

**REGULATIONS RELATING TO
TECHNICAL AND OPERATIONAL MATTERS AT ONSHORE FACILITIES
IN THE PETROLEUM ACTIVITIES, ETC.
(TECHNICAL AND OPERATIONAL REGULATIONS)**

(Last amended 15 December 2016, cf. page 4)

**Petroleum Safety Authority Norway
Norwegian Directorate of Health**



**PETROLEUM SAFETY AUTHORITY
NORWAY**

Regulations relating to technical and operational matters at onshore facilities in the petroleum activities, etc. (technical and operational regulations)

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Regulations relating to technical and operational matters at onshore facilities in the petroleum activities, etc. (technical and operational regulations)

Stipulated by the Petroleum Safety Authority Norway on 29 April 2010 in pursuance of Sections 5, 6, 8, 20, 21, 22, 23, 24, 25, 26, 27, 28 and 43 of the Act of 14 June 2002 No. 20 relating to protection against fire, explosion and accidents with dangerous substances and relating to the fire department's rescue tasks (the Fire and Explosion Protection Act), Section 10-18 of the Act of 29 November 1996 No. 72 relating to the petroleum activities, Sections 1-4, 2-2, 3-1, 3-2, 3-3, 3-5, 4-1, 4-2, 4-3, 4-4, 4-5, 4-6, 5-2, 5-4, 5-5, 6-1, 6-2, 6-4, 7-1, 7-2, 7-3, 18-1 and 18-5 of the Act of 17 June 2005 No. 62 relating to working environment, working hours and job protection, etc., Section 4 of the Act of 11 June 1976 No. 79 relating to control of products and consumer services (the Product Control Act), Sections 2, 10 and 12 of the Act of 24 May 1929 No. 4 relating to supervision of electrical installations and electrical equipment and Section 68, first subsection litera d of the Regulations of 12 February 2010 No. 158 relating to health, safety and the environment in the petroleum activities, etc.

Stipulated by the Norwegian Directorate of Health on 29 April 2010 in pursuance of Section 8-4 of the Act of 5 August 1994 No. 55 relating to protection against communicable illnesses, Section 1-2 of the Act of 23 June 2000 No. 56 relating to health and social preparedness, Section 8, second subsection of the Act of 24 June 2011 No. 29 relating to public health (the Public Health Act) and Section 68, first subsection litera d of the Regulations of 12 February 2010 No. 158 relating to health, safety and the environment in the petroleum activities, etc. Amended 20 December 2012. Amended 23 December 2013. Amended 16 December 2014. Amended 18 December 2015. Last amended 15 December 2016.

CHAPTER I INTRODUCTORY PROVISIONS

Section 1 Scope

These regulations cover health, safety and working environment at onshore facilities as mentioned in Section 6, litera e of the Framework Regulations, cf. Section 2 of the Framework Regulations.

Section 2 Responsibilities

Section 7 of the Framework Regulations applies correspondingly for these regulations.

Section 3 Definitions

Definitions as mentioned in Section 6 of the Framework Regulations apply correspondingly for these regulations.

The following definitions apply for these regulations:

Land-use plan:

Overview showing planned placement location of equipment and installations, access routes, internal traffic patterns and enclosures.

Area restriction:

A certain delineated area with specified use restrictions surrounding equipment and installations.

Fire area:

Area, building or room that is separated from other areas by a fire division, such that the likelihood of spread in the event of a design fire load is reduced.

Fire division:

Distance or division made of incombustible materials.

Design load:

Characteristic load multiplied by load coefficients.

Hazardous substance:

Flammable substance: Solid, liquid or gaseous substances, mixture of substances, as well as substances that occur in combinations of such states, which due to their flash point, contact with other substances, pressure, temperature or other chemical properties, represent a fire risk.

Explosive substance: Other solid, liquid or gaseous substances, mixture of substances, as well as substances that occur in combinations of such states, which due to their properties can easily cause an explosion through impact, friction, or through contact with ignition sources or other substances.

Reactive substance: Solid, liquid or gaseous substances, mixture of substances, as well as substances that occur in combinations of such states, which upon contact with water, at their pressure, temperature or other chemical properties, represent a risk of dangerous reaction, explosion or emission of dangerous gas, vapour, dust or mist.

Pressurised substance: Solid, liquid or gaseous substances or mixture of substances other than fire or reactive substances, which are under pressure, and which can thereby represent a danger in the event of uncontrolled emission.

Main area:

Area or building block on the facility that contains identical or similar functions.

Process facility:

A physical system consisting of equipment that alters the properties of the process media.

Safety functions:

Technical barrier elements that are intended to reduce the possibility of a concrete fault, hazard and accident situation occurring, or that limit or prevent damage or inconveniences.

Safety system:

Technical barrier elements that are realised in a common system.

Section 4

Regulations stipulated by other authorities

The following regulations are exempt from the scope of these regulations:

- Regulations of 26 June 2002 No. 847 relating to fire-preventing measures and supervision (in Norwegian only) (Regulations relating to fire prevention),
- Regulations of 8 June 2009 No. 602 relating to handling of flammable, reactive and pressurised substances as well as equipment and systems used in such handling (Regulations relating to handling of hazardous substances) (in Norwegian only).

CHAPTER II

GENERAL PROVISIONS FOR DESIGNING ONSHORE FACILITIES

Section 5

Choice of development concept

When choosing a development concept, the following shall be considered:

- a) major accident risk,
- b) type of operation,
- c) geographical location,
- d) location conditions,
- e) regularity requirements,
- f) lifetime,
- g) possible later removal, and

- h) need to develop new technology.

Section 6

Design of onshore facilities

Onshore facilities shall be based on the most robust and simple solutions possible, and designed so that

- a) they can withstand the design loads and probable combinations of these loads at all times,
- b) major accident risk is as low as possible,
- c) a fault in one component, system or a single mistake does not result in unacceptable consequences,
- d) materials handling and transport can take place in an efficient and prudent manner,
- e) a prudent working environment is facilitated,
- f) operational assumptions and restrictions are safeguarded in a prudent manner,
- g) these regulations' provisions regarding health conditions are safeguarded in a prudent manner,
- h) the lowest possible risk of pollution is facilitated, and
- i) prudent maintenance is facilitated.

The operator shall prepare a land-use plan.

Design and placement location of the onshore facility's areas and equipment shall contribute to reduce the risk relating to fires and explosions.

Measures to protect onshore facilities against fires and explosions shall be based on a strategy.

Section 7

Installations, systems and equipment

Installations, systems and equipment shall be designed in the most robust and simple manner possible and such that

- a) the possibility for human errors is limited,
- b) they can be operated, tested and maintained without endangering life, health and material assets, and
- c) they are suitable for use and able to withstand the loads they can be exposed to during operation.

Installations, systems and equipment shall be marked so as to facilitate safe operation and prudent maintenance.

Installations in caverns shall be secured to prevent leaks from the installation.

Equipment and installations that are constructed and controlled in accordance with regulations that Norway is obligated to comply with through international agreements, are considered approved in accordance with the regulations.

Section 8

Materials

Materials to be used in or on onshore facilities shall be selected considering

- a) the load requirements mentioned in Section 6,
- b) manufacturing, joining and construction processes,
- c) possible use of materials protection,
- d) fire resistance attributes,
- e) probable changes in operating conditions,
- f) the opportunity to reduce future use of chemicals and pollution,
- g) the employees' health and working environment, and
- h) possible future removal.

Section 9

Qualification and use of new technology and new methods

Where the activities entail use of new technology or new methods, criteria shall be drawn up for development, testing and use such that the requirements for health, safety and working environment are satisfied. The criteria shall be representative for the relevant conditions of use, and the technology or methods shall be adapted to already accepted solutions.

The qualification or testing shall demonstrate that applicable requirements can be satisfied using the relevant new technology or methods.

Section 10

Safety functions

Onshore facilities shall be equipped with necessary safety functions that can at all times

- a) detect abnormal conditions,
- b) prevent abnormal conditions from developing into hazard and accident situations, and
- c) limit the damage caused by accidents.

Requirements shall be stipulated for the performance of safety functions.

The status of active safety functions shall be available in the central control room.

Section 10a

Ignition source control

In order to prevent and protect against ignition of combustible liquids and explosive gases, a systematic mapping of potential electric and non-electric ignition sources shall be performed. In addition, the necessary technical, operational and organisational measures shall be implemented so as to reduce the risk of ignition as far as possible.

Equipment and safety systems in classified areas shall fulfil requirements for use in explosive areas.

Equipment and safety systems that are meant to be operational in abnormal situations, where an explosive atmosphere can exist outside classified areas, shall fulfil requirements to zone 2, minimum, or be placed in protective rooms. Other non-critical equipment that represents an ignition source, shall deactivate automatically on gas detection, but manual deactivation shall also be possible when it is practical to do so from a central or strategic location, in accordance with the facility specific strategy for fire and explosion safety.

CHAPTER III

DESIGN OF AREAS, INSTALLATIONS, SYSTEMS AND EQUIPMENT

Section 11

Materials handling and transport routes, access and evacuation routes

Onshore facilities and transport routes shall be designed so that materials handling and personnel traffic can take place in an efficient and prudent manner. Handling of materials shall to the extent possible take place by means of mechanical systems and technical appliances.

Where access routes between different levels are used daily, there shall normally be a stairway or ramp.

Evacuation routes shall be designed so that all evacuation can take place in a simple, quick and safe manner. There shall be at least two escape routes from areas with regular traffic.

Section 12

Lifting appliances, lifting gear and equipment for personnel transport

Lifting appliances and lifting gear shall be designed based on the conditions under which the lifting appliances and lifting gear will be used, cf. Section 11.

Equipment for personnel transport shall be designed such that safety is ensured for personnel carrying out activities above normal work height, or who are transported using such equipment.

Section 13

Safety signs

In the event that exposing employees to a risk of accidents or health hazards cannot be avoided using technical measures or other facilitation, safety signs shall be posted.

Safety signs shall be posted at the entrance to rooms and by zones or equipment where employees can be exposed to a risk of accidents or health hazard.

Response, rescue and evacuation equipment, as well as the route to this equipment, shall also be posted with such signs.

Section 14

Pipeline systems

The pipeline systems shall be designed such that interior maintenance can be performed.

Chambers for sending and receiving cleaning and inspection tools shall be designed such that they cannot be opened under pressure.

Section 15

Electrical installations

Electrical installations shall be designed with safeguards and other protection so that abnormal conditions and faults that can result in danger for the personnel and the onshore facility, are avoided. The electrical installations shall be designed with adequate protection against e.g.

- a) electrical shock during normal use and in the event of faults,
- b) thermal effects,
- c) overcurrent,
- d) fault currents,
- e) overvoltage,
- f) undervoltage,
- g) variations in voltage and frequency,
- h) power supply failure,
- i) ignition of explosive gas atmosphere,
- j) electromagnetic disturbances, and
- k) health hazard as a result of electromagnetic fields.

An earthing system shall be installed to prevent static electricity in connection with explosive atmospheres.

A lightning protection system shall be considered.

Section 16

Drainage system

Onshore facilities shall be equipped with drainage systems that can collect and divert liquids to reduce the risk of fire, harm to personnel and pollution.

Section 17

Exhaust ducts

Exhaust ducts for combustion products shall be placed and designed such that hot surfaces and sparks cannot ignite potential leaks of combustible liquids and gases, and such that waste gases are not an inconvenience for personnel, or create hazardous situations.

Section 18

Accommodation

The living quarters shall be designed and located so that it can withstand the design loads.

The living quarters' furnishings and capacity shall ensure a prudent residential environment and be adapted to the various necessary functions that shall be safeguarded, and the anticipated personnel need in the various phases of the activity.

The living quarters shall be equipped and furnished so as to maintain an adequate standard of hygiene.

Section 19

Ventilation and indoor climate

The ventilation in indoor and outdoor areas shall cover the need for air change and provide acceptable air quality. The ventilation shall also be designed so that smoke from fires can be controlled, and so that hazardous and combustible gases cannot penetrate closed non-rated areas.

The indoor climate shall be adapted to the individual room as regards air needs, circulation, humidity and temperature. The indoor air shall be free of hazardous pollution.

Section 20

Chemicals and chemical exposure

Chemicals and technical solutions shall be chosen that prevent harmful chemical influences on people and the environment, and which reduce the need for use of chemicals.

When choosing, designing and placing equipment and systems for storage, use, recovery and destruction of chemicals, the following shall be considered:

- a) health and safety of personnel,
- b) corrosion and other forms of material decomposition,
- c) fire and explosion hazard, and
- d) risk for pollution.

Section 21

Human-machine interface and information presentation

Monitor-based equipment and other technical equipment for monitoring, controlling and running machines, installations or production processes, shall be designed so as to reduce the risk of mistakes that can be significant to safety.

Information transmitters and operating devices shall be designed, placed and grouped to allow for simple and quick receipt of necessary information and implementation of necessary actions. The presented information shall be correct and easily understandable.

Information systems shall be designed for both normal and critical situations.

The control room shall be placed, designed and outfitted so that safety and working environment are prudent and the risk of mistakes of significance for safety is reduced.

Section 22

Communication systems and equipment

Onshore facilities shall be outfitted with communication systems that at all times enable internal communication on the onshore facility. Communication equipment shall be selected based on operational needs, the type of activity and defined hazard and accident situations, cf. Section 17 of the Management Regulations.

Communication equipment and associated power supplies shall be designed and protected so that their function is maintained in hazard and accident situations.

The onshore facilities shall be outfitted with alarm systems that can notify the personnel at all times of hazard and accident situations.

CHAPTER IV

WORKING ENVIRONMENT FACTORS IN THE DESIGN OF ONSHORE FACILITIES

Section 23

Ergonomic design

Work areas and work equipment shall be designed and placed in such way that the employees are not subjected to adverse physical or mental strain as a result of manual handling, work position, repetitive movements or work intensity etc. that can cause injury or illness.

Work sites and equipment shall also be designed and placed in such a way as to reduce the risk of mistakes that may be significant to safety.

Workplaces shall provide for the possibility of individual work positions.

When carrying out work operations from their normal work station and using a good working position, employees shall have a view that allows them to make sure the work can be carried out safely.

Section 24

Outdoor work areas

Outdoor work areas shall have sufficient weather protection so that the risk of health problems and mistakes is reduced.

Weather protection in outdoor areas shall be adapted to the expected periods of stay, the scope and character of the work, representative weather conditions and risk factors.

Section 25

Noise and acoustics

Onshore facilities shall be designed so that no employees are exposed to noise that is harmful to hearing.

Limit values for hazardous noise are for daily noise exposure, $L_{EX8h} = 85$ dB and the peak sound pressure level, $L_{pC, peak} = 130$ dB.

Requirements shall be set for noise and acoustics in the individual areas based on planned manning and the functions that shall be safeguarded in the areas. The noise level and acoustics shall not preclude communication of significance to safety. The noise level in sleeping quarters, break rooms and recreation rooms shall be reduced as much as possible to contribute to necessary rest and restitution.

Section 26

Vibrations

Onshore facilities shall be designed so that vibrations do not harm personnel at the onshore facility, or complicate the personnel's important work tasks.

Section 27

Lighting

The lighting shall be such that the working environment and safety are safeguarded during work, travel and restitution.

If possible, daylight and a view shall be provided in work rooms and public rooms.

Section 28

Radiation

Onshore facilities shall be designed such that exposure to radiation is limited.

Primarily, technical solutions shall be facilitated that reduce the need to use radioactive substances. Where radioactive substances shall be used, safe transport, handling and storage of such substances shall be facilitated.

CHAPTER V

FIRE AND EXPLOSION PROTECTION IN THE DESIGN OF ONSHORE FACILITIES

Section 29

Hazardous materials and explosives

Hazardous substances and explosives shall be marked, handled and stored so that the risk of and in connection with fire, explosion and other accidents is as small as possible.

Hazardous substances and explosives shall not be stored in rooms or locations that serve as evacuation routes.

Necessary measures shall be implemented to prevent the risk of fire or explosion in the event of spills or leaks.

Section 30

Passive fire protection

Where passive fire protection is used, this shall be designed such that it provides relevant structures and equipment with sufficient fire resistance as regards load capacity, integrity and isolation properties during a design fire load.

When designing passive fire protection, the cooling effect from fire-fighting equipment shall not be considered.

Section 31

Fire divisions

The main areas of onshore facilities shall be separated so that they can withstand the design fire and explosion loads.

Rooms and other defined areas with important functions and important equipment or a high risk of fire shall be separated from their surroundings with fire divisions.

Penetrations shall not weaken the fire divisions. Doors in physical fire divisions shall be self-closing.

The operator shall ensure that measures are implemented to prevent that activities on the onshore facility can cause fire in the surrounding vegetation.

Section 32

Fire and gas detection system

Onshore facilities shall have a fire and gas detection system that ensures quick and reliable detection of incipient fires, fires and gas leaks. The system shall be able to perform the intended functions independently of other systems.

The positioning of fire and gas detectors shall be based on relevant scenarios and simulations or tests so that the consequences of the fire or gas leak can be limited.

Section 33

Emergency shut-down system

Onshore facilities shall have an emergency shutdown system that can prevent the development of hazard and accident situations and limit the consequences of accidents, cf. Section 10. The system shall be able to perform the intended functions independently of other systems.

The emergency shutdown system shall be designed so that it enters or maintains a safe condition if a fault occurs that can prevent the system from functioning. The emergency shutdown system shall have a simple and clear command structure. The system shall be capable of being activated manually from release stations that are located in strategic locations at the onshore facility. It shall be possible to manually activate functions from the central control room that bring the onshore facility to a safe condition in the event of a fault in the parts of the system that can be programmed.

Emergency shutdown valves shall be installed that can stop streams of hydrocarbons and chemicals to and from the onshore facility, and which isolate the onshore facility's fire areas.

Section 33a

Control and monitoring system

Onshore facilities shall have control and monitoring systems which, using associated alarms, warn the operator of incidents, nonconformities or faults that are significant for safety. The alarms shall be issued such that they can be perceived and responded to within the time required for safe use of equipment, plants and processes.

Section 34

Process safety system

Process facilities shall have a process safety system. The system shall be able to perform the intended functions independently of other systems.

The process safety system shall be designed such that it enters or maintains a safe condition if a fault occurs that can prevent the system from functioning.

The process safety system shall be designed with two independent levels of safety to protect equipment.

Section 35
Depressurisation and flare system

Onshore facilities equipped with or connected to process facilities shall have a depressurisation and flare system. The systems shall prevent escalation of hazard and accident situations by quickly reducing the pressure in the equipment, and shall be designed so that gas releases do not harm personnel or equipment.

It shall be possible to activate the depressurisation manually from the central control room.

Liquid separators installed in the flare system shall be secured against overfilling.

Section 36
Firewater supply

Onshore facilities shall have a sufficient supply of firewater to combat fires and prevent spreading.

The firewater system shall be designed such that a pressure stroke does not make all or part of the system inoperative.

It shall be possible to activate fire pumps manually from the central control room and at the drive assembly. Drive assemblies for fire pumps shall be equipped with two independent starting arrangements. Automatic disconnection functions shall be as few as possible.

Fire mains shall be designed and placed so that a sufficient supply of firewater is ensured.

Section 37
Fire-fighting equipment and systems for fire-fighting

Installation of fixed fire-fighting installations shall be based on a risk assessment.

Onshore facilities shall be equipped with sufficient manual fire-fighting and firefighter equipment to efficiently combat near-fires and prevent escalation.

Section 38
Emergency power and emergency lighting

Onshore facilities shall have a reliable, robust and simple emergency power system that ensures sufficient supply of power to equipment and systems that shall function in the event of a main power failure.

It shall be ensured that interruptions when switching from main power to emergency power do not entail operating problems for the emergency power users.

Onshore facilities shall be equipped with emergency lighting that ensures necessary lighting on the facility in the event of main lighting failure.

CHAPTER VI
GENERAL PROVISIONS FOR CONDUCTING ACTIVITIES

Section 39
Installation and commissioning

During installation of land facilities and parts thereof, it shall be ensured that the loads they are exposed to, do not exceed the design load limit.

When commissioning land facilities, it shall be ensured that they satisfy the requirements in Chapter II of these regulations regarding requirements for designing onshore facilities and parts thereof, see also Section 23 of the Framework Regulations. The technical condition of installations, systems and equipment shall be maintained until the facilities, systems and equipment are put into service.

Section 40
Start-up and operation of onshore facilities

Before onshore facilities and parts thereof are started up for the first time, or after technical modifications, commissioning shall be carried out.

During start-up as mentioned in the first subsection, and during operation,

- a) the management system with associated processes, resources and operations organisation shall be established,
- b) governing documents, including technical operations documents, shall be available in updated versions and the operations personnel shall be familiar with them,
- c) systems for employee participation shall be established, cf. Section 13 of the Framework Regulations and
- d) the occupational health service shall be operative.

Section 41

Use of onshore facilities

Use of onshore facilities and parts thereof shall be in accordance with requirements stipulated in and in pursuance of the health, safety and environment legislation and any additional limitations that follow from fabrication, installation and commissioning. The use shall at all times be in accordance with the onshore facility's technical condition and the assumptions for use that form the basis of the analyses, cf. Chapter V of the Management Regulations.

When setting restrictions for the activity level on the onshore facility, the maintenance status shall also be considered.

Facilities and equipment taken out of use shall be secured against unintended use, and be handled so that they do not pose a risk for harm to life, health, the environment and material assets.

Section 42

Safety systems

Which measures and restrictions are necessary in order to maintain safety systems' barrier functions in the event of overbridging, disconnection of safety systems or other impairments, shall be stipulated in advance. The compensatory measures shall be implemented as rapidly as possible once such an impairment arises.

Statuses of safety systems shall be known and available to all relevant personnel at all times.

Section 43

Critical activities

It shall be ensured that critical activities are carried out within the operational restrictions set during engineering and in the risk analyses as mentioned in Section 16 of the Management Regulations, cf. also Section 56 of these regulations.

Section 44

Simultaneous activities

The responsible party shall define which activities that, in combination with other activities, shall be considered simultaneous activities.

When conducting simultaneous activities that contribute to a non-acceptable increase in risk, the necessary measures shall be implemented.

Section 45

Procedures

The responsible party shall set criteria for when procedures shall be used to prevent faults and hazard and accident situations.

It shall be ensured that procedures are established and used in such a way as to fulfil their intended functions.

Section 46

Organisation of work

The employer shall ensure that the work is organised such that hazardous exposure and unfortunate physical and psychological strains are avoided for the individual employee, and such that the likelihood of

mistakes that can lead to hazard and accident situations, is reduced. The organisation shall be based on an individual and overall evaluation of acute and long-term effects from the various working environment factors, and on an evaluation of how technology and organisation affects the opportunity to work safely.

The work shall be organised such that the employee's opportunities, limitations and need for a meaningful work situation are sufficiently addressed, cf. Section 47.

The employer shall reduce unfortunate strain conditions and risk of injury and accidents based on performed analyses, mapping and gathered information on the employees' own experience of work-related risk and strain conditions.

Section 47

Psychosocial aspects

The employer shall ensure a good psychosocial working environment by considering conditions that can influence the employees' health, safety and welfare. Special emphasis shall be given to the interaction between requirements for work performance, the employees' perception of control over own work and social support in the working environment.

Section 48

Physical and chemical working environment

The employer shall ensure that the work is organised such that the employees are not exposed to unfortunate strains as a result of manual handling, working position, repetitive movements, work intensity, etc., cf. also Section 23.

Organisation of ergonomic conditions in safety-critical work systems shall also safeguard good interaction between humans, technology and organisation and requirements for prudent psychological loads.

The employer shall ensure that hazardous chemical exposure during storage, use, handling and disposal of chemicals, and during work operations and processes that produce chemical components, is avoided, cf. Section 20.

The employer shall ensure that hazardous exposure during storage, use, handling and disposal of radioactive sources is avoided, cf. Section 28.

The employer shall ensure that no employees are exposed to hazardous noise as mentioned in Section 25, first subsection, or hazardous vibrations, cf. Section 26.

Criteria shall be set for which climatic conditions require protective measures during outdoor work, and under which conditions such work shall be limited or halted, cf. also Section 24.

Section 49

Occupational health service

The employer shall ensure the enterprise has or is affiliated with an approved occupational health service with competence adapted to the company's risk factors, cf. provisions on occupational health service in Regulations of 6 December 2011 relating to administrative arrangements in the area of the Norwegian Labour Inspection Authority (in Norwegian only) and Regulations of 6 December 2011 relating to organisation, management and participation (in Norwegian only).

The operator or the party responsible for operating an onshore facility, shall ensure cooperation between its occupational health service and such personnel affiliated with the other employers.

CHAPTER VII

COMPETENCE AND INFORMATION FOR CONDUCTING ACTIVITIES

Section 50

Competence

It shall be ensured that the personnel at all times have the competence necessary to carry out the activities in accordance with the health, safety and environment legislation. In addition, the personnel shall be able to handle hazard and accident situations, cf. Section 14 of the Management Regulations and Section 52 of these regulations.

Section 51

Training in safety and working environment

The individual employee and manager shall be provided with training in working environment factors of significance for conducting their work.

Managers with direct responsibility for work with radioactive sources shall have completed theoretical and practical radiation protection training.

The employees shall be provided with necessary training in health and safety matters, and the training shall take place during working hours. Criteria shall be set for what constitutes necessary training.

Training as mentioned in the third subsection shall be provided upon employment, transfer or change of work tasks, introduction of new work equipment or changes to the equipment and upon introduction of new technology that applies to the individual's workplace or work tasks.

The training shall be adapted to changed or new risk in the enterprise, and repeated when necessary.

Section 52

Practice and exercises

The responsible party shall ensure that necessary training and necessary exercises are conducted, so that the personnel are able at all times to effectively handle operational interruptions and hazard and accident situations.

Section 53

Risk information during work operations

It shall be ensured that the employees are provided with information on health risk and the risk of accidents during the work to be performed.

The results of assessments, analyses, measurements, mappings of causes of work-related illnesses, investigations of work accidents and near-misses, and the importance of these results for the work activities, shall be available.

The employees and their representatives shall familiarise themselves with this information.

Section 54

Transfer of information at shift and crew changes

In connection with shift and crew changes, the responsible party shall ensure necessary transfer of information on the status of safety systems and ongoing work, as well as other information of significance to health, safety and the environment during work activities, cf. Section 15 of the Management Regulations.

CHAPTER VIII

PLANNING, OPERATION AND CONTROL DURING ACTIVITIES

Section 55

Planning

When planning activities on the individual onshore facility, the responsible party shall ensure that important risk contributors are kept under control, both individually and overall, cf. also Section 12 of the Management Regulations.

The planning shall consider the status of important risk contributors and changes in risk evident from the risk indicators, cf. Section 10 of the Management Regulations.

Section 56

Safety clearance of activities

Planned activities shall be safety-cleared before they are carried out. The clearance shall indicate which conditions shall be met, including which measures shall be implemented before, during and after the work so

that those participating in or who can be affected by the activity, are not injured, and so that the likelihood of mistakes that can lead to hazard and accident situations, is reduced.

Section 57

Monitoring and control

The responsible party shall ensure that matters of significance for prudent work activities as regards health and safety, are monitored and kept under control at all times, cf. Section 19 of the Management Regulations.

Personnel with control and monitoring functions shall at all times be able to gather and process information on such conditions in an effective manner, cf. also Section 14 of the Management Regulations.

Section 58

Maintenance

The responsible party shall ensure that land facilities and parts thereof are maintained, so that the required functions are safeguarded in all phases of the lifetime.

Section 59

Classification

Systems and equipment shall be classified as regards the consequences of potential functional failures for health, safety and the environment.

For functional faults that can lead to serious consequences, the responsible party shall identify the various failure modes with associated failure causes and failure mechanisms, and predict the likelihood of failure for the individual failure mode.

The classification shall be used as a basis in choosing maintenance activities and maintenance frequencies, in prioritising various maintenance activities and in evaluating the need for spare parts.

Section 60

Work on and operation of electrical installations

During live work, near live installations, in or near earthed and short-circuited installations and during operation of low and high voltage installations, necessary measures shall be implemented to prevent injury so those who carry out the work, and to reduce the likelihood of hazard and accident situations, cf. Section 56 regarding safety clearance of activities.

The responsible party shall designate a person with responsibility for the electrical installations.

Requirements for registering of enterprises, use of qualified personnel, qualifications, control of qualifications and approval as mentioned in Sections 3–9, 11–18, 21 and Appendix I in Regulations relating to electrical enterprises etc. (in Norwegian only), apply correspondingly to work related to electrical installations and electrical equipment covered in these regulations.

Section 61

Transport of hazardous goods

The responsible party shall ensure that transport of hazardous goods takes place, and the goods are handed over, in a prudent manner.

Section 62

Lifting operations

Lifting operations shall be cleared, managed and conducted in a prudent manner, e.g. it shall be ensured that personnel do not come under suspended loads, cf. Section 56.

The responsible party shall also ensure that all lifting operations involving personnel transport, are only carried out using lifting appliances that are specially designed and approved for this purpose, cf. Section 12.

Section 63

Diving operations

Surface-oriented diving, bell diving and saturation diving at onshore facilities shall be carried out in a prudent manner.

Bell diving and saturation diving at onshore facilities shall be carried out in compliance with requirements in the Facilities Regulations and in the Activities Regulations.

In respect of surface diving:

- a) a pressure chamber shall be accessible at all diving sites,
- b) diving teams shall consist of at least four qualified people with documented competence/certificates (diving leader, diver, back-up diver and tender (line/hose guide)),
- c) procedures shall be prepared that clearly describe technical, operational and health conditions for normal operation, emergencies and emergency preparedness situations,
- d) training in the use of emergency and preparedness procedures shall be documented, and
- e) requirements shall be set for annual health checks of divers, and the employer shall have a system for medical follow-up of divers.

CHAPTER IX

EMERGENCY PREPAREDNESS

Section 64

Establishment of emergency preparedness

The operator or the party responsible for operating an onshore facility shall prepare a strategy for emergency preparedness against hazard and accident situations. The emergency preparedness shall be established based on results from risk and emergency preparedness analyses as mentioned in Section 17 of the Management Regulations and the defined hazard and accident situations and barrier performance requirements, cf. Section 5 of the Management Regulations.

Section 65

Emergency preparedness organisation

The emergency preparedness organisation shall be robust, i.e. so that it is able to handle hazard and accident situations in an efficient manner.

The operator shall ensure that the emergency preparedness is coordinated with the public rescue service, the rest of the national health and care services and with the municipal emergency preparedness pursuant to the Public Health Act Section 28 (in Norwegian only), so that the chain of action for rescued, ill or injured personnel is coherent and professionally adequate, cf. Section 22, first subsection of the Framework Regulations.

Section 66

Emergency preparedness plans

The responsible party shall prepare plans for emergency preparedness and response to undesirable incidents that can occur at onshore facilities. Such plans shall at all times describe the emergency preparedness and contain action plans for the defined hazard and accident situations. The plans shall describe who will manage and coordinate deployment of emergency preparedness resources in the event of hazard and accident situations.

Section 67

Handling hazard and accident situations

The responsible party shall ensure that necessary measures are taken as soon as possible in the event of hazard and accident situations so that

- a) correct notification is given immediately, cf. also Section 22,
- b) hazardous situations do not develop into accident situations,
- c) personnel can be rescued during accident situations,

- d) the onshore facility's personnel can be evacuated quickly and efficiently at all times,
- e) the condition can be normalised when the development of a hazard and accident situation has been stopped.

CHAPTER X HEALTH-RELATED MATTERS

Section 68 Health-related matters

The operator shall establish systems for contact and exchange of information with the municipality, county council and regional health enterprise regarding health matters.

Systems for contact and exchange of information shall include

- a) hygienic conditions as regards people and environment,
- b) matters regarding accidents and acute illness that occur or can occur among people at the onshore facility,
- c) transport of ill and injured personnel, as well as
- d) health-related emergency preparedness.

The responsible party shall carry out a risk and vulnerability analyses of health matters as a basis for preventing and, if necessary, identifying nonconformities in relation to the relevant regulatory provisions.

The operator shall coordinate its emergency preparedness plans with the municipality, county council and regional health enterprise, cf. Section 22 of the Framework Regulations. Emergency drills shall be conducted to the extent necessary.

CHAPTER XI CONCLUDING PROVISIONS

Section 69 Supervision, decisions, enforcement, etc.

Chapter IX of the Framework Regulations applies correspondingly to these regulations, with restrictions following from Section 1.

Section 70 Entry into force

The Regulations will enter into force on 1 January 2011.

In areas covered by Chapters II through V regarding requirements for design, regulations in force until these regulations enter into force, can be used as a basis for the areas of health, safety and working environment for existing onshore facilities. However, in the event of major rebuilding and modifications of existing facilities, these regulations will apply for that which is covered by the rebuilding or modification.