Enabling Statute: Canada Oil and Gas Operations Act

Canada Oil and Gas Drilling Regulations (SOR/79-82)

Regulation current to June 22nd, 2008

Canada Oil and Gas Drilling Regulations

SOR/79-82

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CANADA OIL AND GAS OPERATIONS ACT

Canada Oil and Gas Drilling Regulations

Regulations Respecting the Exploration and Drilling for and the Conservation of Oil and Gas and the Measures to Ensure the Safety of such Operations

SHORT TITLE

1. These Regulations may be cited as the Canada Oil and Gas Drilling Regulations.

INTERPRETATION

2. In these Regulations,

"abandoned" means, in respect of a well or test hole, a well or test hole that has been permanently plugged; (abandonné)

"accommodation installation" means an installation that is used to accommodate persons at a drill site and that functions independently of a drilling installation, and includes any associated dependent diving system; (installation d'habitation)

"Act" means the Canada Oil and Gas Operations Act; (Loi)

"Approval to Drill" means an Approval to Drill granted to an operator in respect of a well pursuant to section 83; (approbation de forer)

"Approval to Re-enter" means an Approval to Re-enter granted to an operator in respect of a well pursuant to section 83 that entitles the operator to re-enter a well for the purpose of conducting a downhole operation; (approbation de rentrer)

"artificial island" means an island constructed by man to provide a site for the exploration and drilling for, or the production, storage, transportation, distribution, measurement, processing or handling of oil and gas; (île artificielle)

"Authority to Drill a Well" [Repealed, SOR/96-116, s. 1]

"casing liner" means a casing that

(a) is suspended from a string of casing previously installed in the well, and

(b) does not extend to the well-head; (tubage partiel)

"certificate of fitness" means a certificate issued by a certifying authority in accordance with section 4 of the Canada Oil and Gas Certificate of Fitness Regulations; (certificat de conformité)

"certifying authority" has the same meaning as in section 2 of the Canada Oil and Gas Certificate of Fitness Regulations; (société d'accréditation)

"Chief" means the Chief Conservation Officer; (délégué)

"completed" means, in respect of a well or test hole, a well or test hole that has been prepared to permit the

(a) production of fluids from the well,

(b) observation of the performance of a reservoir,

(c) injection of fluids into the well, or

(d) disposal of fluids into the well; (achevé)

"conductor casing" means casing that is installed in a well to facilitate well control during drilling of the hole for the surface casing; (tubage initial)

"conductor pipe" means a large diameter pipe installed in a well to provide a conductor for drilling fluid through surficial formations; (tubage guide)

"dependent diving system" means a diving system that is associated with an installation other than a diving installation and that does not function independently of the installation; (système de plongée non autonome)

"development well" means a well that is drilled in a field or pool for the purpose of the

(a) production of fluids from the well,

(b) observation of the performance of a reservoir,

(c) injection of fluids into the well, or

(d) disposal of fluids into the well; (puits de développement)

"discovery well" means an exploratory well that, in the opinion of the Chief, has encountered oil or gas in quantities of commercial significance; (puits de découverte)

"diverter" means a device fitted on a well-head or on a marine riser for the purpose of directing the flow of fluids away from the drill floor in an emergency; (déflecteur)

"diving system" means the plant or equipment used in or in connection with a diving operation, and includes the plant and equipment that are essential to a diver or to a pilot of a manned submersible; (système de plongée)

"drill crew" means the personnel whose primary duties consist of the operating of a drilling rig; (équipe de forage)

"drill floor" means, in respect of a drilling rig or drilling unit, the stable platform surrounding the rotary table that provides support for the drill crew during drilling operations; (plancher de forage)

"drill site" means a location where a drilling rig is or may be installed; (emplacement de forage)

"drilling base" means the stable foundation on which a drilling rig is installed and includes the ground surface, an artificial island, an ice platform, a platform fixed to the ground or seafloor and any other specially constructed foundation; (base de forage)

"drilling installation" means a drilling unit or a drilling rig and its associated drilling base, and includes any associated dependent diving system; (installation de forage)

"drilling program" means a program for the drilling of one or more wells within a specified area and time using one or more drilling rigs or drilling units and includes all operations and activities ancillary to the program; (programme de forage)

"Drilling Program Approval" [Repealed, SOR/96-116, s. 1]

"Drilling Program Authorization" means an authorization to conduct a drilling program that is issued to a person pursuant to paragraph 5(1)(b) of the Act; (autorisation de programme de forage)

"drilling rig" means the plant used to make a well by boring or other means and includes a derrick, draw-works, rotary table, mud pump, blowout preventer, accumulator, choke manifold and other associated equipment including power, control and monitoring systems; (appareil de forage)

"drilling unit" means a drillship, submersible, semi-submersible, barge, jack-up or other vessel used in a drilling program and includes a drilling rig and other related facilities installed on a vessel; (unité de forage)

"drillship" means a ship that has a hull and is fitted with a drilling rig so that it is capable of drilling in deep water; (navire de forage)

"environmental conditions" means meteorological, oceanographical and other natural conditions, including ice conditions, that may affect the operations of a drilling program; (conditions environnementales)

"exploratory well" means a well or part of a well, other than a development well or test hole, that is drilled for the purpose of discovering oil or gas or obtaining geological information; (puits de prospection)

"formation flow test" means an operation to induce the flow of formation fluids to the surface of a well for the purpose of procuring reservoir fluid samples and determining reservoir flow characteristics; (essai d'écoulement de formation)

"intermediate casing" means any casing string installed in a well, following the installation of a surface casing in the well, through which further drilling operations may be carried out in a well; (tubage protecteur)

"kick" means the spontaneous flow of fluids at the surface of a well caused by the entrance of formation fluids into the well-bore; (jaillissement)

"legal survey" means a survey made in accordance with instructions of the Surveyor General; (arpentage légal)

"natural environment" means the physical and biological environment in the specified area of a drilling program; (environnement naturel)

"offshore" means, with respect to a drill site, a location within a water covered area that is not an island, an artificial island or an ice platform; (au large des côtes)

"onshore" means, with respect to a drill site, a location other than offshore; (sur terre)

"operator" means a person who has applied for or has been issued a Drilling Program Authorization; (exploitant)

"permafrost" means the thermal condition of the ground when its temperature is at or below zero degrees Celsius for more than one year; (pergélisol)

"permafrost casing" means the conductor casing installed in a well to protect against the hazards associated with the thawing of a permafrost section or the liberation of gas within or immediately below a permafrost section; (tubage de pergélisol)

"production casing" means the casing installed in a well-bore for production or injection purposes and may include an intermediate casing; (tubage de production)

"relief well" means a well drilled to assist in controlling a blowout in an existing well; (puits de secours)

"rig release date" means the date on which a drilling rig last conducted operations on a well in accordance with the Approval to Drill in respect of that well; (date de libération de l'appareil)

"seafloor" means the surface of all that portion of land under the sea; (fonds marins)

"spud-in" means, in respect of the drilling of a well, the initial penetration of the ground or seafloor; (démarrage de forage)

"support craft" means any vessel, vehicle, tug, ship, aircraft, air-cushion vehicle or other craft used to provide transport for or assistance to a drilling program but does not include a drilling base or drilling unit; (véhicule de service)

"surface casing" means the casing installed in a well to a depth sufficient to establish well control for the continuation of the drilling operations; (tubage de surface)

"surface improvement" means any railway, pipeline or other right-of-way, road allowance, surveyed roadway, dwelling, industrial plant, aircraft runway or taxiway, any building used for military purposes, any permanent farm building or any school, church or other place of public concourse; (aménagement en surface)

"suspended" means, in respect of a well or test hole, a well or test hole in which drilling or producing operations have temporarily ceased; (suspendu)

"terminated" means, in respect of a well or test hole, a well or test hole that has been abandoned, completed or suspended in accordance with these Regulations; (cessé)

"test hole" means any hole, other than a well or seismic shot hole, drilled through sedimentary rock to a depth of more than 30 m; (trou d’essai)

"U.L.C." means the Underwriters’ Laboratories of Canada; (U.L.C.)

"waste material" means any refuse or garbage, or any other useless material generated during a drilling program and ancillary operations but does not include drilling fluid and drill cuttings; (déchets)

"well-bore" means the hole drilled by a bit in order to make a well; (trou de sonde)

"well control" means the control of the movement of fluids in or from a well; (contrôle d’un puits)

"well material" means any formation or reservoir material obtained from a well, including any cutting, core or fluid; (matériau de puits)

"wireline" means a line that is used to run survey instruments or other tools in a well and that is made of

(a) steel, or

(b) several wires made of steel, copper or other metals together with electrical insulation. (câble)

SOR/80-641, s. 1; SOR/96-116, ss. 1, 43(F); SOR/2002-170, s. 1.

APPLICATION

3. (1) These Regulations apply

(a) to every operator who explores or drills for oil or gas under the Act; and

(b) in respect of every well and test hole drilled under the Act.

(2) [Repealed, SOR/96-116, s. 2]

SOR/96-116, s. 2.

SUBMISSION OF INFORMATION

4. Any information that is required to be submitted under these Regulations shall be prepared and submitted in a form and manner satisfactory to the Chief.

SOR/96-116, s. 43(F).

PART I

GENERAL

Application for Authorization

5. A person may apply for a Drilling Program Authorization by submitting to the Chief five copies of a completed application form for that Authorization.

SOR/96-116, s. 3.

Conditions of Drilling Program Authorization

6. A Drilling Program Authorization is subject to the following requirements:

(a) the drilling program, including all equipment used therefor, must comply with this Part;

(b) the operator must conduct the drilling operations in accordance with the contingency plans referred to in section 79; and

(c) [Repealed, SOR/2002-170, s. 2]

(d) in the case of an offshore drill site, a certificate of fitness must be issued for each drilling installation and accommodation installation and must remain valid and in force.

SOR/96-116, s. 3; SOR/2002-170, s. 2.

7. to 12. [Repealed, SOR/96-116, s. 3]

Defective or Experimental Equipment

13. (1) Every operator shall, in the interests of safety,

(a) forthwith repair or replace any defective equipment that is being used during a drilling operation;

(b) alter any operational procedure that is unsafe, inadequate or deficient; and

(c) where necessary, initiate a new operational procedure in respect of the drilling operation.

(2) Where, pursuant to subsection (1), the operator is required to replace equipment or alter a procedure described in the application for a Drilling Program Authorization or to initiate a new operational procedure, the operator shall obtain the approval of the Chief for the replacement equipment, altered procedure or new operational procedure before undertaking the replacement, alteration or new procedure.

SOR/88-489, s. 2; SOR/96-116, s. 4.

14. The Chief may approve the use in a drilling program of drilling equipment that has not been proven under field conditions, but any such approval shall cease to be valid if the actual performance of the equipment does not meet or exceed the rated design performance specified for that equipment in the application for the Drilling Program Authorization.

SOR/88-489, s. 3; SOR/96-116, s. 5.

15. [Repealed, SOR/96-116, s. 5]

Support Craft

16. Every support craft used in a drilling program shall be designed and constructed to operate safely and to provide safe and efficient support for all drilling operations.

17. Every marine support craft that is a support craft referred to in section 16 and that is a vessel shall

(a) meet the requirements of the Collision Regulations, as if the marine support craft were a Canadian vessel; and

(b) carry emergency equipment and life-saving devices sufficient in number to permit the escape of all persons from the marine support craft under any conditions that may reasonably be anticipated.

SOR/96-116, s. 6; SOR/2002-170, s. 3.

Standby Craft

18. (1) A suitable standby craft shall be provided for a drilling operation as a means of evacuating personnel from the drill site.

(2) The standby craft referred to in subsection (1) shall have sufficient capacity and equipment to evacuate all personnel from the drill site.

19. Every standby vessel shall be equipped in accordance with Canadian Coast Guard TP 7920E, Standard Respecting Standby Vessels, as amended from time to time.

SOR/80-641, s. 2; SOR/96-116, s. 7.

20. [Repealed, SOR/96-116, s. 7]

Hazards

21. Every operator shall take all reasonable precautions for the protection of personnel and equipment from naturally occurring and man-made hazards in the area specified in the Drilling Program Authorization issued to that operator.

SOR/96-116, s. 8.

Requirements for Drilling Units

22. (1) Every drilling unit shall

(a) be equipped with drip trays, curbs and gutters and such other facilities as are necessary to prevent pollution of the water by fuel or chemicals that have been spilled or leaked aboard the drilling unit; and

(b) be equipped with a means for burning, venting, storing, transporting or otherwise disposing of waste in accordance with sections 137 to 139.

(2) The operator of every drilling unit shall ensure that the drilling unit is equipped with a system capable of collecting any waste oil from the oil sumps on the unit.

23. to 29. [Repealed, SOR/96-116, s. 9]

Standards For Drilling Equipment

30. (1) The minimum acceptable standards for a derrick, mast, draw-works, mud pump and for related drilling rig equipment that is installed on a drilling rig are those standards that are equal or superior to the relevant specifications of the American Petroleum Institute.

(2) The derrick, mast, draw-works, mud pump and related equipment of a drilling rig shall be designed to operate safely and efficiently under the maximum load conditions anticipated during any drilling operation.

Meteorological Forecasts

31. (1) On the request of the Chief, an operator shall provide facilities and equipment capable of observing, measuring and recording the environmental conditions and the effect that those conditions have on the drilling operations at any drill site that is onshore or on an ice platform.

(2) Where drilling operations are carried out offshore, the operator shall

(a) obtain, during the period the operations are being carried out, forecasts of meteorological conditions, including ice movements, each day and each time during the day when the conditions change substantially; and

(b) ensure that the drilling unit is equipped with facilities and equipment for observing, measuring and recording

(i) environmental conditions, and

(ii) the pitch, roll and heave of the drilling unit.

SOR/80-641, s. 4; SOR/96-116, s. 43(F).

32. to 37. [Repealed, SOR/96-116, s. 10]

Electrical Equipment

38. (1) All electrical equipment used on a drilling unit or drilling rig that is onshore shall be designed and located in such a manner as to avoid the creation of any hazard.

(2) Subject to section 57, every electrical motor or generator on a drilling rig that is onshore shall conform with requirements of Class I, Division 1 locations, as defined in the Canadian Standards Association Canadian Electrical Code, Part I, where such motor or generator is located in a space that is within

(a) 2 m from the centre line of a rotary table;

(b) 2 m in a horizontal direction from the centre line of a blowout preventer stack; or

(c) 2 m of any shale shaker or atmospheric gas separator.

(3) Electrical equipment, other than a motor or generator referred to in subsection (2), on a drilling rig that is onshore shall conform with the requirements of Class I, Division 2 locations, as defined in the Canadian Standards Association Canadian Electrical Code, Part I, where the equipment is installed in a space that is

(a) within 4 m of the centre line of a rotary table or a blowout preventer stack;

(b) within 4 m of a shale shaker or an atmospheric gas separator;

(c) an enclosed space containing a mud tank;

(d) an enclosed space containing a choke manifold; or

(e) an enclosed space where combustible gases may accumulate.

(4) Any space outside of Class I, Division 2 locations referred to in subsection (3) shall be considered exposed to transient combustible gases if the space is within

(a) 20 m of the centre line of a rotary table;

(b) the derrick structure; or

(c) any enclosure a part of which is within 20 m of the centre line of a rotary table.

(5) Notwithstanding subsection (3), the spaces described in paragraphs (c), (d) and (e) of that subsection may be considered as spaces exposed to transient combustible gases where a positive mechanical ventilation system and gas detectors have been installed in those spaces and are in use.

(6) Any electrical equipment within spaces described in subsection (4) shall be constructed of materials suitable for the climatic conditions in the area of the drilling program and shall be equipped with

(a) junctions and connections that are totally enclosed and sealed by gaskets and threaded hubs;

(b) where an extension cord is used, a connecting device that prevents accidental disconnection of the cord; and

(c) subject to subsection (7), a terminal for each cord referred to in paragraph (b) that provides an interruption of the circuit before the connecting cord is withdrawn.

(7) Where a terminal, other than a terminal described in paragraph (6)(c), is used, a legible sign that states that the electrical current is to be turned off before the connection or disconnection of an extension cord referred to in paragraph (6)(b) shall be posted

(a) adjacent to the terminal; or

(b) in the generator room or dog house.

(8) Electrical wiring in any space referred to in subsections (2) to (4) shall be

(a) type SO, SOW or STW cords, as defined in the Canadian Standards Association Canadian Electrical Code, Part I, with connecting devices that prevent the accidental disconnection of any electrical cord and that provide an interruption of the circuit before any connecting cord is withdrawn;

(b) encased in rigid threaded conduit; or

(c) lead-covered armoured cable.

39. (1) Every electrical installation on a drilling unit used to carry out a drilling program shall

(a) comply with the IEEE Recommended Practice for Electric Installations on Shipboard, standard 45-1983 dated April 25, 1983 by the Institute of Electrical and Electronics Engineers or with such standard as the Chief may approve pursuant to section 12.2 of the Act; and

(b) be explosion proof or pressurized where it is installed

(i) in any open space within 15 m horizontally of the rotary table of the drilling unit,

(ii) less than 3 m above the drill floor of the drilling unit or less than 10 m below the drill floor, or

(iii) within 3 m of a mud ditch, shale shaker, degasser or mud tank.

(2) Where combustible gases may accumulate in any enclosed area of a drilling unit and air is used to provide the pressure referred to in paragraph (1)(b), the air intake shall be located outside and as far as practicable from any area where combustible gases may accumulate.

(3) The primary circuits from the power plant serving a drilling unit shall be equipped with at least two manual shutoff switches each at a different location.

SOR/80-641, s. 7; SOR/88-489, s. 7; SOR/96-116, s. 43(F).

40. to 56. [Repealed, SOR/96-116, s. 11]

Small Drilling and Service Rigs

57. Subsection 38(2), paragraph 75(3)(c) and section 111.2 do not apply to drilling rigs and service rigs that have an applied power of less than 375 kW or equivalent to the rotary table and main hoist.

SOR/80-641, s. 16; SOR/96-116, s. 12.

Diving Operations

58. [Repealed, SOR/96-116, s. 13]

59. (1) Where diving operations are carried out during the course of a drilling program, the operator shall ensure that the divers do not, except in the case of an emergency involving the safety of personnel, carry out operations at, descend to or ascend from a work site located at a depth of 50 m or more unless the descent and ascent are carried out in and the operations are carried out from a submarine, an armoured diving suit, a diving bell or other diving vehicle.

(2) Every diving vehicle referred to in subsection (1) shall be

(a) fitted with life support systems, observation ports, external lights, communications systems, a means of crossing the air-water interface in a safe manner and a means of guiding the diving vehicle to the diver's underwater work site; and

(b) capable of returning the occupants safely to the surface in the event of failure of the air supply, the power supply or the primary hoisting mechanism.

SOR/88-489, s. 10.

Blowout Preventer Requirements

60. (1) Where drilling and related operations are being carried out below the conductor casing of a well, a diverter or blowout preventer system shall be installed on the well-head.

(2) A blowout preventer system installed pursuant to subsection (1) shall be capable of being activated from the drill floor of a drilling rig and from one other location remote from the well-head.

(3) Where hydraulic control lines are used to activate a blowout preventer system, the lines shall be fire resistant.

(4) A drilling system to be used in an offshore operation shall be designed to provide a means of installing on and removing from the well-head the blowout preventer system installed pursuant to subsection (1).

(5) Subject to subsection (6), each blowout preventer system installed pursuant to subsection (1) shall have a rated working pressure in accordance with section 107.

(6) The rated working pressure of a blowout preventer system installed pursuant to subsection (1) shall not be less than 13 MPa.

(7) A blowout preventer system installed pursuant to subsection (1) shall be equipped with

(a) a control panel whose functions are clearly identified thereon and in full view and within easy access of the driller's station;

(b) a control panel in addition to the control panel described in paragraph (a), located in a readily accessible and protected location remote from the drill floor;

(c) a secondary control system and a secondary source of operating power capable of activating the blowout preventers in case the primary control system or primary power source fails;

(d) a control system that is capable of closing

(i) any ram-type preventer within 30 seconds of activation,

(ii) any annular-type blowout preventer smaller than 450 mm bore diameter within 45 seconds of activation, and

(iii) any other type of preventer within 60 seconds of activation;

(e) where the well is onshore, an accumulator and a recharging system located in a readily accessible and protected area at least 20 m from the drill floor.

(8) Any accumulator in a hydraulic blowout preventer control system installed on a well-head during the drilling of a well shall be capable of closing and opening the annular-type preventer and one of the ram-type preventers in one continuous sequence of operations without recharging.

(9) The blowout preventer system installed pursuant to subsection (1) shall be designed to permit the maintenance, retrieval and replacement of any major component of the system while maintaining well control.

SOR/80-641, s. 18.

61. (1) Subject to subsection (2), section 60 does not apply in the case of a test hole or a well that is drilled for a purpose other than

(a) the production of oil or gas;

(b) exploring for oil or gas;

(c) obtaining water to inject into an underground formation; or

(d) the injecting of gas, air, water or other substance into an underground formation.

(2) Notwithstanding subsection (1), the Chief may direct that a diverter or blowout preventer system be installed on any test hole or well referred to in that subsection during the drilling of the test hole or well.

SOR/96-116, s. 43(F).

62. Equipment for the purpose of well control shall

(a) have sufficient structural strength to withstand normal loading conditions associated with drilling and related operations; and

(b) be protected against the effects of all environmental conditions that may reasonably be anticipated.

Casing

63. (1) Every operator shall submit to the Chief for approval the casing setting depths, the casing program and the casing cementing program for each test hole or well that he intends to drill.

(2) Any casing to be used in a well shall be new pipe or, subject to subsection (3), reconditioned pipe.

(3) No reconditioned pipe shall be used as casing unless it has been inspected by an approved method and found to have adequate strength for its intended purpose.

(4) Where a floating drilling unit is used to drill a well, the conductor casing for that well shall be designed to have sufficient structural strength to support the load imposed by the marine riser and by the diverter or blowout preventers.

(5) When designing the conductor casing referred to in subsection (4) the support provided by the conductor pipe may be taken into account.

SOR/96-116, s. 43(F).

64. (1) The casing to be installed on any well shall be designed to withstand burst, collapse, tension, bending, buckling or other stresses that are known to exist or that may reasonably be expected to exist.

(2) The selection of any casing installed in a well shall be based on the performance properties listed in the API Bulletin on Performance Properties of Casing, Tubing, and Drill Pipe, API Bul 5C2, nineteenth edition, issued by the American Petroleum Institute and dated October 1, 1984 or with such other standard as the Chief may approve pursuant to section 12.2 of the Act.

(3) The minimum design factors used in the design of well casings shall be

(a) 1.33 for burst, for surface and intermediate casing;

(b) 1.0 for burst, for conductor casing, production casing and liners;

(c) 1.0 for collapse; and

(d) 1.6 for tension.

SOR/88-489, s. 11; SOR/96-116, s. 43(F).

65. (1) Subject to subsection 76(3), the casing to be installed in any well shall be designed to withstand burst pressures using the following assumptions:

(a) the maximum internal pressure in the conductor casing and surface casing is 22 kPa/m of depth to which it is run;

(b) the maximum internal pressure in intermediate casing is equal to,

(i) for a well that is onshore, 50 per cent of the maximum anticipated formation fluid pressure at the depth to which the well is to be drilled prior to setting a further casing, and

(ii) for a well that is offshore, 75 per cent of the maximum anticipated formation fluid pressure at the depth to which the well is to be drilled prior to setting a further casing;

(c) the maximum internal pressure for production casing is the maximum reservoir pressure;

(d) the maximum internal pressure determined in accordance with paragraphs (b) and (c) is reduced by an internal pressure equivalent to a head of methane gas that extends from the well-head to the depth to which the well is to be drilled prior to setting a further casing;

(e) for surface and intermediate casing, an external pressure exists that is equivalent to a head of water from the casing shoe to the top of the highest known water table.

(2) For the purposes of paragraph (1)(b), where the formation fluid pressure is not known, the formation fluid pressure at any depth shall be assumed to be 11 kPa/m of well depth.

66. (1) The casing to be installed on any well shall be designed to withstand collapse loading based on the following assumptions:

(a) the hydrostatic head of the drilling fluid in which the casing is run acts on the exterior of the casing at any given depth;

(b) the conductor or permafrost casing and surface casing is

(i) completely evacuated, where the well is onshore,

(ii) 50 per cent evacuated, where the well is offshore;

(c) the intermediate casing and other protective casing is at least 50 per cent evacuated; and

(d) the casing used for production purposes is completely evacuated.

(2) For the purpose of subsection (1), the effect of axial stresses on collapse resistance shall be taken into account.

67. Well casing shall be designed to withstand tensile loading based on the following assumptions:

(a) the weight of casing is its weight in air; and

(b) the tensile strength of the casing is the yield strength of the casing wall or of the joint, whichever is the lesser.

68. (1) Where casing liners are used in lieu of full casing strings, the casing liner and the casing to which it is attached shall together meet the relevant design criteria set out in sections 64 to 67.

(2) Notwithstanding sections 64 to 67, any casing design criteria, other than the criteria set out in those sections, may be applied to casing to be used if the operator submits details of the design criteria that shows that the design criteria submitted, if followed, provides casing the safety of which is equivalent or superior to the safety of the casing designed in accordance with those sections.

69. The setting depth of any casing string shall be based on relevant geological and engineering data.

70. (1) Where normal pressure conditions exist and permafrost is absent or is present in consolidated formations, the casing program shall, in respect of an exploratory well that is onshore, include

(a) conductor pipe or conductor casing, or both, set to a depth sufficient to ensure the return of drilling fluids;

(b) surface casing set in a competent formation at a depth of not less than 150 m and not more than four times the depth of the previous conductor casing or 500 m, whichever is greater; and

(c) intermediate casing set at a depth to ensure that at least 25 per cent of the hole is cased during all drilling operations below surface casing.

(2) Where normal pressure conditions exist and permafrost is known or believed to exist in unconsolidated formations, the casing program shall, in respect of an exploratory well that is onshore, include

(a) conductor pipe or conductor casing set in accordance with paragraph (1)(a);

(b) permafrost casing set at a depth of 150 m below ground level where permafrost occurs to a depth greater than 150 m;

(c) surface casing that is at least 100 m but not more than 300 m below the base of the permafrost where permafrost occurs to a depth greater than 150 m or that is set in accordance with paragraph (1)(b) if permafrost occurs to a depth of less than 150 m; and

(d) intermediate casing set in accordance with paragraph (1)(c).

(3) Where normal pressure conditions exist, the casing program shall, in respect of any exploratory well that is offshore, include

(a) conductor pipe set at a minimum depth of 10 m below the seafloor;

(b) one or more conductor casings set at a depth not exceeding 250 m below the seafloor unless a diverter system is installed on a cemented conductor pipe or previous conductor casing in which case the conductor casing shall be set at a depth not deeper than the greater of

(i) four times the depth of the previous conductor casing or cemented conductor pipe, and

(ii) 500 m;

(c) surface casing set at a depth to ensure that at least 25 per cent of the well-bore is cased at all times; and

(d) intermediate casing as required to protect the well against anticipated pressures or difficult hole conditions and to ensure that at least 25 per cent of the well-bore is cased at all times while drilling below surface casing.

(4) Notwithstanding subsections (1) to (3), the Chief may,

(a) where abnormal pressure conditions are known to exist or are anticipated, require the operator to install casing in addition to the casing required by those subsections;

(b) [Repealed, SOR/2002-170, s. 4]

(5) An operator may, with the approval of the Chief, install additional casing in a well, including production casing and liners, below the intermediate casing referred to in paragraphs (1)(c), (2)(d) and (3)(d).

(6) No operator shall set any casing in a well unless he has received approval from the Chief for the depth at which the casing may be set.

SOR/96-116, s. 43(F); SOR/2002-170, s. 4.

Cementation of Casing

71. The mixture of the cement to be used and the procedure to be followed in the cementing of casing strings in a well shall be designed to

(a) prevent the movement of formation fluids in the casing-formation annuli or casing-casing annuli;

(b) provide support for the casing; and

(c) retard corrosion of the casing.

72. (1) The conductor casing and permafrost casing shall be cemented, where practicable, from the shoe of the casing to the surface.

(2) Surface casing shall, unless otherwise approved by the Chief, be cemented to the surface of the well or to a depth that is not less than 25 m above the base of any previous casing string.

(3) Intermediate casing shall be cemented with sufficient cement to

(a) isolate all hydrocarbon or potable water zones;

(b) isolate abnormally pressured intervals from normally pressured intervals; and

(c) rise to a minimum of 300 m above the casing shoe or 150 m above the base of the permafrost.

SOR/80-641, s. 19; SOR/96-116, s. 43(F).

73. Where practicable, every casing liner shall be cemented for its full length.

Marine Riser

74. (1) Every marine riser shall be capable of

(a) furnishing access to the well;

(b) isolating the well-bore from the sea;

(c) withstanding the differential pressure of the drilling fluid relative to the sea;

(d) withstanding wave and current forces; and

(e) permitting the drilling fluid to be returned to the drilling unit or drilling rig located on an ice platform.

(2) Every marine riser shall be supported in a manner that effectively isolates it from the forces caused by the motion of the drilling unit or drilling rig located on an ice platform.

SOR/80-641, s. 20.

Drilling Fluid System

75. (1) The drilling fluid system, including the drilling fluid, the circulating system and the associated monitoring and maintenance equipment used during a drilling operation shall be capable of

(a) preventing the uncontrolled entry of formation fluids into the well-bore;

(b) allowing proper well evaluation;

(c) coping with all lithological, operational, pressure, temperature and other well conditions that may be encountered; and

(d) removing excess drill solids, weighting material and formation fluids from the drilling fluid.

(2) The combined capacity of the drilling fluid tanks of every drilling fluid system shall be not less than

(a) 120 m3 for a well that is onshore and 180 m3 for a well that is offshore; or

(b) 50 per cent of the aggregate of the volume of the hole and the marine riser.

(3) The equipment provided to monitor the drilling fluid of every drilling fluid system shall include

(a) a mud pit level indicator with a warning device to alert personnel of mud volume gains and losses;

(b) a mud volume measuring device that accurately determines the mud volume used to fill the hole on trips;

(c) subject to section 57, a mud-return or full-hole indicator that monitors drilling fluid returns;

(d) equipment to test the physical and chemical properties of the drilling fluid entering and leaving the hole, including density, viscosity, water loss, filter cake, salinity, pH, solids content and gel strengths; and

(e) automatic gas detecting, measuring and recording devices that trip an automatic audio alarm to warn of any increase in the gas content of the drilling fluid.

(4) The indicators and alarms required pursuant to subsection (3) shall be strategically located on the drilling rig to alert any drilling supervisor.

(5) Subject to subsection (6), every operator shall provide a means of disposing of drilling fluid, drill cuttings and gas separated from the drilling fluid.

(6) The means referred to in subsection (5) shall require the approval of the Chief.

SOR/96-116, s. 43(F).

Air, Foam and Gas Drilling

[SOR/80-641, s. 21(E)]

76. (1) An operator may drill a well using air, gas, foam or other fluid in the circulatory system if such procedure is approved by the Chief.

(2) Where air or gas is used in the circulatory system referred to in subsection (1), the operator shall install and maintain

(a) a rotating head capable of diverting the return air or gas flow into a bleed-off line that is as straight as practicable and not less than 50 m in length;

(b) where formations that may contain hydrogen sulphide are being drilled, a hydrogen sulphide monitor continuously on the bleed-off line;

(c) a device to provide a continous source of ignition at the end of the bleed-off line; and

(d) a reserve volume of mud that is

(i) in suitable condition to be pumped into the well without delay,

(ii) equal in volume to at least 1.5 times the volume of the hole, and

(iii) not less than 1200 kg/m3 in density.

(3) Where air, gas or foam is used in the circulatory system referred to in subsection (1), the blowout preventer system and casing program shall be designed to contain the maximum formation pressure that may be encountered.

SOR/96-116, s. 43(F).

Testing Equipment

77. (1) Any equipment used in a formation flow test shall have the capacity to

(a) reverse circulate the test string;

(b) conduct the flow from the well through the surface control valve to the choke manifold; and

(c) treat, store, burn or otherwise dispose of the fluids produced during the testing operation.

(2) The rated working pressure of formation flow test equipment and related equipment shall be equal to or greater than the maximum shut-in formation pressure that may reasonably be anticipated.

(3) The formation flow test equipment referred to in subsection (1) shall include a downhole safety valve that permits closure of the test string above the packer.

(4) Any formation flow test equipment used in testing a well that is offshore and drilled with a floating drilling unit shall have a subsea test tree that includes

(a) a valve that

(i) may be operated from the surface, and

(ii) automatically closes when there is a failure in any part of the formation flow equipment; and

(b) a release system that permits the test string to be hydraulically or mechanically disconnected within or below the blowout preventers.

Manuals

78. (1) Every operator shall prepare an operating manual for all normal drilling and related operations carried out by him and for all abnormal conditions or situations that can be reasonably anticipated during drilling operations.

(2) A copy of the operating manual referred to in subsection (1) shall be

(a) readily accessible at each drilling site and on each drilling unit where drilling operations are being carried out; and

(b) on the request of the Chief, submitted to the Chief.

SOR/96-116, s. 43(F).

Contingency Plans

79. (1) Every operator shall ensure that contingency plans have been formulated and that equipment is available to cope with any foreseeable emergency situation during a drilling program, including

(a) a serious injury to or the death of any person;

(b) a major fire;

(c) the loss of or damage to support craft;

(d) the loss or disablement of a drilling unit or a drilling rig;

(e) the loss of well control;

(f) arrangements for the drilling of a relief well should such become necessary;

(g) hazards unique to the site of the drilling operation; and

(h) spills of oil or other pollutants.

(2) The plans referred to in subsection (1) shall provide for coordination with any existing local or national contingency plans.

(3) A copy of the plans referred to in subsection (1) shall be

(a) readily accessible at each drilling rig and on each drilling unit where drilling operations are being carried out; and

(b) on the request of the Chief Conservation Officer or Chief Safety Officer, submitted to the Chief Conservation Officer or Chief Safety Officer.

SOR/96-116, s. 43(F); SOR/2002-170, s. 10.

PART II

APPROVAL TO DRILL, APPROVAL TO RE-ENTER OR APPROVAL TO DRILL A TEST HOLE

Prohibition

80. (1) No person shall

(a) drill a well unless an Approval to Drill in respect of the well has been granted to the person; or

(b) for the purpose of conducting a downhole operation, re-enter any well that has been suspended unless an Approval to Re-enter in respect of the well has been granted to the person.

(2) No person shall drill a test hole without the approval of the Chief.

SOR/96-116, s. 14.

Notification

81. Every operator shall notify the Chief in writing at least 45 days prior to commencement of

(a) the construction of any artificial island or ice platform,

(b) the spud-in of any proposed well, or

(c) the re-entry of a well that has been suspended,

of the day such construction, spud-in or re-entry, as the case may be, is to commence.

SOR/80-641, s. 22; SOR/96-116, s. 43(F).

Granting, Suspension and Revocation of Approvals

[SOR/96-116, s. 15]

82. (1) Every operator shall submit to the Chief an application for an Approval to Drill or Approval to Re-enter not less than 21 days before the date on which the operator plans to spud-in or re-enter.

(2) The application required under subsection (1) shall be in a form satisfactory to the Chief and shall include

(a) the name of the well;

(b) the geographical coordinates of the well;

(c) the proposed depth of the well;

(d) the name of the drilling contractor and the identification of the drilling rig or drilling unit to be used;

(e) the proposed spud-in date of the well and estimated time required to drill the well;

(f) the proposed drilling program including any program for the taking of conventional cores, wireline logs or formation flow tests;

(g) the casing program and the volume of cement estimated to be used;

(h) where the proposed well is onshore,

(i) the elevation of the ground surface at the well-head, and

(ii) the elevation of the rotary table;

(i) where the proposed well is offshore,

(i) the elevation of the rotary table, and

(ii) the depth of the water at the drill site;

(j) the geological prognosis and prospective horizons; and

(k) such other information as the Chief may require.

(3) The application required pursuant to subsection (1) shall be accompanied by

(a) the tentative survey plan described in section 87;

(b) any approved plan described in section 88; and

(c) the well prognosis described in section 89.

SOR/88-489, s. 12; SOR/96-116, ss. 16, 43(F).

83. (1) The Chief shall grant an Approval to Drill or an Approval to Re-enter where the Chief is satisfied that the activity will be conducted safely, without waste and without polluting the environment.

(2) An Approval to Drill or Approval to Re-enter is subject to the following conditions:

(a) the operator must commence drilling within 120 days after the day on which the Approval is granted;

(b) the well must be drilled no deeper than the depth proposed in the application for the Approval;

(c) the contractor and the drilling rig or drilling unit identified in the application for the Approval must be used in the drilling operations; and

(d) the operator must conduct the drilling operation as proposed in the application for the Approval and in accordance with any conditions imposed by the Chief in relation to the Approval.

SOR/96-116, s. 17.

84. The Chief Conservation Officer or Chief Safety Officer may suspend or revoke an Approval to Drill or Approval to Re-enter where the safety of operations becomes uncertain owing to

(a) the level of performance of the drilling rig, drilling base or drilling unit or any support craft being demonstrably less than the level of performance indicated in the application for a Drilling Program Authorization submitted by the operator; or

(b) the environmental conditions encountered in the area of the drilling program for which the Approval to Drill or Approval to Re-enter was granted being more severe than those predicted by the operator when the Drilling Program Authorization was issued.

SOR/96-116, s. 17; SOR/2002-170, s. 10.

Surface Improvements

85. (1) No person shall drill a well that is onshore within 100 m from any surface improvement unless that person

(a) satisfies the Chief that the reservoir cannot be adequately evaluated by drilling from a more distant location; and

(b) establishes to the Chief that the operation can be conducted without damage or threat to the surface improvement.

(2) A test hole may be drilled at a location within 100 m of a surface improvement if the operation can be conducted without damage to the surface improvement.

(3) Where a well is to be drilled or re-entered within 5 km of a licensed airport, the operator shall advise the general manager of that airport of the proposed or actual location of the well not later than the date on which the operator submits the application for an Approval to Drill or an Approval to Re-enter in respect of that well.

(4) No well shall be drilled that may penetrate a mineral deposit where there are mining operations or where mining operations may be undertaken unless measures, satisfactory to the Chief, are taken to

(a) protect the mineral deposits from damage or loss of value; or

(b) prevent interference with the mining operation.

SOR/88-489, s. 14; SOR/96-116, ss. 18, 43(F).

Location of Well

86. (1) The location of a well is subject to the approval of the Chief.

(2) The surface location of a development well shall be selected and the drilling procedures for that well designed to ensure that the well intersects the reservoir at a point consistent with good reservoir engineering practice.

SOR/96-116, s. 43(F).

87. Where the proposed well is offshore, the operator shall

(a) prepare a tentative survey plan showing the location of the proposed well; and

(b) describe the survey system that will be used to establish the position of the well.

88. (1) Where a proposed well is onshore and is to be located within 100 m of the normal high-water mark of a body of water or permanent stream, the operator shall submit evidence that he has obtained prior written approval of his plan to prevent pollution of the water from such regulatory bodies as may have jurisdiction in respect of the drill site.

(2) The plans referred to in subsection (1) shall

(a) indicate the elevation of the land and water surfaces adjoining the drill site;

(b) describe any special problems at the drill site;

(c) include details of the construction and maintenance of dikes, reservoirs and other installations intended to be constructed; and

(d) provide particulars in respect of the method to be used to dispose of mud, oil, water or other fluids associated with the proposed drilling operations.

Well Prognosis

89. (1) [Repealed, SOR/96-116, s. 19]

(2) Every operator shall prepare and submit to the Chief a well prognosis that includes information in respect of

(a) all surface and subsurface conditions that may affect the drilling of the well;

(b) the manner in which the program for the drilling of the well has been designed to overcome the meteorological and oceanographic conditions referred to in the application for a Drilling Program Authorization; and

(c) any other matter in respect of the proposed well on the request of the Chief.

(3) The well prognosis referred to in subsection (2) shall be divided into the following parts:

(a) part one of the prognosis shall provide general information in respect of the proposed well, including the proposed well name, well classification and, where the proposed well is a development well, the coordinates of the location at which the well is designed to penetrate the production interval or injection interval;

(b) part two of the prognosis shall provide information in respect of surface conditions in the vicinity of the well that may affect the safety and efficiency of operations and, where the well is offshore, the anticipated meteorological and oceanographic conditions and the topography and composition of the seafloor;

(c) part three of the prognosis shall provide information in respect of the subsurface conditions anticipated at the proposed drill site that may affect the safety and efficiency of the drilling operations and shall include

(i) the depth and thickness of geological formations and the depth of geological markers,

(ii) the depth and nature of formations where problems such as lost circulation zones, swelling shale zones and permafrost zones are anticipated,

(iii) the variations in the blowout preventor and drilling fluid systems from those described in the Drilling Program Authorization in respect of the proposed well; and

(d) part four of the prognosis shall provide information to demonstrate that the drilling program is suitable for the surface and subsurface conditions described in paragraph (c) including

(i) the equipment, procedures and resources to be employed to protect the natural environment in the vicinity of the proposed well,

(ii) the details of the casing and cementing program to be used in respect of the proposed well,

(iii) the variations in the blowout preventer and drilling fluid systems from those described in the Drilling Program Approval in respect of the proposed well, and

(iv) the well evaluation and termination program.

SOR/96-116, ss. 19, 43(F).

Evidence of Financial Responsibility

90. As a condition of the Drilling Program Authorization and of the Approval to Drill or Approval to Re-enter, every operator shall, before the commencement of any drilling,

(a) furnish the Minister with evidence of financial responsibility in a form and in an amount satisfactory to the Minister for the purpose of ensuring that the operator terminates the well and leaves the drill site in a satisfactory condition in accordance with section 206; and

(b) furnish the Minister with evidence, in a form satisfactory to the Minister, that the operator is able to meet any financial liability that might be incurred as a result of the drilling of a well.

SOR/88-489, s. 15; SOR/96-116, s. 20.

91. [Repealed, SOR/96-116, s. 21]

PART III

AUTHORIZED ENTRY, INSPECTION AND INVESTIGATIONS

Conservation Officers and Safety Officers

92. [Repealed, SOR/96-116, s. 22]

93. No person other than a conservation officer or safety officer shall enter a drill site that is onshore or a safety zone established in accordance with section 101 for offshore drilling unless the person is authorized to enter by the operator or by the Chief.

SOR/88-489, s. 16; SOR/96-116, s. 43(F); SOR/2002-170, s. 5.

94. A safety officer may, where it is reasonable having regard to the drilling operation in progress and after giving written notice to the operator, require the operator to test the function, capacity or structural integrity of any item of drilling equipment the failure or malfunction of which might affect the safety of personnel or the pressure control of the well.

SOR/2002-170, s. 5.

95. Where a safety officer, in the interests of safety, requests the replacement or repair of any safety equipment referred to in section 19, the operator shall without delay repair or replace the item of safety equipment referred to in the request.

SOR/2002-170, s. 5.

Investigation of Accidents

96. (1) The Chief Conservation Officer or Chief Safety Officer may investigate any accident or other event that

(a) involves death or injury;

(b) causes damage to or failure of drilling equipment; or

(c) results in pollution.

(2) Where an investigation referred to in subsection (1) is commenced, the appropriate operator shall provide all reasonable assistance to the Chief Conservation Officer or Chief Safety Officer or investigating officer acting on his behalf and make available to the Chief Conservation Officer or Chief Safety Officer or to the investigating officer all records and data that in the opinion of the Chief Conservation Officer or Chief Safety Officer or the investigating officer may contain information relevant to the matter under investigation.

SOR/96-116, s. 43(F); SOR/2002-170, s. 10.

97. (1) Where the Chief Conservation Officer or Chief Safety Officer or an investigating officer acting on behalf of the Chief Conservation Officer or Chief Safety Officer investigates an accident or other event referred to in subsection 96(1), the Chief Conservation Officer or Chief Safety Officer or investigating officer may view any part of a drilling rig or drilling unit and related equipment.

(2) Where an accident or other event referred to in subsection 96(1) has been investigated, the Chief Conservation Officer or Chief Safety Officer shall forthwith report the results of the investigation to the Minister.

SOR/88-489, s. 17; SOR/96-116, s. 43(F); SOR/2002-170, s. 10.

98. No person shall obstruct or hinder the Chief Conservation Officer or Chief Safety Officer or an investigating officer acting on his behalf from carrying out an investigation referred to in subsection 96(1).

SOR/96-116, s. 43(F); SOR/2002-170, s. 10.

PART IV

DRILLING OF A WELL

99. The establishment of a drill site or the construction of a drilling base in a permafrost region shall, to the extent practicable, be carried out so as to minimize

(a) any disturbance of the ground surface and vegetation; and

(b) any change in the thermal regime of the ground in the area of the drill site or drilling base.

100. Every operator shall ensure that

(a) the drilling of any well is conducted in a manner that maintains full control of the well at all times;

(b) plans have been made and equipment is available to deal with all abnormal situations that may be anticipated;

(c) the administrative and logistic support that is provided for a drilling program includes the following:

(i) transportation facilities suitable for the area of operations,

(ii) suitable supplies of drilling consumables, food and fuel,

(iii) accommodation for personnel,

(iv) first aid facilities,

(v) storage and repair facilities, and

(vi) the communication systems referred to in section 54;

(d) the drilling of the well is conducted in accordance with the procedures and equipment authorized pursuant to Parts I and II;

(e) equipment including travelling blocks and ancillary equipment, masts, substructures, drilling lines, well control equipment and pressure vessels are operated within the limits specified by the manufacturer of the equipment;

(f) at the end of each crew shift, the retiring drilling supervisor of any drilling rig informs the new supervisor of any mechanical deficiencies that have not been rectified during the shift and of any downhole conditions or other problems that have a bearing on the safe conduct of the drilling of the well; and

(g) differences in language or other barriers to effective communication do not jeopardize the safety of operations on any drilling rig, drilling unit or support craft.

Safety Zone

101. (1) For the purposes of this section, the safety zone around a drilling installation consists of

(a) the area within a line enclosing and drawn at a distance of 500 m from the perimeter of the drilling installation; and

(b) the area within a line enclosing and drawn at a distance of 50 m from the anchor pattern, if any, of the drilling installation.

(2) Every operator shall take reasonable measures to warn persons who are in charge of vessels and aircraft and who are not authorized to enter the safety zone of the boundaries of the safety zone.

SOR/96-116, s. 23.

Availability of Regulations

102. Every operator shall ensure that a copy of these Regulations is

(a) kept at any drill site that is onshore or on any drilling unit during the period in which a drilling program is being conducted under a Drilling Program Authorization; and

(b) available for scrutiny on request by any person on the drill site or drilling unit.

SOR/96-116, s. 24.

Display of Authorizations, Approvals and Critical Procedures

[SOR/96-116, s. 25]

103. Every operator shall ensure that

(a) the Approval to Drill, Approval to Re-enter and Drilling Program Authorization are displayed in a prominent place on the drill site to which they apply; and

(b) current information on the status of the well, including the elevation of blowout preventers and mud density, together with the detailed procedures for controlling a kick are displayed in a conspicuous place in the doghouse or at the driller's station.

SOR/96-116, s. 26.

Surveys

104. (1) A legal survey shall be used to confirm the location of

(a) any development well;

(b) any exploratory well that has been assigned the status of a discovery well by the Chief under section 221; or

(c) any other well, on the request of the Chief.

(2) The geographical location of any exploratory well that is offshore shall be determined by a survey made in accordance with recognized surveying practices as soon as practicable after the drilling unit is in position at the well location.

(3) The geographical location and dimensions of an artificial island shall be determined by a survey made in accordance with recognized surveying practices.

SOR/96-116, s. 43(F).

Well Control Equipment

105. Every operator shall ensure that all well control equipment, including the casing, the blowout preventer system and the surface equipment necessary for formation flow testing, is

(a) installed in such a manner that it can properly fulfil its function; and

(b) pressure tested on installation and periodically thereafter in accordance with sections 114 to 116.

SOR/88-489, s. 18(E).

106. (1) Every operator shall, in respect of a well that is onshore, ensure that

(a) a diverter system is installed on the conductor pipe where necessary to ensure that the hole below the conductor pipe can be drilled safely; and

(b) where permafrost casing or conductor casing is installed in the well,

(i) a blowout preventer system that

(A) consists of at least one hydraulically operated annular-type blowout preventer with remote controls, kill line and a pressure relief line, and

(B) has a rated working pressure greater than the maximum bottom-hole pressure anticipated to be encountered before the installation of further casing,

is installed on the casing, or

(ii) a diverter system that gives protection equivalent to or superior to that provided by the equipment referred to in subparagraph (i) is installed on such casing.

(2) Every operator shall, in respect of a well that is offshore, ensure that a blowout preventer and a marine riser or a diverter and a marine riser is installed on the conductor pipe where necessary to ensure that the portion of the hole below the conductor pipe can be drilled safely.

(3) Where conductor casing is installed on a well that is offshore, every operator shall ensure that

(a) a blowout preventer system is installed on the well-head that

(i) has a rated working pressure that exceeds the maximum bottom-hole pressure anticipated before the next casing is installed,

(ii) is comprised of at least three hydraulically operated blowout preventers of which one is an annular-type preventer, one is fitted with pipe rams and one is fitted with blind rams,

(iii) has a pressure relief line and a kill line, and

(iv) has a choke manifold at the surface; or

(b) a diverter system that gives protection equivalent to or superior to the protection provided by the system referred to in paragraph (a) is installed.

107. (1) Every operator shall ensure that a blowout preventer system is installed on the well-head during all drilling operations that are carried out below the surface casing.

(2) Subject to subsection 76(3), the blowout preventer system for all drilling operations below the surface casing shall have a rated working pressure that is

(a) greater than 50 per cent of the maximum anticipated formation pressure where the well is an onshore well;

(b) greater than 75 per cent of the maximum anticipated formation pressure in the case of ram-type preventers and greater than 50 per cent of the maximum anticipated formation pressure in the case of annular-type preventers, where the well is an offshore well;

(c) greater than 20 MPa unless the operator provides data to show that a blowout preventer system with a pressure rating of less than 20 MPa can be used without jeopardizing the safety of the well; and

(d) notwithstanding paragraphs (b) and (c), the pressure rating of any annular-type preventer need not exceed 35 MPa except that the Chief may require a second annular-type preventer or other blowout prevention equipment where the anticipated bottom hole pressure exceeds 69 MPa.

(3) For the purpose of subsection (2), where the maximum formation pressure is not known, it shall be assumed to be equal to or greater than the product obtained by multiplying 11 kPa/m by the well depth in metres.

(4) Every operator shall ensure that the blowout preventer system referred to in subsection (1), in respect of a well that is onshore, include, at least,

(a) three hydraulically operated blowout preventers comprising

(i) one annular-type preventer, and

(ii) two ram-type preventors, one of which is fitted with blind rams and one with rams that fit the drill pipe in use;

(b) a drilling spool with side outlets, unless side outlets are provided in the body of the preventer;

(c) a pressure relief line and kill line; and

(d) a choke manifold.

(5) Every operator shall ensure that the blowout preventer system referred to in subsection (1) installed in a well that is offshore includes

(a) the equipment set out in subsection (4);

(b) a third ram-type preventer fitted with rams that fits the drill pipe in use; and

(c) where the blowout preventers are submerged, blind rams that are capable of shearing the drill pipe.

SOR/80-641, s. 23; SOR/96-116, s. 43(F).

108. Every operator shall ensure, when running casing in a well, that a blowout preventer system is installed on the well-head consisting of

(a) at least one annular-type preventer when running

(i) surface casing in a well that is onshore, where permafrost casing has been set,

(ii) surface casing in a well that is offshore,

(iii) intermediate casing in a well that is offshore, where the blowout preventers for the well are submerged, or

(iv) production casing in an exploratory well that is offshore, where the blowout preventers for the well are submerged;

(b) at least one annular preventer and one ram-type preventer fitted with rams to fit the casing while running intermediate and production casing

(i) in a well that is onshore, or

(ii) in a well that is offshore, where the blowout preventers for the well are not submerged; and

(c) at least one annular preventer and one ram-type preventer fitted with rams to fit the casing or two annular preventers while running production casing in a development well that is offshore and the blowout preventers for the well are submerged.

SOR/80-641, s. 24(E).

Safety Valves

109. Every operator shall ensure that

(a) a safety valve is installed in the drill string immediately above and below the kelly; and

(b) there is available on every drill floor

(i) full opening drill string safety valves to fit each type of connection in the drill string, and

(ii) a suitable inside blowout preventer valve.

Choke Manifold

110. (1) Every operator shall ensure that a choke manifold that has a rated working pressure equal to or greater than the pressure rating of the blowout preventers referred to in sections 106 to 108 is installed on or near the drill floor.

(2) The inside diameter of all lines and valves comprising the choke manifold referred to in subsection (1) shall be greater than 64 mm in respect of a well that is offshore and greater than 50 mm in respect of a well that is onshore.

(3) The flow from a well shall be capable of being directed through the main flow line and two or more secondary lines of the choke manifold and each secondary line shall be equipped with an adjustable choke.

(4) Notwithstanding subsection (2), the flow lines and choke manifolds installed on drilling units that were deployed on lands in Canada prior to January 18, 1980, that continue to be so deployed and do not undertake drilling operations in water depths greater than 100 m shall have an inside diameter of not less than 50 mm.

(5) The choke manifold referred to in subsection (1) shall

(a) be equipped with at least one pressure gauge; and

(b) have installed a sufficient number of outlets to permit the installation of gauges to measure the pressure under any selection of flow route.

(6) The operator shall ensure that during all drilling operations gauges sufficient in number to fit all gauge outlets on the choke manifold are available for immediate installation.

(7) Where a choke manifold referred to in subsection (1) has a pressure rating greater than 20 MPa, the manifold shall be equipped with an automatic choke and the control for the automatic choke shall be on or near the drill floor.

(8) Every choke manifold referred to in subsection (1) shall be protected against freezing.

(9) Where a choke manifold is in an enclosed area, the area shall be properly ventilated and have at least two exits.

SOR/80-641, s. 25.

Flow Lines from Wells

111. All flow lines, pressure relief lines, kill lines and choke lines shall

(a) be made of steel or high pressure flexible hose covered with fire resistant material;

(b) have an inside diameter that is greater than 64 mm when used for a well that is offshore and greater than 50 mm when used for a well that is onshore;

(c) be properly installed and securely tied down;

(d) be designed so that there is a minimum number of changes in the direction of flow and, where an abrupt change is necessary, such change shall be protected against erosion; and

(e) be identified by colour or other means at the choke manifold.

111.1 Notwithstanding paragraph 111(b), the flow lines installed on drilling units that were deployed on lands in Canada prior to January 18, 1980, that continue to be so deployed and do not undertake drilling operations in water depths greater than 100 m shall have an inside diameter of not less than 50 mm.

SOR/80-641, s. 26.

111.2 Subject to section 57, the main flow line from a well shall be equipped with a valve located near the wellhead and capable of being operated from the drilling station.

SOR/80-641, s. 26.

Flare Line and Flare Pit

112. (1) Every flare line and any other pipeline downstream of the choke manifold referred to in subsection 110(1) shall have an inside diameter not less than the inside diameter of the largest line in the choke manifold.

(2) No valve shall be located on the flare line downstream of the choke manifold while drilling operations are in progress.

(3) For every well that is onshore, there shall be a flare pit or flare tank at the drill site that

(a) is located at least 40 m from the well-bore; and

(b) has a rear firewall of sufficient height to contain the flame within the pit.

(4) Every operator shall ensure that a flare line for a well that is onshore or located on an ice platform

(a) extends from the choke manifold to the flare pit or flare tank;

(b) is designed to prevent the accumulation of any fluid within the line;

(c) is properly installed and anchored; and

(d) where hydrogen sulphide gas is known or expected to be produced in excess of one per cent by volume of the gas produced, is equipped with a flare stack that is

(i) located at least 40 m from the well-bore,

(ii) at least 10 m in height,

(iii) equipped with a pilot flame or other ignition device to ensure continuous ignition of any vented gas, and

(iv) equipped with a guard to protect the flame from being extinguished by the wind.

(5) For any well that is offshore, there shall be installed at least two complete flare lines or other devices that allow the flow of fluid from the well to be directed to two or more sides of the drilling unit for flaring.

SOR/80-641, s. 27.

Protection of Permafrost

113. (1) Subject to subsection (2), where conductor pipe is installed in permafrost, the annulus surrounding such pipe shall be insulated or refrigerated to minimize, to the greatest extent practicable, any deterioration of the ground surface due to thermal disturbance of the permafrost.

(2) The Chief may, on the application of an operator, approve a method, other than the method described in subsection (1), to minimize the deterioration of the ground surface.

SOR/96-116, s. 43(F).

Pressure Tests of Casing and Preventers

114. (1) Every operator shall ensure that

(a) every blowout preventer is visually inspected before or immediately after installation to confirm that

(i) it is in good working order, and

(ii) the packing elements and seals for each preventer are in good condition;

(b) where a well is offshore, the blowout preventer control system is pressure tested to its maximum operating pressure

(i) immediately following installation, where the blowout preventers are not submerged, and

(ii) immediately prior to installation, where the blowout preventers are submerged; and

(c) where a well is onshore, the blowout preventer control system is pressure tested to 50 per cent of its maximum operating pressure immediately following installation.

(2) When pressure testing any blowout preventer, choke manifold, kill line and pressure relief line as required by these Regulations, every operator shall ensure that

(a) a low viscosity fluid is used; and

(b) the following two test pressures are used for each test:

(i) a test pressure of 1,500 kPa, and

(ii) a test pressure equal to that prescribed for a casing pressure test in paragraph 116(2)(b) except in the case of an annular-type preventer, in which case the test pressure shall be equal to 50 per cent of

the rated working pressure of the preventer or the pressure prescribed under paragraph 116(2)(b), whichever is lesser, and this test shall be made with the preventer closed on the drillpipe being used.

115. Every operator shall ensure that

(a) the equipment referred to in subsection 114(2) is pressure tested

(i) after installation,

(ii) before drilling out any string of casing installed in a well,

(iii) before commencing a formation flow test or a series of tests, unless the well is onshore and a pressure test has been conducted within the previous seven days,

(iv) following repairs that require disconnecting a pressure seal in the wellhead assembly, and

(v) not less than once every 15 drilling days, in the case of a well that is onshore, and not less than once every 14 operational days, in the case of a well that is offshore;

(b) appropriate remedial measures are undertaken immediately where the blowout preventers fail to meet pressure test requirements; and

(c) blowout preventers are not removed from the well-head, unless the well is adequately plugged.

SOR/80-641, s. 28.

115.1 Notwithstanding paragraph 115(a), the operator need not pressure test shear rams in a blowout preventer stack where there is a separate set of blind rams in the same stack.

SOR/80-641, s. 29.

116. (1) Every operator shall ensure that casing is pressure tested

(a) after installation and prior to drilling out the cement plug or casing shoe;

(b) immediately after any remedial cementing;

(c) at least once every 1 000 rotating hours or more frequently where casing wear is detected; and

(d) immediately prior to perforating or using the casing for purposes of formation flow testing.

(2) Every operator shall ensure that

(a) conductor casing is tested to a minimum surface pressure of 1,000 kPa;

(b) surface casing, intermediate casing and intermediate liners are pressure tested to a surface pressure that is equal to or greater than the lesser of

(i) the rated working pressure of the blowout preventers,

(ii) where the well is onshore, 40 per cent of the maximum formation fluid pressure anticipated during the next phase of the drilling operation,

(iii) where the well is offshore, 60 per cent of the maximum formation fluid pressure anticipated during the next phase of the drilling operation, or

(iv) the calculated formation fracture pressure at the casing shoe; and

(c) production casing and production liners are tested to a surface pressure that is equal to at least 90 per cent of the maximum reservoir pressure.

(3) For any casing pressure test to be satisfactory, the test pressure prescribed in subsection (2) shall be maintained for five minutes with no pressure decline or for 15 minutes with a pressure decline of less than five per cent of the test pressure.

(4) Every operator shall advise the Chief Conservation Officer or Chief Safety Officer where excessive casing wear is suspected and shall conduct a pressure test on the request of the Chief Conservation Officer or Chief Safety Officer.

(5) Where a casing string does not hold the required pressure throughout its length, the Chief Conservation Officer or Chief Safety Officer may direct that

(a) drilling or testing operations be suspended;

(b) drilling be terminated at a particular depth; or

(c) precautions or remedial measures be taken before drilling or testing operations are continued.

SOR/80-641, s. 30; SOR/96-116, s. 43(F); SOR/2002-170, s. 10.

Coal and Mineral Deposits

117. Where coal or other mineral deposits are encountered while drilling, the operator shall notify the Chief of the deposits and shall take such measures as are necessary to protect the deposits.

SOR/96-116, s. 43(F).

Cementation

118. (1) Subject to subsection (3), every operator shall ensure that

(a) the cementation of casing and casing liners is carried out in accordance with the program specified in the Approval to Drill or Approval to Re-enter;

(b) where practicable, fluid returns are visually observed during all cementation operations; and

(c) the cement rise in the annulus, based on observations made under paragraph (b) and on the design data, is calculated and is recorded.

(2) Every operator shall ensure, in respect of a well that is onshore, that where permafrost casing is used, the annulus of the surface casing is sealed at the surface and suitable devices are fitted to monitor and relieve any pressure that may accumulate under the seal.

(3) Subsections (1) and (2) do not apply where the operator provides data to show that other measures will provide an equivalent or greater degree of well control.

SOR/80-641, s. 31; SOR/96-116, s. 27.

119. (1) The volume of cement slurry used for the cementation of any casing shall be at least 30 per cent greater than the estimated annular volume to be filled unless that estimate is based on a reliable caliper log in which case the volume shall be at least 10 per cent greater than the estimated annular volume.

(2) Where there are indications during or after the completion of cementation that the casing is not properly cemented, the operator shall conduct a pressure test at the shoe of the casing or otherwise determine the effectiveness of the cement in the annulus and ensure that any necessary remedial action is taken.

Waiting on Cement Time

120. (1) Every operator shall ensure that the time interval while waiting for cement to harden before resumption of drilling after cementation of any casing is in no case less than six hours and is less than 12 hours only where the operator determines, by testing representative samples of the cement using acceptable equipment and procedures, that the cement has a compressive strength of at least 3,500 kPa.

(2) The time interval and the result of any test referred to in subsection (1) shall be recorded on the tour sheets.

Maximum Pressure During Well Stimulation

121. The maximum injection pressure used during any well stimulation operation shall not exceed the burst pressure resistance of the weakest joint in the casing or tubing used for the injection or the rated working pressure of the well-head, whichever is the lesser.

Formation Leak-Off Test

122. (1) Every operator shall conduct a pressure test in the hole to determine the pressure integrity of the formations present in the hole

(a) prior to drilling more than 60 m below the shoe of any casing other than the conductor casing; and

(b) when an over-pressured zone is about to be penetrated.

(2) The test referred to in subsection (1) shall test the formation to a pressure which is the lesser of one and one-third times the indicated formation fluid pressure and the pressure at which the formation begins to accept the test fluid prior to the point of fracturing.

(3) Where a well is to be abandoned, every operator shall pressure test a formation to its fracture point on request of the Chief during the abandonment of the well.

SOR/96-116, s. 43(F).

Monitoring of Drilling

123. Every operator shall ensure that

(a) the drilling fluid is monitored during the drilling of a well, after the conductor casing has been installed in the well, to determine

(i) its volume, flow rate and chemical and physical properties, and

(ii) where an automatic gas detecting, measuring and recording facility is required under subsection 75(3), the nature and relative quantity of gas in the drilling fluid returns;

(b) the results of the determination made in accordance with paragraph (a) are recorded and the record maintained at the drill site;

(c) the detectors, indicators, alarms and other monitors required under subsection 75(3) are maintained in good working order at all times; and

(d) a continuous surveillance of the drilling fluid returns is maintained at all times when significant amounts of formation fluid are entering the well-bore or when a zone that is over-pressured or contains oil or gas is being penetrated.

124. (1) Every operator shall ensure that

(a) the rate of the penetration of the formations of a well is recorded continuously while drilling or coring by an automatic device located on the drill floor;

(b) the drilling fluid and the drilling fluid system is maintained and operated in such a manner as to prevent formation fluids entering or leaving the well-bore except under controlled conditions; and

(c) drilling ceases and remedial measures are undertaken immediately when the hydrostatic head of the drilling fluid fails to over-balance the formation fluid pressure, except where drilling in an under-balanced condition has been approved by the Chief.

(2) Unless approval to drill in an under-balanced condition has been obtained from the Chief, every operator shall endeavour to keep the hole filled with a fluid of sufficient density to over-balance formation pressures at all times.

(3) During tripping and except as provided under subsection (2), every operator shall ensure that the hole is filled with the correct amount of drilling fluid after every fifth stand of drillpipe or every single stand of drillcollars is withdrawn from the hole.

SOR/96-116, s. 43(F).

Volume of Drilling Fluid

125. (1) During any drilling operation, the volume of active drilling fluid in the surface system of a well shall not be less than 50 per cent of the hole capacity or 65 m3, whichever is the lesser.

(2) Every operator shall, in respect of an exploratory well that is onshore,

(a) have stored on the drill site a reserve stock of weight material in an amount satisfactory to the Chief; and

(b) have suitable facilities for the rapid addition of the reserve stock to the drilling fluid system.

(3) Every operator shall, in respect of an exploratory well that is offshore, have stored on the drilling unit reserve drilling fluid

(a) the volume of which is greater than the lesser of

(i) the volume of the drilling fluid in the active mud tanks at the surface of the well, and

(ii) 65 m3; and

(b) that is in a suitable condition for immediate use during any period that drilling is in progress.

(4) The reserve drilling fluid required under subsection (3) shall, in respect of an exploratory well that is offshore, have a density of 200 kg/m3 greater than the density of the active system unless the operator provides data to the Chief to show that a lesser density will provide an equivalent or greater degree of well control.

SOR/96-116, s. 43(F).

126. Except while drilling the hole for the conductor casing, every operator shall ensure that drilling ceases immediately when lost circulation occurs to the extent that the hole cannot be kept full of drilling fluid and that drilling is not resumed until adequate circulation has been regained or until approval has been obtained from the Chief to continue drilling the well in accordance with procedures prescribed by the Chief.

SOR/96-116, s. 43(F).

Pressure Transition Zone

127. (1) The fluid content and the characteristics of the lithology of the formations being drilled shall be continuously monitored during any exploratory drilling and the monitoring techniques shall be such that the pressure transition zone between normally and abnormally pressured formations can be detected.

(2) Every operator shall, when a pressure transition zone is detected,

(a) cease drilling;

(b) attempt to verify the presence of the zone; and

(c) take such measures as are necessary to control the anticipated pressures before drilling is resumed.

(3) Where, on the basis of seismic or other data and on the results observed during the drilling of a well, the existence of an over-pressured zone is indicated to be within the next 100 m of drilling, the Chief may, in the interest of safety, prescribe the rate of penetration for further drilling.

SOR/96-116, s. 43(F).

Directional and Deviation Surveys

128. (1) Every operator shall ensure that deviation surveys are taken at intervals not exceeding 150 m during the drilling of any well.

(2) Directional surveys shall be taken at sufficiently frequent intervals during the drilling of any well to permit the location of any point in the well-bore to be calculated

(a) in the case of a well that is onshore, within 30 m of its actual location; and

(b) in the case of a well that is offshore, within 15 m of its actual location.

(3) Notwithstanding subsection (1), the Chief may extend the intervals at which deviation surveys must be taken when drilling below intermediate casing.

(4) Except in the case of a relief well, every operator shall ensure that a well is drilled in such a manner that it does not intersect an existing well.

(5) On request of the Chief, every operator shall ensure that a directional survey is taken prior to installing a casing string in a well or before placing a well on production.

SOR/80-641, ss. 32, 33; SOR/96-116, s. 43(F).

Plugging Back of Wells

129. Where the lower portion of any well is to be plugged, that portion shall be abandoned in accordance with sections 210 to 213 and a minimum of 30 m of cement shall be left in place at the top of the plugged interval unless the operator provides data to show that it is not practicable to do so.

Drilling Unsafe to Continue

130. (1) Every operator shall ensure that any operation at a drill site or on a drilling unit shall cease as soon as possible where the continuation of that operation

(a) causes or may cause pollution; or

(b) endangers or may endanger the safety of personnel, the security of the well or the safety of the drilling rig or the drilling unit.

(2) Where an operation has ceased pursuant to subsection (1), that operation shall not be resumed until it can be resumed safely and without causing pollution.

(3) Where a fatal accident occurs at a drill site or on a drilling unit, every operation associated with the fatality shall be suspended as soon as possible and shall not be resumed without the approval of the Chief Safety Officer.

(4) Every operator shall ensure that any drilling program in progress at a drill site that is offshore is suspended where any of the following conditions exist:

(a) an inability to maintain well control;

(b) a failure of any major component of the blowout prevention system, casing or drilling fluid system;

(c) an inability to maintain the properties, volume or circulation rate of the drilling fluid as required by these Regulations;

(d) an inability to maintain on location the amounts of drilling consumables required by section 135;

(e) an uncontrolled fire;

(f) a loss of a significant portion of the primary power;

(g) an inability to safely handle the drillpipe, casing or heavy equipment necessary for the operation in progress;

(h) a diving operation is being conducted near any submerged blowout preventer or wellhead;

(i) an inability to satisfactorily maintain the position of the drilling unit over the well;

(j) an excessive motion of the drilling unit caused by sea state, ice movement or weather conditions;

(k) a serious and imminent threat of ice or icebergs; or

(l) where a drilling unit is anchored, the tension on any anchor exceeds the values established when the anchor was set.

(5) Where drilling is suspended in accordance with subsection (4), the operator shall not resume drilling until the condition ceases to exist.

(6) Where during the drilling of a well a formation that is potentially dangerous is likely to be encountered or a potentially hazardous operation is to be undertaken near the end of a drilling season, the Chief Safety Officer may order, in the interests of safety, that all drilling and testing of the well be suspended until the subsequent drilling season.

SOR/96-116, s. 43(F); SOR/2002-170, s. 11.

Inspections and Tests of Equipment

131. (1) Every operator shall ensure that every drilling unit, drilling rig and associated equipment used in a drilling program

(a) is maintained in good working condition at all times during the drilling program; and

(b) is inspected, in accordance with good oilfield practice, at least annually and a report is prepared in respect of the inspection.

(2) Every operator shall ensure that a comprehensive inspection, that includes magnetic particle, x-ray and ultra sonic surveys of critical joints and structural members, of the structure of every drilling unit used in a drilling program is made at least once in every four year period and a report is prepared in respect of the inspection.

(3) Every operator shall ensure that

(a) subject to paragraph (b), all major components of the blowout preventer system, except the blind rams, are actuated once each day that drilling operations are carried out if

(i) the drill string is out of the hole, or

(ii) the drill bit is within the casing;

(b) where the drill string referred to in paragraph (a) is not out of the hole or the drill bit referred to in that paragraph is not within the casing, all major components of the blowout preventer system, except the blind rams, are actuated at least once every three days that drilling operations are carried out;

(c) the blind rams are actuated at least once each time the drill string is out of the hole;

(d) auxiliary equipment that may be used for well control, including the cementing unit and lines, degasser, hydraulic control lines and inside drillpipe blowout preventers, are available for instant use;

(e) all firefighting and safety equipment required by these Regulations is inspected once each week to confirm that the equipment is serviceable and in its proper location;

(f) all safety cables attached to the kelly hose, tongs, weight indicator or other suspended equipment are inspected, properly secured, and serviceable; and

(g) each air-intake shut-off valve or engine flooding system, where required for diesel engines by subsection 50(2), are tested to confirm that it is serviceable

(i) before drilling out the cement plug at the shoe of any casing string,

(ii) before each formation flow test or series of tests, and

(iii) in conjunction with every blowout prevention practice drill required under paragraph 151(f).

132. [Repealed, SOR/96-116, s. 28]

Inspection of Electrical Equipment

133. (1) Every operator shall ensure that the electrical equipment and wiring on any drilling rig that is onshore or drilling unit used in a drilling program is inspected at intervals not exceeding 18 months and, on request of the Chief, shall provide verification that it meets the requirements of section 38 or 39, as the case may be.

(2) Every operator shall ensure that electrical equipment, electrical motors, lighting fixtures and wiring on a drilling rig and on other equipment associated with the drilling program is designed,

installed and maintained in accordance with applicable standards of the Canadian Standards Association or other standards that are equivalent or superior to the standards of the Association.

SOR/96-116, s. 43(F).

134. [Repealed, SOR/96-116, s. 29]

Quantities of Consumables

135. (1) Every operator shall ensure that sufficient quantities of fuel, drilling fluid materials, cement and other drilling consumables are stored on the drill site to meet any normal and foreseeable emergency condition.

(2) and (3) [Repealed, SOR/88-489, s. 19]

SOR/88-489, s. 19.

Bulk Handling of Fuel and Consumables

136. Every operator shall ensure that

(a) drilling fluid additives are

(i) stored and handled in a manner that minimizes deterioration and prevents damage to the environment, and

(ii) where bulk transfer systems are not used, packaged in properly labelled containers;

(b) liquid fuel and oils are transported, transferred and stored in a closed system;

(c) liquid fuel stored at or above deck level or at ground surface is contained in a closed and properly vented container that is located at least 25 m from a well;

(d) bulk fuel storage containers located onshore for use at a drill site are surrounded by an impermeable dike of sufficient height and strength to contain within its perimeter all the fuel in the storage containers;

(e) all reasonable precautions are taken to avoid spillage while transferring fuel from a supply vessel to a drill site or to a drilling unit; and

(f) when a fuel transfer referred to in paragraph (e) is completed, the transfer hoses used in the transfer are drained into the supply vessel and both hose-ends are securely plugged.

Waste Material

137. Every operator shall ensure that all waste material, drilling fluid and drill cuttings generated at a drill site are handled and disposed of in a manner that

(a) does not create a hazard to safety, health or to the environment; and

(b) is approved by the Chief Conservation Officer or Chief Safety Officer.

SOR/96-116, s. 43(F); SOR/2002-170, s. 10.

138. Every operator shall ensure that

(a) any oil or gas produced during formation flow tests is stored in suitable tanks or flared in a manner approved by the Chief;

(b) where an oil spill occurs, oil spill countermeasures of a chemical nature are not used unless, in the opinion of the Chief Conservation Officer or Chief Safety Officer, there is a severe threat to the safety of persons, property or the natural environment; and

(c) in respect of a well that is offshore

(i) any waste fuel, oil or lubricant is collected in a closed system that is designed for the purpose, and

(ii) any stored waste oil or oily material, not burned at the drill site, is transported to shore in a suitable container and properly disposed of at the shore.

SOR/96-116, s. 43(F); SOR/2002-170, s. 10.

139. Every operator shall ensure that

(a) all sewage, galley and other domestic waste that might contribute to pollution is disposed of in a manner approved by the Chief;

(b) combustible trash is not burned at a drill site except where precautions are taken to ensure that the fire does not endanger personnel or the safety of the well;

(c) any spent acid or excess acid is disposed of in a manner approved by the Chief; and

(d) in respect of a well that is offshore, all non-combustible trash, including glass, wire, scrap metal and plastics, is transported to a port and properly disposed of at that port.

SOR/96-116, s. 43(F).

Radio and Support Craft Procedures

140. Every person in charge of a helicopter, supply vessel, or other support craft employed in the carrying out of a drilling program shall inform all passengers of such craft, at the time of boarding, of the safety rules and procedures applicable to that craft.

141. Every operator shall ensure that the radio station on a drilling unit used by him in a drilling program is manned with personnel capable of operating the radio station and such personnel shall, as a part of their regular duties,

(a) maintain a listening watch on the 156.8 MHz frequency; and

(b) monitor all movements of any support craft operating between the drilling unit and the shore.

142. Every person in charge of a standby craft referred to in section 18 shall

(a) maintain open communication channels with the drilling unit;

(b) maintain the craft within such distance from the drilling unit as is approved by the Chief; and

(c) stand ready with the craft to conduct rescue operations at any time

(i) that the safety of personnel, the safety of the drilling unit or the safety of the well being drilled by that drilling unit is endangered or is likely to be endangered,

(ii) when there is particular danger of a man falling overboard,

(iii) when a helicopter is landing on or taking off from the drilling unit,

(iv) when diving operations from the drilling unit are in progress, and

(v) when the drilling unit is threatened by ice.

SOR/96-116, s. 43(F).

Moving Drilling Units

143. (1) The anchor of any drilling unit used in a drilling program shall not be set or retrieved when weather or sea conditions are such as to render such operations unsafe.

(2) All drillpipe, drillcollars, marine risers or other equipment and any consumables stored on the deck of any drilling unit used in a drilling program shall be securely tied down during a move or during any adverse weather conditions.

(3) Where a drilling unit used in a drilling program is moved, the anchor buoy pennant lines shall be securely fastened, whenever practicable, to prevent them from trailing over the side of the unit or in the water.

Anchors

144. (1) Where anchors are used for holding any drilling unit used in a drilling program in position at a well site, each anchor line and anchor shall be tested, prior to the commencement of drilling operations, to a tension equal to the lesser of

(a) the maximum anticipated tension expected during the time the drilling unit is on the well site; and

(b) the capacity of the winch.

(2) Where a tension load equal to the lesser of subsections (1)(a) and (b) cannot be applied to the anchor line, the operator shall take such remedial action as is necessary to ensure that the drilling unit is securely anchored.

Stability

145. (1) Where an operator uses a drilling unit in a drilling program that is not a floating drilling unit, he shall ensure that

(a) the mat, legs, footings, hull or piles of the unit and the surrounding seafloor are inspected regularly, where practicable, to confirm that no areas of weakness are developing; and

(b) where scour, build up of seafloor sediments or any other condition that threatens the stability of the drilling unit occurs, such measures as are necessary to protect the safety of the drilling unit and of the personnel on board are taken.

(2) Where an operator uses a drilling unit referred to in subsection (1), he shall not raise or lower the unit if weather, ice or sea conditions make such an operation unsafe.

(3) During the raising or lowering of any drilling unit referred to in subsection (1), only those persons necessary for the operation shall be on board the drilling unit and each person on board the drilling unit shall be awake and wear a life jacket.

146. [Repealed, SOR/96-116, s. 30]

PART V

SAFETY AND TRAINING OF PERSONNEL

General

147. Every operator shall ensure that

(a) any operation necessary for the safety of personnel employed at a drill site or on a support craft has priority, at all times, over any other operation on that drill site or craft;

(b) trained personnel are ready and able to operate any item of equipment; and

(c) safe working methods are followed in all operations during any drilling program.

General Safety

148. Every operator shall require that all personnel keep clear of any load that is being hoisted, suspended or lowered on a drilling rig, drilling unit or on a support craft and shall ensure that no person is under a mast that is being raised or lowered.

149. Every operator shall ensure that all working areas including walkways, decks, stairs, rig floors and enclosed areas on a drilling rig, drilling unit or support craft are kept clean and tidy and free of waste material, oil and ice.

Training of Personnel

150. (1) Every operator shall ensure that every person employed on a drilling program

(a) receives instruction and training in respect of all operational and safety procedures that that person may be required to carry out during the course of his duties during such employment;

(b) is capable of doing the duties assigned to him; and

(c) is 16 years of age or more and is 18 years of age or more if his duties require him to work on the drill floor.

(2) No drilling unit supervisor, drilling rig supervisor, drilling foreman or tool-pusher shall be employed on a drilling program unless he has, once in every three-year period, attended at and achieved a satisfactory rating from a well control school whose standards are acceptable to the Chief.

(3) When requested by the Chief, the operator shall inform him of the arrangements he has made to ensure that the requirements of subsection (1) are being carried out.

SOR/96-116, s. 43(F).

Safety Drills

151. Every operator shall ensure that

(a) a fire drill is held at least once every two weeks at each drill site;

(b) all personnel employed on a drill site are familiar with personal safety and evacuation procedures in respect of the drilling program;

(c) all drill crew and other persons employed on a drilling program have received instructions in respect of their duties in the event of an oil spill;

(d) a field practice exercise of oil spill countermeasures is held at least once in each year that the operator is engaged in a drilling program;

(e) in the case of a drilling unit, an abandon ship drill is carried out at least once each week;

(f) a blowout prevention practice drill is held at least once each week the operator is engaged in a drilling program; and

(g) each member of the drill crew is fully instructed in his assigned duties in respect of or the prevention of a blowout.

152. and 153. [Repealed, SOR/96-116, s. 31]

Safety Instruction

154. Every passenger on a helicopter, supply vessel or any other support craft engaged in a drilling program shall comply with all safety instructions received from the person in charge of such craft.

Rest Period

155. Every operator shall ensure that no person is required to work as a member of a drill crew

(a) a shift in excess of 12 continuous hours, or

(b) two successive shifts of any duration unless that person has had at least six hours rest between such shifts,

except when such duration of work is necessary to ensure the safety of personnel, the drilling rig or drilling unit or the security of the well.

156. and 157. [Repealed, SOR/96-116, s. 32]

Smoking

158. (1) No person shall, in respect of a drill site that is onshore, smoke

(a) within 25 m of the well-head or any other potential source of combustible gases;

(b) within 25 m of explosives or in an explosives storage room; or

(c) in any area designated as a no smoking area by the Chief.

(2) No person shall smoke on a drilling unit except in those areas designated by the Chief.

(3) Notwithstanding subsection (2), no person shall smoke on a drilling unit during any emergency operations or emergency evacuation practice drill.

(4) Every operator shall post notices prohibiting smoking at each area on the drill site designated as a no smoking area by the Chief.

(5) No person shall smoke in any area where a notice prohibiting smoking has been posted pursuant to subsection (4).

SOR/96-116, s. 43(F).

159. to 163. [Repealed, SOR/96-116, s. 33]

Radioactive Substances

164. Every operator shall ensure that

(a) every person using radioactive substances at a drill site is licensed by the Atomic Energy Control Board; and

(b) the procurement, containment, transportation, use, storage and disposal of all radioactive substances used at a drill site is in accordance with the provisions of the Atomic Energy Control Act and the regulations thereunder.

165. Every operator shall ensure that the containment, use and certification of any equipment used at a drill site that emits radiation is in accordance with the requirements of the Radiation Emitting Devices Regulations.

166. to 168. [Repealed, SOR/96-116, s. 34]

PART VI

OPERATIONAL RECORDS AND REPORTS

General

Safety and Well Evaluation Information

169. (1) Every operator shall record any information obtained during the drilling program that is relevant to the safety of the program or to the evaluation of the well at the time the information is obtained in a suitable book or log kept at the drill site.

(2) Every operator shall submit to the Chief Safety Officer every report regarding applied research work or studies obtained or compiled by the operator that contains information relevant to the safety of drilling operations in the area set out in the application for a Drilling Program Authorization as soon as the report is available.

SOR/96-116, s. 35; SOR/2002-170, s. 11.

Reference for Well Depths

170. (1) The measurement of any depth in a well made during the drilling or on the termination of the well shall be measured from a single reference point.

(2) The reference point referred to in subsection (1) shall be either the rotary table or the kelly bushing of the drilling rig.

(3) Where a well is onshore, the operator shall measure and record

(a) the elevation of the natural ground surface prior to spud-in; and

(b) the elevation of the casing flange after the installation of conductor casing.

(4) Where a well is offshore, the operator shall measure and record immediately prior to spud-in

(a) the distance from the rotary table to the seafloor at the mean lower low-water level; and

(b) the water depth at the mean lower low-water level.

Notification of Significant Event

171. (1) Every operator shall notify the Chief Conservation Officer or Chief Safety Officer immediately, by the most rapid and practical means, of any significant situation or event, including the loss of life, a missing person, serious injury to a person, fire, loss of well control, an imminent threat to the safety of a drilling unit, drilling rig or to personnel, an oil or toxic chemical spill or the anticipated discovery of oil or gas.

(2) Every operator shall submit a full written report of a situation or event referred to in subsection (1) to the Chief Conservation Officer or Chief Safety Officer as soon as practicable following the notification required by that subsection.

SOR/96-116, s. 43(F); SOR/2002-170, s. 10.

Notifications to Conservation Engineer

172. Every operator shall, within 24 hours, notify a conservation engineer, by telex, telegram or by an equivalent means, of the

(a) date that a drilling unit arrives at any drill site;

(b) hour and date of a spud-in or of the re-entry of any well for the purpose of further drilling; and

(c) hour and date that any drilling rig or drilling unit is released from a well.

Submission of Survey Plan

173. Every operator shall submit to the Chief, in triplicate, a plan of any legal survey made pursuant to section 104 as soon as practical.

SOR/96-116, s. 43(F).

Tour Sheets and Barge Reports

174. Every operator shall ensure that a comprehensive record of the drilling operation and observations of the natural environment are maintained during a drilling program in the form of tour sheets and, where applicable, daily ship or barge reports.

175. (1) The tour sheets referred to in section 174 shall be kept during the period any drilling rig that is onshore or drilling unit, as the case may be, is engaged

(a) in a drilling program; or

(b) in any well completion or repair operation.

(2) A legible copy of the tour sheets referred to in section 174, signed by or on behalf of the operator, shall be submitted to the Chief at least once each week.

(3) A legible copy of the tour sheets referred to in section 174 for each well shall be kept on the drilling rig or on the drilling unit, as the case may be, during any time drilling operations are being carried out.

(4) The following information shall be recorded on the tour sheets referred to in section 174:

(a) the elevation of the rotary table or kelly bushing and of the ground or seafloor;

(b) the time spent by the drill crew at each separate operation carried out during the drilling program;

(c) the volume of the drilling fluid in surface tanks that is available for use and the properties of and the materials added to the drilling fluid;

(d) the pumping pressure, the circulating rate of the drilling fluid, and any loss of the drilling fluid in the well;

(e) the make-up of any drilling assemblies including the size and type of bit, and the size, number and length of all tubulars;

(f) the increase in the depth of the well made by drilling or coring in each shift of a drill crew;

(g) the weight on the bit and rotary table speed;

(h) particulars of the running of and results of any deviation or directional surveys;

(i) particulars of the running and cementing of any casing, including the type and quantity of casing and cement;

(j) the results of any pressure test or function test of the blowout preventer system;

(k) the results of any pressure test on casing, open formations or packers;

(l) particulars of any wireline logging operations, including the type of wireline log run;

(m) details of any safety meeting held;

(n) details of any blowout prevention or abandon ship practice drill held;

(o) particulars of the failure of or significant damage to any equipment that affects the drilling operations;

(p) details in respect of the accidental spillage of any fuel, drilling fluid or other material;

(q) details of any apparent gain in volume of the drilling fluid at the surface and the steps taken to control any kick that may have been encountered;

(r) particulars of the perforating of any casing including numbers and intervals;

(s) particulars of the stimulating of any formation including the type and quantity of the fluid used and the pressure and rate at which the fluid was injected into the formation;

(t) particulars of the running of any formation flow test;

(u) details of the recovery by wireline of any formation sample or formation fluid sample;

(v) particulars in respect of the loss of any tubulars or other material in the well and a description of any operations undertaken for their recovery;

(w) particulars of the suspension of operations for any cause; and

(x) details in respect of the termination of the well.

(5) Where any drilling rig that is onshore or any drilling unit is being used for a well completion, re-completion or a remedial operation, the information to be recorded on the tour sheets shall, in addition to the data referred to in subsection (4), include

(a) a summary of the operations undertaken;

(b) the amounts of workover fluids used, injected, lost or recovered from the well;

(c) details of any casing or tubing used in the completion;

(d) results of any tubing and packer pressure tests;

(e) the landing depths for any tubing or casing packers and the depths of any tool seats; and

(f) details of any recovered fluid and of any fluid levels observed during swabbing operations.

(6) A summary of any work performed on a well during a drilling program by a work barge, support vessel or other similar equipment shall be submitted to the Chief at least once a week.

SOR/96-116, s. 43(F).

176. (1) Where the facilities referred to in subsection 31(1) are required for a well that is onshore, the Chief may request the operator to observe and record the wind direction and velocity, the temperature, and the precipitation at such intervals as he may specify.

(2) Where any drilling program is offshore, the operator shall observe and record on the daily ship or barge report referred to in section 174

(a) the presence of any ice floes or icebergs and their movement;

(b) at least once every three hours,

(i) the wind direction and speed,

(ii) the wave direction, height and period,

(iii) the swell direction, height and period,

(iv) the current direction and speed,

(v) the barometric pressure and air temperature,

(vi) the sea water temperature, and

(vii) the visibility; and

(c) the amount of precipitation in the preceding 24-hour period.

(3) Where any exploratory well is drilled from an ice platform the operator shall observe and record any ice movement in the vicinity of the platform at least once every 12 hours and on the request of the Chief shall observe and record at least once every 12 hours

(a) the wind direction and speed;

(b) the barometric pressure and air temperature; and

(c) the current speed and direction.

SOR/80-641, s. 37; SOR/96-116, s. 43(F).

177. Where any drilling program is offshore and the drilling unit is a floating unit, the operator shall

(a) observe and record at least once every six hours, when the wind speed does not exceed 35 km/h, and at least once every three hours, when the wind speed exceeds 35 km/h,

(i) the pitch, roll and heave of the drilling unit, and

(ii) the tension on every anchor line;

(b) observe and record during the drilling program the fluid level of every ballast, fuel and drill water tank at least once

(i) every four hours, where the drilling unit is of the semi-submersible type, and

(ii) every 24 hours, where the drilling unit is a drillship;

(c) where the drilling unit is of the semi-submersible type, calculate and record the vertical centre of gravity of the unit at least once every 24 hours; and

(d) where the drilling unit is a drillship, calculate and record the vertical centre of gravity of the unit at least once every seven days and re-assess that calculation every 24 hours.

Daily Records

178. Every operator shall ensure that

(a) a daily record is kept of all persons employed or visiting at a drill site; and

(b) a barge log or ship's log is maintained, in respect of a drilling unit, that records

(i) the arrival and departure of any support craft,

(ii) the location and deployment of any standby vessel,

(iii) the dispatch and receipt of any radio message,

(iv) the details of any emergency drills,

(v) any change in the draft, and

(vi) the particulars of any inspection of the hull.

Routine Reports

179. (1) Every operator shall, during a drilling program, prepare and submit to the Chief once each week

(a) a summary of all significant events that occurred at the drill site during the preceding week;

(b) a report describing the lithology of any formation drilled and the nature of any reservoir fluids encountered during the preceding week;

(c) a summary of the results of any deviation and directional surveys that were taken during the preceding week, including a calculation of the bottom-hole coordinates for any well that was directionally drilled or that has deviated more than five degrees from the vertical; and

(d) a report in respect of every accident that occurred during the preceding week and that involved an injury to or the death of any person.

(2) Every operator shall, on request of the Chief during a drilling program, submit a report to the Chief each day, by telex, telegram or by an equivalent means, setting out the depth of the well, the lithology of the formations encountered during the previous day, the properties of the drilling fluid, the results of each formation leakoff test, the weather and, where applicable, sea conditions, the performance of the drilling unit and such other information as may be requested by the Chief.

(3) Every operator shall ensure that a record is maintained on the drill site of the receipt and consumption of all explosive material at the drill site and such records shall be submitted on request to the Chief.

SOR/96-116, s. 43(F).

Downhole Survey Record

180. (1) Every operator shall ensure that every wireline log or other survey made in the well

(a) is recorded at a scale that provides a degree of sensitivity appropriate to the measurements being made; and

(b) has recorded thereon a description of any tool calibration or other data that is necessary in the interpretation of the wireline log or survey.

(2) Every operator shall

(a) submit to the Chief, by the most rapid and practical means, two field-print copies of all wireline logs run by that operator;

(b) submit, on the request of the Chief, wireline logs in digital form if they have been prepared in that form; and

(c) submit, on the request of the Chief, all wireline log data in respect of a well before the well is terminated. SOR/96-116, s. 43(F).

Penetration and Gas Content Records

181. The rate of penetration as recorded in accordance with subsection 124(1) and the record referred to in subsection 190(2) shall be submitted to the Chief on his request.

SOR/96-116, s. 43(F).

Formation Flow Records

182. (1) Every operator shall submit to the Chief forthwith any records made in accordance with section 200 or 201.

(2) The records referred to in subsection (1) shall include accurate reproductions of any pressure and flow charts except where accurate reproductions cannot be made, in which case the original charts shall be submitted.

(3) Where original charts are submitted pursuant to subsection (2), the Chief shall return the charts to the operator within 30 days of the day he received them.

SOR/96-116, s. 43(F).

Report of Structural Faults

183. (1) Every operator shall submit a written report on any inspection or survey made in accordance with section 131 within 15 days of the day the report is completed.

(2) Every operator shall notify the Chief immediately if an inspection of a drilling unit or of any other vessel engaged in the drilling program reveals conditions that lessen or might lessen the structural integrity of the drilling unit or vessel.

SOR/96-116, s. 43(F).

Well Termination Report

184. (1) Where an operator terminates a well, the operator shall record the details of the manner in which the well is terminated and shall submit the record to the Chief within 21 days after the rig release date in respect of the well.

(2) The record referred to in subsection (1) shall, if requested by the Chief, be accompanied by a sketch illustrating the condition of the well after termination.

SOR/88-489, s. 21; SOR/96-116, s. 43(F).

Press Releases

185. Where an operator issues a press release concerning any discovery, blowout or other significant event that occurs at a well, the operator shall simultaneously transmit a copy of the press release to the Chief by telex or telecopier.

SOR/88-489, s. 22; SOR/96-116, s. 43(F).

PART VII

WELL EVALUATION

General

186. (1) Every operator shall obtain sufficient well tests, wireline logs, analyses, surveys and samples during the drilling of a well to ensure that a comprehensive geological and reservoir evaluation can be made.

(2) On the request of the Chief in writing, every operator shall

(a) take any wireline log, test or survey;

(b) cut any core; or

(c) collect any sample of drill cuttings or formation fluids.

(3) Where

(a) the bottom of any well is in a sedimentary rock formation,

(b) the well depth specified in the Approval to Drill or Approval to Re-enter has not been reached, and

(c) a continuation of drilling would not expose the operator conducting the drilling program to a hazardous operation,

the operator shall, if so directed by the Chief in writing, continue drilling, until the approved well depth is reached or until a non-sedimentary rock formation is encountered, whichever first occurs.

(4) Where permafrost is known to exist in a well, the operator shall, if requested by the Chief, determine the approximate depth of the base of permafrost by running a temperature survey or other wireline log or by such other method as may be specified by the Chief.

(5) Every operator shall, if requested by the Chief, submit an analysis and interpretation of any well evaluation data.

SOR/96-116, ss. 36, 43(F).

Drill Cuttings

187. (1) Subject to subsection (7), every operator shall, on the request of the Chief, ensure that samples of drill cuttings are collected from those portions of the well designated by the Chief.

(2) Where the samples referred to in subsection (1) are for lithological purposes, they shall be collected at a frequency of one sample for every 5 m drilled.

(3) Notwithstanding subsection (2), where the rate of penetration is abnormally high or where the quantity of drill cuttings returning to the surface is abnormally low, the frequency at which the samples are collected may be reduced to a minimum of one sample for every 10 m drilled or a lesser frequency if approval has been obtained from the Chief.

(4) Where the samples referred to in subsection (1) are for the purpose of determining hydrocarbon source potential, they shall be collected at a frequency of at least one sample for every 10 m drilled or a lesser frequency if approval has been obtained from the Chief.

(5) Where samples referred to in subsection (1) are collected for lithological purposes, they shall be

(a) collected in sufficient portions to satisfy the requirements of section 223; and

(b) placed, at the time of collecting, in suitable containers that are accurately and durably labelled with the name of the well and the depth interval from which they were obtained.

(6) Where samples referred to in subsection (1) are collected for the purpose of determining hydrocarbon source potential, they shall be collected, canned and sealed on the drill site in a manner approved by the Chief.

(7) Where an operator cannot obtain samples from a portion of the well as required by subsection (1) for any reason, he shall record the depth interval for which samples were not obtained, the reason therefor and submit the record to the Chief.

SOR/96-116, s. 43(F).

Cores

188. (1) Every operator shall ensure that conventional cores are taken in accordance with the program referred to in the Approval to Drill unless it is not operationally practicable to do so.

(2) Every operator shall advise the Chief, as soon as possible, of any case where it is not practicable to take the cores referred to in subsection (1).

(3) Any core taken pursuant to subsection (1) shall be

(a) extracted from the core-barrel in accordance with good oilfield practices;

(b) described immediately in accordance with good geological practices;

(c) where the nature of the core is amenable, marked in a way that identifies the depth interval from which the core was obtained and the orientation that the core had prior to its being removed from the formation; and

(d) placed in a core container.

(4) A core container referred to in paragraph (3)(d) shall

(a) be sufficiently strong to protect the core from breakage;

(b) be approximately 800 mm in overall length; and

(c) be accurately and durably labelled with the name of the well, the depth interval from which the core was obtained and the sequential number of the container.

(5) The information referred to in paragraph (4)(c) and subsection 189(2) may be given in a coded form.

SOR/96-116, ss. 37, 43(F).

189. (1) No person shall extract a sidewall core from a core gun before the firing head of the core gun has been removed.

(2) Every operator shall ensure that any sidewall core obtained is described immediately in accordance with good geological practice and is placed in a suitable container that is accurately and durably labelled with the name of the well and the depth interval from which the core was obtained.

Gas Content of Drilling Fluid

190. (1) Where a gas detection device is required under paragraph 75(3)(e), all drilling fluid returning to the surface shall be sampled and tested to determine the total hydrocarbon gas content and, where the facility has the capability, the relative amounts of any methane, ethane, propane and butane gas.

(2) The results of the sampling and testing referred to in subsection (1) shall be recorded.

Wireline Logs

191. (1) Subject to subsection 194, every operator shall ensure that wireline logs that are necessary for the proper evaluation of any well are taken over all uncased intervals in the well below the surface casing.

(2) For the purpose of subsection (1), sufficient wireline logs shall be taken in any well to

(a) permit an accurate calculation of the porosity, fluid saturation and fluid contact for all potential reservoirs;

(b) measure the size of the hole and the spontaneous potential and natural radioactivity of any formation;

(c) assist in determining the lithology of any formation; and

(d) permit the calculation of accurate values of the vertical angle and direction of the hole and of the structural dips of the formations, where requested by the Chief.

(3) Every operator shall ensure that the wireline logs referred to in subsection (2) yield data of good quality by ensuring that they are taken

(a) as soon as practical after penetrating a potential reservoir;

(b) before altering the nature of the drilling fluid in a manner that would affect the quality of the wireline logs;

(c) before enlarging the diameter of the hole for the purpose of installing casing; and

(d) at sufficiently frequent time intervals during the drilling of a well that the nature of the formation fluids adjacent to the well-bore have not been significantly altered by invasion of the drilling fluid.

(4) For the purposes of subsection (1), a sufficient number of types of porosity-measuring wireline logs shall be taken in any well so that any effect of shaliness, hydrocarbons, complex lithology and the walls of the hole can be compensated for in determining the porosity of any formation.

(5) Unless otherwise permitted in the Approval to Drill, every operator shall take at least two types of porosity-measuring wireline logs if significant reservoir development is indicated in the portion of the hole in which the wireline logs are to be taken.

(6) For the purposes of subsection (1), a sufficient number of types of resistivity-measuring wireline logs shall be taken in any well so that the distortion caused by filtrate invasion, thin beds, the drilling fluid and the walls of the hole can be compensated for in calculating the formation resistivity.

SOR/96-116, ss. 38, 43(F).

192. [Repealed, SOR/2002-170, s. 6]

193. Where any wireline log referred to in section 191 is taken,

(a) the maximum bottom-hole temperature shall be measured with at least two maximum-recording thermometers; and

(b) the formation, temperature, the time that the circulation of the drilling fluid stopped and the time that the wireline log instrument left the bottom of the hole shall be recorded on the wireline log.

194. Where the formations in a well are composed of salt or non-sedimentary rock, only those wireline logs that are necessary to measure the diameter of the hole, the radioactivity of the formation and sonic transit time of the formation are required.

195. (1) Every operator shall ensure that every wireline log referred to in section 191 and 192 is taken at a rate that yields good quality data and does not cause formation fluids to be swabbed into the well.

(2) Where conditions in a well are such that the taking of any wireline log referred to in section 191 would endanger the safety of any person, the well or the drilling rig, the operator shall defer the taking of such wireline logs until the conditions are such that the taking of the wireline log can be done safely.

(3) Where the taking of a wireline log is deferred under subsection (2), the operator shall

(a) immediately notify a conservation engineer of the deferment; and

(b) submit a program, for approval of a conservation engineer, detailing the procedures to be used to obtain the information that would have been obtained from the deferred wireline log.

(4) Where a well is offshore and is being drilled from a drilling unit that floats, the operator shall use a motion-compensator device during the taking of any wireline log referred to in section 191 if the vertical motion of the drilling unit is such that the quality of the data would be adversely affected.

Testing and Sampling of Formations

196. (1) Subject to subsection 197(2), every operator shall ensure that every formation in a well is sampled or tested to obtain fluid flow and reservoir pressure data from the formation where there is an indication that the result of such a sample or test will contribute substantially to the evaluation of the formation.

(2) For the purposes of subsection (1), every operator shall ensure that a formation flow test is conducted if fluid samples and productivity data are required and wireline formation samples do not provide sufficient information for the evaluation of the formation.

Formation Flow Test

197. (1) Every operator shall, at the request of the Chief, submit a detailed testing program prior to conducting the formation flow test referred to in subsection 196(2).

(2) Every operator shall ensure that a formation flow test in respect of a well that is offshore is not conducted without the prior approval, in writing, of the Chief.

SOR/96-116, s. 43(F).

198. (1) Every operator shall ensure that during any formation flow test no formation fluids are allowed to flow to the surface or are circulated to the surface unless there is adequate illumination in the vicinity of the test tree, flow lines, and test tanks.

(2) Where a well is offshore and is being drilled from a drilling unit that floats, every operator shall ensure that a formation flow test in respect of that well is not conducted

(a) with a packer set in an interval of the well that is not protected by casing,

(b) when the unit is heaving or likely to heave more than one and one-half metres during the test, or

(c) without adequate illumination,

unless the flow test has been approved by the Chief.

(3) Every operator shall ensure that before starting any formation flow test

(a) all safety equipment and fire protection equipment is inspected and found ready for immediate use;

(b) where the test is to be conducted in an interval of a well that is protected by casing, the annulus between the test string and the casing is pressure tested to confirm that the packer will withstand pressure from above the packer;

(c) all sections of the flow test equipment are pressure tested to at least the maximum pressure to which such equipment may reasonably be expected to be subjected during the test; and

(d) where the well is offshore, the captain of the stand-by vessel is informed that the test is to be taken.

SOR/96-116, s. 43(F).

199. Every operator shall ensure that

(a) during any formation flow test, all flow rates and pressures are measured and controlled,

(b) any produced well fluid is

(i) sampled to determine if it contains hydrogen sulphide gas,

(ii) monitored to determine if it contains a significant amount of sand, and

(iii) stored and disposed of in accordance with section 138,

(c) any formation flow test is stopped immediately where

(i) hydrogen sulphide gas is present, or

(ii) significant sand erosion is occurring,

unless precautions have been taken to ensure the safety of personnel and the control of the well; and

(d) after the completion of the formation flow test and prior to pulling the test string used to conduct the test out of the well, any formation fluid in the test string is circulated to the surface or is otherwise recovered.

200. Every operator shall ensure that

(a) all relevant information on any formation flow test is properly recorded; and

(b) the information referred to in paragraph (a) includes, if available,

(i) the initial shut-in pressure,

(ii) all flow rates and wellhead pressures with respect to time,

(iii) sufficient build-up pressure and flowing pressure data to calculate the permeability and the static reservoir pressure,

(iv) the total volume of fluid recovered and the volume of each type of fluid produced, and

(v) the temperature and pressure in the well at the point and at the time any fluid sample was taken.

201. (1) Every operator shall ensure that any formation flow test obtained by wireline is designed and conducted to obtain the maximum amount of reservoir fluid practicable under the circumstances and that all relevant information in respect of the test is recorded.

(2) The information referred to in subsection (1) shall include

(a) the name of the well and the depth from which the fluid sample was obtained;

(b) the date and time the fluid sample was obtained;

(c) the temperature of the formation from which the fluid was obtained;

(d) a record of the well pressure during the test; and

(e) the type, quality and nature of the fluids recovered.

202. (1) Every operator shall ensure

(a) that a sample of each type of fluid produced from any exploration well or any other well that the Chief may designate is taken during a formation flow test;

(b) that the sample referred to in paragraph (a) is of sufficient volume and is collected using techniques that permit the analyses referred to in section 226;

(c) where the sample referred to in paragraph (a) is a liquid, the sample is analysed pursuant to section 226 and delivered pursuant to section 227; and

(d) where the sample referred to in paragraph (a) is a gas, the sample is analysed pursuant to section 226 and is submitted on the request of the Chief.

(2) Any sample referred to in paragraph (1)(a) shall be placed in a sealed container at the drill site.

(3) The container referred to in subsection (2) shall be

(a) constructed of a material that ensures that the sample can be safely transported; and

(b) numbered, properly labelled and accompanied by information setting out

(i) the name and depth of the well,

(ii) the date and the means by which the sample was obtained, and

(iii) where applicable, the type and the number of the formation flow test.

SOR/96-116, s. 43(F).

PART VIII

WELL TERMINATION

Application

203. (1) Where an operator intends to terminate a well, he shall submit the details of the proposed program for the termination to a conservation engineer for approval.

(2) Where the program referred to in subsection (1) has been approved, the operator shall, subject to subsection 186(3), ensure that the well is terminated in accordance with that program.

(3) Where an operator submits a program referred to in subsection (1), he shall forward with the submission the following information in respect of the well to be terminated unless such information is in the possession of the Chief;

(a) the current status of the well;

(b) the lithology and age of all formations;

(c) the depth and extent of any loss of circulation;

(d) the depth and size of any casing strings;

(e) the type and properties of any drilling or completion fluid;

(f) the depth, thickness and nature of any reservoir;

(g) the depth and nature of any show of oil or gas;

(h) the result of any wireline log survey; and

(i) the results of any formation flow test or sample test.

(4) Where a well cannot be terminated in accordance with the approved termination program referred to in subsection (2) owing to the existence of conditions not anticipated by the operator at the time the program was submitted for approval, the operator shall

(a) inform the Chief that the well has not been terminated in accordance with the program;

(b) leave the well in as secure a condition as is practicable; and

(c) terminate the well in accordance with the approved termination program within a period of time specified by the Chief.

SOR/96-116, s. 43(F).

Removal of Casing

204. (1) An operator shall not permanently remove any casing or tubing while abandoning a well except in accordance with subsection (2), and such removal is part of the program referred to in subsection 203(1).

(2) Where the casing referred to in subsection (1) is removed,

(a) a mechanical bridge plug shall be set in the casing not more than 15 m below the cut-off point prior to cutting the casing;

(b) subject to paragraph (d), a 30 m cement plug shall be placed across the casing stub;

(c) that portion of the well above the cut-off point shall be abandoned in accordance with this Part; and

(d) where casing is cut for the purpose of recovering a wellhead, a cement plug that is as long as practicable shall be placed across the casing stub.

Surface Marking and Restoration

205. Every operator shall ensure that the surface location of any abandoned well that is onshore is marked by a steel marker painted iridescent orange that extends 1.5 m above ground level and is comprised of

(a) a length of pipe that is either welded to the cover on the cut-off casing or is set in cement; and

(b) a steel plate that is at least 5 mm thick and measures 500 mm by 300 mm on which the well name and well location coordinates are bead-welded.

206. Every operator shall ensure that

(a) on the termination of any well,

(i) all refuse is cleared from the drill site and the surface of the drill site is restored to the satisfaction of a conservation engineer, and

(ii) where applicable, a cement plug is placed in the top of the rat hole and in the top of the mouse hole of the well; and

(b) on the termination of any offshore drilling operation, the seafloor is cleared of any material or equipment that could interfere with other commercial uses of the sea, unless the Chief, having been satisfied that no interference with other commercial uses of the sea is reasonably likely to result, otherwise approves.

SOR/80-641, s. 38; SOR/88-489, s. 23; SOR/96-116, s. 43(F).

Drilling Rig Removal Prohibited

207. No operator shall remove a drilling rig or drilling unit from a well drilled under these Regulations unless the well has been terminated in accordance with these Regulations.

Operator Responsible for Abandoned Wells

208. Every operator shall ensure that

(a) a well or a portion of a well that is not suspended or completed, is abandoned; and

(b) where a well is abandoned, the well is abandoned in such a manner that any formation fluid is prevented from flowing through or escaping from the well-bore.

209. (1) An acknowledgement by the Chief of a well termination record submitted in accordance with subsection 184(1) shall in no way relieve an operator of the responsibility for a proper termination of the well if, at a later date, the termination of the well is found not to be in accordance with these Regulations.

(2) [Repealed, SOR/2002-170, s. 7]

SOR/96-116, ss. 40, 43(F); SOR/2002-170, s. 7.

Location of Abandonment Plugs

210. (1) For the purposes of paragraph 208(b),

(a) where practicable, a cement plug shall be set at the bottom of any well except where

(i) the formation at the bottom of the well is salt, in which case the bottom cement plug may be set immediately above the top of the salt formation, or

(ii) conditions in the bore hole of the well are such that it is not practicable to set a cement plug at the bottom of the well, in which case the bottom cement plug will be set as deep in the well as is practicable;

(b) cement plugs and mechanical bridge plugs shall be set in accordance with the termination program approved under subsection 203(2) and shall be designed to

(i) isolate formations or groups of formations that appear to have abnormal pressures,

(ii) separate porous permeable formations that contain formation fluids that are significantly different in nature from each other,

(iii) separate porous permeable formations from other porous permeable formations that are significantly different in age, and

(iv) separate lost circulation intervals in the well from other porous permeable formations;

(c) except as provided in paragraphs (a) and (d), a cement plug that is at least 30 m in length shall be run at the bottom of the deepest casing string in the well and the plug shall

(i) extend at least 15 m below and 15 m above the shoe of the casing, or

(ii) be placed on a bridge plug that is set in the casing within 100 m of the casing shoe;

(d) the cement plug referred to in paragraph (c) is not required where

(i) at least 10 m of cement is left in the bottom of the casing during cementation and the cement is not removed, or

(ii) a bridge plug is set in casing within 100 m of the bottom of the hole

and the casing is pressure tested;

(e) where a leak exists or is suspected in the innermost casing string, a cement plug shall be set at the time of abandonment to seal the leak;

(f) where any annulus is open to a formation, a cement plug shall be set to seal that annulus;

(g) in the case of a well that is onshore,

(i) all casing shall be cut at a point 1 m below ground level and a 10 m plug shall be placed in the innermost casing, and

(ii) a steel plate shall be welded over the top of the casing in a manner that completely closes off the well-bore and the annuli between all strings of casing; and

(h) in the case of a well that is offshore,

(i) a cement plug shall be placed on a bridge plug set at a depth of not more than 150 m below the seafloor or squeezed through a retainer placed at a depth of not more than 150 m below the seafloor, and

(ii) all casing shall be cut off below the seafloor at a depth below which damage by ice scour cannot reasonably be expected or 1 m, whichever is the greater.

(2) A conservation engineer may

(a) approve a change in any termination program referred to in subsection 203(2) in respect of the abandonment of a well at any time owing to the existence of conditions not anticipated by the operator at the time the program was submitted for approval; or

(b) require an operator to perforate any casing installed in a well in order to place cement between porous permeable zones that would not otherwise be isolated.

SOR/80-641, s. 39(E).

211. (1) Except in a development well, every operator shall ensure that every interval in a casing string that has been perforated for flow testing or any other purpose is plugged prior to perforating any other interval in the casing string.

(2) Where the perforated intervals referred to in subsection (1) are in formations that contain oil or gas or abnormal fluid pressures, they shall be plugged

(a) by setting a bridge plug not more than 30 m above the top perforation and by placing not less than 5 m of cement on the bridge plug;

(b) by squeezing cement into the perforations and then testing the plug to a pressure of not less than 7,000 kPa above the formation fluid pressure in the interval; or

(c) by setting a cement plug not more than 30 m above the top perforation and not less than 30 m in length.

(3) Notwithstanding subsection (2), where the interval that is perforated is the uppermost perforated interval in a well, a cement plug, the base of which is not more than 30 m above the top perforation, shall be placed in the casing and the plug shall not be less than 30 m in length.

Length and Quality of Cement Plugs

212. (1) The cement plugs referred to in paragraph 210(1)(b), unless otherwise approved in the termination program, shall be not less than

(a) 100 m in length, where set in a portion of the well not protected by casing; and

(b) 30 m in length, where set in a portion of the well that is protected by casing.

(2) The cement used for any cement plugs shall be designed to have a minimum compressive strength of 3,000 kPa after it has hardened for at least eight hours.

Feeling for Plugs

213. (1) Every operator shall wait for at least six hours for the cement used for plugs to harden and shall then confirm with a force of 90 kN or the full weight of the cementing string, whichever is the lesser, the position of any cement plug that is not supported by a plug or by the bottom of the well and that is located

(a) at the shoe of the deepest casing string;

(b) above an abnormally pressured zone; or

(c) above a hydrocarbon bearing zone.

(2) Where a plug is found to be so displaced from its intended position as to render it inadequate for the purpose for which it was intended, a supplementary plug shall be set to replace it and the position of it confirmed in accordance with subsection (1).

SOR/80-641, s. 40.

Termination of Test Holes

214. (1) Where an operator intends to terminate a test hole, he shall submit the details of the proposed program for the termination to a conservation engineer for approval.

(2) Where the program referred to in subsection (1) has been approved, the operator shall ensure that the test hole is terminated in accordance with that program.

215. Every operator shall ensure that any hole that is drilled as a part of a drilling program and that is less than 30 m deep is plugged with a cement plug at the surface.

Marking of Well-heads

216. Every operator shall ensure that the well-head of any suspended or completed well is

(a) protected against damage;

(b) where the well is onshore, identified by a suitable sign; and

(c) where the well is offshore, equipped with a device that will permit it to be easily located.

Fluid in Abandoned or Suspended Wells

217. Every operator shall ensure that,

(a) where a well or a lower interval in a well is to be abandoned or suspended, the well or interval shall be filled with fluid of sufficient density to over-balance the formation pressures found in the well; and

(b) on request of the Chief, any fluid to be placed in the casing-tubing annulus of a well that is to be suspended or completed is fluid that

(i) will not freeze under the conditions to which it will be subjected, and

(ii) is treated to minimize corrosion of the casing and tubing.

SOR/96-116, s. 43(F).

Suspended Wells

218. (1) Every operator shall ensure that every well drilled by him that is suspended is left in such a manner that

(a) prevents any formation fluid from flowing through or escaping from the well-bore;

(b) minimizes any seafloor obstruction where the well is offshore;

(c) permits the installation of a well-head or the safe and efficient resumption of operations; and

(d) restores, to the greatest extent practicable, the surface location to its natural state.

(2) Every well referred to in subsection (1) that is suspended after it is completed shall be equipped with a down-hole mechanical plug and a surface mechanical plug in the tubing that are pressure tested to ensure that they are properly installed.

219. (1) Every well that is suspended and that has not been completed shall be completed or abandoned within six years of the date of suspension.

(2) Every well that is completed and suspended shall be

(a) inspected each year and a report on the condition of the well shall be made to the Chief; and

(b) placed on production or abandoned within a period of six years from the date of suspension unless the Chief has granted an extension of the period.

SOR/96-116, s. 43(F).

Well Completion

220. (1) Subject to subsection (2), every operator shall ensure that a well termination program submitted for approval in accordance with section 203 provides for

(a) the isolation of each completed reservoir interval from any other porous or permeable interval penetrated by the well;

(b) the safe and efficient testing and production of any completed reservoir interval;

(c) where open-hole completion techniques are used, the installation of production casing at a depth that is not more than 60 m above the top of the productive interval;

(d) where cased-holed completion techniques are used, the setting of production casing at a depth provides a sump of at least 15 m below the base of the productive interval;

(e) the setting of a packer as close as practicable to the top of the interval to be completed and the pressure testing of that packer to a differential pressure that is at least 4,000 kPa greater than the maximum differential pressure anticipated under production conditions;

(f) the stimulation of productive formations in a manner that is safe and that permits evaluation of production characteristics; and

(g) on the request of the Chief, the measurement and control of the amount of sand flowing into the well.

(2) Every operator shall ensure that the well-head and related equipment on a completed well

(a) has a working pressure that is greater than the initial reservoir pressure in any productive interval;

(b) is pressure tested to a pressure that is not less than the initial reservoir pressure in any productive interval; and

(c) has installed thereon a means of monitoring

(i) the pressure and temperature at the tubing-head, and

(ii) the pressure at the casing-head.

(3) Every operator shall, on the request of the Chief, install a surface-controlled sub-surface safety valve in a well that has been completed.

SOR/96-116, s. 43(F).

PART IX

DEPOSITION OF SAMPLES FROM A WELL

General

221. The Chief may at any time assign or change the name, classification or status of any well.

SOR/96-116, s. 43(F).

222. (1) Every operator shall ensure that every sample of a drill cutting, a core or sample of well fluid that is taken from a well in compliance with these Regulations is transported and stored in a manner that prevents any loss or deterioration of the cutting, core or sample.

(2) No operator shall transport

(a) any sample of well fluid that is collected for purposes of analysis in a plastic container or in any other container that may cause or permit the chemical properties of the samples to be significantly altered; or

(b) any sample of gas the pressure of which is greater than the pressure rating of the gas container.

Drill Cuttings

223. (1) Subject to subsection (2), every operator shall ensure that

(a) subject to paragraph (d), a portion of each sample of drill cuttings collected in accordance with section 187 is washed and dried

(i) to remove any drilling fluid or other contaminants, and

(ii) in a manner that minimizes any change in the natural appearance or lithologic characteristics of the cuttings;

(b) the portion referred to in paragraph (a) is of sufficient volume to fill two vial containers;

(c) the vials referred to in paragraph (b) are of a type approved by the Chief and are accurately and durably labelled with the name of the well and the depth interval from which the drill cuttings were obtained;

(d) at least 500 g of each sample of drill cuttings referred to in paragraph (a) are left unwashed and are placed in a moisture-proof container; and

(e) the container referred to in paragraph (d) is durably labelled with the name of the well and the depth interval, which may be coded, from which the sample was taken.

(2) Where it is not practicable to obtain sufficient samples to allow the operator to meet the requirements of subsection (1), he shall process such samples as he has obtained in a manner satisfactory to the Chief.

SOR/96-116, s. 43(F).

Sidewall Cores

224. Every operator shall store any sidewall core material remaining after petrographic, reservoir, paleontological, palynological or other analyses have been conducted in containers that are durably labelled with the name of the well and the depth from which the core was obtained.

Conventional Cores

225. (1) Every operator shall ensure that

(a) every conventional core is analyzed to determine the basic reservoir characteristics of all potential reservoir intervals in the core;

(b) the analysis referred to in paragraph (a) includes the measurement of

(i) porosity,

(ii) permeability, in the direction of maximum horizontal permeability, normal to the direction of maximum permeability and in the vertical direction, and

(iii) any other property requested by the Chief; and

(c) when any samples necessary for the analysis referred to in paragraph (a) have been removed from the core, the remaining core or a longitudinal slab of the core that is not less than one-third the cross-sectional area of the core is submitted to the Chief.

(2) Notwithstanding subsection (1), the Chief may approve or require the preservation of all or a portion of any core for the purpose of a full-core analysis.

(3) Every operator shall store every core or portion of a core not submitted to the Chief pursuant to paragraph (1)(c) at a location in Canada for not less than two years after the date on which the core was taken.

(4) Every operator shall, before disposing of a core or portion of a core referred to in subsection (1), notify the Chief and deliver to the Chief any such core or portion of a core that the Chief designates.

SOR/88-489, s. 24; SOR/96-116, s. 43(F).

Analysis of Fluid Samples

226. (1) Every operator shall ensure that

(a) each sample of gas, condensate, oil or water obtained from a well is analyzed to determine

(i) its density, and

(ii) its constituent compounds and the relative proportion of each of the compounds;

(b) each sample of gas referred to in paragraph (a) is analyzed to determine

(i) its gross heating value in the dry acid-free condition, and

(ii) its pseudo-critical temperature and pressure;

(c) the viscosity of each sample of oil referred to in paragraph (a) is measured at two different temperatures with a variance of at least 20°C;

(d) the resistivity and pH of each sample of water referred to in subsection (1) is measured; and

(e) where the well produces more than one fluid phase, the analysis of a recombined sample is made to determine the physical and chemical factors that affect the performance of the reservoir of the well.

(2) The result of any analysis or measurement referred to in subsection (1) shall be reported in units that are acceptable to the Chief.

SOR/96-116, s. 43(F).

Delivery of Samples and Other Materials to Chief

[SOR/96-116, s. 43(F)]

227. (1) Every operator shall deliver to the addresses specified by the Chief,

(a) all samples and other materials that are required to be submitted under these Regulations;

(b) within 60 days of the rig release date of any well,

(i) two complete sets of the washed drill cuttings samples referred to in paragraph 223(1)(a),

(ii) a complete set of the unwashed drill cuttings referred to in paragraph 223(1)(d), and

(iii) a complete set of the canned drill cuttings referred to in subsection 187(6);

(c) within six months of the rig release date, any sidewall core or any remnant thereof remaining after any analyses of the core;

(d) within 60 days after the rig release date of any well, any conventional core required to be submitted pursuant to paragraph 225(1)(c) for that well;

(e) within 60 days of the date of the formation flow test, any fluid or condensate sample referred to in section 202;

(f) within six months of the rig release date, any palynological or nano fossil slide produced from a sidewall core destroyed in the production of the slide; and

(g) within five years of the rig release date, any foraminiferal or petrographic slide produced from a sidewall core destroyed in the production of the slide.

(2) Notwithstanding paragraph (1)(a), on request of the Chief, any foraminiferal and petrographic slide referred to in paragraph (1)(g) shall be made available for public examination after the expiration of the confidential period for the well required by any law of Canada.

SOR/88-489, s. 25; SOR/96-116, s. 43(F).

PART X

FINAL WELL REPORTS

Exploratory and Development Wells

228. (1) Where an operator drills a well, the operator shall prepare a final well report on termination of the well and shall submit the report to the Chief,

(a) in the case of an exploratory well, within 90 days after the rig release date of the well or where a conservation engineer determines that 90 days would constitute an undue hardship for the operator, within such longer period as the conservation engineer allows; and

(b) in the case of a development well, within 45 days after the rig release date of the well or where a conservation engineer determines that 45 days would constitute an undue hardship for the operator, within such longer period as the conservation engineer allows.

(2) The final well report referred to in subsection (1) for an exploratory well shall contain a record of all operational, engineering and geological information that is relevant to the well and shall be organized into the following sections, with appendices, if appropriate:

(a) an introduction;

(b) general well data;

(c) a summary of drilling and related operations;

(d) a summary of weather, ice conditions, and sea-state and of the response performances of the drilling unit in extreme conditions for an offshore exploratory well;

(e) geological and palaeontological information;

(f) a summary of directional and deviation surveys and the coordinates of the bottom of the hole;

(g) a plot of the location of the bore-hole in the case of a well that has deviated more than 10 degrees from the vertical;

(h) reservoir and well evaluation data; and

(i) any wireline logs, analyses, studies and all other pertinent reports.

(3) The final well report referred to in subsection (1) for a development well shall contain:

(a) a summary of the completion operations;

(b) the coordinates of the bottom of the hole and of the top of any productive zone, and in the case of a directionally drilled well, a plot showing the location of the well-bore;

(c) details of the completion equipment and tubing including a diagram of equipment installed on the well;

(d) results of any formation flow test;

(e) a copy of any report prepared by contractors of the operator that concern well stimulation; and

(f) any wireline logs, core analyses, studies, reports or records relating to the evaluation of the well.

SOR/88-489, s. 26; SOR/96-116, s. 43(F).

Test Holes

229. (1) Every operator shall prepare a final report on the drilling of any test hole or group of test holes drilled by him.

(2) Where an operator prepares a final report referred to in subsection (1), the operator shall submit the report to the Chief within 90 days after the date of abandonment of the test hole or the last of a group of test holes or, where a conservation engineer determines that 90 days would constitute an undue hardship for the operator, within such longer period as the conservation engineer allows.

(3) The final report referred to in subsection (1) shall contain a record of all operational and engineering information that is relevant to the test hole or group of test holes and shall be organized into the following sections, with appendices where appropriate:

(a) introduction;

(b) general test hole data;

(c) a summary of drilling and related operations;

(d) in the case of offshore or remote operations, a summary of weather, ice and sea conditions;

(e) geological and paleontological information; and

(f) any wireline logs, petrophysical analysis and special studies.

SOR/88-489, s. 27; SOR/96-116, s. 43(F).

PART XI

[Repealed, SOR/96-116, s. 41]

PART XII

OFFENCES

234. (1) No person shall tamper with or activate without cause any safety and fire-fighting equipment required under sections 19, 27, 28, 29, 36, 41, 46, 47, 54 and 55.

(2) [Repealed, SOR/2002-170, s. 8]

SOR/2002-170, s. 8.

235. [Repealed, SOR/2002-170, s. 9]