology and organisation is optimised, cf. [Section 13 of the Management Regulations](#). The ISO 6385 standard should be used in such organisation.

The requirement relating to carrying out as much as possible of the work in the daytime as mentioned in the fourth subsection, entails that night work shall be limited to tasks and functions necessary to maintain prudent operations.

The requirement relating to necessary rest and restitution as mentioned in fourth subsection, entails that all personnel can sleep undisturbed and normally alone, cf. also [Section 19](#), and that necessary transport in offshore periods, including helicopter transport, takes place during working hours.

The purpose of the provision is to prevent unfortunate developments whereby the employee is not assured of sufficient restitution and rest, which could have safety-related consequences.

## **Re Section 34**

### **Ergonomic aspects**

Regulations laid down by the Ministry of Labour 6 December 2011, pursuant to the Working Environment Act, and entering into force 1 January 2013, contain, inter alia, further provisions on ergonomic aspects, including heavy and monotonous work and work at computer screens. Clarification of the scope as far as the petroleum activities are concerned, is directly evident from the individual regulations. In addition, reference is made to the [lawmirror \(in Norwegian only\)](#) of the Norwegian Labour Inspection Authority, in which the requirement of the regulations that are being repealed upon entering into force of the new regulations in pursuance of the Working Environment Act, are included.

In connection with the organisation as mentioned in the first subsection, the [NORSOK S-002N](#) standard, Chapters 5.1 and 5.2 (the principles and the organisation part) should be used.

For work at computer screens as mentioned in the third subsection, the Labour Inspection's Guidelines for work at computer screens should be used.

## **Re Section 35**

### **Psychosocial aspects**

Aspects as mentioned in the first sentence, can include

- a) requirements relating to efficiency and workload in relation to the resources available for conducting the work tasks,
- b) the work's complexity in relation to competence and resources,
- c) opportunities for variation and stimulation in the job,
- d) opportunities for independence and influence on important decisions,
- e) opportunities for career development and utilisation of own competence,
- f) climate of co-operation, handling of disagreements, conflicts and harassment,
- g) work management, including feedback and follow-up in the daily work,
- h) night work and working alone.

## **Re Section 36**

### **Chemical health hazard**

In order to avoid exposure as mentioned in the first subsection, the Regulations relating to conduct of work should be used.

As regards CO and CO<sub>2</sub> as mentioned in second subsection, the [NORSOK U-100N](#) standard, Chapters 5.2.3.2 and 5.2.3.3, should be used. In addition, special consideration should be given to potential release of, from materials under high pressure, chemical substances that are detrimental to health.

### **Re Section 37**

#### **Radiation**

Radiation means ionising and non-ionising radiation.

Handling also means handling during hazard and accident situations.

To fulfil the requirement relating to avoiding exposure, the Norwegian Radiation Protection Authority's

- a) [Radiation Protection Regulations \(in Norwegian only\)](#),
- b) Guideline 1 relating to industrial radiography, and
- c) Guideline 9 relating to industrial control sources in fixed installations as well as use of radiation for research purposes, should be used.

### **Re Section 38**

#### **Noise**

Exposure action value as mentioned in this section, does not replace, but shall be seen in the context of, requirements related to risk reduction, cf. [Section 11 of the Framework Regulations](#).

The risk assessment as mentioned in the third subsection, shall in particular take into account

- a) exposure level, type and duration and exposure to impulse noise such as impacts and bangs,
- b) effect on health and safety of employees who are especially exposed to risk,
- c) any effect on the employees' health and safety due to interaction of noise and chemical substances and between noise and vibrations in the work, to the extent possible,
- d) indirect effects on the employees' health and safety due to the noise's effect on the ability to register warning signals or other sounds that shall be audible to reduce the risk of accidents,
- e) the manufacturer's information on the noise level of the working equipment,
- f) whether alternative working equipment exists which gives lower noise exposure,
- g) exposure to noise beyond regular working hours which falls under the employer's responsibility,
- h) relevant information from health surveys, and other published information, to the extent possible, and
- i) availability of hearing protection with sufficient sound reduction.

Information and training for the employees as mentioned in the fifth subsection, should especially include

- a) the risk assessment made, and the measures implemented,
- b) limit values and action values,
- c) measurement results,
- d) when there is a need for hearing protection and training in correct use, risk related to noise and how signs of hearing injuries can be discovered and how they shall be reported,
- f) under which terms they are entitled to medical examination and the purpose of the examination,
- g) ensure working methods that limit noise exposure to the extent possible, and
- h) the risk of health injury potentially caused by the use of working equipment.

### **Re Section 39**

#### **Vibrations**

Regulations laid down by the Ministry of Labour 6 December 2011, pursuant to the Working Environment Act, and entering into force 1 January 2013, contain, inter alia, further provisions on protection against mechanical vibrations. Clarification of the scope as far as the petroleum activities are concerned, is directly evident from the individual regulations. In addition, reference is made to the [lawmirror \(in Norwegian only\)](#) of the Norwegian Labour Inspection Authority, in which the requirement of the regulations that are being repealed upon entering into force of the new regulations in pursuance of the Working Environment Act, are included.

Cf. also [Section 24 of the Facilities Regulations](#).

#### **Re Section 40**

##### **Outdoor work**

To fulfil the requirement relating to criteria, the [NORSOK S-002N](#) standard, Chapter 5.8 should be used, see 4.4.9 for principles and organisation.

#### **Re Section 41**

##### **Safety signs and signalling in the workplace**

The guidelines have been removed.

#### **Re Section 42**

##### **Personal protective equipment**

The guidelines have been removed.

#### **Re Section 43**

##### **Use of work equipment**

The guidelines have been removed.

#### **Re Section 44**

##### **Risk information during execution of work**

No comments.

### **CHAPTER IX MAINTENANCE**

#### **Re Section 45**

##### **Maintenance**

Maintenance means the combination of all technical, administrative and management measures during the life cycle of a unit intended to keep it in, or restore it to, a state in which it can perform its intended functions, cf. definition 2.1 (with associated terminology) in the NS-EN 13306 standard.

Maintenance includes activities such as monitoring, inspection, testing, trial and repair, and keeping things tidy.

Functions also mean safety functions, cf. [Section 2 of the Facilities Regulations](#). For these functions, the requirement relating to maintenance entails that performance shall be ensured at all times, cf. [Section 8 of the Facilities Regulations](#).

Facilities or parts of facilities also mean temporary equipment.

All phases also mean periods in which the facility or parts of the facility are temporarily or permanently shut down.

#### **Re Section 46**

##### **Classification**

To fulfil the classification requirement, the [NORSOK Z-008](#) standard should be used in the area of health, working environment and safety.

Fault mode, failure cause and failure mechanism as mentioned in the second subsection, are defined in the NS-EN 13306 standard.

#### **Re Section 47**

##### **Maintenance programme**

The maintenance programme can consist of sub-programmes for inspection, testing, preventive maintenance, etc., cf. [Section 45](#).



The requirement relating to prevention as mentioned in the first subsection, entails also that the programmes shall be available at start-up, cf. [Section 20](#), second subsection, litera b. When preparing the maintenance programme as mentioned in the first subsection, the NS-EN ISO 20815:2008 standard, Appendix I and the CEI/IEC 60300-3-11 standard can be used in the area of health, working environment and safety.

For activities as mentioned in the second and third subsections, the following should be used in the area of health, working environment and safety:

- a) the standards ISO 13702, Appendix C5, and IEC 61508, and [Norwegian Oil and Gas' Guideline 070](#) is used for **safety systems**,
- b) **the emergency shut-down system** is verified in accordance with the safety integrity levels set on the basis of the IEC 61508 standard and [Norwegian Oil and Gas' Guideline 070](#). For plants that are not covered by this standard and this guideline, the operability should be verified through a full-scale function test at least once each year. The test should cover all parts of the safety function, including closing of valves. The test should also include measurement of interior leakage through closed valves. Recording of the plant's or equipment's functionality in situations where the function is triggered or put to use, may replace testing of the plant or the equipment,
- c) the [NORSOK N-005](#) standard should be used to monitor the condition of **structures**. See also [Section 50](#),
- d) the [NORSOK Z-006](#) standard should be used for **preservation**,
- e) condition monitoring should be carried out at least once each year of **risers with support** and other particularly vulnerable parts of the pipeline system. Where there are multiple pipeline systems with identical properties for use, this monitoring can be performed on a representative selection,
- f) the [NORSOK R-003](#) standard, Appendices G and H should be used for maintenance of **lifting appliances and lifting gear**,
- g) the standards [NORSOK D-010](#), Chapters 4.2.3 and 4.2.4 and table 15.9, ISO 10417 and ISO 10423, Chapter 9 should be used for **well control and well intervention equipment, subsurface safety valves and christmas trees**, with the following addition: the requirement in the second subsection of the regulations also includes the condition of barrier elements and pressure integrity in wells.
- h) the IEC 61892 standard should be used for **electrical installations with associated equipment**.

The [DNV RP G-101](#) guidelines may be used to establish the inspection programme for **process plants and auxiliary systems**.

#### **Re Section 48 Planning and priorities**

In order to fulfil the requirement relating to time limits as mentioned in the second subsection, the time limits should be calculated from the time when a fault mode is identified as having occurred or is under development.

#### **Re Section 49 Maintenance effectiveness**

Maintenance effectiveness as mentioned in the first subsection, means the ratio between the requirements stipulated for performance and technical condition and the actual results.

The standards NS-EN ISO 14224 and NS-EN ISO 20815, Appendix E, should be used when registering data as mentioned in the first subsection, including failure data and maintenance data.

#### **Re Section 50 Special requirements for technical condition monitoring of structures, maritime systems and pipeline systems**

To fulfil the requirement relating to technical condition monitoring as mentioned in the first subsection, the [NORSOK N-005](#) standard should be used in the area of health, working environment and safety. Floating facilities which shall be inspected and maintained at sea without regular dry-docking, should fulfil [DNV OSS-102](#), Chapter 2, Part 3 H100.

The examinations as mentioned in the fourth subsection, should particularly be carried out with a view towards projected new facilities and use of facilities beyond their original planned lifetime in mind.

Fault modes as mentioned in the fifth subsection, mean both external and internal failure modes.

When finding fault modes as mentioned in the fifth subsection, the [DNV RP F-101](#) guideline should be used if the fault mode is a result of the corrosion failure mechanism.

### **Re Section 51**

#### **Specific requirements for testing of blow out preventer and other pressure control equipment**

To fulfil the requirement relating to testing, complete overhaul and recertification so that the equipment can fulfil its intended functions, the [NORSOK D-010](#) standard, Chapters 4.2.3.4 and 4.2.3.5 as well as tables 15.4, 15.14, 15.19, 15.21, 15.32, 15.37, 15.38 and 15.47 and Appendix A, Table A.1, as well as [DNV RP-E101](#) should be used. See [Section 47](#) as regards this type of equipment in well interventions and overhaul of subsea wells.

Complete overhaul and recertification as mentioned in the second subsection, may be carried out continuously and in a manner which ensures that single components and the whole unit will be overhauled in a rolling five year period.

## **CHAPTER X MONITORING THE EXTERNAL ENVIRONMENT**

### **Re Section 52**

#### **Cooperation on and planning of environmental monitoring**

The operator shall monitor the external environment as mentioned in [Section 48 of the Framework Regulations](#). This chapter contains complementary provisions on how to implement the monitoring.

The baseline surveys and environmental impact assessments will, together with an overview of discharges, form the basis for planning and implementation of environmental surveys.

The cooperation requirement as mentioned in the first subsection, entails that several operators cooperate so that the monitoring activities are managed in relation to regional risk, the overall content is emphasised and provisions are made for using the best available technology (BAT).

The requirement relating to cooperation in defined regions as mentioned in the first subsection, entails that there shall be agreements between operators that have partly or completely identical areas of impact for pollution from their own activities. The regions may be identical to the geographic scope of the cooperation agreements. Regions for environmental monitoring of operational discharges are described in the [Guidelines for environmental monitoring of the petroleum activities on the Norwegian continental shelf \(in Norwegian only\)](#).

For monitoring and control relating to proper implementation as regards health and safety, see [Section 31](#).

It is vital that the monitoring is conducted in accordance with a defined framework to ensure comparable results between years, and between different regions. The requirements relating to analysis shall also be seen in connection with the international reporting requirements.

Environmental monitoring of the Norwegian continental shelf includes both monitoring of benthic habitats (sediments, soft and hard seabed fauna) and monitoring of the water column. The purpose of the environmental monitoring offshore is to achieve:

- an overview and control of pollution from the offshore activities, including environmental impacts
- an overview of the general condition and development around the individual facilities and in the regions (trends).

The results from the monitoring will, among other things, be used for:

- evaluation of the risk for environmental damage and ecological effects
- verification of models for calculating environmental risk as a function of the existing and expected discharges from the offshore activities
- verification of laboratory research.

It may also be relevant to monitor areas in the beach zone and onshore if these areas are affected by the offshore activity.

The Climate and Pollution Agency (Klif) can, as for the other operator activities, audit the environmental monitoring. This applies to all stages of the activities, from planning of the surveys through to the various operators' internal use of the results.

*Guidelines for the environmental monitoring of the petroleum activities on the Norwegian continental shelf (in Norwegian only)* will provide the operators with a template for a standardised way of carrying out the surveys, thus making it possible to compare results from year to year and between various regions. The guidelines cover the most important surveys that all operators shall carry out, and the operators themselves shall decide whether there is need for additional or other surveys on the individual field or in the region. Any deviations from the standard station grid that have been used in previous surveys or given in the guidelines, shall be justified in the programmes for the environmental surveys.

The monitoring results will provide factual data to be used as a basis for decisions on necessary actions to be taken offshore. The results will also be used for calculating national environmental indicators, and will be reported in accordance with international treaties, including OSPAR.

In order to obtain an optimum description of the conditions around the individual facilities and in the region, it is important that the monitoring programmes are designed in light of the existing discharge situation. This means that the operators in the planning stage shall consider and include relevant pollution components in the monitoring programme, as necessary, based on what is discharged on the individual field and in the region. Such an evaluation requires that the monitoring, discharge reporting and defined challenges from the Environmental Impact Assessments be seen as a whole.

### **Re Section 53 Baseline surveys**

The scope of baseline surveys as mentioned in the first subsection, may be adjusted to the need for obtaining new knowledge.

The scope of the surveys as mentioned in the first subsection, litera b, depends inter alia on which particularly vulnerable environmental resources (species and habitats) that may be expected in the area. Particularly vulnerable environmental resources may include coral reefs, spawning grounds, marine mammals, birds and beaches.

### **Re Section 54 Environmental monitoring of benthic habitats**

As a whole, the monitoring of the benthic habitats shall contribute to explaining whether a station or a larger area around the individual facility or in a region is affected by discharges from the activities. The results from the environmental monitoring shall be such that they can be used to check the conclusions of the impact assessment (IA) for the individual field and for the region. The relation between IA, actual discharges and environmental monitoring shall be emphasised.

A normal frequency for environmental monitoring is every three years. The guidelines may allow for a lower frequency, based on pollution loads, history and regional knowledge.

Since 1997, Norway has used the terms "reference stations" and "regional stations" in connection with monitoring of the seabed on the Norwegian continental shelf. Both types of stations normally cover the background level of selected components in the area, and the reference stations can, in given instances, function as regional stations and vice versa. Reference stations and regional stations in one and the same region are used to estimate background levels in the regions.

The term reference stations is now discontinued, and all non-field-specific stations are called regional stations in the new *Guidelines for environmental monitoring of the petroleum activities on the Norwegian continental shelf (in Norwegian only)*.

### **Re Section 55 Environmental monitoring of the water column**

There are currently few internationally accepted standardised methods for monitoring of biological effects in the water column. A number of methods are, however, under development, and many have been tested in the field. This primarily applies to various biomarkers which are being used more and more for monitoring impact and, gradually, for monitoring condition. Still, measurement of concentration levels in selected organisms will see further use in the environmental monitoring around petroleum installations on

the Norwegian continental shelf. The operators shall participate actively in the testing and development of suitable methods for detecting pollution and environmental effects in the water column. The Climate and Pollution Agency shall be consulted on significant items during the process. As the methods regarding detection of the impact at this stage are still under development and being tested, the guidelines will be regularly revised.

### **Re Section 56** **Reporting of monitoring results**

No comments.

### **Re Section 57** **Remote measurement of acute pollution**

Remote measurement means a system which, regardless of visibility, light and weather conditions, can detect and map the position, area, quantity and properties of acute pollution. Such a system may consist of sensors and equipment deployed in satellites, airplanes and helicopters, or on facilities and vessels with associated services and procedures.

The purpose of the remote measurement is to ensure that the information concerning the pollution is sufficient, so that the correct actions are taken in order to stop, limit and map the pollution.

The remote measuring system can consist of

- a) procedures for notification of observations made by personnel on facilities, vessels and aircraft,
- b) competence for interpretation of monitoring data from the various available sensors,
- c) modelling tools to predict transport and spread of acute pollution,
- d) competence for visually quantifying oil and chemicals with the aid of area measurement and colour thickness maps for the relevant types of oil and chemicals,
- e) meteorological services that are necessary in order to support the remote measurement,
- f) systems for detection and mapping of pollution in the recipients.

In order for the remote measuring system to detect acute pollution of significance, the area surrounding the facility should regularly be subjected to remote measurements. A decision should be made as to the need for continuous remote measuring. A plan for the remote measuring, based on a risk analysis focusing on environmental aspects, should be in place, cf. [Section 17 of the Management Regulations](#).

### **Re Section 58** **Environmental surveys in the event of acute pollution**

Follow-up surveys mean chemical and biological surveys both during and after acute pollution. It should be possible to utilise the results of such surveys both during the combat phase with regard to evaluation of relevant measures for optimal combating of the pollution, and in the restoration phase with regard to identification of resources that have been harmed. Such surveys may require special instrumentation and technical measuring equipment, particularly in the event of underwater discharges for surveys in the water column.

The Climate and Pollution Agency's *Guidelines for environmental surveys following acute pollution (TA-2995 2012)* provide a framework for the contents of such surveys.

### **Re Section 59** **Characterisation of oil and chemicals**

Characterisation as mentioned in the first subsection, means collection of chemical and physical survey and analysis data as a basis for dimensioning the emergency preparedness for acute pollution. Such a basis can, in addition to weathering properties and fate in a marine environment, be oil budgets, colour density properties, transport and spread or efficiency of relevant emergency response material, cf. [Section 42 of the Facilities Regulations](#).

Before starting exploration activities, there should at least be a theoretical evaluation of the pollution characteristics as a basis for environment-related risk and emergency preparedness analyses, cf. [Section 17 of the Management Regulations](#).

If the transport of oil in pipelines entails blends that have altered characteristics that are of significance to the environment and emergency preparedness, such blends should be characterised.

A demand analysis should be carried out with regard to small-scale or meso-scale laboratory testing for mapping the oil's weathering properties and fate in a marine environment. The reason for selecting the method for carrying out dispersion should be stated, and the chosen methodology should enable comparison of the results of analyses within the same region.

## **CHAPTER XI EMISSIONS AND DISCHARGES TO THE EXTERNAL ENVIRONMENT**

### **Re Section 60 Discharge of oily water**

The requirement relating to cleaning as mentioned in the first subsection, applies to all discharges, but not to displacement water where low oil content and location of the outlet make cleaning impractical.

Oil content as mentioned in the third subsection, means content of dispersed oil in undiluted water.

In addition to the oil content being as low as possible as mentioned in the third subsection, the operator should consider the possibility of reducing the total discharged water volume through, for example, methods such as water shut-off, downhole separation and injection. When technology for cleaning other than dispersed oil becomes available, the Climate and Pollution Agency may set requirements relating to such cleaning.

If oil-contaminated water is injected, cleaning of the water will not normally be required. Information on case processing times can be obtained from the Climate and Pollution Agency upon request.

### **Re Section 61 Emissions to air**

Polluting emissions to air on the Norwegian shelf come under the scope of the [Pollution Control Act \(in Norwegian only\)](#). With regard to energy-producing plants offshore (existing and new plants with a supplied total nominal thermal output exceeding 50 MW), the EU council directive 96/61/EEC on integrated prevention and limitation of pollution (the IPPC directive) also applies. Pursuant to the EEA agreement, the directive applies to Norway and has been implemented in Norwegian legislation. The directive sets requirements for the pollution control authorities' follow-up of the enterprises and the duties of these enterprises with respect to the environment. Norway's obligations under the directive will be fulfilled by application of the [Pollution Control Act \(in Norwegian only\)](#). Follow-up of the directive implies the stipulation of new requirements for emissions to air from energy-producing plants offshore.

The [Pollution Control Act \(in Norwegian only\)](#) and the IPPC directive require that the best available techniques (BAT) be used when stipulating emission requirements to reflect what can be achieved by using BAT, while not specifying the actual techniques to be used. To help the authorities decide which techniques can be considered BAT, the EU is preparing instructive BAT reference documents, both for individual industries and across industries. These documents show which techniques can be generally considered to be consistent with the IPPC directive's requirements relating to BAT. Thus, the BREF documents cannot be said to specify BAT requirements as such, but shall be regarded as guidelines for BAT evaluations. The energy-producing plants offshore are included in the BREF for large combustion plants (LCP-BREF). When stipulating what shall be considered BAT in the individual case, the pollution authorities will emphasise available relevant BREFs, the installation's technical characteristics, its geographical location and the local environmental conditions.

New fields and new development projects shall be operated in accordance with the directive from the date when the activities start (Article 4).

Choice of development solution may be of great importance to the technical and economic consequences by limiting the emissions to air. There may therefore be a mutual connection between the terms set in the emission permit to limit emissions, and the choice of development concept. Therefore, in the event of new developments and upgrading of existing ones, the operator should inform the Climate and Pollution Agency about its BAT evaluations early in the development process, i.e. in ample time prior to making a choice and deciding on development solutions, and prior to entering into binding contracts. This

applies regardless of whether this development is subject to the requirement for carrying out impact assessments. The BAT evaluations should also be included in the impact assessment and in the application for emission permit pursuant to the [Pollution Control Act \(in Norwegian only\)](#). In the application, the operator shall demonstrate and substantiate that the chosen solutions can be considered BAT.

According to [Section 11 of the Pollution Control Act \(in Norwegian only\)](#), the company shall apply for emission of NO<sub>x</sub> and CO<sub>2</sub>. It follows from [Section 11, second subsection of the Pollution Control Act \(in Norwegian only\)](#) that “a party subject to a quota obligation pursuant to [Section 4 of the Climate Quota Act \(in Norwegian only\)](#), shall, upon application, be granted permission for emissions of greenhouse gases subject to quota obligations if said party can prove that he is able to monitor and report the emissions in a satisfactory manner.”

## **Re Section 62**

### **Ecotoxicological testing of chemicals**

All chemicals used in the petroleum sector, are comprised by REACH.

Norwegian Accreditation (NA) is the Norwegian agency for the accreditation of technical matters, including GLP as mentioned in the first subsection.

A summary of different types of chemicals that require ecotoxicological documentation in the form of an HOCNF, as mentioned in the second subsection, litera a, is shown in the table below. The operator should carry out an internal environmental evaluation of types of chemicals which do not require an HOCNF. Guidelines for the completing HOCNF are given in "Supplementary guidance for the completing of harmonised offshore notification format (HOCNF) for Norwegian sector".

| No. | Type of chemicals  | HOCNF required     | Comments  |
|-----|--|--------------------|---|
| 1   | Chemicals which only consist of substances on the PLONOR list                                | Yes, except part 2 | Exemption for testing requirements  |
| 2   | All chemicals planned for use in connection with drilling and well operations and production | Yes                | Also applies to exploration drilling  |
| 3   | Chemicals in water-based, synthetic and oil-based drilling fluids                            | Yes                | Including base fluid  |
| 4   | Chemicals used in auxiliary systems, pipelines and water injection                           | Yes                | Including chemicals that remain in the well and chemicals that will follow the flow of hydrocarbons even if there are no plans to discharge on the field  |
| 5   | Chemicals in closed systems, e.g. BOP fluid and hydraulic fluids                             | No<br><br>Yes      | If consumption* is less than 3000 kg per facility per year<br><br>HOCNF is required if consumption* is more than 3000 kg per facility per year. The additive packages can be excepted from test requirements.   |
| 6   | Lubricants   | No<br><br>Yes      | Lubricants not discharged<br><br>HOCNF is required for discharged lubricants  |
| 7   | Thread compound  | Yes                | In testing of bioaccumulation and biodegradability of thread compounds, the grease component is considered a substance. All components in the grease shall be stated in the HOCNF   |
| 8   | Water and gas tracers  | Yes                | The HOCNF requirement applies to water tracers  |
| 9   | Deck washing agents  | Yes                |   |
| 10  | Emergency response chemicals   | Yes                | The operator shall evaluate the planned emergency response chemicals and prepare an overview of them. Submitting the overview and HOCNF is not required. See also <a href="#">Section 67 of the Activities Regulations</a> .  |
| 11  | New chemicals undergoing testing   | No                 | The operator can make an evaluation of the toxicity of the chemicals and the biodegradability and potential for bioaccumulation for the individual substances. The evaluation shall be documented and can be based on test data or literature data. If the chemical is put to use, a complete HOCNF shall be available within 6 months. |
| 12  | Dispersion and beach cleaning agents for combating acute oil pollution                       | No                 | The requirements in the <a href="#">Regulations relating to limitation of pollution (in Norwegian only)</a> , Chapter 19, apply to testing and documentation of dispersants and beach cleaning agents.  |
| 13  | Fuel   | No                 |   |
| 14  | Laboratory chemicals and spray cans  | No                 |   |
| 15  | Paint and other surface coatings, including spray cans                                       | No                 |   |
| 16  | Chemicals in firewater systems   | No                 |   |

\*consumption means the initial charging of the system, replacement and all other use of the chemical.

To complete the HOCNF, the OSPAR Guidelines for Completing the Harmonized Offshore Chemical Notification Format should be used.

### **Re No 1 Biodegradability**

When evaluating the properties of the degradation products for substances with moderate degradation (BOD<sub>28</sub> between 20 and 60%), the results from testing of inherent biodegradability may be used together with other available information regarding the substances. The evaluations should be documented.

### **Re No 2 Bioaccumulation**

The potential for bioaccumulation is given as the partition coefficient octanol/water, Log Pow. Log Pow from the OECD 117 method shall be stated as the highest value if the results show several values, and all peaks with an area exceeding 5% are counted in the chromatogram. Professional evaluations of bioaccumulation potential and estimate values for Log Pow should be stated in the HOCNF comment field.

### **Definitions and references:**

Preparation: Preparation means a mixture or solution that consists of two or more substances.

Substance: The OSPAR Guidelines for Completing the HOCNF define substance: an element and its chemical compounds in natural form or as a result of a process, including added material needed to make the compound stable, and including contaminants from the production process, but excluding solvents which can be separated without interference with the substance's stability or without altering the substance's properties. Substances were previously also called components.

Chemical: Common term for chemical substances or mixture of substances.

OSPAR: Oslo-Paris Convention for the protection of the Marine Environment of the North-East Atlantic

OECD: Organisation for Economic Co-operation and Development

SKIM: Cooperation forum offshore Chemicals, Industry and Environment Authorities

OSPAR Recommendation 2010/4 on a Harmonised Pre-screening Scheme for Offshore Chemicals (supersedes 2000/4 from 1 January 2011)

HOCNF: Recommendation 2010/3 on a Harmonised Offshore Chemical Notification Format (HOCNF) (supersedes Recommendation 2000/5 from 1 January 2011)

PLONOR list; OSPAR List of Substances/Preparations Used and Discharged Offshore which Are Considered to Pose Little or No Risk to the Environment (PLONOR), [www.klif.no](http://www.klif.no)

OSPAR Guidelines for Toxicity Testing of Substances and Preparations Used and Discharged Offshore (Reference number: 2005-12)

## **Re Section 63**

### **Categorisation of chemicals**

Substances that are harmful to reproduction and mutagenic, mean mutagenic categories (Mut) 1 and 2 and reproduction categories (Rep) 1 and 2, cf. Appendix 1 to the [Regulations regarding labelling etc. of hazardous chemicals or self classification \(in Norwegian only\)](#).

### **References**

White Paper No. 25 (2002-2003) The government's environmental policy and the environmental state of the realm, <http://odin.dep.no/md>, Chapter 8 and Appendix 2

OSPAR List of Substances/Compounds Liable to Cause Taint (Reference number: 2002-5), [www.klif.no](http://www.klif.no)

OSPAR List of Chemicals for Priority Action, [www.klif.no](http://www.klif.no)

## **Re Section 64**

### **Environmental assessments**

The operator is required to substitute substances that may be harmful to health or the environment with less harmful alternatives, cf. [Section 3a of the Product Control Act \(in Norwegian only\)](#) relating to substitution requirements.

The evaluation of the chemicals as mentioned in first subsection should also include treatment of waste/hazardous waste and necessary transport. Evaluation of the fate of the chemicals in the environment may be included under other matters of significance.

As an aid in evaluating the chemicals' fate in the environment, the chemicals may be ranked using the CHARM (Chemical Hazard Assessment and Risk Management Model) software tool or other models based on similar principles. Guidelines for the use of the CHARM model have been published. The values



generated by CHARM may only be used for ranking the chemicals, and not for establishing the environmental impact of their use and discharge.

### References

CHARM, Chemical Hazard Assessment and Risk Management; User Guide for the Evaluation of Chemicals Used and Discharged Offshore, [www.klif.no](http://www.klif.no)

### Re Section 65 Choice of chemicals

No comments.

### Re Section 66 Use and discharge of chemicals

The processing of permits as mentioned in this section, follows from [Chapter 36 of the Pollution Regulations \(in Norwegian only\)](#). These regulations include provisions relating to the case processing and the required contents of an application. Information on case processing times can be obtained from the Climate and Pollution Agency upon request.

#### What is covered by the requirement for a permit in the first subsection:

A permit pursuant to [Chapter 3 of the Pollution Control Act \(in Norwegian only\)](#) shall be obtained in connection with the petroleum activities on the Norwegian continental shelf. This applies to activities in connection with drilling and well operations, production, emptying of pipelines, and other activities entailing the use and discharge of chemicals. The basis for permits as mentioned in the first subsection, is the results from testing, evaluation and categorisation of chemicals as mentioned in [Sections 62, 63 and 64](#).

Chemicals in firewater systems are not subject to the requirement for obtaining a permit in the [Pollution Control Act \(in Norwegian only\)](#), see [Section 4, first subsection of the Pollution Control Act \(in Norwegian only\)](#), cf. [Section 7, first subsection](#) cf. [Chapter 3](#). This is covered by the safety rules of the [Petroleum Act](#).

Ordinary pollution from living quarters, offices, etc., including sanitary drainage and chemicals for addition to and cleaning of drinking water systems, are permitted pursuant to [Section 8, first subsection, No. 2 of the Pollution Control Act \(in Norwegian only\)](#), and is therefore not subject to the requirement for obtaining a permit. The [Product Control Act \(in Norwegian only\)](#) and its regulations apply to all chemicals used. This means that the substitution requirement also applies.

In activities that entail use and/or discharge of chemicals in amounts which the operator considers to be very small and not covered by applicable permits, Klif can be contacted to clarify the need for a special permit.

#### Conditions in the permits:

Specific conditions may be given in the permits for the use and discharge of chemicals, cf. [Section 16 of the Pollution Control Act \(in Norwegian only\)](#). The registration of amounts discharged as described in the [Guidelines for reporting from the petroleum activities on the Norwegian continental shelf \(in Norwegian only\)](#), will be a requirement for discharges to sea and injection.

Even if the use and discharge of chemicals are within the limits set in the discharge permit, the use and discharge shall be reduced to the extent possible. The same applies to the use and discharge of chemicals for which there are no specific use and discharge limits, cf. [Section 11 of the Framework Regulations](#).

Regardless of whether the operator has received permission to use and discharge chemicals, an evaluation shall be made of whether there are other less environmentally harmful alternatives pursuant to [Section 3a of the Product Control Act \(in Norwegian only\)](#).

Categorisation of chemicals, as described in [Section 63](#) of these regulations, will be the basis for the conditions in the permit.

Discharge of substances in the black category will normally not be permitted. If such a permit is given, it will apply to specific chemicals, and a permit will be given for use and discharge of a specific amount of the black category substance. For Klif to grant a permit for use of substances in the black category, the reason for such use is needed, and documentation shall be available. The permit will include a condition regarding these substances having a high priority for substitution.

Upon application, Klif can grant a permit to use and discharge a specific amount of substances in the red category. The permit will include a condition regarding these substances having a high priority for substitution.

For chemicals in the yellow category, specific conditions regarding the use and discharge will not be given, but the permits will state an estimated amount that the operator plans to discharge. The permit will normally include a condition that if a larger amount of substances in yellow category is discharged than stated in the permit, the reason for this shall be stated in the annual discharge report, cf. [Section 34, litera c of the Management Regulations](#).

Normally, Klif will not require information on type and quantity of PLONOR chemicals (chemicals in the green category) in the application. The use and discharge will be covered by the permit. If there are plans to carry out an individual activity (for example drilling or discharges from pipelines) not covered by applicable permits and using only PLONOR chemicals, Klif shall be contacted. In special cases there may be specific conditions given regarding discharges also for PLONOR chemicals. This will depend on the volume discharged, the recipient and the time of the discharge, for example when emptying export pipelines or when the discharges take place in areas with particularly vulnerable resources.

Normally, Klif will not require information on type and amount of chemicals in closed systems if the consumption is less than 3000 kg per year or are lubricants which are not discharged. The use and discharge will be covered by the permit as long as it is in line with relevant regulations pursuant to the [Product Control Act \(in Norwegian only\)](#). Information regarding types and amounts will be required if the use of lubricants is high.

Klif will normally not require information on types and amounts of laboratory chemicals and spray cans in permit applications. The use and discharge will be covered by the permit, if the use and discharge is in line with regulations regarding ozone-reducing substances and other relevant regulations pursuant to the [Product Control Act \(in Norwegian only\)](#).

The ban on discharges of unused chemicals as mentioned in the second subsection, also applies to chemicals on the OSPAR PLONOR list.

Pollution in chemicals as mentioned in the fifth subsection means, for example, heavy metals in weight materials.

When evaluating applications to discharge large amounts of water containing chemicals from pipelines as mentioned in the seventh subsection, Klif will take into account the recommendations from the relevant expert bodies. The conclusions from consulting with independent expert bodies should be included in the application. Large amounts in this case mean volumes greater than 1000 m<sup>3</sup> of water.

## **Re Section 67**

### **Chemicals for emergency preparedness**

Emergency preparedness chemicals shall be tested and evaluated as mentioned in [Sections 62 and 64](#).

The operator is not required to apply for a permit to use and discharge emergency preparedness chemicals, but any use and discharge shall be reported as mentioned in [Section 34, litera d of the Management Regulations](#).

The responsible party shall evaluate whether there are less hazardous emergency preparedness chemicals than those in the list of emergency preparedness chemicals, in accordance with Section 3a of the [Product Control Act \(in Norwegian only\)](#).

As regards use of dispersants and beach cleaning agents for combating acute oil pollution, reference is made to [Chapter 19 of the Pollution Regulations \(in Norwegian only\)](#). The Norwegian Coastal Administration is the professional authority in an acute situation if dispersants are not included in the operator's emergency preparedness plans.

## **Re Section 68**

### **Discharge of cuttings, sand and solid particles**

Cuttings as mentioned in the first subsection, means both solid material from the formation and solid material added as part of the drilling fluid or other fluids used in drilling and well activities. Organic drilling fluid means mineral oil-based and synthetic drilling fluid.

Even if the oil or base fluid in synthetic drilling fluid as mentioned in the first subsection, is less than ten grams per kilo of dry substance, the operator should consider additional cleaning or other disposal methods than discharge to sea, for example injection.

Information on case processing times can be obtained from the Climate and Pollution Agency upon request.

#### **Re Section 69**

##### **Discharge from formation testing and clean-up of wells**

Start-up of any flaring as mentioned in the second subsection, should take place in daylight. Information on case processing times can be obtained from the Climate and Pollution Agency upon request.

#### **Re Section 70**

##### **Measuring the quantity of discharged oil, other substances and water**

With regard to measuring, Norwegian Oil and Gas' guidelines for sampling and analysis of produced water can be used.

An overview of which substances the requirement applies to, can be found in [Guidelines for reporting from the petroleum activities on Norwegian continental shelf \(in Norwegian only\)](#). The measurement programme as mentioned in the second subsection, should include a description of the method for manual measurement if an automatic analyser is out of commission. The measurement programme should also cover changes in procedures in cases where unstable operation of the installation is expected or detected.

#### **Re Section 71**

##### **Measuring associated fluids discharged with solids**

Organic drilling fluid means mineral oil-based and synthetic drilling fluid. Solids include cuttings, produced sand and other solid materials from the well, such as packing and inert materials.

The requirement relating to measuring also applies to sediments and deposits from process equipment

## **CHAPTER XII WASTE**

#### **Re Section 72**

##### **Waste**

For handling of waste as mentioned in the second subsection, the Regulations relating to hazardous waste and [Chapter 21 of the Pollution Regulations \(in Norwegian only\)](#), Prohibition against incineration at sea, also apply, as well as other regulations issued in pursuance of [Chapter 5 of the Pollution Control Act \(in Norwegian only\)](#), unless otherwise specifically determined.

Waste oil as mentioned in the third subsection, means used lubricants and similar oils (used in engines, gear boxes, hydraulic systems, transformers, switches etc.) that can no longer be used as originally intended.

The plan for treatment of waste as mentioned in the fourth subsection, should include reduction of waste volume, source separation, reuse, recycling and potential energy recovery.

Information on case processing times can be obtained from the Climate and Pollution Agency upon request.

## **CHAPTER XIII EMERGENCY PREPAREDNESS**

#### **Re Section 73**

##### **Establishment of emergency preparedness**

To fulfil the requirement relating to the strategy as mentioned in the first subsection, the standards ISO 15544 and NS-EN ISO 13702 Chapter 4 should be used for health and safety-related emergency preparedness.

The defined hazard and accident situations as mentioned in the first subsection, mean a representative selection of hazard and accident situations used in the dimensioning of the emergency preparedness.

In order to fulfil the requirement relating to establishing emergency preparedness as mentioned in the first subsection, the [NORSOK U-100N](#) standard, Chapters 5.1.5 and 9, should be used for manned underwater operations.

The normal case processing time pursuant to the second subsection, second sentence, is 14 weeks, so that the Climate and Pollution Agency can evaluate whether there are special circumstances making it necessary to set further requirements relating to emergency preparedness.

Special circumstances as mentioned in the third subsection, can be activities where the environmental damage could be considerable, but where the probability of hazard and accident situations which can result in pollution is so low that the acceptance criteria for environmental risk have been met. Another example can be activities where the knowledge basis is deficient.

## **Re Section 74**

### **Shared use of emergency preparedness resources**

Contractual cooperation as mentioned in the first subsection, means, for example, entering into agreements relating to common emergency preparedness plans or agreements to use the emergency preparedness resources of others to ensure optimal emergency response in major acute incidents within an area or region. The availability of public resources in acute pollution situations will depend on no other prioritised activities being underway. Necessary evaluations of sensitivity and uncertainty with respect to availability of such resources shall be performed.

## **Re Section 75**

### **Emergency preparedness organisation**

Emergency preparedness organisation as mentioned in the first subsection, means the personnel, including a physician, directly associated with unit resources, area resources, external resources and regional resources.

In order to ensure robustness as mentioned in the first subsection, emphasis should be placed on the individual's education and expertise, experience, physical suitability, personal qualities and experience from drills and training when selecting the personnel.

The hazard and accident situations as mentioned in the first subsection, also include other hazard and accident situations than the defined, complex hazard and accident situations, stress situations and situations where key personnel are incapacitated or are unable to carry out their duties.

Necessary functions as mentioned in the second subsection, means, inter alia, operational leadership, operation, remote measurement, environment, economy, logistics and information.

## **Re Section 76**

### **Emergency preparedness plans**

The emergency preparedness plans should include

- a) a description of purpose, scope and responsibility,
- b) a description of organisation, notification, mobilisation and communication,
- c) action plans,
- d) a description of fields and facility(ies) and prioritised vulnerable environmental resources in the impact area for acute pollution,
- e) a description of unit resources, area resources, regional resources and external resources and equipment,
- f) instructions for emergency preparedness personnel,
- g) any coordination procedures vis-à-vis other involved parties, cf. [Section 74](#), second and third subsections,
- h) any cooperation procedures and agreements, cf. [Section 78](#).

Action plans as mentioned in litera c of these guidelines, should cover, inter alia,

- a) emergency preparedness strategy, emergency preparedness measures and decision criteria for the emergency preparedness phases,

- b) in order to handle acute pollution, the emergency preparedness strategy should comprise objectives for protection of prioritised, vulnerable environmental resources. The description of emergency preparedness measures and decision criteria for the various emergency preparedness phases should include response times for relevant emergency preparedness measures, remote measurements, choice of emergency preparedness measures based on minimum environmental damage considerations, shore clean-up and environmental surveys in case of acute pollution,
- c) for the health-related emergency preparedness, treatment of
  - a) personal injuries in the event of major accident situations,
  - b) personal injuries in the event of industrial accidents,
  - c) acute illness,
  - d) psychological reactions,
  - e) communicable diseases,
  - f) poisoning.

To fulfil the requirement relating to emergency preparedness plans, the [NORSOK U-100N](#) standard, Chapter 9.1, should be used for manned underwater operations.

### **Re Section 77**

#### **Handling of hazard and accident situations**

Giving the **right notification** as mentioned in litera a, means notifying, inter alia,

- a) the facility's central control room or other central function,
- b) the Joint Rescue Coordination Centre
- c) one or more parts of the operator's emergency preparedness organisation,
- d) the contractors' emergency preparedness organisations,
- e) other licensees and partners in the event of an agreement relating to coordinated emergency preparedness resources, or in the event of joint use of production and/or transport systems.

The scope of the notification will depend on the situation at hand. The Joint Rescue Coordination Centre as mentioned in litera b of these guidelines, handles further notification of bodies that have national emergency resources. This includes notification of the Norwegian Coastal Administration, which is responsible for the public emergency preparedness in relation to acute pollution.

The requirement relating to combating as mentioned in litera b, includes dispersion and mechanical combating of oil on the sea.

The requirement relating to **rescue** as mentioned in litera c, entails that the responsible party shall be able to

- a) locate missing personnel using personnel control systems,
- b) bring personnel to safe areas on vessels, facilities or land,
- c) give injured personnel lifesaving first aid and medical treatment on their own facilities, the standby vessel or other facilities.

The requirement relating to rescue also entails that the two independent MOB boat systems, cf. [Section 41 of the Facilities Regulations](#), shall have their own crews.

The requirement relating to **evacuation** as mentioned in litera d, entails that the evacuation measures shall be of a nature that provides the highest possible probability that personnel can be evacuated from an exposed area to a safe area on the facility and, if applicable, to safe areas on vessels, other facilities or on land. As regards sick and injured personnel, the requirement implies that transport to the land-based health service takes place in a safe and prudent manner.

In order to fulfil the evacuation requirement as mentioned in litera d, the [NORSOK U-100N](#) standard, Chapter 9.5, should be used for divers under pressure.

The requirement relating to **normalisation** as mentioned in litera e, also implies that

- a) injured or sick personnel are given the necessary treatment and care, such as medical treatment on land and follow-up of physical and psychological delayed injuries, and that the next of kin are provided with the necessary information, care and follow-up after major accidents,
- b) damage to the facility and reservoir is stabilised and corrected,
- c) the operation of the facility is resumed.

### **Re Section 78**

#### **Regional preparedness for acute pollution**

Measures as mentioned in the second subsection, can for example be development of a new concept or new solutions, rescheduling of activities or strengthened emergency preparedness.

### **Re Section 79**

#### **Action against acute pollution**

When preparing the plan as mentioned in the first subsection, the basis should be the emergency preparedness action plans, cf. [Section 76](#).

As mentioned in [Section 34 of the Management Regulations](#), the plans for action against acute pollution shall be submitted to the supervisory authorities.

Documentation as mentioned in the second subsection, means a description of

- a) measures taken,
- b) results from remote measurement and environmental surveys in connection with acute pollution,
- c) environmental impact and detrimental environmental consequences,
- d) achievement of objectives,
- e) criteria for concluding measures.

## **CHAPTER XIV COMMUNICATION**

### **Re Section 80 Communication**

In order to communicate as mentioned in the first subsection, it should be possible, inter alia, to

- a) provide important information to personnel on the facility during operations and in hazard and accident situations,
- b) communicate important information between personnel in the control centre, personnel engaged in the operation of process facilities, drilling operations and lifting operations,
- c) establish and maintain direct and continuous communication between communication operators, field and platform management, internal and external emergency resources during hazard and accident situations,
- d) provide communication in the event of a coordinated action against acute pollution.

The requirement relating to external communication as mentioned in the first subsection, means that manned facilities shall have 24-hour continuous telecommunications services with monitoring service on VHF channel 70 (DSC) and channel 16. The service can be established on one's own facility or as a part of a joint solution where several facilities are within a specifically defined area.

In connection with such a solution,

- a) a central communications centre should be established on one of the facilities and an alternative centre should be prepared on one of the other facilities,
- b) the facilities covered by the solution should be covered by mutual VHF radio communication and be organised under the second-line emergency preparedness management,
- c) efficient routines should be established to achieve contact with the facilities when the local radio station is not manned,
- d) the facilities shall have mutual permanent communication systems.

The other facilities covered by this solution should have a communication operator who primarily handles communication tasks in hazard and accident situations.

A person responsible for communications as mentioned in the second subsection, means a person who has a particular responsibility to ensure the professional operation of the facility's radio station and use of the other communication systems at all times.

## **CHAPTER XV DRILLING AND WELL ACTIVITIES**

### **Re Section 81 Well programme**

In order to fulfil the requirement relating to the programme as mentioned in the first subsection, the [NORSOK D-010](#) standard, Chapters 4.3, 4.7, 4.10.3 and 9.3 should be used in the area of health, working environment and safety.

For wells that are to be temporarily plugged back, the programme should also describe

- a) plans for future use of the well,
- b) securing of the wellhead,
- c) planned location inspections and their frequency,
- d) an evaluation of well integrity seen in the context of the design life for the barriers, cf. also [Section 88](#).

The updating as mentioned in the second subsection, implies, for example, that a new programme shall be prepared for wells that have not been put to use according to the original plan, or that have been temporarily plugged back for three years.

### **Re Section 82 Well location and wellbore**

In order to fulfil the requirement relating to well location and wellbore as mentioned in the first subsection, the [NORSOK D-010](#) standard, Chapters 4.3 and 5.7.4 should be used, with the following addition:

the well's location and wellbore should be stated in Universal Transverse of Mercator (UTM) coordinates.

### **Re Section 83 Shallow gas and shallow formation fluids**

Formation fluids as mentioned in the first subsection, also means hydrates and water under pressure.

In order to fulfil the requirement, the [NORSOK D-010](#) standard, Chapter 5.7.2 should be used in the area of health, working environment and safety.

### **Re Section 84 Monitoring well parameters**

The requirement relating to collection implies, inter alia, that data that could indicate a possible well control incident, are monitored, recorded and processed.

In order to fulfil the requirement relating to collection, the [NORSOK D-010](#) standard, Chapters 4.7.2, 5.7.3 and 5.7.4.2 should be used, with the following addition: when testing the formation's fracture strength, pressure testing to the maximum anticipated pressure for the well section should be carried out.

### **Re Section 85 Well barriers**

In order to fulfil the requirement relating to the barrier as mentioned in the first subsection, the [NORSOK D-010](#) standard, Chapters 4.2, 5.3 and 15 should be used in the area of health, working environment and safety.

Where a homogeneous liquid column constitutes the primary barrier, the barrier requirement as mentioned in the first subsection, entails that there is sufficient drilling fluid material and drilling fluid available to maintain the barrier, cf. also [Section 51 of the Facilities Regulations](#).

The handover as mentioned in the third subsection, includes handover between companies and handover between units on the facility. Examples of such units are “production”, “well service”, “operation” and “maintenance”.

In order to fulfil the requirement for handover of wells as mentioned in the third subsection, the [NORSOK D-010](#) standard, Chapters 4.10.3, 8.3 and 8.7 should be used for drilling and well activities.

### **Re Section 86 Well control**

Loss of well control as mentioned in the first subsection, means the failure of one or more well barriers.

In order to fulfil the requirement for regaining well control as mentioned in the first subsection, the [NORSOK D-010](#) standard, Chapter 4.2.7 should be used.

The action plan as mentioned in the second subsection, should, for direct intervention, contain e.g. the following:

- a) a description of mobilisation and organisation of personnel and facilities,
- b) an evaluation of requirements related to equipment as regards capacities and dimensions,
- c) a mapping of well intervention equipment and well services.

To fulfil the requirement for the action plan as mentioned in the second subsection, the [NORSOK D-010](#) standard, Chapter 4.8 should be used.

### **Re Section 87 Controlled well stream**

Controlled well stream means formation testing, test production, clean-up and stimulation of the well. Discharges from formation testing and clean-up of wells are regulated in [Section 69](#).

In order to fulfil the requirement to operational limitations in the area of health, working environment and safety, the [NORSOK D-010](#) standard, Chapters 6, 7, 8 and 14, plus tables 15.27, 15.32, 15.34, 15.35, 15.36, 15.45 and 15.46 should be used. Cf. also [Section 53 of the Facilities Regulations](#).

### **Re Section 88 Securing wells**

To fulfil the requirement relating to securing as mentioned in the first subsection, the [NORSOK D-010](#) standard, Chapter 9 should be used in the area of health, working environment and safety.

The monitoring as mentioned in the first subsection, should be carried out by monitoring the pressure above the lowermost barrier.

In order to control the well integrity as mentioned in the second subsection, one should, inter alia, be able to monitor pressure conditions or set a blind plug just above or below the packer element. For surface-completed wells, it should be possible to monitor the pressure in the annulus and in the production tubing, or as an alternative, in the last casing set. For subsea-completed wells, it should be possible to monitor the pressure in the production tubing and in the production annulus.

If it is necessary to abandon the radioactive source in the well, as mentioned in the third subsection, the [NORSOK D-010](#) standard, Chapter 9 and table 15.24 should be used, with the following additions:

- an internal overview of abandoned sources should be established and maintained. The overview should contain details about every single source and its position,
- radioactive sources abandoned in work strings should be secured in a manner which clearly indicates any unintentional drilling close to/in the direction of the source's position.

### **Re Section 89 Remote operation of pipes and work strings**

In order to fulfil the requirement for remote-operated pipe handling, [Norwegian Oil and Gas' guideline No. 081](#) should be used.

The requirement regarding limitations as mentioned in the second subsection, implies, inter alia, that the work area for the remote-operated systems shall be determined.

Personnel as mentioned in the third subsection, means those manning the control and monitoring functions, and personnel staying inside the work area of these systems. The personnel should be able to have corresponding contact and communication among themselves.



## CHAPTER XVI MARITIME OPERATIONS

### Re Section 90 Positioning

In order to fulfil the requirement relating to marine operations as mentioned in the first subsection, Table 1 Equipment Class should be used for vessels and facilities with dynamic positioning, with the following addition:

in the event of dynamic positioning near other floating facilities or vessels, consideration should be given, inter alia, to

- a) mutual movement and different movement patterns,
- b) the effect of current and noise from propellers,
- c) interference with other or joint transponders
- d) varying shadow effect for antennas connected to the dynamic positioning system.

For calculation of anchoring systems, see also [Section 25](#).

#### Table 1 Equipment Class

For a description of the equipment classes in this table, see IMO/MSC Circular 645, Chapter 2, Equipment Classes.

| ACTIVITY  |          |
|---|----------|
| <b>a) Manned underwater operations</b><br>where loss of position entails a high risk for divers or diver platforms  | 3        |
| <b>b) Other manned underwater operations</b><br>where loss of position entails risk for divers or diver platforms   | 2        |
| <b>c) Support vessels for manned underwater operations conducted from work boats</b><br>where loss of position for the support vessel has direct consequences for the work boat   | 2        |
| <b>d) Drilling and well activities</b><br>where well control is ensured by a facility with dynamic positioning  | 3        |
| <b>e) Facilities that produce or store hydrocarbons</b>   | 3        |
| <b>f) Flotels with gangway connected</b><br>Two reference systems may be accepted for arrival and departure   | 3        |
| <b>g) Activities carried out by lifting vessels or pipe-laying vessels in the vicinity of the facility (here permanently placed and mobile/floating)</b><br>It may be acceptable for only two out of three reference systems to be operational upon arrival and departure                                       | 3        |
| <b>h) Other activities within the safety zone, where the vessel represents a risk to the facility</b><br>The requirement applies if the vessel exceeds the vessel size the facility is designed for with regard to withstanding a collision.<br>Two reference systems may be accepted for arrival and departure | 2        |
| <b>i 1) Tank vessel loading from facilities handling hydrocarbons</b>   | 2        |
| <b>i 2) Tank vessel loading from subsea loading and off-loading installations</b><br>where the tank vessel is not moored or anchored to these installations   | 2        |
| <b>i 3) Tank vessel loading from subsea loading and off-loading installations</b><br>where the tank vessel is moored or anchored to these installations   | 1* or 2* |
| <b>j) Loading operations from buoys</b>   | 1        |
| <b>k) Other well activities</b><br>The requirement applies to well maintenance facilities if well control is handled by another facility  | 2        |
| <b>l) Shallow drilling</b><br>if encountering hydrocarbons is not expected  | 1        |

*\*Class 1 if the distance between associated facility(ies) and tank vessel is 2.5 km or more, Class 2 if not.*

## Notes to the table

- 1) For dynamic positioning, consideration should be given to the reference systems' limitations as regards reliability, availability and quality.
- 2) High risk as mentioned in this table litera a, means the cases when the diver does not have an unrestricted return to the diving bell, or where loss of the vessel's position can lead to loss of or damage to the diving bell, and possibly the associated bottom weight.
- 3) The requirement relating to Equipment Class 3 for drilling and well activities as mentioned in this table litera d, does not apply to shallow drilling and core drilling. For shallow drilling, however, other requirements in the table may be relevant, such as the requirement relating to Equipment Class 2 for other activities within the safety zone without risk to health, environment and safety. Well activities that require Equipment Class 3, include well intervention, such as wireline operations. Other well activities as mentioned in this table litera k, with requirements for Equipment Class 2, where the production facility has well control equipment, may be well stimulations and unmanned underwater operations, including the use of remote-controlled subsea vessels or subsea tools.
- 4) The recommendation for Equipment Class 2 for tank vessels as mentioned in this table, is conditional upon the preparation of a positioning capacity plot for the dynamic positioning system.

In order to maintain the position as mentioned in the second subsection, floating production, storage and offloading facilities (FPSOs) and floating storage units (FSUs) that offload to tank vessels, should be equipped with directional control.

Floating vessel-shaped production and storage facilities should at all times know their own position and direction and the position and direction of nearby facilities and larger vessels, cf. [Section 31](#) on monitoring and control.

In loading operations where no hawser is being used, the tank vessel should be able to stop the loading automatically if the limits for distance and direction are exceeded, at the same time as emergency shutdown valves are being closed on the facility and on the vessel, cf. [Section 33 of the Facilities Regulations](#).

Operation of positioning and anchoring systems should be in accordance with [Sections 15-17 of the Norwegian Maritime Authority's Regulations relating to positioning and anchoring systems on mobile facilities \(in Norwegian only\)](#).

For vessels anchored within the safety zone which are larger than the facility has been designed to withstand collision with, the anchoring should fulfil [Sections 6 through 17 of the Norwegian Maritime Authority's Regulations relating to positioning and anchoring systems on mobile facilities \(in Norwegian only\)](#) (the Anchoring Regulations 09), and should conform with [Section 16 of the Norwegian Maritime Authority's Regulations for mobile facilities with technical production installations and equipment \(in Norwegian only\)](#) if they lie adjacent to the facility.

## CHAPTER XVII ELECTRICAL INSTALLATIONS

### Re Section 91

#### Work on and operation of electrical installations

In order to fulfil the requirements relating to work as mentioned in the first subsection,

- a) [Chapter I Section 5, Chapter II Sections 6, 7 and 9 and Chapters III, IV and B of the Regulations relating to operational safety of electrical installations \(in Norwegian only\)](#),
- b) NEK EN 50110-1 Safety when working on and operating electrical installations (in Norwegian only)
- c) [Chapter III of Regulations relating to use and maintenance of electromedical equipment \(in Norwegian only\)](#),  
should be used, as well as
- d) IMCA D 045, R 015 Code of practice for the safe use of electricity under water, which should be used for manned underwater operations.

Being the responsible party as mentioned in the second subsection, entails having a particular professional responsibility for ensuring that electrical installations comply with applicable regulations at all times, and for keeping up-to-date on electrical installations and equipment under planning, construction and

commissioning, etc. As regards qualifications for the person with responsibility for the electrical installations, see Section 21.

## **CHAPTER XVIII LIFTING OPERATIONS**

### **Re Section 92 Lifting operations**

In order to fulfil the requirement relating to lifting operations as mentioned in the first subsection, the [NORSOK R-003](#) standard should be used. Cf. also [Section 69 of the Facilities Regulations](#) and [Section 25](#) of these regulations.

## **CHAPTER XIX MANNED UNDERWATER OPERATIONS**

### **Re Section 93 Manned underwater operations**

The [NORSOK U-100N](#) standard should be used during manned underwater operations.

### **Re Section 94 Time limit provisions**

Stays at working depth as mentioned in litera a, means the time between completed compression, alternatively first compression if work is to be carried out at several pressure levels, and start of final decompression.

Bell runs as mentioned in litera c, shall be calculated continuously from the first time the lock between the bell and the chamber is depressurised, and shall be concluded before the pressure in the lock has been equalised for the last time.

Surface personnel as mentioned in litera h, means the diving supervisor or possibly a diving supervisor candidate under qualified leadership.

When stipulating breaks as mentioned in litera h, the workload should be used as a basis; however, the breaks should not be shorter than a half hour.

## **CHAPTER XX CONCLUDING PROVISIONS**

### **Re Section 95 Supervision, decisions, enforcement, etc.**

No comments.

### **Re Section 96 Entry into force**

See [Section 73 of the Framework Regulations](#), too.

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