REGULATIONS RELATING TO DESIGN AND OUTFITTING OF FACILITIES, ETC. IN THE PETROLEUM ACTIVITIES (THE FACILITIES REGULATIONS)

Regulations relating to design and outfitting of facilities, etc. in the petroleum activities (the Facilities Regulations).

Stipulated by the Petroleum Safety Authority Norway on 29 April 2010 in pursuance of Section 10-18 of the Act of 29 November 1996 No. 72 relating to petroleum activities, Sections 1-3 and 4-4 of the Act of 17 June 2005 No. 62 relating to working environment, working hours and job protection, etc., and Section 68, first subsection, litera b of the Regulations of 12 February 2010 No. 158 relating to health, safety and the environment in the petroleum activities, etc.

Stipulated by the Climate and Pollution Agency on 29 April 2010 in pursuance of Sections 9 and 40 of the Act of 13 March 1981 No. 6 relating to protection against pollution and relating to waste, and Section 68, first subsection, litera b 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 Sections 16, second subsection and 76, final subsection of the Act of 2 July 1999 No. 64 relating to health personnel (the Health Personnel Act), Sections 1-2, third subsection and 8-4 of the Act of 5 August 1994 No. 55 relating to protection against contagious illnesses and Section 68, first subsection, litera b 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 Food Safety Authority on 29 April 2010 in pursuance of Sections 16 and 23 of the Act of 19 December 2003 No. 124 relating to food production and food safety, etc., and Section 68, first subsection, litera b of the Regulations of 12 February 2010 No. 158 relating to health, safety and the environment in the petroleum activities, etc.

CHAPTER I
INTRODUCTORY PROVISIONS

Section 1
Scope

These regulations apply to offshore petroleum activities, with exceptions as mentioned in Section 4 of the Framework Regulations.

Requirements for facilities in these regulations also apply to installations and equipment necessary to carry out manned underwater operations from vessels.

As regards mobile faciltities registered in a national shipping register, and which adhere to a maritime operational concept, relevant technical requirements in the Norwegian Maritime Directorate's regulations for mobile facilities (the Red Book) as they read after the amendments in 2007 and subsequent amendments, form the basis with the following clarifications and limitations, cf. Section 3 of the Framework Regulations:

a) Section 3 of the Framework Regulations only covers provisions relating to matters of a maritime character that are not directly related to the petroleum function the facility is intended to carry out. The section does not include provisions regarding:
   - drilling and process equipment,
   - universal audio and visual alarms,
   - equipment for personnel transport and requirements for personnel transport on the drill floor,
   - the working environment in general,
   - the activities to be carried out in the petroleum activities,

b) the facility shall be used in a manner that makes it possible to use a flag and/or classification practice that involves a calendar-based recertification, including a five-year main inspection,

c) which operational assumptions form the basis for engineering, construction and use shall be clear,

d) any exemptions granted by the flag state authority shall be evaluated and presented to the Petroleum Safety Authority Norway for assessment if they have significance for safety in the petroleum activities,

e) provisions regarding documentation, supervision, approvals, etc. do not apply, unless otherwise directly evident from the petroleum 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:

Class A fire division:
A division manufactured in incombustible materials that satisfies the following criteria:

a) it is sufficiently reinforced,
b) it prevents the spread of flames and smoke for at least one hour of the standardised fire test,
c) it is designed so that the average temperature and the temperature of any single point on the unexposed side do not rise more than 140°C and 180°C, respectively, above the original temperature within the following timeframes:
   – class A-60: 60 minutes,
   – class A-30: 30 minutes,
   – class A-15: 15 minutes,
   – class A- 0: 0 minutes,
d) any insulation materials are fire-tested at an institution that is internationally or nationally recognised in the specific discipline.

Class B fire division:
A division manufactured in incombustible materials that satisfies the following criteria:

a) it prevents the spread of flames for at least half an hour of the standardised fire test,
b) it is designed so that the average temperature on the unexposed side does not rise more than 140°C above the original temperature. In addition, the temperature at any single point shall not rise more than 225°C above the original temperature within the following timeframes:
   – class B-30: 30 minutes,
   – class B-15: 15 minutes,
   – class B- 0: 0 minutes.

Class H fire division:
A division manufactured in incombustible materials that satisfies the following criteria:

a) it is sufficiently reinforced,
b) it prevents the spread of flames and smoke for at least two hours of the standardised fire test,
c) it is designed so that the average temperature and the temperature of any single point on the unexposed side do not rise more than 140°C and 180°C, respectively, above the original temperature within the following timeframes:
   – class H-120: 120 minutes,
   – class H-60: 60 minutes,
   – class H-0: 0 minutes,
d) any insulation materials are fire-tested at an institution that is internationally or nationally recognised in the specific discipline.

Load-bearing structures:
Those parts of the facility whose primary task is to transfer loads.

Design load:
Characteristic load multiplied by load coefficients.

Design accidental load:
An accidental load that the facility or a function shall be able to withstand for a defined period of time.

Dynamic positioning system (DP system):
A system in which the power supply, thruster system and control system are incorporated together and can be operated such as to automatically maintain a fixed position.

Simpler facilities with accommodation:
Facilities that are normally not manned, and which are equipped with emergency quarters.

Simpler facilities without accommodation:
Facilities without accommodation and helicopter deck, and which are

a) only manned in connection with maintenance,
b) only manned in daylight and during prudent weather conditions so that the personnel can leave the facility in a safe manner after completing work,
c) not part of an integrated development concept or do not pose a danger to other facilities in the area or in some other manner affect the operation of other facilities in an unacceptable manner.

Anchoring system:
An anchoring system of the catenary type or a combination of thruster system and catenary-type anchoring.

Functional loads:
Loads caused by the physical existence, use and treatment of the facility.

High pressure and high temperature wells (HPHT wells):
Wells with an expected shut-in pressure greater than 69 MPa (690 bar), or a temperature higher than 150 °C.

Lifting appliance:
A composite unit used for hoisting and lowering loads, with or without horizontal movement.

Lifting gear:
Components or equipment used between the lifting appliance and the load or to grip the load, and which are not an integrated part of the lifting appliance.

Natural loads:
Loads caused by natural conditions.

Permanently manned facilities:
Facilities that are continuously manned, or which are part of an integrated development concept with gangway connections.

Pipeline systems:
Subsea pipelines and risers that transport hydrocarbons and other fluids, with associated safety systems, valves, chambers, corrosion protection systems, etc.

Safety system:
A system that realises one or more active safety functions.

Safety functions:
Physical measures that reduce the probability of a hazard and accident situation occurring, or that limit the consequences of an accident.

Accidental loads:
Loads to which the facility can be exposed as a result of incorrect use, technical failure or undesirable external influences.

CHAPTER II
GENERAL PROVISIONS

Section 4
Choice of development concept

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

a) major accident risk,
b) type of operation,
c) risk of pollution,
d) geographical location,
e) location conditions,
f) reservoir properties,
g) regularity requirements,
h) lifetime,
i) any subsequent removal,
j) need to develop new technology.

Section 5
Design of facilities

Facilities shall be based on the most robust and simple solutions as possible, and designed so that

a) they can withstand the loads as mentioned in Section 11,
b) major accident risk is as low as possible,
c) a failure in one component, system or a single mistake does not result in unacceptable consequences,
d) the main safety functions as mentioned Section 7 are maintained,
e) materials handling and transport can be carried out in an efficient and prudent manner, cf. Section 13,
f) a safe working environment is facilitated, cf. Chapter IV,
g) operational assumptions and restrictions are safeguarded in a prudent manner,
h) health-related matters are safeguarded in a prudent manner,
i) the lowest possible risk of pollution is facilitated,
j) prudent maintenance is facilitated.

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

The facility's areas shall be classified such that design and location of areas and equipment contribute to reduce the risk associated with fires and explosions.

Areas occupied by personnel, or where safety-related equipment is located, shall not be exposed to waves with an annual probability greater than $1x10^{-2}$.

Section 6
Design of simpler facilities without accommodation

Simpler facilities without accommodation shall be designed to fulfil the requirements for acceptable risk, cf. Section 9 of the Management Regulations. A prudent working environment and satisfactory hygienic conditions shall also be facilitated during stays on the facility.

Where these regulations describe specific solutions, simpler solutions can be chosen for such facilities than those prescribed, provided these solutions can be proven satisfactory through special assessments.

Correspondingly, simpler solutions than those recommended in the guidelines for the individual provisions in these regulations can be considered.

Section 7
Main safety functions

The main safety functions shall be defined in a clear manner for each individual facility so that personnel safety is ensured and pollution is limited.

For permanently manned facilities, the following main safety functions shall be maintained in the event of an accident situation:

a) preventing escalation of accident situations so that personnel outside the immediate accident area are not injured,

b) maintaining the capacity of load-bearing structures until the facility has been evacuated,
c) protecting rooms of significance to combatting accidents so that they remain operative until the facility has been evacuated,
d) protecting the facility's secure areas so that they remain intact until the facility has been evacuated,
e) maintaining at least one escape route from every area where personnel are found until evacuation to the facility's safe areas and rescue of personnel have been completed.

Section 8
Safety functions

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,
c) limit the damage caused by accidents.

Requirements shall be stipulated for the performance of safety functions.

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

CHAPTER III
OVERALL JOINT REQUIREMENTS

Section 9
Qualification and use of new technology and new methods

Where the petroleum activities entail use of new technology or new methods, criteria shall be drawn up for development, testing and use so that the requirements for health, safety and the environment are fulfilled. 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 fulfilled using the relevant new technology or methods.

Section 10
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 error is limited,
b) they can be operated, tested and maintained without risk to the personnel and with the lowest possible risk of pollution,
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 proper maintenance.

Work equipment covered by Sections 2 and 4 of the Regulations relating to the use of work equipment, shall be designed in accordance with the provisions in Chapters IV, V and VI of those regulations.

Section 11
Loads, load effects and resistance

The loads that can affect facilities or parts of facilities, shall be determined. Accidental loads and natural loads with an annual probability greater than or equal to $1x10^{-4}$, shall not result in loss of a main safety function, cf. Section 7.

When stipulating loads, the effects of seabed subsidence over, or in connection with the reservoir, shall be considered.

Functional and natural loads shall be combined in the most unfavourable manner.

Facilities or parts of facilities shall be able to withstand the design loads and probable combinations of these loads at all times.

Section 12
Materials

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

a) the load requirements mentioned in Section 11,
b) manufacturing, joining and construction processes,
c) possible use of materials protection,
d) fire-resistance properties,
e) probable changes in operating conditions,
f) the opportunity to reduce future use of chemicals and pollution,
g) the opportunity to reduce, reuse and recover waste,
h) the employees' health and working environment,
i) potential future removal.

Section 13
Materials handling and transport routes, access and evacuation routes

Facilities and transport routes shall be designed so that materials handling and personnel traffic can take place efficiently and safely. Handling of materials shall to the extent possible take place by means of mechanical systems and technical appliances.

There shall be a stairway or ramp where access between different levels is used daily.

Escape 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 14
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, drafts, humidity and temperature. The indoor air shall be free of hazardous pollution.

Section 15
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 installations 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 hazards,
d) risk of pollution.

The Regulations relating to soluble sexivalent chrome in cement apply to the scope of these regulations.

Section 16
Flammable and explosive goods

The area for storage of flammable items and explosives shall be designed so that the risk of and associated with fire and explosion is as low as possible.

Simple provisions shall be in place to handle and remove explosives that can constitute a risk in the event of a hazard and accident situation.

Explosives shall be secured so that they do not inadvertently go off during storage and use.

Section 17
Instrumentation for monitoring and recording

Facilities shall be outfitted with instrumentation for monitoring and recording conditions and parameters that can be significant in verifying the results from analyses, as well as parameters of significance to the facility's further use.

Facilities shall also be outfitted with instrumentation for recording environmental data that can be significant to the petroleum activities. Facilities' instrumentation for flight weather service shall fulfil the requirements in Section 31 of the Civil Aviation Authority's Regulations relating to flight over the continental shelf – commercial aviation to and from the helicopter deck on permanent and mobile offshore facilities, and in the Civil Aviation Authority's Regulations relating to flight weather service.

The first facility of a new type shall be outfitted with instruments to collect data to verify the calculations. Fixed reference electrodes shall be installed on the first facility in areas where the corrosion conditions differ from areas where experience has been gained.

Section 18
Systems for internal and external communication

Temporarily or permanently manned facilities shall be outfitted with communication systems that enable continuous communication internally on the facility, and between the facility and ships, aircraft and land. Furthermore, these facilities shall be outfitted with alarm systems that can notify the personnel at all times of hazard and accident situations. The following audio and visual alarms shall be possible:

a) general alarm in the form of interrupted sound signals and yellow flashing lights,
b) prepare for evacuation in the form of uninterrupted sound signals and yellow flashing lights.

At least two independent chains of notification shall be established to land, preferably using permanent communication connections.

Section 19
Communications equipment

Equipment for external communication 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 can be maintained in hazard and accident situations.

CHAPTER IV
DESIGN OF WORK AND COMMON AREAS

Section 20
Ergonomic design

Work areas and work equipment shall be designed and deployed in such a 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 that the risk of mistakes that can have an impact on safety, is reduced.

Workplaces shall facilitate 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 enables them to make sure the work can be carried out safely.

Section 21
Human-machine interface and information presentation

Monitor-based equipment and other technical equipment for monitoring, controlling and operating machines, installations or production processes, shall be designed to reduce the risk of mistakes that can have an impact on 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 easy to understand.

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

In the event of incidents, nonconformities or faults in systems of significance to safety, alarms shall be activated that clearly differ from other information. The alarms shall be given such that they can be understood and handled in the time required for safe operation of equipment, installations and processes.

Section 22
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 23
Noise and acoustics

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_{EX12h} = 83 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 cabins, break rooms and recreation rooms shall be reduced as much as possible to contribute to necessary restitution and rest.

Section 24
Vibrations

Facilities shall be designed so that vibrations do not harm personnel on the facility, or complicate the personnel's important duties.

The Regulations relating to protection from mechanical vibrations apply to the scope of these regulations.

Section 25
Lighting

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

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

Section 26
Radiation

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 the substances shall be facilitated.

Section 27
Equipment for personnel transport

Equipment for personnel transport shall be designed to ensure the safety of personnel carrying out activities above normal work height, or who are transported using such equipment.

Personnel winches shall be such that spooling can take place safely and be secured against uncontrolled deployment so that users cannot fall freely.

Section 28
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 near 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.

Safety signs covered by the Regulations relating to safety signs and signalling in the workplace shall be designed in accordance with provisions in those regulations.

CHAPTER V
PHYSICAL BARRIERS

Section 29
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 insulation properties during a design fire load.

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

Section 30
Fire divisions

The main areas on facilities shall be separated by fire divisions that can withstand the design fire and explosion loads and, as a minimum, satisfy fire rating H-0 if they can be exposed to hydrocarbon fires.

Rooms with important functions and important equipment, as well as rooms with a high risk of fire, shall be separated from their surroundings with fire divisions with a fire rating corresponding to the fire type and the design fire and explosion loads to which they would be exposed.

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

Section 31
Fire divisions in living quarters

The living quarters shall be protected by fire divisions that, as a minimum, satisfy fire rating

a) H-60 for external walls facing a process or drilling area and which may be exposed to fire from these,
b) A-60 for other external walls,
c) A-0 for external walls on the living quarters that are located on a separate facility at a safe distance from production or drilling facilities, and for external walls on the emergency quarters on simpler facilities with accommodation, if these quarters are separated from the production or wellhead areas with a main fire division that, as a minimum, satisfies fire rating H-0.

The internal design of the living quarters shall be such that it limits the spread of fire.

Section 32
Fire and gas detection system

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

In the event of fire or gas detection, automatic actions shall limit the consequences of the fire or gas leak. The placement of detectors shall be based on relevant scenarios and simulations or tests.

Section 33
Emergency shutdown system

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 7. 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 safe conditions 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 trigger stations that are located in strategic locations on the facility. It shall be possible to manually activate functions from the central control room that bring the 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 facility, and which isolate the facility's fire areas.

Section 34
Process safety system

Facilities outfitted with or attached to 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
Gas release system

Facilities equipped with or attached to process facilities, shall have a gas release system. The system shall prevent escalation of hazard and accident situations by quickly reducing the pressure in the equipment, and it shall be designed so that the release of gas does not harm personnel or equipment.

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

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

Section 36
Firewater supply

All facilities with accommodation shall have a sufficient supply of firewater to combat fires and, if necessary, suppress gas explosions.

Permanently manned facilities shall have firewater supply from fire pumps or other independent supply to ensure sufficient capacity at all times, regardless of whether parts of the supply are out of service. Simpler facilities with accommodation shall have a firewater supply from a fire pump or other equivalently reliable supply. Simpler facilities without accommodation shall have an adequate supply of firewater so that the personnel can be protected from fires that can occur when the facility is manned.

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

On facilities where firewater is supplied from fire pumps, the pumps shall start up automatically in the event of a pressure drop in the fire main and upon confirmed fire detection. Fire pumps shall also be capable of being manually activated from the central control room and at the propulsion unit. Propulsion units for fire pumps shall be equipped with two independent starting arrangements. Automatic disconnection functions shall be as few as possible.

Firewater piping shall be designed and placed such that a sufficient supply of firewater is ensured to any area on the facility.

Section 37
Fixed fire-fighting systems

Fixed fire-fighting systems shall be installed in explosion-hazard areas and in areas with a major risk of fire. The systems shall also cover equipment containing significant amounts of hydrocarbons. The systems shall be designed such that fire-fighting can be carried out quickly and efficiently at all times.

The systems shall be automatically activated by a signal from the fire detection system. In the event of gas detection, the systems shall be automatically activated if this can result in lower explosion pressure.

In areas where gas is used as an extinguishing medium, notification systems shall be installed that announce the release of gas.

Manual activation of the fire-fighting systems shall activate the facility's general alarm.

Section 38
Emergency power and emergency lighting

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 do not entail operating problems for the emergency power users when switching from main power to emergency power.

The emergency power system shall have as few as possible automatic disconnection functions to ensure continuous operation.

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

Section 39
Ballast system

Floating facilities shall be equipped with a system that can ballast any ballast tank under normal operational conditions.

In the event of unintended flooding of any space adjacent to the sea, it shall nevertheless be possible to ballast.

Ballast systems shall be in accordance with Section 2 and Sections 7 through 22 of the Norwegian Maritime Directorate's Regulations relating to ballast systems on mobile facilities.

Section 40
Open drainage systems

Facilities shall be equipped with open drainage systems that can collect and divert oil and chemicals so that the risk of fire, harm to personnel and pollution is reduced.

The installation shall be designed such that any discharge of oil and chemicals results in the least possible pollution of the marine environment and such that the requirements in Chapter XI of the Activities Regulations are fulfilled.

CHAPTER VI
EMERGENCY PREPAREDNESS

Section 41
Equipment for rescue of personnel

Facilities shall at all times have available equipment for quick and prudent rescue of personnel who fall into the sea, cf. also Section 77 of the Activities Regulations. This equipment shall not expose the rescue crew or personnel to be rescued to unacceptable risk.

Diving facilities shall at all times have available equipment such that personnel in diving bells, subsea chambers and submersibles can be rescued in an emergency.

Section 42
Materials for action against acute pollution

Materials for action against acute pollution shall satisfy requirements evident from the analyses mentioned in Section 17 of the Management Regulations.

Facilities shall at all times have access to materials that can efficiently be used against acute pollution, cf. Chapter II of the Framework Regulations.

The materials shall be tested under realistic conditions as regards functional and operative qualities, as well as collection efficiency. The materials shall be adapted to the pollution's physical and chemical properties and operative conditions at sea and along the coast and beaches.

Weather, wind and current-related efficiency figures shall be set for various types of materials, based on documented and relevant capacity figures.

Section 43
Emergency preparedness vessels

The need for emergency preparedness vessels and requirements for the vessels' emergency preparedness functions shall be evident from the analyses mentioned in Section 17 of the Management Regulations.

Emergency preparedness vessels that take part in management and execution of actions against acute pollution shall be designed such that they can perform their functions at sea, along the coast and in the beach zone.

Section 44
Means of evacuation

Personnel on facilities shall be able to evacuate quickly and efficiently to a safe area under all weather conditions, cf. Section 77, litera d of the Activities Regulations.

The choice of means of evacuation, their placement and protection shall be based on the defined hazard and accident situations, cf. Section 73 of the Activities Regulations.

Free-fall lifeboats, supplemented by rescue chutes and associated life rafts shall be used as means of evacuation for evacuation to sea.

Special assessments can be undertaken of the need for and choice of equipment for hyperbaric evacuation.

Hyperbaric evacuation units shall be designed such that they can be towed and lifted, or in some other manner recovered from the water under weather conditions where their use may be warranted.

Section 45
Survival suits and life jackets, etc.

It shall be possible to store personal survival suits in the cabins. In addition, a number of survival suits and life jackets shall be placed easily accessible on the facility, based on the results from the emergency preparedness analysis mentioned in Section 17 of the Management Regulations.

It shall be possible to store the survival suits and life jackets without compromising their quality.

Life buoys shall be placed so they are easily accessible on the facility.

Section 46
Manual fire-fighting and firefighters’ equipment

Facilities shall be equipped with sufficient manual fire-fighting and firefighter equipment to effectively combat incipient fires and prevent escalation.

CHAPTER VII
ELECTRICAL INSTALLATIONS

Section 47
Electrical installations

Electrical installations be shall designed with safeguards and other protection so as to avoid abnormal conditions and faults that can result in danger for the personnel and the facility. Facilities 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 interference,
k) health hazard as a result of electromagnetic fields.

CHAPTER VIII
DRILLING AND WELL SYSTEMS

Section 48
Well barriers

Well barriers shall be designed such that well integrity is ensured and the barrier functions are safeguarded during the well's lifetime.

Well barriers shall be designed such that unintended well influx and outflow to the external environment is prevented, and such that they do not hinder well activities.

When a well is temporarily or permanently abandoned, the barriers shall be designed such that they take into account well integrity for the longest period of time the well is expected to be abandoned.

When plugging wells, it shall be possible to cut the casings without harming the surroundings.

The well barriers shall be designed such that their performance can be verified.

Section 49
Well control equipment

Well control equipment shall be designed and capable of activation such that it ensures both barrier integrity and well control. For drilling of top hole sections through risers or conductors, equipment shall be installed with a capacity to divert shallow gas and formation fluids away from the facility until the personnel have been evacuated.

The pressure control equipment used in well interventions shall have remote-controlled valves with mechanical locking mechanisms in the closed position.

Well intervention equipment shall have a remote-controlled shear/blind ram as close to the christmas tree as possible.

Floating facilities shall have an alternative activation system for activating critical functions on the blowout preventer for use in the event of an evacuation.

Floating facilities shall also have the capacity to disconnect the riser package after the shear ram has cut the work string.

Section 50
Compensator and disconnection systems

Floating facilities shall be equipped with a disconnection system that secures the well and disengages the riser before a critical angle occurs.

When designing the compensator system, robust technical solutions shall be chosen where faults do not result in unacceptable consequences, cf. Section 5 litera c.

Section 51
Drilling fluid system

The drilling fluid system shall be designed such that it mixes, stores, circulates and cleans a sufficient volume of drilling fluid with necessary properties to safeguard the drilling fluid's drilling and barrier functions.

The high pressure section of the drilling fluid system with associated systems shall also have the capacity and working pressure to be able to control the well pressure at all times.

Section 52
Cementing unit

The cementing unit shall be designed such that it mixes, stores and delivers the correct volume of cement with necessary properties to ensure proper anchoring and barrier integrity. The unit shall be designed such that residues of both unmixed chemicals and mixed cement are handled in accordance with the principles of the Pollution Control Act.

In the event the cementing unit with associated systems shall function as a replacement unit for the drilling fluid system, it shall have sufficient capacity and working pressure to be able to control the well pressure at all times.

Section 53
Equipment for completion and controlled well flow

Equipment in the well and on the surface shall be designed to safeguard controlled flowrates, cf. Section 12.

The flow line and annulus shall be equipped with necessary downhole safety valves (SCSSV) and necessary equipment for monitoring well parameters.

During well testing, it shall be possible at any time to control the well stream through the work string and choke manifold.

Section 54
Christmas tree and wellhead

Christmas trees and wellheads shall be designed such that prudent recovery, re-entry, well intervention and well control can be carried out.

The christmas tree shall have at least two main valves, and at least one of them shall be automatic.

CHAPTER IX
PRODUCTION PLANTS

Section 55
Production plants

Production plants shall be designed such that chemical and energy consumption is reduced, and with minimum pollution of the external environment.

Production plants shall have a control system that enables stable regulation of the plant.

Treatment systems for produced water shall be designed such that the oil content in each discharge stream is the lowest possible, cf. Section 60 of the Activities Regulations. The discharge point for produced water shall be located such that the discharges result in the least possible damage to the marine environment.

If there is a risk of ignition, the vessels in the system shall be designed to prevent air penetration.

Production plants also include subsea production plants.

CHAPTER X
LOAD-BEARING STRUCTURES AND PIPELINE SYSTEMS

Section 56
Load-bearing structures and maritime systems

Load-bearing structures shall maintain satisfactory safety in use, failure, fatigue and accident limit states. They shall be able to withstand the loads they are exposed to, including loads with an annual probability of 10^{-2} in the failure limit state and the loads that follow from Section 11, in the accident limit state. The analyses shall be verified by an organisationally independent party.

Load-bearing structures shall be sufficiently robust to ensure that local damage or failure will not result in unacceptable consequences.

Maritime systems shall be sufficiently robust to ensure that local damage or individual technical or operational faults do not result in unacceptable consequences.

Section 57
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.

For flexible pipeline systems and pipeline systems of other materials than steel, utilisation factors and any load and material factors shall be stipulated so that the safety level for such systems is not lower than for steel pipelines and steel risers.

CHAPTER XI
LIVING QUARTERS

Section 58
Living quarters

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

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

Emergency quarters on simpler facilities with accommodation possibilities shall be adapted to the greatest personnel need. The same safety and hygiene requirements are set for simpler facilities with accommodation possibilities as for living quarters.

Section 59
Health department

Permanently manned facilities shall have a health department. The health department shall be such that the health personnel can carry out their tasks in a prudent manner.

There shall be equipment on the facility such that prudent first aid and medical treatment can be provided on the facility and during transport.

It shall be possible to establish telephonic contact between the health department and an onshore physician. Internal communication between the health department and the manned control room shall be facilitated. Communications equipment shall be secured against power outages.

The health department shall have satisfactory work lighting and at least two electrical outlets for emergency power to maintain life support functions, cf. Section 38.

There shall be sufficient area and equipment to cover the need for first aid on simpler facilities with accommodation possibilities.

Section 60
Emergency sickbay

Permanently manned facilities shall have an emergency sickbay in addition to a health department.

The treatment capacity shall be in accordance with the defined hazard and accident situations as mentioned in Section 17 of the Management Regulations.

The emergency sickbay shall be equipped such that it can provide prudent first aid and medical treatment.

Section 61
Supply of food and drinking water

The provisions in the Drinking Water Regulations apply to drinking water supplies in the petroleum activities.

Facilities, including drinking water supplies, shall be designed such that the requirements mentioned in Section 13 of the Activities Regulations and the Drinking Water Regulations are fulfilled. Facilities shall have the necessary means to ensure the quality of food and drinking water.

CHAPTER XII
MARITIME FACILITIES

Section 62
Stability

Floating facilities shall be in accordance with the requirements in Sections 8 through 51 of the Norwegian Maritime Directorate's Regulations relating to stability, watertight subdivision and watertight/weathertight closing mechanisms on mobile offshore facilities.

There shall be weight control systems on floating facilities, which ensure that the weight, weight distribution and centre of gravity are within the design specifications. Equipment and structure sections shall be secured against displacement that can influence stability.

Section 63
Anchoring, mooring and positioning

Floating facilities shall have systems designed to hold their position at all times and, if necessary, be able to move from their position in the event of a hazard and accident situation.

The anchoring system shall be in accordance with the requirements in Sections 6 through 17 of the Norwegian Maritime Directorate's Regulations relating to positioning and anchoring systems on mobile offshore facilities (the Anchoring Regulations 09). Vertical loads as mentioned in Section 14 litera i of the regulations, can be accepted for certain types of anchors, such as pile or suction anchors.

The mooring system shall be in accordance with the requirements in Section 35 of the Norwegian Maritime Directorate's Regulations relating to mobile offshore facilities with production plants and equipment.

Dynamic positioning systems shall be designed so that the position can be maintained during defined failures and damage to the system, as well as during accidents. Components and equipment shall be designed so that the total system satisfies the requirements for a certain equipment class, cf. Section 90 of the Activities Regulations.

Section 64
Turret

Turrets shall be designed so that they are in accordance with the requirements in Section 15, Nos. 1 through 4 of the Norwegian Maritime Directorate's Regulations relating to mobile offshore facilities with production plants and equipment.

CHAPTER XIII
DIVING FACILITIES

Section 65
Installations and equipment for manned underwater operations

Diving bells shall have an internal volume of at least 4.5 m^3. If the diving bell is designed for more than two divers, there shall, for each extra diver, be an additional internal volume of 1.5 m^3.

Compression chambers for saturation diving shall have an internal height of at least 200 cm measured from the floor in the centre of the chamber. There shall be an internal volume of at least 4 m^3 for each person.

The umbilical cord to subsea chambers shall allow for controlled disconnection in the event the support vessel loses its position. In addition, it shall be easy to find the umbilical so that necessary supplies to the subsea chamber can be re-established.

CHAPTER XIV
ADDITIONAL PROVISIONS

Section 66
Loading and offloading systems

Loading and offloading systems for oil and chemicals shall be designed such that the risk of polluting the external environment is acceptable, cf. Section 9 of the Management Regulations.

Section 67
Waste

Facilities shall be designed such that waste can be collected, stored and treated in a prudent manner as regards health and environment, as mentioned in Section 72 of the Activities Regulations.

Section 68
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 for helicopter traffic.

Exhaust ducts from atmospheric tanks and vessels shall be placed and designed such that emissions of toxic or combustible gases do not entail increased risk for the personnel or the facility.

Section 69
Lifting appliances and lifting gear

Lifting appliances and lifting gear on facilities shall be designed based on the conditions under which the lifting appliances and lifting gear will be used, cf. Section 12. Corresponding requirements apply to the safety of lifting appliances and lifting gear on vessels that participate in the petroleum activities.

When choosing lifting appliances and lifting gear on floating facilities, the facility's movements shall be given particular consideration.

Drilling and well areas, including storage areas, shall have equipment for remote operation of pipes and work strings. The requirement for remote operation of pipes and work strings applies from when the pipes have been laid out on the pipe deck and made ready for further transport to the drill floor or work deck.

The requirement for such remote operation of pipes and work strings also applies to lightweight rigs and snubbing units.

Section 70
Helicopter deck

The helicopter deck shall be designed and outfitted such that it satisfies the requirements in the Civil Aviation Authority's Regulations relating to flight over the continental shelf – commercial aviation to and from the helicopter deck on permanent and mobile offshore facilities.

Equipment for fire-fighting on the helicopter deck shall be designed and placed such that

a) fires on the helicopter deck, both on and inside helicopters, can be combatted safely and efficiently,
b) rescue crew and other personnel are protected during evacuation of helicopters.

The helicopter deck shall be equipped with one fire-fighting station at each access point.

Section 71
Marking of facilities

Facilities shall be marked such that they can quickly be identified and such that other traffic in the area is notified. Marking of facilities shall be in accordance with the Norwegian Coastal Administration's provisions.

Anchor and marking buoys shall be marked in a corresponding manner.

All navigation marks placed in connection with the petroleum activities shall be in accordance with IALA rules and of a type that is accepted by the Norwegian Coastal Administration for such marking. When anchor points are placed outside the safety zone, the Petroleum Safety Authority Norway can require them to be marked with yellow anchor buoys with yellow reflectors, and if applicable, with yellow flashing lights.

Section 72
Marking of equipment and cargo

Cargo and equipment that is transported or used for transport to or from facilities or vessels that participate in the petroleum activities shall be clearly marked with the name of the owner, facility or vessel.

Section 73
Lifts

Lifts shall be designed based on the conditions under which they will be used, and such that personnel and materials transport can be carried out in an efficient and prudent manner, cf. Section 13.

CHAPTER XV
IMPLEMENTATION OF EEA REGULATIONS

Section 74
Simple pressure vessels

Simple pressure vessels as defined in the Regulations relating to simple pressure vessels (the SPV Regulations) shall be in accordance with the requirements in the SPV Regulations, also when such vessels are used in the petroleum activities.

Section 75
Personal protective equipment

Personal protective equipment as defined in the Regulations relating to construction, design and production of personal protective equipment (the PPE regulations) shall be in accordance with the requirements in the PPE regulations, also when such equipment is used in the petroleum activities.

One exemption from this provision is Section 49, No. 2 of the Regulations relating to Personal Protective Equipment.

Section 76
Aerosol containers

Aerosol containers as defined in the Regulations relating to aerosol containers (the Aerosol Regulations) shall be in accordance with the requirements in the Aerosol Regulations, also when such aerosol containers are used in the petroleum activities.

Section 77
EMC

Electrical appliances covered by the Regulations relating to electrical equipment (the EE Regulations), and which are used in the petroleum activities, shall be in accordance with the requirements in the EE Regulations as regards electromagnetic compatibility, with the exception of Section 5.

Appliances and fixed installations covered by the Norwegian Post and Telecommunications Authority's Regulations relating to electromagnetic compatibility (EMC) for electronic communication, shall be in accordance with the requirements in those regulations, also when such equipment is used in the petroleum activities.

Section 78
ATEX

Equipment and safety systems for use in explosion hazard areas as defined in the Regulations relating to equipment and safety systems for use in areas with explosion hazard (the ATEX Regulations), shall be in accordance with the requirements in the ATEX regulations, also when such equipment is used in the petroleum activities; with the exception that follows from Section 1, fourth subsection, fifth indent of the ATEX Regulations.

Section 79
Pressure equipment not covered by the Facilities Regulations

These regulations do not apply to pressure equipment covered by the Regulations relating to pressure equipment.

Section 80
Machinery and safety components not covered by the Facilities Regulations

These regulations do not apply to machinery and safety components covered by the Regulations relating to machinery.

CHAPTER XVI
CONCLUDING PROVISIONS

Section 81
Supervision, decisions, enforcement, etc.

Chapter IX of the Framework Regulations applies correspondingly to these regulations.

Section 82
Entry into force

1) The Regulations will enter into force on 1 January 2011. At this time, the Regulations of 3 September 2001 No. 1100 relating to design and outfitting of facilities, etc. in the petroleum activities will be repealed.
2) In the areas of health, working environment and safety, technical requirements in regulations in force until these regulations entry into force, can be used for existing facilities.
3) However, in the event of major rebuilding and modifications of existing facilities, these regulations will apply for what is covered by the rebuilding or modification.
4) Requirements for helicopter decks as mentioned in Section 70, cf. Chapters IV and V of the Regulations relating to flight over the continental shelf Chapters IV and V, do not apply to facilities built prior to 1 June 1993. The requirement in Section 10 of the mentioned regulations, does not apply to facilities built prior to 1 January 2008.