



REPUBLIC OF GHANA

**PETROLEUM (EXPLORATION AND PRODUCTION)
(HEALTH, SAFETY AND ENVIRONMENT)
REGULATIONS, 2017**

(L.I. 2258)

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IN exercise of the powers conferred on the Minister responsible for Petroleum by subsections (1) and (2) of section 94 of the Petroleum (Exploration and Production) Act, 2016 (Act 919), these Regulations are made this 14th day of November, 2017.

Purpose and Application

Purpose

1. The purpose of these Regulations is to
 - (a) prevent the adverse effects of petroleum activities on health, safety and the environment;
 - (b) provide the minimum health, safety and environment requirements for contractors, sub-contractors, licensees, the Corporation and any other person engaged in a petroleum activity;
 - (c) promote high standards for health, safety and the environment in carrying out a petroleum activity;
 - (d) ensure systematic implementation of measures to comply with requirements and achieve set goals in applicable working environment and safety standards; and
 - (e) contribute to the development and improvement of health, safety and environmental standards.

Application

2. (1) These Regulations apply to petroleum activities within the scope of the Act.

(2) Despite subregulation (1), regulations 35 to 48 do not apply to offshore petroleum activities.

Management System

Duty to develop a management system

3. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall develop, maintain and implement a management system to ensure compliance with these Regulations.

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(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall follow up the developed management system for continuous improvement.

(3) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity, shall ensure that representatives of the employees are informed of the management system developed under subregulation (1).

(4) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that employees and their representatives are given the opportunity to participate in health, safety and environmental matters.

(5) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) employees contribute to the development and maintenance of management systems;
- (b) employees participate in the monitoring and continuous improvement process; and
- (c) any party subject to an administrative decision informs the representatives of the employee of the administrative decision.

Qualification and follow-up of persons engaged in petroleum activity

4. (1) When entering into a contract, a contractor, sub-contractor, licensee or the Corporation shall ensure that persons engaged in a petroleum activity

- (a) are qualified to fulfil the regulatory requirements relating to health, safety and the environment; and
- (b) comply with the regulatory requirements when performing the petroleum activity.

(2) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a person who carries out work on behalf of the contractor, sub-contractor, licensee, Corporation or any other person engaged in a petroleum activity has the requisite competence to carry out the work in a prudent and safe manner.

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- (3) An operator shall ensure that
- (a) any deficiencies in management of health, safety and the environment by persons engaged in a petroleum activity are corrected; and
 - (b) the necessary adjustments are made with respect to the management systems of the operator and that of persons engaged in a petroleum activity, to ensure the necessary uniformity.

Verification

5. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall carry out verification of new installations and modifications, and ensure third party verifications are carried out for all critical components.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall, in compliance with requirements of these Regulations, determine

- (a) the scope of verifications, and
- (b) the method of verification.

(3) For the purpose of this regulation, "critical component" means

- (a) a component of the assembly devoid of redundancy, or
- (b) an auxiliary restraining device,

whose failure may cause the failure of the whole structure or a significant part of the structure.

Training of Ghanaians

6. Upon request from the Commission, a contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall provide health, safety and environment training opportunities for Ghanaians at their plants and facilities for the purpose of on-the-job training and practical attachment programmes.

General Provisions

General health and safety requirements

7. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) maintain an office in the country that, on an independent basis, is capable of ensuring that petroleum activity is carried out in accordance with these Regulations;

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- (b) promote a positive health, safety and environment culture in all phases and activity areas, to minimise risk and improve health, safety and the environment;
- (c) ensure that a management system contributes to compliance with these Regulations and is continuously identifying and reducing risks; and
- (d) before entering into a contract, ensure that the persons assigned to perform work directly or indirectly, understand and are qualified to fulfil the relevant requirements of these Regulations.

(2) A contractor, licensee or the Corporation shall ensure that the operator complies with these Regulations.

(3) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) activities are conducted in a manner that is acceptable under these Regulations, based both on an individual and an overall assessment of all factors of relevance for planning and implementation of the activity as regards health, safety and the environment; and
- (b) an employee
 - (i) understands the duty to contribute to the prevention of accident and ill-health;
 - (ii) is given proper and adequate training; and
 - (iii) is provided with information on health risks and risk of accidents on the work to be performed.

Health and safety plan

8. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) have a health and safety plan that is adapted to the scope of the petroleum activity; and
- (b) submit the health and safety plan to the Commission not later than three months before the commencement of activity in accordance with subregulation (2) of regulation 171.

(2) The health and safety plan shall stipulate and further develop objectives and strategies to improve health and safety in accordance with technological developments, applicable laws and best international practice.

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(3) The objectives of the health and safety plan shall be expressed in such a manner that the degree of achievement can be assessed.

(4) The health and safety plan shall also include information on the following:

- (a) targets;
- (b) training and competence development;
- (c) organisational arrangements;
- (d) performance standards;
- (e) waste management; and
- (f) emergency preparedness and response for the relevant petroleum activity.

(5) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure agreement and, if applicable, harmonisation between short-term and long-term objectives in all relevant areas of activity, at different levels and between those engaged in the petroleum activities.

(6) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall prepare a revised health and safety plan,

- (a) in case of any significant modification, change or new stage of existing petroleum activity not already catered for in an existing health and safety plan or safety case; and
- (b) in any event, within one year of the submission of the most recently submitted health and safety plan.

(7) When preparing the Health and Safety Plan, the contractor, licensee, sub-contractor, Corporation or any other person engaged in a petroleum activity shall give consideration to the specific nature of the activities, local conditions and operational assumptions.

Risk reduction principles

9. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall take steps to eliminate or reduce risks or hazards to people, the environment or assets in accordance with these Regulations and in compliance with best industry practices.

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(2) In the event of insufficient knowledge about the potential effects of technical, operational or organisational solutions on health, safety or the environment, the contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall adopt solutions that reduce the uncertainty.

(3) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall replace factors that could cause harm to people, damage to the environment or assets in a petroleum activity, with factors that, in an overall assessment, have less potential for harm or damage.

(4) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall carry out risk assessments during all phases of petroleum activities.

(5) For the purpose of subregulation (3), "factors" include materials, equipment and procedures.

Safety Case

10. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall prepare and submit to the Commission, a Safety Case not later than six months before the commencement of operation or decommissioning of a petroleum facility.

(2) A Safety Case submitted in accordance with subregulation (1) shall indicate

- (a) a description of the petroleum facility;
- (b) the technical and other control measures;
- (c) risk and emergency preparedness analysis conducted in accordance with regulation 156;
- (d) relevant information relating to the part of the management system that is designed to ensure compliance with applicable health and safety legislation and at continuously identifying and reducing risks to a level as low as possible at petroleum facilities; and
- (e) an emergency preparedness plan prepared in accordance with regulation 157.

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(3) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall during operations follow up the conditions established in the Safety Case.

(4) The Safety Case shall ensure implementation of the management system and enhance health and safety performance in compliance with relevant enactments.

(5) Despite subregulation (1), the Commission may request a contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity to submit a bridging document in relation to one or more Safety Cases or health and safety plans.

(6) A Safety Case shall

- (a) relate to a specific petroleum facility or proposed petroleum facility in a specified location;
- (b) correlate with the petroleum facility or proposed petroleum facility and the activity to be carried out at the facility;
- (c) be prepared in consultation with an independent and competent person and the workers on the facility; and
- (d) be a true reflection of the state of safety arrangements for an existing or proposed petroleum facility.

(7) Where there is a significant modification, change or new stage of existing petroleum facilities not already catered for in an existing Safety Case, the contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall submit a revised Safety Case to the Commission within six months of the modification, change or introduction of the new stage of existing petroleum facility or in any event, within five years of the submission of the most recently submitted Safety Case.

(8) For the purposes of subregulation (7), "significant modification" means a major alteration or significant deviation from the original design of the petroleum facility that may have health, safety and environmental implications.

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Use of English language

11. The medium of communication and instruction in the petroleum activity shall be the English language.

General Requirements on Design and Operation of Petroleum Facility

Choice of development concept

12. (1) A contractor, sub-contractor, licensee or the Corporation shall, in choosing a development concept, comply with the provisions of these Regulations and take into consideration the following:

- (a) major accident risk;
- (b) type of operation;
- (c) risk of environmental damage;
- (d) geographical location;
- (e) location conditions;
- (f) reservoir properties;
- (g) regulatory requirements;
- (h) lifetime of the facility;
- (i) any subsequent removal; and
- (j) need to develop new technology.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) the design, construction and installation of petroleum facilities are executed in a manner that ensures that petroleum facilities can be operated and removed in a safe and prudent manner; and
- (b) subsea facilities and pipeline systems are designed, constructed and installed in a manner that ensures that the subsea facilities and pipeline systems can withstand mechanical damage caused by other activity, and do not damage fishing gear or obstruct fishing activity to an unreasonable extent.

Main safety functions

13. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in petroleum activity shall define the main safety functions in a clear manner for each individual petroleum facility to ensure personnel safety and prevent pollution.

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(2) For a petroleum facility which is permanently manned, the contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall maintain the following main safety functions in the event of an accident situation:

- (a) prevention of the escalation of accident situations to ensure that personnel outside the immediate accident area are not injured;
- (b) maintenance of the integrity of load-bearing structures until the petroleum facility has been evacuated;
- (c) protection of rooms of significance to combat accidents so that the rooms remain operative until the petroleum facility has been evacuated;
- (d) protection of the secured areas of the petroleum facility so that the areas remain intact until the petroleum facility has been evacuated; and
- (e) maintenance of at least one escape route from every area where personnel are found until evacuation to the safe areas of the petroleum facility and rescue of personnel have been completed.

Safety functions

14. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall equip petroleum facilities with the 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.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) specify the performance requirements for safety functions; and
- (b) make the status of safety functions available in the central control room.

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Design of petroleum facility

15. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a petroleum facility is designed to be as simple and robust as possible, and ensure that

- (a) the petroleum facility can withstand the loads determined in regulation 31;
- (b) accident risks are eliminated or reduced to as low as reasonably possible;
- (c) a failure in one component, system or a single mistake does not result in adverse consequences;
- (d) the main safety functions specified in regulation 13 are maintained;
- (e) handling of materials and transport can be carried out in an efficient and prudent manner;
- (f) escape routes are designed such that all evacuation can take place in a safe, simple and timely manner;
- (g) a safe working environment is facilitated and maintained;
- (h) operational assumptions and restrictions are safeguarded in a prudent manner;
- (i) health-related matters are safeguarded in a prudent manner;
- (j) the risk of pollution is reduced to as low as reasonably practicable; and
- (k) the petroleum facility is maintained on a regular basis.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) adopt and maintain a strategy for protecting the petroleum facility against fire and explosion; and
- (b) classify the areas of the petroleum facility in a manner as to ensure that the design and location of areas and equipment contribute to reduce risks associated with fire and explosion.

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Qualification and use of new technology and new method

16. (1) Where the petroleum activity entails the use of a new technology or a new method, the contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) criteria are established for development, testing and use of that technology or methods to fulfil the requirements for health, safety and the environment;
- (b) criteria are suitable for the relevant conditions of use, and the new technology or the new method is adapted to solutions already accepted; and
- (c) the qualification or testing demonstrates that applicable requirements can be fulfilled using the relevant new technology or new method.

(2) For the purposes of subregulation (1), "new technology" means a method, process, equipment or device which may have limited information on health, safety and environmental implications but can be adopted to suit a solution which is already acceptable.

Materials

17. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that in the selection of materials to be used in or on a petroleum facility, the following are considered:

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

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Installations, systems and equipment

18. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that an installation, a system and an equipment is designed in the most robust, safe and prudent manner, such that

- (a) the probability for human error is as low as reasonably possible;
- (b) the installation, system and equipment can be operated, tested and maintained without risk to the personnel and the risk of pollution is as low as reasonably possible; and
- (c) the installation, system and equipment are suitable for use and able to withstand the load that the installation, system and equipment is exposed to during operation.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that an installation, system and equipment is designed and marked so as to facilitate safe operation and proper maintenance.

Pipeline system

19. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a pipeline system is designed in a manner that will enable interior maintenance to be performed;
- (b) a chamber for sending and receiving cleaning and inspection tools is designed in a manner that the chamber cannot open or be opened under pressure; and
- (c) utilisation factors and any load and material factors for flexible pipeline systems and pipeline systems made of materials other than steel, are documented in a manner that the safety level for these systems are not lower than the safety levels for steel pipelines and steel risers.

(2) For the purposes of subregulation (1), "steel riser" means a flexible steel pipe or an assembly of steel pipes used to

(a) transfer

- (i) fluids produced from the seabed to the surface facility,
or

- (ii) injection fluids or control fluids; or

(b) lift gas from the surface facility and the seabed.

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Electrical installation

20. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that an electrical installation is designed with safeguards and other protection in order to prevent abnormal conditions and faults that can be hazardous to the personnel and the petroleum facility.

(2) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a petroleum facility is designed with adequate protection against situations including

- (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 atmospheres;
- (j) electromagnetic interference;
- (k) health hazards; and
- (l) other hazardous conditions.

Instrumentation for monitoring and recording

21. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a petroleum facility is equipped with

- (a) instrumentation for monitoring and recording conditions and parameters that are significant in verifying the results from analyses and parameters of relevance to further use of the petroleum facility; and
- (b) instrumentation for recording environmental data that are relevant to the petroleum activity.

(2) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the first petroleum facility of a new type is outfitted with instruments to collect data to verify the recorded measurements.

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(3) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall install fixed reference electrodes on the first petroleum facility in areas where the corrosion conditions differ from areas where experience has been gained.

Communication equipment

22. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) equipment for external communications are selected based on operational needs, the type of activity and defined hazard and accident situations;
- (b) communication equipment and associated power supplies are designed and protected to ensure that the communication equipment and power supply functions can be maintained in hazard and accident situations;
- (c) a petroleum facility which is temporarily or permanently manned is outfitted with communication systems that enable continuous communication internally on the facility, and between the facility and ships, aircraft, land and other installations; and
- (d) a petroleum facility is outfitted with alarm systems that can notify the personnel at all times of hazard and accident situations.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that at least two independent channels of notification are established to land, preferably using permanent communication connections.

Helicopter pad or deck

23. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that every helicopter pad or deck is designed and outfitted in a safe and prudent manner.

Hoisting, lifting appliances and lifting gear

24. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a hoisting equipment or a lift is designed

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- (i) based on the conditions under which the hoisting equipment or lift will be used, and
 - (ii) such that personnel and material transport can be carried out in a safe and prudent manner;
 - (b) equipment for personnel transport are designed to ensure the safety of personnel;
 - (c) personnel winches are such that spooling can take place safely and be secured against uncontrolled deployment so that users cannot fall freely;
 - (d) a lifting appliance and a lifting gear on a petroleum facility is designed based on the conditions under which the lifting appliance and lifting gear will be used;
 - (e) particular consideration is given to the movement of the facility when choosing a lifting appliance and lifting gear on a floating petroleum facility;
 - (f) a drilling and well area, including a storage area, has equipment for remote operation of pipes and work strings;
 - (g) requirement for the remote operation of pipes and work strings also applies to light weight rigs and snubbing units;
 - (h) an overhead sheave or pulley is securely fastened to the support of the overhead sheave or pulley; and
 - (i) a hook used in single point hoisting is equipped with a device to prevent the accidental release of the load.
- (2) The requirement of paragraph (d) of subregulation (1) applies to the safety of lifting appliances and lifting gear on a vessel which participates in a petroleum activity.
- (3) The requirement of paragraph (f) of subregulation (1) 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.

Marking of petroleum facility

25. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a petroleum facility is marked for easy identification in a manner that other traffic in the area is notified;
- (b) an anchor and marking buoy is marked in a corresponding manner;

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- (c) navigation marks are in place; and
- (d) an anchor point placed outside the safety zone is marked with yellow anchor buoys with yellow reflectors, and if applicable, with yellow flashing lights.

Marking of equipment and cargo

26. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that cargo and equipment that are transported or used for transport to and from a petroleum facility or a vessel that participates in the petroleum activity is clearly marked with the name of the owner, facility or vessel.

Production facility

27. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a production facility

- (a) is designed in a manner that chemical and energy consumption is reduced, and there is minimum pollution of the external environment; and
- (b) has a control system that enables stable operation of the production facility.

(2) A production facility in subregulation (1) includes a subsea production facility.

Oceanography, meteorology and earthquake data

28. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the relevant oceanography, meteorology and earthquake data are collected and taken into consideration in planning and carrying out petroleum activities.

Placement of petroleum facility and choice of route

29. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a petroleum facility including a well is placed at a safe distance from other facilities and objects such as light houses, beacons, cables, pipelines and vulnerable environmental resources in order to ensure that the petroleum facility does not create unacceptable risk to other facilities, settlements or the external environment.

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Installations and equipment for manned underwater operation

30. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a diving bell has adequate internal capacity for safe operations;
- (b) a compression chamber for saturation diving has suitable height and adequate internal volume for each person; and
- (c) the umbilical to a subsea chamber
 - (i) allows for controlled disconnection in the event that the support vessel loses its position; and
 - (ii) is readily accessible so that necessary supplies to the subsea chamber can be re-established.

Loads, load effects and resistance

31. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) the loads that can affect a petroleum facility or a part of the petroleum facility is determined; and
- (b) accidental loads and natural loads do not result in loss of a main safety function.

(2) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) when stipulating loads, the effects of seabed subsidence over, or in connection with the reservoir, are considered, such that when functional and natural loads combine in the most unfavourable manner it should not result in failure; and
- (b) a petroleum facility or part of the petroleum facility is able to withstand the design loads and probable combinations of these loads at all times.

Ventilation and indoor climate

32. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that ventilation, both indoor and outdoor is designed to ensure

- (a) acceptable air quality;
- (b) that smoke from fires can be controlled; and
- (c) that hazardous and combustible gases cannot penetrate closed non-aerated areas.

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(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) climate indoors is adapted to each individual room as regards air needs, drafts, humidity and temperature; and
- (b) air indoors is free of pollution.

Living quarters

33. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that furnishings and capacity of living quarters on the petroleum facility

- (a) meet acceptable standards for residential environment and are adaptable to the various functions and are safeguarded;
- (b) meet anticipated personnel needs in the various phases of the petroleum activity; and
- (c) are equipped and furnished to maintain an adequate standard of hygiene.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that emergency quarters on a petroleum facility with accommodation possibilities are adapted to the needs of the maximum number of personnel allowed on board the facility.

(3) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the internal design of living quarters are constructed in a manner as to limit the spread of fire.

(4) Where the living quarters are located on a separate facility, the contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that external surfaces and distance to nearby facilities are constructed in a manner that a fire on a nearby facility or in the surroundings does not entail an unacceptable risk for personnel and functions in the living quarters.

Equipment for food and drinking water

34. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that equipment for food and drinking water are designed in accordance with applicable enactments.

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Specific Requirements in Relation to Onshore Petroleum Activity

Entry onto land

35. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall before

- (a) entering on land, engage the communities in which the licensed area is situated in consultation with the appropriate authorities to ensure that landowners are adequately informed of the type of operation to be undertaken, the approximate duration of the operation and the potential damage that could be caused to property;
- (b) commencement of upstream petroleum activity onshore, obtain the required approvals and permits; or
- (c) entering on land, notify the Commission in writing of the intentions at least three months before making the entry.

Protection of infrastructure, public utilities, facilities and installations

36. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) there is no interference with any existing infrastructure, public utility, facility and installations during the performance of any operation in the search for and the production of petroleum, unless otherwise approved by the Commission; and
- (b) public utilities, infrastructure, facilities and installations close to the operation sites as well as others who may be affected by petroleum activities are protected.

(2) Where a blowout occurs during a drilling operation in an area which is close to a community, the operator shall

- (a) immediately inform the Commission and emergency services; and
- (b) take the necessary steps to safeguard the general public.

Location survey

37. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) determine the location and elevation of a well before the well is spudded; and
- (b) submit to the Commission a certified plan and final survey report not later than one month after completion of the survey.

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(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity, shall in consultation with the Commission, decide the method for location and elevation of the well.

Drilling in prohibited area

38. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall not drill a well in a prohibited area unless that contractor, sub-contractor, licensee, the Corporation or any other person is authorised by the Commission in writing.

Land rig

39. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a land rig is designed, secured and adequately sized for wells to be drilled, and are in accordance with applicable enactments;
- (b) a land rig is equipped with mast head light; and
- (c) a structural change or modification is not made to a land rig without the consent in writing of the Commission.

Spudding-in

40. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a well is not spudded; or
- (b) re-entry of a rig-assisted well is not started until the rig and its associated equipment are completely rigged up and reliable communications have been established.

Protection of completed well

41. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a completed well is

- (a) fenced and adequately protected; and
- (b) clearly marked with warning notices of existing danger.

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(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that where installed, the wellsite fencing protecting the wellhead from outside interference is replaced upon completion of a repair operation.

Identification of well and production facility

42. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall mark each well and production facility with a notice in clear, legible letters, of a type and size as determined by the Commission.

Siting of production facility

43. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a production facility and the components of the production facility are sited in a manner as to reduce risk as low as reasonably practicable.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that similar production facilities are grouped and dissimilar production facilities are not located within close proximity of each other.

(3) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a separator is not enclosed within a bund or firewall surrounding a tank or group of tanks.

Lifting operations onshore

44. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a lifting operation

- (a) is cleared in accordance with regulation 108;
- (b) is managed and conducted in a prudent manner, such that personnel do not come under suspended loads; and
- (c) which involves the transportation of personnel is only carried out using a lifting appliance that is specially designed and approved for that purpose.

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Tanks and storage

45. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a permanent tank used to store petroleum liquids or batteries of tanks, is designed and constructed in a safe and prudent manner; and
- (b) crude oil is stored in a manner as to avoid spillage and contamination of water bodies and ground water.

Siting of flares

46. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a flare stack, a flare pit and a flare line are designed, constructed and sited in a manner that enables sufficient sizes to contain and direct produced fluids away from the petroleum facility, property, natural vegetation and personnel.

(2) Where large volumes of gas or oil are to be burnt and topographic conditions do not allow the flare line to be extended further than the acceptable distance, the contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a flare shield is constructed in a manner and of a standard that will further ensure the safety of the petroleum facility, property, natural vegetation and personnel.

Depressurisation and flare systems

47. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) onshore facilities which are equipped with or connected to process facilities have a pressurisation and flare system;
- (b) it is possible to activate the pressurisation manually from the central control room; and
- (c) liquid separators installed in the flare system are secured against overfilling.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the depressurisation and flare system referred to in subsection (1) is designed

- (a) to prevent escalation of hazard and accident situations by quickly reducing the pressure in the equipment; and
- (b) so that gas releases do not harm personnel or equipment.

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Restoration of site

48. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that on the completion, suspension or abandonment of a well, the wellsite and any surrounding area giving access to the well is restored as near to the original state.

Requirements for Specific Systems and Equipment

Process safety system

49. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a petroleum facility that has or is outfitted with a process facility has a process safety system that is

- (a) able to perform the intended function independent of other systems;
- (b) designed such that it enters or maintains safe mode in the event of a fault or malfunction; and
- (c) designed with two independent levels of safety to protect the equipment of the process facility.

Gas release system

50. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a petroleum facility that has or is equipped with a process facility has a gas release system that

- (a) is capable of preventing the escalation of hazards and an accident situation by promptly reducing the pressure in the equipment;
- (b) is designed in a manner that prevents the release of gas from causing harm to a person or an equipment;
- (c) is able to manually trigger depressurisation from the central control room; and
- (d) secures a liquid separator installed in the gas release system against overfilling.

Passive fire protection

51. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a passive fire protection is designed in a manner that ensures that in the event of a design fire load, the passive

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fire protection provides sufficient fire resistance to the relevant structures and equipment with regards to the load capacity, integrity and insulation properties; and

(b) the cooling effect from a fire-fighting equipment is not taken into account when designing passive fire protection.

(2) For the purposes of subregulation (1),

(a) "design fire load" means the maximum degree of fire a system is designed to handle or accommodate; and

(b) "passive fire protection" means a group of systems that compartmentalises structures and equipment through the use of fire-resistant rated walls or floors.

Fire divisions

52. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

(a) a main area on a petroleum facility

(i) is separated by a fire wall that has the capacity to withstand the designed fire load and explosion load; and

(ii) at least satisfies fire rating standards if exposed to hydrocarbon fires;

(b) the following rooms are separated from their surroundings with a fire wall that has a fire rating that corresponds to the type of fire and the designed fire load and explosion load to which that may be exposed:

(i) a room that has an important function;

(ii) a room that contains a critical equipment; and

(iii) a room with a high risk of fire;

(c) a penetration into the fire wall does not weaken the fire wall; and

(d) a door in a fire wall is self-closing.

(2) For the purposes of subregulation (1), "main area" includes

(a) the Central Control Room;

(b) the Electronic House;

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- (c) the Engine Room;
- (d) the accommodation area; and
- (e) any other operation centre where critical activity or equipment related to health and safety is carried out or located.

Fire and gas detection system

53. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a petroleum facility has a smoke detection system, fire detection system and gas detection system that enables quick and reliable detection of near-fire, fire and gas leakage;
- (b) the smoke detection, fire detection or gas detection system is able to perform the intended function independent of other systems;
- (c) in the event of fire detection or gas detection, an automatic action limits the consequence of the fire or gas leakage; and
- (d) the installation of a smoke detector, fire detector or gas detector is based on a relevant scenario and simulation or test.

Emergency shutdown system

54. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a petroleum facility has an emergency shutdown system that has the capacity to prevent the development of hazard and an accident situation and limit the consequence of an accident in accordance with regulation 13;
- (b) the emergency shutdown system has the capacity to perform the intended function independent of other systems;
- (c) the emergency shutdown system is designed to maintain a safe condition in the event of a fault or malfunction;
- (d) the emergency shutdown system has a simple and clear command structure;
- (e) the emergency shutdown system is capable of being activated manually from trigger stations that are located in strategic locations on the facility;

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- (f) it is possible to manually activate a function of the emergency shutdown system from the central control room of the petroleum facility in order to have the facility in a safe condition in the event of a fault in a programmed part of the emergency shutdown system; and
- (g) the emergency shutdown valves are installed to stop streams of hydrocarbons and chemicals to and from the facility, and isolate the fire and ignition sources on the facility.

Firewater supply

55. (1). A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a petroleum facility that has accommodation has sufficient supply of firewater to combat fire and, if necessary, suppress gas explosion;
- (b) a permanently manned petroleum facility has firewater supply from fire pumps or other independent supply to ensure sufficient capacity at all times, regardless of whether a part of the supply is out of service;
- (c) a petroleum facility without accommodation has adequate supply of firewater so that the personnel may be protected from fire that may occur when the facility is manned;
- (d) a firewater system is designed in a manner as to prevent pressure stroke from rendering the system or a part of the system inoperative;
- (e) in a petroleum facility where firewater is supplied from a fire pump, the pumps start up automatically in the event of a pressure drop in the fire main and upon confirmed fire detection;
- (f) the fire pump is capable of being manually activated from the central control room and at the propulsion unit;
- (g) a propulsion unit for a fire pump is equipped with two independent starting arrangements and automatic disconnection functions are as few as possible; and
- (h) the firewater piping is designed and installed in a manner that ensures sufficient supply of firewater to any area of the petroleum facility.

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(2) For purposes of subregulation (1), "firewater" means water supply for fire-fighting on a petroleum facility.

Fixed fire-fighting system

56. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a fixed fire-fighting system

- (a) is installed in all explosion-hazard areas and in any other area with a major risk of fire;
- (b) covers equipment that contains a significant amount of hydrocarbons and is designed to facilitate quick and efficient fire-fighting at all times; and
- (c) is automatically activated by a signal from the fire detection system, where there is a gas detection, which may result in an explosion.

(2) The contractor, sub contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that where gas is used as an extinguishing medium on the petroleum facility, a notification system is installed to announce the release of gas in that area.

(3) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the manual activation of the fire-fighting systems is capable of activating the general alarm of the petroleum facility.

(4) For the purposes of this regulation, "explosion hazard area" means an area that

- (a) has the potential to experience a fire outbreak due to flammable gases or flammable produced liquid; or
- (b) is a potential source of fire and explosion.

Manual fire-fighting and fire-fighters' equipment

57. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the petroleum facility is equipped with sufficient manual fire-fighting and fire-fighter's equipment to effectively combat incipient fire and prevent escalation of incipient fire.

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Ballast systems

58. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a floating petroleum facility is equipped with a system that may ballast any ballast-tank under normal operational conditions;
- (b) the petroleum facility may ballast where there is unintended flooding of a space adjacent to the sea; and
- (c) ballast systems are in accordance with best industry practice.

Loading and offloading systems

59. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that loading and offloading systems for oil and chemicals are designed in a manner that prevents the risk of polluting the external environment.

(2) Despite subregulation (1), where it is impracticable to achieve total prevention, the contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall set the acceptance criteria for a major accident or environmental risk in respect of the following:

- (a) the personnel on the facility and groups of personnel exposed to particular risks;
- (b) loss of main safety functions as stipulated under regulation 13;
- (c) acute pollution from the facility; and
- (d) damage to third parties.

(3) The acceptance criteria shall be used when assessing results from risk analyses under regulation 156.

Exhaust duct

60. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) an exhaust duct for combustion is designed and installed in a manner that ensures that

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- (i) a hot surface and a spark do not have the capacity to ignite a potential leak of combustible liquid and gas, and
- (ii) waste gas is not an inconvenience for personnel, or create a hazardous situation for helicopter traffic;
- (b) an exhaust duct from an atmospheric tank and vessel is designed and installed in a manner that ensures that an emission of toxic or combustible gas does not result in an increased risk for the personnel or the petroleum facility; and
- (c) an exhaust duct is designed in a manner that the exhaust gas is routed to an unclassified area.

Open drainage system

61. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the petroleum facility is equipped with an open drainage system that may collect and divert

- (a) oil and chemicals in order that the risk of fire, risk of harm to personnel and risk of pollution is minimised; and
- (b) rainwater to reduce the risk of flooding.

Emergency power and emergency lighting

62. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a petroleum facility has an emergency power system that is reliable, robust and simple and ensures sufficient supply of power to an equipment or system that is required to function in the event of a main power failure;
- (b) a power interruption does not result in operational problems for the emergency power users when switching from main power to emergency power;
- (c) an emergency power system is equipped with few automatic disconnection functions to ensure continuous operation; and
- (d) a petroleum facility is equipped with emergency lighting to ensure sufficient illumination on the facility in the event of main lighting failure.

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(2) For purposes of subregulation (1), "emergency power system" means an independent, alternative source of electrical power that is dependable, capable and easy to use and supports important electrical systems where there is a loss of normal power supply or primary power supply.

Personnel rescue equipment

63. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the petroleum facility has, at all times, suitable equipment available for quick and timely rescue of personnel who fall into the sea.

(2) The equipment shall not expose the rescue crew or personnel to be rescued to unacceptable risk.

(3) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a diving facility shall, at all times, have suitable equipment for personnel in diving bells, subsea chambers and submersibles for purposes of emergency rescue.

Emergency preparedness vessel

64. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the requirements and functions of an emergency preparedness vessel is based on risk analysis.

(2) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that an emergency preparedness vessel that takes part in management and execution of an action against acute pollution is designed to perform the functions in a safe and prudent manner.

Means of evacuation

65. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) it is practicable for personnel on a petroleum facility to evacuate quickly and efficiently to a safe area under all weather conditions;

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- (b) the choice of location and protection of the means of evacuation is based on the defined hazard and accident situations;
- (c) a lifeboat supplemented by a rescue chute and associated life rafts is used as means of evacuation for evacuation to sea;
- (d) special assessments are undertaken on the need for and choice of equipment for hyperbaric evacuation; and
- (e) a hyperbaric evacuation unit is designed in a manner that ensures that the unit can be towed, lifted, or recovered from the water under all-weather conditions.

Life jacket and life buoy

66. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a personal life jacket is properly stored in the cabin;
- (b) a life jacket is placed at an easily accessible location on the facility, based on the results from the emergency preparedness analysis carried out and updated periodically;
- (c) a life jacket is regularly checked, inspected annually and stored without compromising the quality of the life jacket; and
- (d) a life buoy is placed at an easily accessible location on the facility.

Emergency sickbay

67. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a permanently manned petroleum facility has an emergency sickbay;
- (b) the treatment capacity at the petroleum facility is in accordance with the defined hazard and accident situation as set out under regulation 156; and
- (c) the emergency sickbay is equipped to provide effective first aid and medical treatment.

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Maritime Facility

General requirement for maritime facility

68. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a maritime facility is designed in a manner that ensures that a person who participates in the maritime operation is not injured, and the probability of hazard and accident situation is minimised;
- (b) each component of a maritime facility is certified periodically by a Classification Society.

(2) For purposes of subregulation (2), "Classification Society" means a group of international agencies that establish and maintain technical standards for construction and operation of maritime vessels and offshore structures and facilities.

Stability

69. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a floating petroleum facility is in accordance with these Regulations, applicable enactments and internationally recognised standards.

(2) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure the floating petroleum facility has a weight control system which ensures that the weight, weight distribution and centre of gravity of the floating petroleum facility is within the design specification for the facility.

(3) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that each equipment and structure section of the petroleum facility is secured against a displacement that may influence stability.

Anchoring, mooring and positioning

70. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a floating petroleum facility

- (a) has a system designed to hold the floating petroleum facility in position at all times; and

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- (b) if necessary, has the capacity to move from its position in the event of a hazard or accident situation.
- (2) The anchoring system of the floating petroleum facility shall be in accordance with the following requirements:
 - (a) the anchoring or positioning system shall keep the unit at its position;
 - (b) anchor chains shall be manufactured according to applicable standards; and
 - (c) the components of the anchoring or positioning system shall be delivered with the instructions of the manufacturer for maintenance and possible length of the lifespan of the design.
- (3) The mooring system shall be in accordance with the requirements in applicable enactments and internationally recognised standards.
- (4) Dynamic positioning systems shall be designed in a manner that ensures that the appropriate position may be maintained during defined failures, damage to the system or accidents.
- (5) A component or an equipment for the dynamic positioning system shall be designed in a manner that ensures that the entire dynamic positioning system satisfies the requirements for a specific equipment class, such that
 - (a) a person who is engaged in a maritime operation may implement the necessary measures to prevent injury and minimise the probability of hazard and accident situation;
 - (b) the requirements are set for maintaining the position of a vessel and petroleum facility during operation; and
 - (c) the criteria for start-up and interruptions are established.
- (6) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall
 - (a) ensure that a buoy is painted yellow; and
 - (b) indicate the name of the petroleum facility on the buoy.
- (7) Where a buoy comes adrift from its moorings, the contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall take steps to recover the buoy as soon as possible.

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Turret

71. (1) A contractor, sub-contractor, the Corporation or any other person engaged in a petroleum activity shall ensure that the turret is designed in accordance with the following requirements:

- (a) a bearing is dimensioned for a simultaneously transferred load from an anchoring system and a riser;
- (b) a rotation machinery is designed in a manner that ensures that a single failure in an active component, including a bearing, may not result in a loss of the possibility of rotating the mobile offshore unit; and
- (c) a system which is not designed to rotate plus or minus "n" times three hundred and sixty degrees ($\pm nx360^\circ$) has a procedure to ensure the relevant restriction.

(2) The contractor, sub-contractor, the Corporation or any other person engaged in a petroleum activity shall ensure that a unit on which a turret cannot rotate plus or minus "n" times three hundred and sixty degrees ($\pm nx360^\circ$) has an arrangement for quick disconnection of a cross-over for hydrocarbon, an electrical cable connection between the turret and the other part of the unit.

Load-Bearing Structures

Load-bearing structures and maritime systems

72. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a load-bearing structure maintains a satisfactory safety state during operation, failure, fatigue or an accident situation;
- (b) a load-bearing structure has the capacity to withstand the load that the structure may be exposed to, including a load with an annual probability of 10^{-2} in the failure limit state and a load stipulated under regulation 31, in the accident limit state;
- (c) a load-bearing structure is sufficiently robust to ensure that an internal damage or failure to the structure shall not result in an unacceptable consequence;
- (d) a maritime system is sufficiently robust to ensure that an internal damage or individual technical fault or operational fault shall not result in an unacceptable consequence; and

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(c) an analysis on a load-bearing structure is verified by an independent party.

(2) For purposes of this regulation, "satisfactory safety state" means the limit a structure can bear with respect to a maximum load capacity by taking into consideration the safety of the equipment.

Drilling and Well Systems

Well location and wellbore

73. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

(a) a well location and a wellbore

(i) are known at all times; and

(ii) are selected based on well parameters of significance for purposes of safe drilling and well activity; and

(b) there is the possibility to drill a relief well from two alternative locations which shall be mapped and known in advance.

(2) When drilling a well, a contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall conduct a survey in a sufficient number and at appropriate intervals to provide an accurate deviation profile of the wellbore from surface to total depth.

Well barrier

74. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a well barrier is defined prior to commencement of well activities by describing the required well barrier elements in accordance with the acceptance criteria.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a drilling rig has a minimum of two blowout preventers during operations.

Well control

75. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a well control equipment is designed in a manner that is capable of activation to ensure barrier integrity and well control.

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Controlled well stream

76. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) an operational restriction is established for a controlled well stream;
- (b) an equipment in the well and on the surface is designed to safeguard controlled flow rate;
- (c) the production tubing and annulus is equipped with the necessary down-hole safety valves and necessary equipment for monitoring well parameters; and
- (d) it is possible to control the well stream through the work string and choke manifold during well testing.

Temporary abandonment of well

77. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) each well is plugged and secured before the well is abandoned in order to safeguard well integrity;
- (b) in the case of a subsea-completed well, the well integrity is monitored if the plan is to abandon the well for more than twelve months;
- (c) the well integrity of a temporarily abandoned well is verified in the event of reconnection; and
- (d) a radioactive substance is not abandoned in a well.

(2) Where a radioactive substance cannot be removed from a well, the contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall abandon the well in a safe and prudent manner.

(3) For purposes of this regulation, "safe and prudent manner" means the acceptable and well laid down procedures which conform to international standards for plugging and capping of a well.

Remote operation of pipes and work strings

78. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) where practicable, ensure that a remotely operated system is used for handling pipes and work strings;

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- (b) establish restrictions for personnel access to a work area with a remotely controlled system; and
- (c) ensure visual contact and audible radio communication between personnel involved in the operation of remotely operated handling equipment.

Compensator and disconnection systems

79. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a floating petroleum facility is equipped with a disconnection system that secures the well and disengages the riser before a critical angle occurs; and
- (b) when designing the compensator system, technical solutions chosen are robust to avoid unacceptable consequences resulting from faulty design, fabrication or installation.

Drilling fluid system

80. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a drilling fluid system is designed in a manner that ensures the drilling fluid system mixes, stores, circulates and cleans a sufficient volume of drilling fluid with the necessary properties to safeguard the drilling and barrier functions;
- (b) the high pressure section of the drilling fluid system with an associated system has the volume and pressure capacity to be able to control the well pressure at all times; and
- (c) the drilling fluid system includes the following:
 - (i) recording and alarmed mud pit or tank level indicators;
 - (ii) an appropriate sized trip tank;
 - (iii) a mud return or full hole indicator;
 - (iv) a pump stroke counter; and
 - (v) a mud degasser.

(2) For purposes of this regulation, "sufficient volume of drilling fluid" means the amount of liquid solution or mud that is needed to maintain the stability of a well during a drilling operation.

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Cementing unit

81. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a cementing unit is designed to mix, store and deliver the correct volume of cement with the necessary properties to ensure proper anchoring and barrier integrity;
- (b) the unit is designed in a manner that ensures that the residue of unmixed chemicals and mixed cement are handled and disposed of in a safe manner; and
- (c) where the cementing unit with an associated system functions as a replacement unit for the drilling fluid system, the cementing unit shall have a volume and pressure capacity to be able to control the well pressure at all times.

Christmas tree and wellhead

82. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a christmas tree or a wellhead is designed in a manner that enables prudent recovery, re-entry, well intervention and well control activities to be carried out; and
- (b) the christmas tree has a minimum of two main valves, one of which shall be automatically operated.

(2) For purposes of this regulation, "christmas tree" means an assembly of valves, spools, pressure gauges and chokes fitted to the wellhead of a completed well to control production.

Design of Work and Common Areas

Ergonomic design

83. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) each work area and work equipment is designed and deployed in a manner that ensures that an employee is not subjected to adverse physical or mental strain as a result of manual handling, work position, repetitive movements or work intensity that may cause injury or illness;
- (b) each work area and equipment is designed and placed in a manner that ensures that the risk of a mistake which may impact the health and safety of a person is minimised; and

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- (c) when carrying out a work operation from the normal work station subject to a good working position, an employee has a view that enables the employee to work safely.

Human-machine interface and information presentation

84. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a monitor-based equipment and any other technical equipment for monitoring, controlling and operating a machine, installation or production process, is designed to minimise the risk of mistake that may have an impact on safety;
- (b) an information system, including an information transmitter and operating device, is
 - (i) designed for both normal and critical situations, and
 - (ii) installed and grouped to allow simple and quick receipt of information and implementation of necessary actions;
- (c) the information referred to under subparagraph (ii) of paragraph (b) is accurate and easy to understand;
- (d) an alarm that clearly differs from any other information or signal is activated in the event of an incident, a non-conformity or fault in a system of significance to safety; and
- (e) the alarm under paragraph (d) is audible, understood and handled in the time required for safe operation of equipment, installation and process.

(2) For the purposes of subregulation (1), "critical situation" means a situation outside normal operating parameters where corrective decisions and actions are based on documented procedures.

Work area

85. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) each work area has sufficient weather protection to minimise mistakes and health risks; and
- (b) the weather protection in each work area is adapted to
 - (i) the expected period of stay,
 - (ii) the scope and character of the work,
 - (iii) the representative weather condition, and
 - (iv) any other risk factor.

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Noise and acoustics

86. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a petroleum facility is designed in a manner that ensures that employees are not exposed to noise that is harmful to hearing;
- (b) requirements for noise and acoustics in each area are established, based on planned manning and the activity to be undertaken in the area;
- (c) the noise level and acoustics do not prevent communication of significance to safety; and
- (d) the noise level in a cabin, break room or recreation room is minimised as much as possible to allow for restitution and rest.

Exposure of personnel to vibrations

87. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a petroleum facility is designed to prevent the exposure of personnel to excessive vibrations.

(2) The amount of vibration that personnel may be exposed to shall not harm personnel or complicate the important duties of the personnel.

Lighting of work area

88. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) illumination of the working environment is designed in a manner that ensures personnel safety during work, travel and restitution period; and
- (b) where practicable, daylight and a view is provided in work and public rooms.

Radiation

89. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a petroleum facility is designed in a manner that limits exposure to radiation;

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- (b) a technical solution is developed to minimise the use of a radioactive substance; and
- (c) where a radioactive substance is used, transportation, handling and storage of the substance are undertaken in a safe and prudent manner.

Chemicals and chemical exposure

90. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) a petroleum facility is designed in a manner that prevents harmful effect on a person and the environment resulting from the use of a chemical;
- (b) the following are considered when choosing, designing and placing an installation for storage, use, recovery and destruction of a chemical:
 - (i) health and safety of personnel;
 - (ii) corrosion and any other form of material decomposition;
 - (iii) fire and explosion hazards; and
 - (iv) risk of pollution; and
- (c) chemicals are stored in a prudent and safe manner.

Flammable and explosive materials

91. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) an area for the storage of a flammable or an explosive material is designed in a manner to as low as practicable reduce the risk associated with fire and explosion;
- (b) a simple provision or procedure is established to handle and remove an explosive that may constitute risk in the event of a hazard and accident situation; and
- (c) an explosive is secured so that the explosive does not inadvertently go off during storage or use.

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Materials handling, access, transport and evacuation route

92. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) ensure that the petroleum facility or a transport route is designed in a manner that ensures the efficient and safe handling of a material or personnel traffic;
- (b) ensure that a material is, as much as practicable, handled by means of a mechanical system or technical appliance;
- (c) provide a stairway or ramp at an area where access between different levels is used daily; and
- (d) provide at least two escape routes from each area with regular traffic.

Safety signs

93. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) safety signs and other necessary measures are provided in the work environment in order to prevent exposure of an employee to a health and safety risk in the work environment;
- (b) safety signs are posted at the entrance of each room and each area or equipment where an employee may be exposed to health and safety risk; and
- (c) safety signs are visibly posted on each rescue or each evacuation equipment, and the route to the equipment.

Maintenance of Petroleum Facility

Maintenance

94. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the petroleum facility is maintained so that the petroleum facility works efficiently throughout the lifespan of the facility.

(2) The petroleum facility shall be inspected by an independent party every five years.

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Classification of systems and equipment

95. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall classify systems and equipment on a petroleum facility.

(2) The classification of the systems and equipment referred to under subregulation (1), shall indicate the health, safety and the environmental impact of potential functional failures.

(3) Where functional failures can lead to serious consequences, the contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall identify the various fault modes with associated causes and mechanisms of failure and also predict the probability of failure for the individual fault modes.

(4) The classification shall inform the maintenance activities and frequencies, in prioritising between different maintenance activities and in evaluating the need for spare parts.

Maintenance programme

96. (1) A contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall through a maintenance programme, systematically prevent fault modes that pose a risk to health, safety and the environment.

(2) The maintenance programme shall include

- (a) activities for monitoring performance,
- (b) technical conditions which ensure identification and correction of fault modes that are developing or have occurred, and
- (c) activities for monitoring and controlling of failure mechanisms that can lead to such fault modes.

Planning and prioritisation

97. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) prepare an overall plan for implementing the maintenance programme;

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- (b) plan the maintenance activities in accordance with the stipulated objectives, strategies and requirements taking into account health, safety and the environment;
 - (c) provide the resources necessary to carry out the planned activities; and
 - (d) ensure coordination of plans of significance to health, safety and the environment.
- (2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall make available criteria for setting priorities with associated deadlines for carrying out specific maintenance activities.
- (3) The criteria referred to under subregulation (2) shall include
 - (a) systems and equipment on a petroleum facility classified in respect of consequences of potential functional failures on the health, safety and environment; and
 - (b) identification of various fault modes with associated failure causes and failure mechanisms, for functional failures that can lead to serious consequences and predict the probability of failure for individual fault mode.
- (4) The classification shall be used as the basis in choosing maintenance activities and maintenance frequencies and in prioritizing between different maintenance activities and in evaluating the need for spare parts.

Maintenance effectiveness

98. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) ensure that maintenance effectiveness is systematically evaluated based on recorded performance and technical condition data in respect of the facility;
- (b) ensure that the evaluation is used for continuous improvement of the maintenance programme; and
- (c) encourage individual employees to actively identify weaknesses and suggest solutions.

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Special requirements for technical monitoring of petroleum and maritime facilities and pipeline systems

99. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) technical monitoring of new structures and maritime systems are carried out during the first year of service;
- (b) data is collected on new types of load-bearing structures to compare with design calculations;
- (c) when using a petroleum facility beyond the design life of the facility, instrumentation of relevant structure sections are considered so as to measure any ageing effects;
- (d) before a petroleum facility is disposed of, studies are carried out on the condition of the facility;
- (e) inspections are carried out to map potential fault modes in the pipeline system where fault modes can constitute environmental or safety hazards; and
- (f) the first inspection is performed after the maintenance programme mentioned in regulation 96 not later than two years after the system has been put into operation.

Specific requirements for testing blowout preventer and other pressure control equipment

100. A contractor, subcontractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a blowout preventer with associated valves and other pressure control equipment on a petroleum facility

- (a) is pressure tested and function tested periodically; and
- (b) undergoes a complete overhaul and re-certification every five years.

Conditions on Facilities

Start-up and operation of facilities

101. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall obtain a permit from the Commission before start-up for the first time or after technical modifications.

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(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a baseline inspection is conducted before the introduction of hydrocarbons into a petroleum facility.

(3) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the technical condition of installations, facilities, systems and equipment are maintained until the facilities, systems and equipment are put into service.

(4) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that during start-up mentioned in subregulation (1), the

- (a) relevant document including technical operation documents, are available in an updated version and the operations personnel are familiar with them;
- (b) health service is efficient, competent and accessible to any person staying on the petroleum facility;
- (c) required number of medics are available at all times on the petroleum facility; and
- (d) health personnel take an independent position in occupational health-related matters.

Manning and competence

102. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure

- (a) personnel competence and sufficient manning in all phases of the petroleum activity; and
- (b) that minimum requirements are established and registered in the management systems for manning and competence to safeguard functions,
 - (i) where mistakes may have serious consequences for health, safety or the environment;
 - (ii) that reduce the probability of mistakes and hazardous situations developing; and
 - (iii) that enable personnel to handle hazard and accident situations at all times.

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(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) at all times provide the personnel with the necessary information and supervision to carry out work related to petroleum activities;
- (b) provide requisite training and exercise for personnel to enable the personnel handle operational disturbances, hazards and accident situations in an effective manner; and
- (c) ensure that the information, supervision and training are given in the English language.

Training and drills

103. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that necessary training and exercises are conducted, so that the personnel are always able to manage operational risks and handle accidents and emergency situations in an effective manner.

Procedures

104. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) approved procedures are used at all times to prevent faults, hazard and accident situations; and
- (b) procedures are established and implemented in such a way as to fulfil their intended functions.

Safety systems

105. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) the measures and limitations necessary in the event of overbridging or disconnection of safety systems or part of the systems or impairment of the system in some other manner, are set in place well in advance; and
- (b) signs of overbridgings, disconnections and other weaknesses of the system are detected at all times.

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Critical activities

106. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that critical activities are carried out within the operational restrictions set during the engineering phase and in the risk analysis.

Simultaneous activities

107. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall define which activities that, in combination with other activities, are considered simultaneous activities.

(2) When conducting simultaneous activities that contribute to an unacceptable increase in risk, the contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall implement the necessary precautionary measures.

Safety clearance for activities

108. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a permit to work system is established.

(2) Personnel who intend to undertake a critical activity shall obtain a safety clearance from a responsible officer for the activity which has a potential to cause accidents before the critical activity is carried out.

Duty to third party employees

109. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity who carries out simultaneous activities at the same workplace, shall cooperate in complying with the provisions in these Regulations and shall inform employees of risk factors at the workplace.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that employees from other companies carrying out simultaneous activities have received the necessary instruction in managing the safety and health risks associated with the activities.

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- (3) The operator shall be responsible for coordinating safety of the work environment and accident prevention efforts.
- (4) The operator shall specifically ensure that
 - (a) routines are established for exchange of information between the various employee groups in the workplace;
 - (b) all employees have an assigned safety representative in the workplace;
 - (c) the employees are given the opportunity to bring issues to the attention of the working environment committee;
 - (d) safety representatives and health and safety personnel are sufficiently familiar with the operations in the workplace; and
 - (e) contravention of safety rules and regulations is brought to the attention of the employee and corrected.

Monitoring and control

110. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that relevant factors for prudent execution of activities as regards health and safety, are monitored and kept under control at all times.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that data relevant to health, safety and the environment are collected, processed and used for

- (a) monitoring and checking technical, operational and organisational factors;
 - (b) preparing measurement parameters, indicators and statistics;
 - (c) carrying out and following up analysis during various phases of the activities;
 - (d) building generic databases; and
 - (e) implementing remedial and preventive measures, including improvement of systems and equipment.
- (3) Requirements shall be set for quality and validity of the data collected and processed.

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Transfer of information at shift and crew changes

111. (1) In connection with shift and crew changes, a contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure necessary transfer of information on the status of safety systems and ongoing work, and other information of significance for health, safety and the environment during the execution of activities.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that necessary information is acquired, processed and communicated to relevant users at the right time in relation to shift change.

Preliminary surveys

112. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the necessary preliminary surveys are undertaken before the installation and commissioning of a petroleum facility.

(2) The preliminary survey referred to in subregulation (1) includes

- (a) prudent installation and use;
- (b) plans for decommissioning; and
- (c) prudent disposal of the petroleum facility.

Transportation of personnel, equipment and supplies

113. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure safe

- (a) transportation of personnel and supplies to, from and between facilities and vessels using the approved means and in accordance with best industry practice, and
- (b) transportation of equipment during placement, installation and use, removal and disposal.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall coordinate the transportation with emergency preparedness as specified in regulation 157.

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Personnel allowed on petroleum facility

114. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that only those who work on a petroleum facility have access to the petroleum facility.

(2) A person who does not work on a petroleum facility shall seek permission from the operator or a party authorised by the operator to have access to the petroleum facility.

(3) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a comprehensive report is available at all times in respect of persons staying on or on their way to or from a petroleum facility or vessel participating in the petroleum activities.

(4) A person staying on a petroleum facility or vessel shall be provided with sufficient information on applicable rules for the stay by the operator who shall ensure compliance.

Accommodation

115. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the number of people accommodated on a petroleum facility does not exceed the designed capacity.

(2) The capacity and furnishings of the living quarters shall be designed such that the residential environment is safeguarded and adapted to the various functions, and anticipated personnel needs in the various phases of the petroleum activities.

(3) Living quarters and simpler facilities with accommodation possibilities shall be equipped and furnished so as to maintain an acceptable standard of hygiene.

(4) Emergency quarters on a simpler facility with accommodation possibilities shall be adapted to the maximum needs of personnel and the different sexes.

(5) There shall be a separate accommodation and restroom facility for women on any petroleum facility at which women work.

(6) The facility referred to under subregulation (5) shall have sufficient lighting both indoors and outdoors so as to provide a safe environment for women at any hour of the day.

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Health and Safety in the Working Environment

Occupational health management

116. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall take reasonable steps to promote good health and prevent illness and injury by

- (a) gathering and communicating information of conditions on a petroleum facility that can affect health;
- (b) ensuring prudent hygienic conditions;
- (c) prohibiting the use of substances like alcohol and narcotic drugs on a petroleum facility; and
- (d) implementing preventive measures within the working environment.

(2) The contractor, sub-contractor, licensee, Corporation or any other person engaged in a petroleum activity shall

- (a) ensure that personnel on the petroleum facility are medically fit to work;
- (b) carry out diagnostics and treatment in connection with illness and injury, including providing first aid in the event of accidents;
- (c) ensure that health and emergency preparedness, as part of the operational requirement, include transportation of sick and injured personnel;
- (d) ensure that health-related matters are safeguarded in accordance with relevant enactments, standards and best international practices during all phases of the petroleum activity; and
- (e) provide efficient health care for any person who stays on the petroleum facility or participates in the petroleum activity.

(3) The health care provided under paragraph (e) of subregulation (2) comprises

- (a) services that promote good health;
- (b) curative and rehabilitative services; and
- (c) preventive measures.

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(4) A physician shall have the professional responsibility for the health services on the petroleum facility.

(5) The health care services referred to under subregulation (3) shall be provided by a health care team constituted taking into account the health risk and workload assessment.

(6) The required number of medical personnel shall at all times be present on the petroleum facility to ensure that health care needs are attended to.

(7) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall provide occupational health services for the undertaking if necessitated by risk factors in the undertaking.

(8) The occupational health service shall assist the employer, the employees, the Working Environment Committee and safety representatives in creating safe and sound working conditions.

(9) The occupational health service shall be independent in respect of work environment matters.

(10) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the organisation has or is affiliated with an approved occupational health service with competence adapted to the risk factors of the organisation.

(11) The operator or the party responsible for operating a petroleum facility, shall ensure cooperation between its occupational health service and similar personnel working for the other employers.

(12) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a Health Impact Assessment of the operations is conducted and the report submitted to the Commission before the commencement of petroleum activity.

Physician on-call

117. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a physician is on-call and other medical personnel may at all times be summoned to the petroleum facility at the shortest possible notice.

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Medicines and medical equipment

118. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that health personnel that provide medical treatment comply with relevant enactments and standards relating to the handling of medication and medical equipment.

(2) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that medicines and medical equipment are adapted to the needs that may arise during the operation of the petroleum facility and in the event of emergency situations.

(3) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that medicines and medical equipment are regularly checked and that stocks are replenished.

Food and drinking water

119. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) food on the petroleum facility is hygienic and of such quality and quantity that meet the nutritional needs of the personnel; and
- (b) safe drinking water is available on the petroleum facility.

Cleaning

120. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the petroleum facility is cleaned on regular basis and the indoor environment is hygienic and aesthetically satisfactory at all times.

Organisation of work

121. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that work is organised so as to prevent hazardous exposure and adverse physical and psychological strains on the employee, and to reduce the probability of error that can lead to hazard and accident situations.

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(2) The organisation of work shall be based on an individual and overall evaluation of acute and long-term effects from the various factors of the working environment, and an evaluation of how technology and organisation of work affect the opportunity to work safely.

(3) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall organise the work with sufficient consideration for the capabilities, limitations and needs of the employees for a suitable working environment.

(4) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall plan the work in a manner that ensures that as much work as possible is carried out during the daytime, and that the employees take the necessary rest and restitution.

(5) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall reduce excessive workloads and risks of injury and accidents based on assessment and competence and capabilities of the employee.

Ergonomics

122. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the work is organised in a manner that the employees are not exposed to unacceptable workloads as a result of manual handling, working posture, repetitive movements and work intensity.

Psychosocial aspects

123. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure a good psychosocial work environment by considering conditions to improve the health, safety and welfare of the employee.

(2) Special emphasis shall be accorded to the interaction between requirements for work performance, the perception of the employees of control over their own work and social support in the work environment.

Chemical health hazard

124. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall prevent the exposure of personnel to hazardous and non-hazardous chemicals during transportation, storage, use, handling or disposal of chemicals, and during operations or processes that produce chemical components.

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Exposure to radiation

125. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that hazardous exposure to radiation during transportation, storage, use, handling and disposal of radioactive sources is prevented.

Noise

126. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that an employee is not exposed to excessive noise levels.

(2) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that risk assessments and necessary analyses are carried out to ensure a suitable work environment and provide support in the choice of technical, operational and organisational solutions.

(3) The analyses referred to under subregulation (2) shall contribute to improving the health, welfare and safety of employees and to prevent personal injuries, fatalities and work-related illness as a result of

- (a) errors that can result in hazard and accident situations; and
- (b) exposure and physical or psychological effects.

(4) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the employees and safety representatives receive continuous information and training on relevant risks in connection with noise if the employees are exposed to noise equal to or exceeding permissible limits.

Vibrations

127. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that employees are not exposed to vibrations that will have a harmful effect on the employees.

Outdoor work

128. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall set the criteria for which climatic conditions require

- (a) protective measures during outdoor work, and
- (b) outdoor work to be limited or stopped

in accordance with standards and international best practice.

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Information on risk during execution of work

133. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) employees are provided with adequate information on health risk and the risk of accidents in the course of performing their duties;
- (b) during live work, work near live installations, work in or near earthed and short-circuited installations and during operation of low and high voltage installations, necessary measures are implemented to prevent injury to those who carry out the work, and to reduce the probability of hazard and accident situations;
- (c) 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 work execution, are, within one month, submitted to the Commission; and
- (d) employees and their representatives familiarise themselves with this information.

Multiple employers at the same workplace

134. Where multiple employers are at the same workplace, the operator shall be the principal undertaker.

Joint working environment committee

135. (1) Where work conditions permit, the Commission may decide that joint working environment committees be established.

(2) Annual reports from working environment committees of an employer and from joint working environment committees shall be submitted to the Commission on request.

Authority to stop dangerous work

136. (1) A safety officer and any other person on a petroleum facility shall

- (a) stop unsafe work operations or work processes, and
- (b) direct that the necessary corrective measures are implemented.

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(2) In addition to subregulation (1), the safety officer or other person on the petroleum facility shall report the unsafe work operation or process to the person responsible for the work operation or process.

(3) The person responsible for the work operation or process shall implement the corrective measures to ensure safe work operations or process.

(4) The safety officer shall stop the work operation or process, if the safety officer considers that the implementation of the corrective measures will not ensure safe work operation or process.

Minimum age

137. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that employees participating in petroleum activities have attained the statutory working age.

Ordinary working hours

138. (1) Ordinary working hours shall not exceed twelve hours per day and an average of forty-two hours per week over a maximum period of one year.

(2) Without limiting subregulation (1), where an employee works more than three hours during the night, the ordinary working hours of that employee shall not exceed an average of twelve hours per day over a period of one year.

Plans for working hour schemes

139. (1) A contractor, sub-contractor, licensee, the Corporation and any other person operating a petroleum facility, shall ensure that plans are prepared for working hour schemes and implemented, for employees and for employees of third parties.

(2) The contractor, sub-contractor, licensee, the Corporation and any other person operating a petroleum facility shall inform the employees of these plans as early as possible, and not later than when the employees arrive on the petroleum facility.

Off-duty periods

140. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that an employee has a continuous off-duty period of at least twelve hours a day.

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(2) The off-duty period shall be between two main work periods.

(3) The off-duty period may be reduced to eight hours if the employee is assured of compensated rest periods or any suitable compensation.

(4) The off-duty period between two work periods shall have a continuous duration of at least one-third of the most recently completed work period.

(5) The time spent travelling to and from the workplace at the beginning or end of each work or offshore period shall not be included as working hours.

(6) The travel time to and from the living quarters facilities shall not be included in the calculation of the eight hour rest requirement.

Breaks

141. (1) An employee shall, for an eight-hour shift, have a rest break of half an hour a day.

(2) An employee shall, for a twelve-hour shift, have a rest break of one hour a day.

(3) Rest breaks shall be counted as working hours.

Overtime

142. (1) The total working hours for an employee, including overtime, shall not exceed sixteen hours per day.

(2) The total accumulated overtime for an employee shall not exceed two hundred hours in a fifty-two-week consecutive period.

(3) Where employment is regulated by a collective bargaining agreement, the employer and representatives of the employee may enter into written agreement regarding overtime, not exceeding three hundred hours in a fifty-two-week consecutive period for an employee.

Offshore periods

143. (1) Offshore periods shall not exceed twenty-eight days.

(2) In cases of exceptional and temporary need, the employer may extend the offshore period by up to seven days for a single period, after having discussed the matter with the representative of the employee.

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(3) The Commission in consultation with the contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity may decide to extend the offshore period beyond seven days in the case of an exceptional or temporary need.

(4) An employee may be exempted from extended offshore periods.

(5) An employee may be exempted from performing work in excess of agreed working hours when the employee requests for health reasons or for social reasons.

Night work

144. (1) Work between the hours of 10:00 p.m. and 06:00 a.m. is night work.

(2) Night work is permitted where

- (a) it is necessary to maintain production or the work is related to activities directly linked to drilling and well operations, including necessary support functions;
- (b) the health, safety and environment risk is reduced by carrying out the work at night; or
- (c) operation of the petroleum facility has been shut down and the work does not entail any special risk.

(3) Prior to starting any work, the employer shall discuss the necessity of night work with the representatives of the employees.

(4) Working hours for employees who work more than three hours during the night, shall not exceed twelve hours in the course of twenty-four hours if the work entails a special risk or significant physical or psychological strain.

(5) The employer and the representatives of the employees may enter into a written agreement for exemption from the provisions in subregulation (4).

(6) In a case referred to in subregulation (5), the employees shall be entitled to equivalent compensating rest periods or, where this is not possible, other suitable compensation.

(7) This regulation applies to an employee in a senior or an independent position.

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Record of working hours

145. (1) A contractor, sub-contractor, licensee, or any other person engaged in a petroleum activity shall create a system to record and follow up working hours for all employees in the organisation including personnel in management and independent positions when this position is important to safety.

(2) Subregulation (1) does not apply to an employee in a senior position and an employee in an independent position.

(3) A contractor, sub-contractor, licensee, or any other person engaged in a petroleum activity shall arrange working hours in a way that employees are not exposed to adverse physical or mental strain, and that they shall be able to observe safety conditions.

(4) An employee who regularly works at night is entitled to exemption from the working-hour arrangement that applies to the group of that employee if the exemption

(a) is needed by the employee concerned for health, social or other welfare reasons, and

(b) may be arranged without major inconvenience to the undertaking.

(5) An employee, who has reached the statutory retirement age or who for health, social or other welfare reasons so requires, may have the normal working hours of that employee reduced, if the reduction of working hours can be arranged without major inconvenience to the undertaking.

(6) When the agreed period of reduced working hours has expired, the employee shall resume previous working hours.

(7) An employee working reduced hours shall have a preferential right to increase the working hours in the event of a vacancy in the undertaking.

(8) When work is carried out on several work sites for the same employer, the employer shall record the total working hours.

Coordinating working environment committees

146. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that a coordinating working environment committee is established for each contract area, or, where all parties are in agreement, a coordinating working environment committee that covers several contract areas are established.

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(2) A joint, local Working Environment Committee shall also be established for each individual petroleum facility.

(3) The committees established under this regulation, shall coordinate and process matters concerning safety and the environment.

(4) The employer and employee representatives from the various main activity areas on the contract area or on the petroleum facility shall participate in the coordinating or the joint, local working environment committees.

(5) For mobile facilities, a representative of the contractor, sub-contractor, licensee, the Corporation or any other person engaged in petroleum activities shall participate, except during transit.

(6) When a mobile facility is part of the petroleum activities on a contract area, the contractor, licensee, sub-contractor, the Corporation or any other person engaged in a petroleum activity shall ensure coordination between the joint, local Working Environment Committee and the Coordinating Working Environment Committee.

Reports on Drilling and Well Activities

Disruption of well programme in the event of labour dispute

147. (1) Where a well programme is disrupted by a labour dispute, the operator shall submit to the Commission, a report on ongoing and planned drilling and well activities that may be affected by the labour dispute not later than four days after receiving notice of withdrawal of services or termination of employment.

(2) The operator shall have a programme available for plugging of the relevant wells, not later than four days after receiving the collective notice of withdrawal of services or termination of employment referred to under subregulation (1) and submit the programme to the Commission.

(3) The operator shall ensure that

(a) the programme for plugging is discussed with the representatives of the employees; and

(b) a report on work to be undertaken to secure the well as a result of the labour dispute, shall be submitted to the Commission within four days of receiving the notice of withdrawal of services or termination of employment.

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Well operations report

148. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the results of well operations and the experience from drilling and well activities are systematically collected and documented and made available daily to the Commission for future use.

(2) The report shall include the following:

- (a) drilling and well activities;
- (b) accidents and incidents;
- (c) non-conformity or deviations or change;
- (d) end of well or activity and operations reports; and
- (e) risk register for monitoring of risks and special reports.

Emissions and Discharges

Flaring and venting

149. (1) In addition to requirements of the Environmental Protection Agency Act, 1994 (Act 490) and other relevant enactments, where petroleum has been flared or vented in an emergency situation, the contractor shall not later than one week submit a detailed report to the Commission.

(2) The report referred to under subregulation (1), shall include information in respect of the

- (a) volume of petroleum flared or vented;
- (b) cause of the emergency situation; and
- (c) remedial measures established to prevent recurrence of the event.

Re-injection of produced water and gas

150. A contractor, sub-contractor, the Corporation or any other person engaged in a petroleum activity shall obtain written permission from the Commission for injection of produced water or gas.

Measuring the discharged quantity of oil, water and other substances

151. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) the contents of oil and other substances in discharges are measured and tested;

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- (b) test results are used to verify the performance of the treatment facility on the installation;
- (c) analysis is carried out in a systematic and standardised manner; and
- (d) the amount of water and content of oil are measured, calculated or estimated in drainage water, displacement water and injected oily water.

Discharges from formation testing and clean-up of wells

152. (1) A contractor, sub-contractor, licensee, or any other person engaged in a petroleum activity shall ensure that

- (a) any oil or oily water from well testing or well clean-up shall not be discharged to land, sea or other water bodies, unless it is cleaned and treated in accordance with applicable enactments; and
- (b) any waste generated from the treatment of oily water is disposed of in accordance with applicable enactments.

(2) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) during testing or clean up of wells from petroleum facilities without an onsite treatment plant, comprehensive assessments are carried out to select the best environmental solution;
- (b) formation testing is carried out with the least possible strain on the external environment to prevent flaring of petroleum to the extent practicable; and
- (c) oily water is not injected without the permission of the Commission.

Use and discharge of chemicals

153. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) reduce the use and discharge of chemicals to the minimum extent possible and shall use chemicals with the lowest possible content of pollutants; and
- (b) obtain the necessary approvals to use, inject and discharge chemicals and water containing chemicals in accordance with relevant enactments.

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(2) The contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that unused chemicals are not discharged onto the land or into the air, sea or other water bodies.

(3) The contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall obtain all necessary written approvals before discharging water containing chemicals from pipelines.

Waste management

154. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall to the extent possible avoid generating waste and ensure that waste generated in connection with petroleum activities is handled in an environmentally safe and hygienic manner.

Risk Analysis and Emergency Preparedness

General requirements for analysis

155. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that analysis carried out provides the necessary basis for decision-making with respect to safeguarding health, safety and the environment.

(2) For the purpose of subregulation (1),

- (a) the conditions, premises and limitations that form the basis of each analysis are clear;
- (b) the individual analysis and its results are described in a balanced and comprehensive manner; and
- (c) the analysis is carried out and updated in accordance with best industry practice.

(3) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall establish criteria for carrying out new analyses and updating existing analyses in case of changes in conditions, assumptions, knowledge and definitions that may influence the risk associated with the petroleum activities.

(4) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) maintain a record of the analyses that have been carried out and are underway; and
- (b) ensure the necessary consistency between analyses that complement or expand upon each other.

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Risk and emergency preparedness analysis

156. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall carry out risk analysis that provides a balanced and the most comprehensive possible picture of the risks associated with the petroleum activity upon which appropriate emergency preparedness can be established.

(2) The risk analysis shall constitute an appropriate basis and support for decisions related to the upcoming petroleum activity.

(3) The risk analysis carried out under subregulation (1) shall

- (a) identify hazard and accident situations;
- (b) identify risks of deliberate attacks or security threats;
- (c) identify the possible causes of incidents or hazards;
- (d) analyse accident sequences and potential consequences; and
- (e) identify and analyse risk reduction measures.

(4) The risk analysis shall form part of the basis for decision-making when

- (a) classifying areas, systems and equipment;
- (b) demonstrating that the main safety functions are safeguarded;
- (c) identifying and stipulating design accidental loads;
- (d) establishing requirements for barriers;
- (e) stipulating operational conditions and restrictions; and
- (f) selecting defined hazard and accident situations.

(5) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall carry out emergency preparedness analysis which shall form part of the basis for making decisions when

- (a) defining hazard and accident situations;
- (b) indicating performance requirements for emergency preparedness; and
- (c) selecting and classifying emergency preparedness measures.

(6) The contractor, sub-contractor, licensee, Corporation or any other person engaged in a petroleum activity shall

- (a) ensure that risk analysis is carried out to

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- (i) identify and assess contributions to major accident and environmental risk; and
 - (ii) ascertain the effects various operations and modifications will have on major accident and environmental risks;
 - (b) ensure that necessary assessments are carried out on sensitivity and uncertainty; and
 - (c) carry out necessary analysis to ensure a safe working environment and provide support in the choice of technical, operational and organisational solutions.
- (7) The assessment carried out under paragraph (b) of subregulation (6) shall be based on the effects of
- (a) changes in assumptions and values; and
 - (b) potential errors.
- (8) The analysis carried out under paragraph (c) of subregulation (6) shall include measures to improve the health, welfare and safety of employees and prevent personal injuries, fatalities and work-related illness as a result of
- (a) mistakes that can result in hazard and accident situations; and
 - (b) exposure and physical or psychological effects.

Emergency preparedness plan and resources

157. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall establish an emergency preparedness plan that

- (a) describes the emergency preparedness, and
- (b) contains an action plan for the risk identified in a risk and emergency preparedness analysis.

(2) The emergency preparedness plan established under subregulation (1) shall be comprehensive to enable the contractor, subcontractor, licensee, Corporation or any other person engaged in a petroleum activity to handle hazard, pollution and accident situations in an efficient manner.

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(3) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that the emergency preparedness plan assigns specific roles to the emergency response team members in order to effectively carry out actions under the plan in the event of acute pollution or accident situations.

(4) The emergency preparedness against acute pollution shall cover the contract area and surrounding areas including, as applicable, land, rivers, flora, fauna, local communities or persons with economic interests in the area, the ocean, coasts and beach zones.

(5) The operator shall

(a) coordinate its own emergency preparedness plan with other operators conducting petroleum activities in the surrounding areas; and

(b) ensure that the emergency preparedness is coordinated professionally with the public rescue service and the health service, so that the chain for action for rescued, ill or injured personnel is coherent.

(6) An operator conducting petroleum activity in an adjacent contract area shall ensure that emergency preparedness resources can be utilised across the different contract areas.

(7) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall develop the emergency preparedness measures taking into consideration the public emergency response capacity and resource.

(8) The contractor, sub-contractor, licensee, the Corporation or an operator of a petroleum facility shall provide access to public authorities for emergency drills and participate in the drills to the extent that it is necessary.

(9) The Commission may order the implementation of measures necessary to prevent security risks and deliberate attacks on a petroleum facility.

(10) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall cooperate with the Commission in carrying out petroleum activities in the contract area, to ensure emergency preparedness for health, safety and the environment.

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(11) Where special circumstances require, the Commission may, in collaboration with other relevant authorities, stipulate conditions for cooperation, including a requirement that the contractor, sub-contractor, licensee, Corporation or any person carrying out petroleum activity in the area jointly bears the cost of the cooperation.

(12) The Commission shall establish areas for joint emergency response plans and the pooling of emergency preparedness resources shall be established.

(13) The Commission may, through administrative directions, stipulate additional area requirements.

Emergency preparedness organisation

158. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall establish an emergency preparedness organisation which is robust and capable of handling hazard and accident situations in an efficient manner.

Notification to the Commission in the event of a high potential near miss or accident

159. (1) An operator shall ensure coordinated and immediate notification via telephone and electronic mail to the Commission in the event of a high potential near miss, pollution, hazardous situation or accident.

(2) A notification of an accident under subregulation (1), shall be confirmed by letter within forty-eight hours.

(3) The operator shall keep the Commission and other relevant authorities continuously updated on the development and the measures that the operator plans to implement in an accident situation.

Handling of hazard and accident situations

160. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in petroleum activities shall ensure that

- (a) necessary measures are taken as soon as possible during hazard and accident situations;
- (b) internal communication systems are established in accordance with regulation 22;
- (c) the appropriate notification is given immediately;
- (d) a hazardous situation does not develop into an accident situation;

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- (e) personnel can be rescued during an accident or emergency situation;
- (f) personnel on a petroleum facility can be evacuated quickly and efficiently during a hazard or an accident situation; and
- (g) conditions at the facility can be normalised when the development of a hazard or an accident situation has been stopped.

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) record a near miss or accident situation in the management system; and
- (b) investigate situations that occur frequently or that have substantial actual or potential health and safety consequences in order to prevent recurrence.

(3) The management system shall set requirements for the scope and organisation of an investigation under paragraph (b) of subregulation (2), including the use of a competent third party.

(4) Reports of investigations referred to in paragraph (b) of subregulation (2) shall, within one month, be submitted to the Commission.

(5) The Commission may delegate a representative to participate as an observer in the investigations.

Safety Zone

Establishment of safety zone

161. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall apply to the Commission to establish a safety zone for a petroleum facility or installation at a designated location.

(2) The application for the establishment of a safety zone shall be submitted to the Commission before the placement of the petroleum facility or installation.

(3) The Commission shall, based on the assessment of the application received under subregulation (2) and in consultation with relevant authorities, establish a safety zone.

(4) The Commission may, in consultation with relevant agencies and authorities establish a safety zone around a subsea facility.

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Establishment of specific safety zones in hazard and accident situations

162. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall apply to the Commission for an extension of the existing safety zones or creation of a new safety zone in the event of a hazard or an accident situation to prevent injury to persons or loss of human lives, serious pollution, major material damage or a substantial shutdown of production.

Monitoring of safety zone

163. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall monitor activities within and outside a safety zone where the activity may result in a safety risk to the petroleum activity inside the safety zone.

Warning and notification in connection with entry into safety zone

164. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) alert a vessel that is entering a safety zone without authorisation;
- (b) alert a vessel outside a safety zone if the vessel may constitute a safety risk to petroleum activities;
- (c) where possible, alert the party responsible for an object where that object poses a safety risk to petroleum activities; and
- (d) alert the Commission and other relevant agencies of the occurrence of any of the situations specified in paragraphs (a) to (c).

(2) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall report any other violation of a safety zone to the Commission and other relevant agencies and authorities.

Measures relating to intruding persons, vessels or objects

165. (1) In the event of an occurrence specified in regulation 164, the contractor, sub-contractor, licensee, the Corporation or any other person engaged in petroleum activities shall, to the extent possible and in a safe manner, refuse entry to persons, vessels or objects.

(2) A refusal of entry may be in the form of an instruction or expulsion.

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(2) For the purpose of subregulation (1), the extent of the documentation shall be adapted to the nature of the enterprise and the activity carried out.

Application for consent, approval, and permit

171. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall apply to the Commission for consent for the following:

- (a) engineering design of a petroleum facility;
- (b) modification of a petroleum facility;
- (c) a structural change to a petroleum facility; or
- (d) safety case or health and safety plan.

(2) For the purposes of paragraph (d) of subregulation (1),

- (a) a safety case shall be submitted in accordance with regulation 10 where the petroleum activity comprises construction, installation, operation or decommissioning of a petroleum facility; and
- (b) a health and safety plan shall be submitted in accordance with regulation 8 in the case of any other petroleum activity.

(3) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall apply to the Commission for approval for the following:

- (a) the commencement of upstream petroleum activity;
- (b) the programme for plugging of relevant wells;
- (c) the flaring or venting of petroleum; and
- (d) the acquisition of a partly pre-designed or pre-fabricated petroleum facility to carry out a petroleum activity.

(4) An application under paragraph (b) of subregulation (3) shall be submitted within four days of receiving a collective notice of withdrawal of services or termination of employment in the event of a labour dispute.

(5) An application under paragraph (d) of subregulation (3) shall include measures to be implemented to qualify the facility for use in a petroleum activity.

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(6) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall apply to the Commission for a consent, approval or permit for petroleum activities including

- (a) acquisition of seismic data;
- (b) exploration and appraisal drilling;
- (c) well intervention;
- (d) construction, installation and operation of a petroleum facility;
- (e) start-up or commissioning of a petroleum facility;
- (f) re-injection of produced water and gas;
- (g) plugging and abandonment of a well; and
- (h) removal or decommissioning of a petroleum facility.

(7) An application for consent, approval or permit shall contain relevant details of the chosen activity to enable the Commission to evaluate the health, safety and environment aspect of the activity.

(8) The Commission may issue guidelines stipulating documentation required to accompany the application for the consent, approval or permit.

(9) The Commission may limit the consent, approval or permit to individual stages or phases of a petroleum activity.

Use of recognised standards

172. (1) For the purpose of these Regulations, a contractor, sub-contractor, licensee, the Corporation or other person engaged in a petroleum activity shall be considered to have complied with a provision of these Regulations if that contractor, sub-contractor, licensee, the Corporation or other person complies with a standard recommended in the guidelines in relation to that provision.

(2) Where a technology or a method not described in a recognised standard is to be used, the contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall submit the justification for the use of that technology or method to the Commission before the installation or use of that technology or method.

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(3) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall not use a combination of parts of different standards unless the contractor, sub-contractor, licensee, the Corporation or other person is able to establish to the satisfaction of the Commission that the combination is capable of achieving an equivalent level of health and safety.

(4) An existing documentation, including certificates issued by relevant recognised authorities and classification institutions may be used as a basis to document compliance.

Documentation in the early phase

173. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall inform the Commission of the plan for an exploration activity.

(2) The plan for an exploration activity shall

- (a) indicate how the exploration activity will be organised, managed and carried out;
- (b) include information in respect of the competence required to carry out the exploration activity; and
- (c) address economic, resource, technical, safety related, commercial and environmental aspects of the exploration activity.

(3) The Commission may direct the contractor, sub-contractor, licensee, the Corporation or any other person engaged in the petroleum activity to submit documentation in respect of the plan referred to in subregulation (1).

Public safety information

174. (1) A person may request a contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity to provide information related to public health, safety and environment in respect of a petroleum activity carried out by that contractor, sub-contractor, licensee or the Corporation.

(2) Where a request is made under subregulation (1), the contractor, sub-contractor, licensee, Corporation or the other person engaged in a petroleum activity shall submit the information within fourteen days.

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Miscellaneous Provisions

Nonconformities

175. (1) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall

- (a) document and follow up nonconformities in relation to these Regulations and internal requirements which are of significance for compliance with these Regulations; and
- (b) assess the impact of nonconformities on health, safety and the environment both individually and in relation to other nonconformities.

(2) A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that

- (a) the causes of nonconformities are identified;
- (b) remedial measures are implemented, monitored and evaluated to prevent a recurrence of the nonconformity; and
- (c) nonconformities are corrected.

(3) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall ensure that necessary compensating measures are implemented to maintain a prudent level as regards health, safety and the environment until the nonconformities have been corrected.

(4) The contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity shall implement necessary preventive measures to prevent the occurrence of potential nonconformities.

(5) An operator or contractor engaged in operating a petroleum facility shall maintain a comprehensive overview of the status of nonconformities.

(6) For the purpose of this regulation, "nonconformity" means the non-fulfilment of a requirement or a deviation from a specific standard.

Offences and penalties

176. (1) A person who

- (a) fails to establish, follow-up and maintain a management system specified in regulation 3;

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- (b) engages non-qualified personnel contrary to regulation 4;
- (c) fails to carry out verification as required under regulation 5;
- (d) fails to mark petroleum facilities as required under regulation 25, or delineate a safety zone as required under regulation 161;
- (e) fails to acquire a permit before entering into private land as specified in regulation 35;
- (f) fails to acquire permits prior to start-up of a petroleum facility as specified in regulation 101;
- (g) fails to meet reporting requirements under these Regulations;
- (h) fails to report high potential near misses and accidents as specified in regulation 159;
- (i) fails to provide information to the Commission as specified in regulation 170; or
- (j) fails to comply with directives or notices of the Commission under these Regulations;

is liable to pay to the Commission, an administrative penalty of fifty thousand penalty units.

(2) A person who contravenes any other provision of these Regulations for which a penalty has not been provided is liable to pay to the Commission, an administrative penalty of fifty thousand penalty units.

(3) A person who

- (a) fails to ensure that petroleum facilities are designed, constructed and fitted with safety functions;
- (b) commences a petroleum activity without approval, licence, consent or permit as required under these Regulations;
- (c) submits or provides the Commission with false information under these Regulations;
- (d) undertakes a drilling operation in prohibited areas contrary to regulation 38;
- (e) fails to restore a site after abandonment of a well or a petroleum facility as specified in regulation 48;
- (f) fails to provide life-saving and emergency equipment for evacuation of personnel during emergency situations as specified in regulations 63 to 67; or

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- (g) interferes with any work, facility or item of equipment constructed, installed or used pursuant to a licensed area, such that the integrity or utility of that work, facility or item of equipment is compromised

commits an offence and is liable on summary conviction to a fine of not less than ten thousand penalty units and not more than fifty thousand penalty units and, where the offence continues, to a fine of not more than one thousand penalty units for each day during which the offence continues or to a term of imprisonment of not less than one year and not more than three years or to both.

(4) A person who obstructs the Commission or an authorised agent of the Commission in the performance of a function under these Regulations, commits an offence and is liable on summary conviction to a fine of not less than one thousand penalty units and not more than ten thousand penalty units and, where the offence continues, to a fine of not more than one thousand penalty units for each day during which the offence continues or to a term of imprisonment of not less than one year and not more than three years or to both.

(5) An administrative penalty required to be paid under this regulation and which is not paid within the period specified in the notice shall be a debt owed to the Republic and recoverable by the Commission in court.

(6) Payment of an administrative penalty or a fine pursuant to this regulation shall not be recovered as expenditure or cost incurred in conducting petroleum operations.

Grievance resolution mechanism

177. A contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity aggrieved by a decision of the Commission in relation to the implementation of these Regulations may lodge a complaint with the Minister in accordance with section 20 of the Petroleum Commission Act, 2011 (Act 821).

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Application of Regulations to existing facilities

178. (1) Regulations 12 to 34 and 49 to 93 do not apply to

- (a) a petroleum facility that has been approved by the Minister in accordance with the Act before the entry into force of these Regulations; or
- (b) a facility for transportation, treatment or storage which is subject to a licence to install and operate, granted by the Minister in accordance with the Act before the entry into force of these Regulations.

(2) In the event of major rebuilding or modification of an existing petroleum facility or a facility for transportation, treatment or storage, regulations 12 to 34 and 49 to 93 apply to the relevant part of the scope of work for the rebuilding or modification.

Guidelines

179. Guidelines issued in accordance with subsection (3) of section 94 of the Act shall serve as explanatory notes and guidance notes to these Regulations.

Interpretation

180. In these Regulations, unless the context otherwise requires,

- "acceptance criteria" means criteria used to define an acceptable level of risk in petroleum activities;
- "accident" means an uncontrolled event which has resulted in loss of human life, personal injury, damage to the environment or loss of assets and reputation;
- "accidental load" means a load to which a facility can be exposed as a result of incorrect use, technical failure or undesirable external influences;
- "accidental release" means an unanticipated discharge of hydrocarbon, chemicals, emission, explosion, outgassing or other escape of dangerous substances, or any component or compound evolving from dangerous substances;
- "anchoring system" means an anchoring system of the catenary type or a combination of thruster system and catenary-type anchoring;

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- “blowout preventer” means an equipment installed at the surface, below the drilling floor on land and platform rigs and on the sea floor of floating offshore rigs to prevent the escape of pressure either in the annular space between the casing and drill pipe or in an open hole during drilling and completion operation;
- “bridging document” means a written document which defines how two or more safety management systems co-exist to allow co-operation and co-ordination on matters of health, safety and environmental protection between different parties;
- “completion” means an installation of production tubing, packers and other equipment, as well as perforation of, stimulation and clean-out and killing of production wells, isolation of previously perforated intervals and additional perforations;
- “consent” means a formalised expression of acceptance of the proposition or proposal from a contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity to carry out certain activities in an attempt to achieve compliance with regulatory requirements;
- “design accidental load” means an accidental load that the facility or a function of the facility shall be able to withstand for a defined period of time;
- “design load” means characteristic load multiplied by load coefficients;
- “drilling activity” means preparation for and implementation of operations for exploration and development wells, including test development wells and shallow wells and re-opening of wells;
- “dynamic positioning system” means a system in which the power supply, thruster system and control system are incorporated together and can be operated in order to automatically maintain a fixed position;

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“emergency preparedness” means technical, operational and organisational measures which prevent or reduce the harmful effects of accidents that have occurred or which prevent a dangerous situation that has occurred from developing into an accident;

“enterprise” means a corporation, business, firm or company registered with a designated purpose;

“environmental data” means data on oceanography, seismology and meteorology, and data that is of significance for the flight weather service;

“external environment” means the area outside the immediate working environment;

“follow up” means to evaluate the adequacy, effectiveness and timelines of actions taken by the contractor, subcontractor, licensee or the Corporation on reported observations and recommendations for continuous improvement in a management system;

“functional load” means loads caused by the physical existence, use and treatment of the facility;

“health-related matters” include

- (a) matters concerning health services;
- (b) preparedness in connection with health care and health services;
- (c) transport of sick and injured persons;
- (d) matters of hygiene, potable water supply, preparation and presentation of food;
- (e) qualification requirements for and training of personnel engaged in health matters; and
- (f) any other matter of importance to health and hygiene;

“high potential near miss” means any incident that could in other circumstances have realistically resulted in one or more fatalities, significant damage to the environment or major asset damage;

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- "lifting appliance" means a composite unit used for hoisting and lowering loads, with or without horizontal movement;
- "lifting gear" means a component or an equipment used between the lifting appliance and the load to grip the load, and which is not an integrated part of the lifting appliance;
- "load-bearing structure" means a part of the facility whose primary task is to transfer loads;
- "major accident" means an incident which immediately or subsequently causes several injuries or loss of human life, serious harm to the environment, loss of or substantial damage to assets;
- "management system" means the set of procedures an organisation is required to follow in order to meet its objectives;
- "maritime facility" means a facility which obtains a maritime flag and class certificate;
- "natural load" means a load caused by natural conditions;
- "near miss" means an occurrence which has a potential to cause loss of human life, personal injury, damage to the environment or loss of assets and reputation;
- "onshore petroleum facility" means a petroleum facility on land and the associated pipeline systems, processing plants and utility systems;
- "permanent abandonment" means the abandonment or plugging of a well or part of a well with the intention that the well will not be used or re-entered;
- "permanently manned petroleum facility" means a facility that is continuously manned, or part of an integrated development concept with gangway connections;
- "pipeline system" means pipelines, subsea pipelines and risers for transport of petroleum and other fluids with associated safety systems, valves, chambers, corrosion protection systems and other equipment;

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- "principal undertaking" means a contractor, sub-contractor, licensee, the Corporation or any other person engaged in a petroleum activity who assumes responsibility for a task or project;
- "process facility" means production equipment and associated piping used for processing and injection of oil and gas such as a separator, heater, pump or tank;
- "process safety system" means systems and equipment, typically Process Shutdown Device, Process Safety Valve and local instrumented safety functions which control abnormal operating conditions to prevent possible hydrocarbon release;
- "production facility" means process and utility equipment and associated piping for production of oil and gas;
- "radioactive source" includes a radioactive material that is permanently sealed in a capsule or closely bonded, in a solid form and which is not exempt from regulatory control, any radioactive material released through the breakage or leaking of the source, but does not include nuclear material or material encapsulated for disposal;
- "relief well" means an offset well drilled to combat blowout;
- "restoration" means the cleanup and contouring of a site, including any application of topsoil, required to return the site as nearly as possible to its original condition and also to return the land to productivity comparable to the surrounding land;
- "risk analysis" means analysis including a systematic identification and categorization of risk to people, the environment and to assets and reputation;
- "risk" means expression of the probability and the consequence of an accident occurring;
- "Safety Case" means a document produced by the operator of a facility which identifies the hazards and risks, describes how the risks are controlled and the safety management system in place to ensure the controls are effectively and consistently applied;

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- "safety functions" means physical measures that reduce the probability of a hazard and accident situation occurring, or that limit the consequences of an accident;
- "safety officer" means a person appointed by the contractor, subcontractor, licensee, the Corporation or any other person engaged in a petroleum activity with the requisite competence and qualification, responsible for assessing and monitoring hazardous and unsafe situations and developing measures to ensure the safety of personnel, the environment and assets;
- "safety system" means a system that realises one or more active safety functions;
- "safety zone" means a zone established by a notice published in the *Gazette* in accordance with regulation 1 of the Ghana Shipping (Protection of Offshore Operations and Assets) Regulations, 2012 (LI.2010);
- "shallow gas" means free gas or gas in solution that exists in permeable formation which is penetrated before the surface casing and a blow out preventer have been installed;
- "simpler facilities with accommodation" means facilities that are normally not manned, and which are equipped with emergency quarters;
- "simultaneous activities" mean activities that are executed concurrently on a platform or unit, including production activity, drilling and well activities, maintenance and modification activities and critical activities;
- "subsea completed well" means development well completed with the wellhead on the sea bed or on a template for connection to a production installation or injection installation;
- "temporary abandonment" means the abandonment of a well or the removal of a well-control equipment with the intention that the operation will be resumed within a specified time frame;

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- “verification” means confirmation by examination and provision of objective evidence that specified requirements have been fulfilled;
- “vessel” includes every description of watercraft with its equipment whether self-propelled or not that is used or capable of being used on water as a means of transportation for the purposes of navigation, fishing or commerce or for any other purpose;
- “well” means a borehole which is drilled in order to discover or delineate a petroleum deposit or to produce petroleum or injection water, inject gas, water or other medium, or to map or monitor well parameters;
- “well activity” means preparation for and implementation of operations in connection with completion, monitoring, control, workover and modification of exploration wells, development wells and test development wells with associated well equipment;
- “Well Barrier Element” means an object that alone cannot by itself prevent flow from one side to the other side by itself;
- “well barrier” means envelope of one or several dependent barrier elements preventing fluids or gases from flowing unintentionally from the formation, into another formation or to the surface;
- “well control” means measures that can be applied to prevent uncontrolled release of wellbore effluents to the external environment or uncontrolled underground flow;
- “wellbore” means the drilled hole or borehole, the open hole or uncased portion of the well, the inside diameter of the wellbore wall, the rock face that bounds the drilled hole;
- “well Influx or Inflow” means unintentional inflow of formation fluid from the formation into the wellbore;
- “well Integrity” means application of technical, operational and organisational solutions to reduce risk of uncontrolled release of formation fluids throughout the life cycle of a well;

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- “well intervention” means the deployment of tools and equipment in a completed well; and
“working environment” means the physical or geographical location of a workplace and the immediate surroundings of the workplace.

HON. BOAKYE AGYARKO
Minister responsible for Petroleum

ANNA PEARL AKIWUMI SIRIBOE
CHIEF STATE ATTORNEY

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