

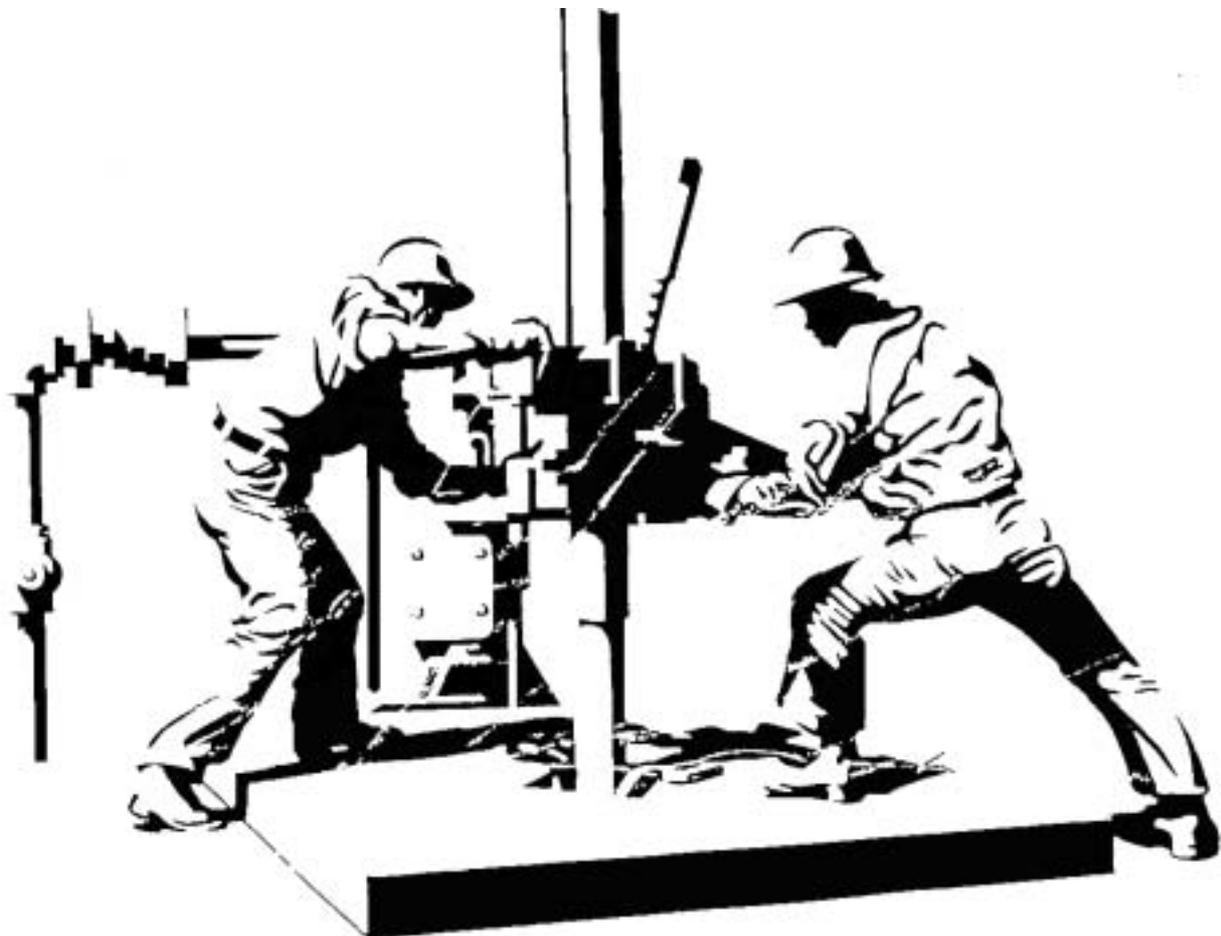
Schedule of

Onshore Petroleum Exploration

and

Production Safety Requirements

August 1992



SCHEDULE OF ONSHORE PETROLEUM EXPLORATION AND PRODUCTION
SAFETY REQUIREMENTS

(August '92)

1. Preliminary

Title

101. This schedule may be cited as the Onshore Petroleum Exploration and Production Safety Requirements (first edition August 1992) referred to in Clause 29 of the Petroleum (Onshore) Act 1991 - Regulation.

Objectives

102. The objectives of this Schedule is to ensure that the operator of either a petroleum exploration programme or production facility:

- (a) accepts responsibility for the safety of employees, visitors on site and members of the general public who might be affected by those operations.
- (b) has identified the major hazards on a site or installation and has implemented the appropriate controls in order to ensure that the management, design, construction, operation, and maintenance of each site or installation and its associated services are safe.

2. General

Safety management Plan

201. (1) The title holder is required to maintain a safety management plan in respect of each installation or site demonstrating that the management system of the company and that of any installation or site are adequate to ensure that:
- (a) the design and operation of any installation or site and its equipment are safe.
 - (b) that the potential major hazards and the risks to personnel thereon, as well as those hazards which could be transferred off site to the general public, have been identified and appropriate controls provided.
 - (c) planning has taken place to establish emergency response procedures.
- (2) The safety management plan needs to set out the safety objectives, the system by which these objectives are to be achieved, the performance standards which are to be met and the means by which adherence to these standards is to be monitored.

Information to be provided about an operator

202. (1) The titleholder must prior to the commencement of any operations nominate an operator and be prepared if required to provide to the Director-General, Department of Mineral Resources, evidence of -
- (a) the technical qualifications of the operator and the operator's advisers; and
 - (b) the operator's ability to comply with the conditions of the permit and the provisions of the Petroleum Act 1992 and Regulations.
- (2) The titleholder must immediately advise the Director-General of any change in operator and be prepared if required to provide the information specified in subparagraph (1) of this Clause for the new operator.
- (3) A titleholder who holds a petroleum title either in full or part may be nominated as the operator.
- (4) If a titleholder does not nominate an operator then the titleholder will be responsible for ensuring compliance with those provisions of this schedule which refer to an operator.

Certificate of Competence

203. The titleholder must ensure that where a person carries out an activity for which that person is required to have a certificate of competence, an authorization or a qualification by a Statute, such person must have such certificate, authorisation or qualification.

Personnel Qualifications and Performance

204. All operations undertaken in the title area are to be carried out in a good and workmanlike manner thereby securing the health and safety of persons employed in the title area. An Inspector may require a titleholder to give any information the Inspector reasonably considers necessary to enable him or her to determine if a person is competent to be engaged on any activity or work carried out in performance of operations in the title area.

Tests

205. The titleholder must ensure that in addition to any other requirements specified in this Schedule any test required under the Schedule is carried out in accordance with good oilfield practice.

General Duties and Responsibilities of Title Holders, operators and Contractors

206. (1) In carrying out operations, the titleholder must provide and cause to be maintained so far as is practicable, a site that is both safe and without risks to the health of employees, visitors and members of the public.
- (2) Where an operator or contractor has been engaged to perform work on the title area, the operator or contractor must provide, install and maintain such plant as is necessary to ensure compliance with this Schedule and so far as is practicable maintain a site that is both, safe and without risks to health.
- (3) The titleholder must employ or engage persons who are suitably qualified in relation to the work being performed.
- (4) Any contractor must employ or engage persons who are suitably qualified in relation to the work being performed.

Responsibility for Contractors

207. The provisions of this schedule regarding employees apply to the operator's contractors and the contractor's employees working in the title area as if those contractor's and their employees are employees of the operator.

Availability of Information

208. (1) The titleholder must take all reasonable steps to ensure that a copy of the following is readily available at all times to every person working in the title area for which the titleholder is responsible:
- (a) this schedule; and
 - (b) a copy of the Code of Environmental Practice as required under Regulation 28; and
 - (c) the manual referred to in paragraph 210.
- (2) The titleholder must ensure that, each employee is aware of and understands the requirements of the documents specified in sub-paragraph (1) including any approved amendments to them, as applicable to the employee's area of responsibility.

- (3) The operator must take reasonable steps to ensure that every supervisor of a worksite or of a portion of a work site must, on changing, shift, inform the next supervisor, orally or in writing, of the state of the operation, plant and equipment in the part of the Worksite for which that person is immediately responsible.

Powers of Inspectors

209. (1) Where an Inspector is of the opinion:

- (a) that any plant being used in a title area is in a dangerous condition; or
- (b) that work being carried out under a title:
 - (i) is contravening a provision of the Act, the Regulations or this Schedule, the approved procedures manual or an approved Code of Environmental Practice; or
 - (ii) is dangerous; or
 - (iii) is not in accordance with good oilfield practice,

the Inspector shall stop those operations or practices and give appropriate notice in writing to the relevant titleholder to rectify those operations and practices.

- (2) The notice must specify a day by which the titleholder must report to an Inspector on the action taken in relation to the notice.
- (3) The Inspector should advise the Minister in writing of any action taken and the Minister may:
 - (a) by notice confirm that no further work may be carried out until the matter referred to in the notice is remedied; and
 - (b) by further notice give directions as to the measures to be taken to remedy the matter referred to in the notice, including:
 - (i) that facility or equipment be repaired or replaced; and
 - (ii) that any part of the environment be restored or rehabilitated.
- (4) When the Minister is satisfied that the matters referred to in the notice issued under sub-paragraph (3) have been remedied, the minister may issue a notice permitting the resumption of work.

Emergency Response Procedures

210. (1) The titleholder must ensure that operations are not carried out on any site for which the titleholder is responsible unless, there are approved Emergency Response Procedures which set out the procedures to be followed and actions to be taken, and identifies the persons to be responsible for following these procedures and taking these actions, in the event of an emergency arising during the operations by reason of:
- (a) the escape or ignition of petroleum; or
 - (b) serious injury to a person; or
 - (c) any other emergency associated with these operations.
- (2) In the event of an emergency arising, the titleholder must ensure that where appropriate responses are carried out in accordance with the procedures referred to in the Procedures referred to above.

Updating of Procedures

211. The titleholder must update the Procedures referred to in Regulation 210 as required by changed circumstances or as required by the Minister to accord with good oilfield practice.

Protective Clothing

212. (1) The titleholder must ensure that personal protective safety equipment be provided for-and used by all persons engaged in or concerned with operations being carried out on a Petroleum title area.
- (2) A person who has been provided with any protective equipment referred to in this Clause shall wear or use the equipment at all times while working under conditions which require it to be provided.

Notices

213. The titleholder must ensure that notices and signs shall where appropriate, be displayed in connection with the carrying out of an operation. Such notices will comply with the appropriate requirements of AS 1319 "Rules for the Design and Use of Safety Signs in the Occupational Environment".

Precautions Against Fire

214. (1) In all cases where internal combustion engines are used as prime movers for the operation of a drill rig and its ancillary-equipment, such engines, if permanently installed, shall be, if practicable, diesel engines. These shall be provided with efficient flame and/or spark arresters on their exhausts and be regularly checked and continuously used.
- (2) No naked lights, smoking, or motor vehicles not provided with efficient flame and/or spark arresters shall be permitted within 30 metres radius of the hole provided that in any event requiring the use of welding plant or other equipment the site manager may permit the use of such motor vehicles, welding plant or blow torches under his personal supervision and subject to such special precautions as appear necessary.
- (3) Where inflammable gas is met in a well and cannot be contained, it shall be conveyed away from the bore-hole head fittings by means of a flare line to a distance of not less than 30 metres from the well and ignited. The discharge end of such flare line shall set up in such a way that any condensate can be collected and the flame is contained so as no environment damage may result. The discharge end of such flare line shall be isolated so that no risks exists for people or animals.

3. Reporting

Reporting of Death and Serious Inquiry

301. (1) In this Paragraph and Paragraph 302 and 303 a serious injury means an injury which requires immediate attention by a medical practitioner.
- (2) Where a person dies or suffers a serious injury:
- (a) the titleholder is to submit a report of the death or injury immediately to an Inspector; and
 - (b) make a report in writing giving full particulars of the death or injury and all related circumstances to be transmitted to the Minister within 5 days after the occurrence of the death or injury.

Written Records of Death and Injury

302. A record in an approved form shall be kept of each death and injury, whether or not a serious injury, suffered by a person including:

- (a) particulars of the death or injury; and
- (b) the circumstances leading to the occurrence of the death or injury; and
- (c) the treatment (if any) given to the injured person and the name of each medical practioner (if any) consulted in relation to the injury.

Reporting Serious Damage

303. (1) In this paragraph and paragraph 304 and 305 serious damage to property means:
- (a) the loss or destruction of property with a value exceeding \$50,000; or
 - (b) damage to property, the repair of which damage would cost an amount exceeding \$50,000; or
 - (c) the loss or destruction of any property, or any damage to property, by reason of which any person dies or suffers serious injury.
- (2) Where serious damage to property occurs:
- (a) a report of each occurrence is immediately to be made to an Inspector; and
 - (b) a report in writing of such occurrence is submitted to the Minister within 5 days of the incident occurring, specifying:
 - (i) the date, time and place of such occurrence;
 - (ii) particulars of the damage;
 - (iii) the events so far as they are known or suspected that caused or contributed to the occurrence;
 - (iv) particulars of repairs carried out or proposed to be carried out to damaged property;
 - (v) measures taken, or to be taken, to prevent a possible reoccurrence.

Reporting Potentially Hazardous Event

304. Where an event occurs which is not in the normal or ordinary course of a particular operation and which is professionally considered to be likely to cause injury to a person or serious damage to property, but such event does not cause injury or serious damage, a report of the event is immediately to be made to an Inspector.

Reporting Damage Less than \$50,000

305. Where damage to property occurs which is not serious damage to property but which results in a significant loss of structural integrity or load bearing capacity in the property damaged or results in some other significant unsafe condition a report of the damage is immediately to be made to an Inspector.

Reporting Escape or Ignition of Petroleum and Other Material

306. (1) The titleholder must ensure that a report is immediately made to an Inspector upon the occurrence of:
- (a) a spillage of hydrocarbons which in areas of inland waters is in excess of 80 litres and in other areas in excess of 500 litres; or
 - (b) an escape of Petroleum in a gaseous form in excess of 500 cubic metres; or
 - (c) any uncontrolled escape or ignition of Petroleum, any other flammable or combustible material or toxic chemicals causing a potentially hazardous situation.

Reporting of Emergencies

307. Any emergency must be reported immediately to an Inspector.

Reporting Radiation Monitoring

308. Where by any legislation relevant to radiation control a report is prepared in respect of the monitoring of radiation in connection with Petroleum operations, a copy of that report must be sent to an Inspector within 5 days.

Report Progress of Exploration Activity

309. During the conduct of any exploration borehole or seismic survey, progress reports are to be submitted to the Director-General covering such periods or events as may be required by the Director-General.

4. Explosives; Radioactive and Dangerous Substances

- (1) Explosives shall be transported, stored and handled in accordance with all applicable explosive control legislation and approved procedures.
- (2) Detonators or ignitor needles shall not be stored with other explosives.
- (3) All explosives shall be kept in a locked storage magazine which is clearly marked with the words "EXPLOSIVES – DANGEC". The storage magazine shall be in an approved location. Explosives shall not be stored in the vicinity of flammable, combustible, corrosive, oxidizing or radio-active materials.
- (4) Explosives shall be handled only by qualified personnel and in accordance with approved procedures.
- (5) Explosives no longer required on a site or showing signs of deterioration shall as soon as possible be removed from the site.
- (6) Packaging having contained EXPLOSIVES shall as soon as possible be removed from the site.
- (7) A record of amounts any types of explosives held in the magazines shall be maintained at all times and such record shall be accessible to an Inspector on request.
- (8) A person engaged in the handling of, or the use of, radiation apparatus or radio-active substance shall comply with the requirements of all applicable radiation control legislation.
- (9) Caustic substances, phosphates, nitrites and other dangerous substances shall be stored in leak-proof containers, away from combustible materials.

5. Notification to Drill

501. Notice under Clause 8 of the Regulations to commence an exploration borehole must include the following information:

- (a) proposed well name and number; and
- (b) location, elevation and co-ordinates of the well site; and
- (c) geological prognosis of the area which includes well objectives and for exploration wells, play definition(s) (source, seal, reservoir, trap configurations) accompanied by a time or depth map of near target horizon(s) and seismic sections where possible; and
- (d) programmed depth; and
- (e) estimated spud date; and
- (f) estimated drilling time; and
- (g) name and address of drilling contractor; and
- (h) type of rig and blow-out prevention equipment, including description of equipment and method of operations; and
- (i) names and addresses of other contractors involved in the operations and the nature of the services they will perform; and
- (j) name of person responsible for communications with the Department; and
- (k) proposed well paths (if the well is to be other than vertical); and
- (l) maps of a suitable scale to enable clear identification of:
 - (i) the existing land tenure including reserves and private property; and
 - (ii) the location of any other wells and public utilities; and
 - (iii) any other structure within 150 metres of the proposed well location.

Equipment Standards

502. The titleholder must ensure that materials and equipment used in drilling and work over operations are in accordance with good oilfield practice.

Location Surveys

503. (1) As soon as practicable after the location of a well is established, but in any event not later than 2 months after the drilling rig is released and prior to site restoration the titleholder must survey the location of the well and provide ISG co-ordinates to the Director-General.

Prohibited Drilling Areas

504. If a well is drilled in an unapproved area the titleholder must plug or close the well within a time specified by the Minister unless the Minister approves further drilling.

Casing

505. (1) The titleholder must ensure that a well is cased in accordance with good oilfield practice to ensure protection of aquifers.
- (2) The titleholder must ensure that the design, placement and cementing of casing strings is in accordance with good oilfield practice.
- (3) The titleholder must ensure that any casing recovered from a well is not re-used in another well unless it has first been inspected and passed in accordance with good oilfield practice.
- (4) The titleholder must ensure that conductor pipe is installed in a well to protect the well and equipment against surface formation instability and to enable the circulation of drilling fluid from the well before surface casing is installed.
- (5) The titleholder must ensure that adequate surface casing is designed and set in accordance with good oilfield practice.
- (6) The titleholder must ensure that after cementing:
- (a) all casing strings, except the conductor casing string, are pressure tested to an approved pressure before drilling out of the casing shoe; and
 - (b) production casing string is pressure tested to an approved pressure before proceeding with operations to complete or test the well; and
 - (c) the pressure test specified in paragraphs (a) and (b) is held for as long as is necessary to ascertain that there is not continuous pressure drop; and
 - (d) the result of the pressure test is recorded in the driller's log.
- (7) The titleholder must ensure that drilling operations or operations to complete or test the well do not commence until a satisfactory result in a pressure test under sub-paragraph (6) has been obtained.
- (8) The titleholder must ensure that a well (other than a plugged and abandoned well) is equipped so that the pressure in each annulus may be measured.

Cementing of Casing

506. (1) The titleholder must ensure that casing strings are cemented in accordance with good oilfield practice.
- (2) The titleholder must ensure that details of all cementing operations are recorded in the driller's log.
- (3) If there is any reason to suspect a faulty cementing operation, the titleholder must ensure that an Inspector is notified as soon as practicable.
- (4) The titleholder must ensure that after the cementing of casing strings, drilling is not commenced until a time lapse of:

- (a) 24 hours; or
 - (b) 8 hours under pressure for the surface casing string and 10 hours under pressure for all other casing strings.
- (5) For the purpose of sub-regulation (4) (b) the cement is considered to be under pressure if during the time lapse referred to in that sub-paragraph the cement after placing is restrained from movement by the use of float valves, or other equipment approved under Paragraph 502.
- (6) The titleholder must ensure that if the cementing requirements of this Clause have not been achieved by primary cementing operation, re-cementing or remedial cementing to achieve compliance shall be undertaken.

Blow-out Prevention Control

507. (1) The titleholder must ensure that blow-out preventers and related well control equipment are installed, operated, maintained and tested in accordance with good oilfield practice.
- (2) The results of all tests conducted on the above equipment must be recorded in the driller's log.
- (3) the titleholder must ensure that during operations there is a control panel located on the drill floor for operating blow-out preventers, and if appropriate another located at such a distance from the well as to ensure safe and ready access in time of emergency.
- (4) The titleholder must ensure that each choke manifold has the following equipment clearly visible to the operator when standing in the normal operating position for either the remotely or hand adjustable chokes:
- (a) a pressure gauge which indicates the drill pipe pressure at the drill floor; and
 - (b) a pressure gauge which indicates the casing string/drill string annulus pressure at a known point upstream of the choke.

Pressure Testing Blow-out Prevention Equipment

508. (1) The titleholder must ensure that the blow-out preventer equipment is tested in accordance with good oilfield practice.
- (2) The titleholder must ensure that each blow-out preventer test is recorded in the driller's log.

Mud monitoring System

509. The titleholder must ensure that where appropriate a mud monitoring system, with drill floor indicators is installed, and used in accordance with good oilfield practice during all drilling operations after setting and cementing the conductor casing string.

Penetration Rate Recorder

510. The titleholder must ensure that where appropriate drilling operations are not commenced or continued unless the drilling rig is equipped with a penetration rate recorder that:

- (a) will give a clear indication of a change in formation; and
- (b) can be used as a guide to warn against approaching areas of abnormal pressure; and
- (c) is maintained in good working order and in continuous operation while drilling.

Accumulators

511. The titleholder must ensure where appropriate that accumulators are located, assembled and operated in accordance with good oilfield practice.

Blow-out Prevention Drill

512. (1) The titleholder must ensure that blow-out prevention drills are conducted weekly for each drilling

crew to ensure that all equipment is operating and that crews are properly trained to carry out emergency duties.

- (2) The titleholder must ensure that all blow-out prevention drills and response times are recorded in the driller's log.
- (3) The titleholder must ensure that a notice is displayed on the rig floor providing details of the well control procedures to be followed in the event that indications of a well kick are observed and all drilling crews are trained in those procedures.
- (4) The titleholder must not permit any on-site personnel holding the position of driller, or a more senior position, to continue to work in drilling operations unless they have a proven proficiency in well control.

Formation Integrity Testing

513. The titleholder must ensure that a formation integrity test is conducted in accordance with good oilfield practice.

Drilling Fluid

514. (1) The titleholder must ensure that the characteristics and use of the drilling fluid provides adequate control of any sub-surface pressures likely to be encountered in the well.
- (2) The titleholder must ensure that the well is maintained full of such drilling fluid.
 - (3) The titleholder must ensure that sufficient reserves of drilling fluid and supplies of drilling fluid materials are available at the well site for immediate use to comply with sub-paragraphs (1) and (2).
 - (4) The titleholder must where appropriate ensure that approved tests on the drilling fluid are performed on a regular basis while drilling and the results of such tests are recorded in the driller's log.

Deviation Surveys

515. The titleholder must ensure that deviation surveys are taken at approved intervals to ascertain the deviation of a well from vertical.

Directional Drilling

516. The titleholder must ensure that a well is not, directionally drilled without the approval of the Director-General.

Conversion of a Well into a Water Well

517. If it is decided to convert a well into a water well, the titleholder must provide details of the proposed conversion to the Director-General for approval as soon as practicable after the decision is made and before conversion is undertaken.

Protection of Aquifers

518. The titleholder must ensure that all reasonable steps are taken during operations on a well to prevent leakage or the pollution of aquifers.

Production or Drill Stem Tests on Exploration or Production wells

519. (1) The titleholder shall notify an Inspector at least 24 hours before conducting a production or drill stem test in a well not yet producing.

- (2) The notification by the titleholder to an Inspector before conducting a production test in an exploration well or production well not yet producing in a title area is to be accompanied by particulars of:
 - (a) the equipment proposed to be used for the test; and
 - (b) the proposed testing program; and
 - (c) the intervals in the well proposed to be tested; and
 - (d) the proposed duration of the test; and
 - (e) the maximum quantity of petroleum or water proposed to be produced; and
 - (f) the proposed method of disposal of the petroleum or water produced.

Flammable Vapours

520. The titleholder must ensure that all vessels and equipment from which flammable vapours may issue are safely vented to the atmosphere, and any significant volume of gas that is vented is burnt through a flare system.

Approval to Abandon or suspend a Well

521. (1) The titleholder must ensure that a well is not abandoned or suspended without prior approval by an Inspector, except as provided for in sub-paragraph (4).
- (2) The titleholder must ensure that subject to subparagraph (4), while drilling operations are being undertaken, a well is not left in an unsafe condition.
- (3) Prior to the cessation of drilling operations, even temporarily, the well must be made safe in accordance with good oilfield practice.
- (4) The titleholder must ensure that, subject to subparagraph (5), where casing is being installed, if a well encounters or has encountered:
 - (a) hydrocarbons; or
 - (b) abnormally pressured water; or
 - (c) unstable coals or shales; or
 - (d) lost returnsdrilling operation are continued to the next scheduled casing point at which point the hole must be logged, cased and secured at the surface.
- (5) The titleholder must ensure that in the event of an emergency or adverse weather conditions requiring cessation of drilling operations, the well must be made safe in accordance with good oilfield practice.
- (6) The titleholder must ensure that an application for consent to suspend a well or approval to abandon a well gives particulars of:
 - (a) the name of the well; and
 - (b) the reason for abandonment or suspension; and
 - (c) the proposed abandonment or suspension program including the method by which the well must be made safe.
- (7) The titleholder must ensure that an abandoned well is sealed by filling from total depth to top with cement or other sealing programme as approved by the Director-General.

Well Completion

522. (1) the titleholder must ensure that the surface and subsurface equipment of a completed well is, where applicable, arranged to permit the measurement of the pressure and temperature at the wellhead and at the bottom of the hole (closed in or flowing), and to permit any other test to be carried out to ensure good oilfield practice.

- (2) The titleholder must ensure that the surface equipment is fitted with sampling connections.
- (3) The titleholder must, on completion and any recompletion of a well, keep and make readily available to an Inspector an accurate record of all subsurface equipment and junk in the well.
- (4) The titleholder must ensure that before opening a well to production, and after every major repair, recompletion or work-over, the wellhead and flow line is pressure tested.

Disposal of Produced Oil and Gas

523. The titleholder must ensure that any oil or gas that is circulated out of or produced from a well during a drilling, testing or repair operation, and that is not flowed through the well's flowline to a gathering facility, must be disposed of in accordance with good oilfield and environmental practice.

Disposal of Waste Fluids

524. The titleholder must ensure that all waste materials from work on a well produced from a well as it cleans up (whether or not contaminated with oil) are disposed of in accordance with good oilfield and environmental practice.

Replacement of Well Site Fencing

525. The titleholder must ensure that if fencing protecting the wellhead from outside interference is removed during an operation, the fencing is replaced immediately after the operation is completed.

6. Electrical

Wiring Rules

The title holder shall ensure that:

601. (1) (a) Electrical apparatus used on the title is of sufficient rating and capacity of avoid dangerous overloading and is protected against any danger arising out of overloading; and
- (b) fixed electrical apparatus installed at the title is kept clean dry and clear of obstruction.
- (2) Without affecting the generality of subclause (1), electrical apparatus shall be constructed, installed, used and maintained in accordance with relevant Australian Standards or other standards.

Protection Circuits

602. The title holder shall ensure that:

- (a) every conductive part of the enclosure of mains-fed electrical apparatus;
- (b) every conductive part of the physical protection of any cable supplying mains-fed electrical apparatus; and
- (c) any conductive handle for the operation of mains-fed electrical apparatus,

is connected to earth in such a manner as to ensure immediate electrical discharge without damages.

The title holder shall ensure that electrical apparatus is protected and safeguarded to avoid danger from excessive temperatures, sparking, touch potential, exposure of live conductors or malfunction.

- (2) Without affecting the generality of subclause (1), the titleholder shall ensure that electrical protection is provided to interrupt the supply of electricity:
 - (a) in the event of a single fault to earth on:
 - (i) mains-fed electrical apparatus supplied at a voltage exceeding 110 volts; or
 - (ii) mobile or portable apparatus supplied at a voltage exceeding 32 volts; and

- (b) to any hand-held tool in the event of an earth fault that causes a current exceeding 30 milliamperes to flow.

603. The titleholder shall ensure that only competent experienced electrical tradespersons carry out work on electrical apparatus on the title. Such person shall:

- (a) be the holder of one of the following qualifications:
 - (i) an electrician licence issued by the Energy Authority of New South Wales;
 - (ii) an electrical trades certificate issued by the New South Wales Department of Technical and Further Education;
- (b) any qualification in electrical engineering or electrical trades from time to time recognized by the Minister as being equivalent to any of the abovementioned certificates,

604. The titleholder shall ensure that all structures are adequately protected from the effects of atmospheric electricity in accordance with the Australian Standard No. 1768.

Control of Static Electricity

605. The titleholder must ensure that suitable adequate measures are taken to prevent the ignition of flammable materials by static electricity.

Welding

606. The titleholder must ensure that electrical welding return conductors are connected directly to the equipment being welded, as well as to the earthing system of the rig or other plant in accordance with the relevant Australian Standard.

Electrical Shock

- 607.
- (a) the titleholder must ensure that instructions on the procedure and treatment to be followed in case of electric shock are kept prominently displayed on the rig floor or in the driller's doghouse, in any generator house and at any other worksite where electricity is used.
 - (b) any person who claims to have received an electric shock shall be afforded immediate medical attention and an investigation shall be conducted into the cause.
 - (c) no person shall carry out any work on or near exposed electrical apparatus energized at a voltage exceeding 60 vac rms or 110v ac.

7. Petroleum Production

Consent for Recovery of Petroleum

701. The titleholder must ensure that the recovery of petroleum, other than recovery of petroleum during a production test of a well, is not carried out unless in accordance with good oil-field practice and the terms and conditions of the lease granted under the Petroleum Act 1991.

Other Operations

702. The titleholder must ensure that operations for:

- (a) the enhanced recovery or recycling of petroleum; or
- (b) the processing, storage or disposal of petroleum; or
- (c) the disposal of produced formation water; or
- (d) the injection of petroleum or water into an underground formation

are not carried out unless in accordance with good oilfield practice and the terms and conditions of the lease granted under the Act.

Equipment to Comply with Standards

703. The titleholder must ensure that the following equipment is designed constructed and operated in accordance with good oilfield practice:

- (a) wellhead equipment; and
- (b) pressure piping; and
- (c) valves used in production equipment; and
- (d) pipe flanges and flanged fittings used in production equipment; and
- (e) pressure vessels and pressure relief devices.

Construction Approval

704. (1) Before commencing the construction of a production facility, the titleholder must submit details of its location, design and proposed standards and method of construction of the production facility and the specification and plans for a fixed fire fighting facility (if any) for the approval of the Director-General.
- (2) The titleholder must ensure that in addition to the requirements of sub-paragraph (1), if it is proposed to make significant additions or modifications to a production facility during construction, the additions or modifications are not commenced until the proposal has been submitted for the approval of the Director-General.

Siting of Production Equipment

705. The titleholder must ensure that all permanent production equipment and process vessels are sited and spaced in accordance with good oilfield practice.

Progress Report of Construction and Installation

706. The titleholder must ensure that there is submitted to an Inspector not later than the 21st day of each month a report on progress made during the previous calendar month in the construction of facilities.

Initial Production Tests

707. (1) For the purposes of this paragraph a reference to a recompleted oil or gas completion is a reference to a change to the completion that requires the approval of the Director-General.
- (2) The titleholder must ensure that a newly completed or recompleted oil completion before being brought into production, or within one month of being brought into production, is subject to a production test to determine, as far as practicable:
- (a) representative chemical analyses of fluids, as they existed in the reservoir; and
 - (b) the production capacity of the well.
- (3) The titleholder must ensure that a newly completed or recompleted gas completion before being brought into production and, in any case within 3 months of its completion or recompletion, is subject to a multi-rate or other appropriate production test to determine, as far as practicable:
- (a) representative chemical analyses of fluids, as they existed in the reservoir; and
 - (b) the production capacity of the well.
- (4) The titleholder must ensure that unless reliable test data are in existence, where a completion is to be subjected to a major stimulation procedure (such as fracturing or acidizing), a test is carried out not more than 6 months before the stimulation and then a further test is carried out not more than 6 months after the completion of the stimulation.
- (5) The titleholder must ensure that a test under subparagraph (3) is appropriate to determine, as far as practicable:

- (a) any changes in the fluid flowing from the completion as a result of the stimulation; and
 - (b) any changes in the producing capacity of the completion as a result of the stimulation; and
 - (c) any changes in formation characteristics as a result of the stimulation.
- (6) The titleholder must ensure that to such extent as the equipment installed in or on a well may permit, where a test is carried out under sub-paragraph (2), (3) or (4), the shut-in and flowing bottom hole pressures are measured.
- (7) The titleholder must notify the Director-General of a proposal to carry out a production test on a newly discovered reservoir as soon as a decision is made as to when the test will be carried out.
- (8) The titleholder must ensure that a detailed report on the results of a production test is provided to the Director-General within 3 months after the completion of the test although the results of a test prior to a major stimulation may be combined with the results of the test after the stimulation.
- (9) The titleholder must ensure that where an extended production test is approved a monthly report detailing pressure information, quantities of fluids produced and sales of gas or hydrocarbon liquids is submitted to the Director-General prior to the 21st day of the next month.

Reservoir Management Plan

708. (1) The titleholder must ensure that subject to sub regulation (2) a well is not brought into production other than for initial reduction testing under paragraph 707 until a reservoir management plan has been approved and the potential for enhanced recovery or retrograde condensation has been assessed in accordance with these paragraphs.
- (2) The titleholder must ensure that where, on the commencement of this schedule, a reservoir is already in production, a reservoir management plan for that reservoir is prepared and submitted for approval within one year after the commencement of this schedule.
- (3) The titleholder must ensure that if it is not practicable to comply with paragraphs (1) and (2) a program of work to carry out such an evaluation during the course of production is submitted for approval.
- (4) The Minister may:
- (a) approve variations to a reservoir management plan; and
 - (b) require that a reservoir management plan be revised to ensure the plan is consistent with good oilfield practice.
- (5) A titleholder must comply with a relevant reservoir management plan.

Evaluation of Potential for Retrograde Condensation

709. (1) Before production from a gas reservoir is commenced, the titleholder must, if practicable carry out sampling and evaluate the possibility of retrograde condensation occurring in the reservoir.
- (2) The titleholder must ensure that if it is not practicable to comply with sub-paragraph (1) before production is commenced a program of work to carry out such an evaluation during the course of production is submitted for approval before production is commenced.
- (3) The titleholder must ensure that where, on the commencement of these Regulations, a reservoir is already in production, an evaluation of the potential for, or the documentation of the historical lack of evidence of, retrograde condensation is carried out and submitted to the Director-General within one year after the commencement of this schedule.
- (4) The titleholder must ensure that where, as a result of an evaluation under this paragraph, there appears to be the possibility of retrograde condensation occurring in a reservoir, a full pressure-volume-temperature study is carried out and the results of that study are submitted to the Director-General as soon as practicable.

Rate of Recovery of Petroleum

- 710 (1) The titleholder must ensure that for a fully developed reservoir, the annual rate of recovery of petroleum from that reservoir is approved.
- (2) The application made by the titleholder under subparagraph (1) for approval of the rate of recovery of petroleum from a fully developed reservoir must include:
- (a) the proposed rate of recovery; and
 - (b) past performance of wells and the reservoir;
 - (c) a prediction of future performance of the reservoir; and
 - (d) an estimate of ultimate recovery from the reservoir.
- (3) The titleholder must ensure that for a reservoir under development, a review of the reservoir description, production policy and current reservoir performance is submitted at the request of the Minister to demonstrate that it is being developed in a manner consistent with sound reservoir management practices and compatible with optimum long-term recovery.

Monitors and Control Mechanisms

711. The titleholder must ensure that approved monitors and control mechanisms are used to control the rate of recovery of petroleum or water from a well.

Production Tests on Producing Wells

7.12. The titleholder must ensure that a production test to estimate the rate of recovery of petroleum from the well, is carried out on each producing well at least once each month unless:

- (a) the rate of recovery of petroleum from the well is monitored continuously; or
- (b) testing of the well is not technically feasible.

Gas Reservoir and Well Performance Monitoring

713. (1) The titleholder must ensure that;
- (a) bottom hole pressure build-up surveys are conducted on each gas completion at intervals of production not exceeding 10% of the currently estimated original recoverable reserves of the reservoir, in accordance with a program approved by the Director-General; and
 - (b) each producing gas completion is tested, at intervals not exceeding 4 years, to determine changes in the flow characteristics of the well; and
 - (c) full well stream gas analysis is determined in conjunction with each test carried out under paragraph (b), and at such other times as the Director-General may direct.
 - (d) each gas completion that is capable of production is tested to determine water production in an approved manner and in accordance with a time table supplied to the Director-General, at intervals not exceeding 6 months.
- (2) Despite sub-paragraph (1) the Director-General may, on application from the titleholder, approve the monitoring of gas reservoir and well performance using alternative methods to that required by sub-regulation (1) provided the Director-General is satisfied that the alternative methods will not lead to undue waste of petroleum.
- (3) Despite sub-paragraph (1) in the event of unforeseen circumstances that justify an extension, the Director-General may, on the request of the titleholder, grant an extension of time not exceeding 2 years in which to complete the test required by sub-regulation (1).
- (4) The titleholder must ensure that a properly calibrated subsurface pressure gauge is used to test a gas completion under sub-regulation (1) (a) and (b).
- (5) The titleholder must ensure that while a gas completion is being cleaned up or tested, the amount of gas flared is kept to a minimum or eliminated in accordance with good oilfield practice.

- (6) The titleholder must ensure that the results of a test carried out under sub-regulation (1) (d) are provided to the Director-General within one month after the end of the month in which the test is carried out.
- (7) The titleholder must ensure that if a test under subparagraph (1) (d) indicates the production of formation water that had not been previously identified:
 - (a) a full separator test is carried out; and
 - (b) if the Director-General so requires, a chemical analysis of the produced water is carried out; and
 - (c) further separator tests are then carried out at approved intervals.

Oil Reservoir Pressure Build-up Surveys

714. The titleholder must ensure that bottom hole pressure build-up surveys are conducted, where downhole equipment permits, on each well completed in a pool from which oil is being produced, at intervals not greater than:

- (a) one year; or
- (b) the time required to produce 10% of the currently estimated original recoverable reserves of the reservoir,

whichever is greater, in accordance with a program directed by the Director-General.

Production Measurement

715. (1) The titleholder must ensure that facilities are in place by the commencement of production to permit the measurement of the quantity of any oil, gas or water that flows from each completion.
- (2) The titleholder must ensure that where commingling of production from separate completions occurs prior to measurement, the production of oil, gas and water from each completion is determined by testing at intervals not exceeding one month.
- (3) The titleholder must ensure that petroleum is not flared, vented, disposed of, or used in recovery operations unless equipment and procedures are used in accordance with good oilfield practice which enable both the quantity and composition of such petroleum to be determined.
- (4) The titleholder must ensure that water is not recovered from a petroleum reservoir and disposed of unless equipment and procedures are used in accordance with good oilfield practice that enables both the quantity and composition of the water to be determined.
- (5) The titleholder must ensure that any metering device used on or in an oil or gas well, gathering system, production facility or pumping station conforms with good oilfield practice.
- (6) The titleholder must ensure that a meter or other device used to measure the production of oil, gas or water is proved and certified as to its accuracy in a manner and at a frequency consistent with good oilfield practice.

Measurement of Production to Determine Royalties

716. (1) The Director-General may, for the purposes of the royalty payable in relation to an operation, select and seal a valve or meter installed at a well or production facility, or on a pipeline, tank or other receptacle that is used for the storage or transportation of oil, gas or other fluids produced from a well.
- (2) Except in an emergency, a seal fixed under subparagraph (1) must not be tampered with or removed by a person without the written permission of the Director-General.

Concurrent Production

717. If the Director-General gives written notice to the titleholder that in the Director-General's opinion a reservoir is, or could be, commercially productive of oil the titleholder must ensure that a completion is not produced as a gas completion except in accordance with a scheme for the concurrent production of gas and oil from the reservoir which is not detrimental to the ultimate recovery of hydrocarbons from the reservoir.

Pressure Below Bubble Point

718. (1) The titleholder must ensure that an oil completion is not produced so that the bottom hole pressure is below the bubble point pressure.
- (2) Despite sub-paragraph (1) the Director-General may, on application from the titleholder, approve production of an oil completion using an alternative method to that required by sub-paragraph (1) provided the Director-General is satisfied that the alternative method will not lead to undue waste of petroleum.

Surface Connections

719. The titleholder must ensure that each well from which petroleum is recovered is provided with such surface connections and equipment as are necessary to prevent the injection of petroleum or water into the well from another well or from production equipment.

Production from more than one Reservoir from one well

720. The titleholder must ensure that petroleum is not recovered simultaneously from more than one reservoir in a well unless provision is made to maintain separation of petroleum and water recovered from each reservoir until the petroleum and water pass a point where the quantity and composition of petroleum and water from each reservoir is determined in accordance with paragraph 715.

Production from more than one Reservoir from more than one Well

721. The titleholder must ensure that petroleum recovered from different reservoirs and from more than one well is not commingled until the petroleum and water pass a point where the quantity and composition of petroleum and water from each well and from each reservoir in which these wells are completed are determined in accordance with paragraph 715.

Segregation of Zones

722. (1) A titleholder must, in relation to each multiple completion well, demonstrate to the Director-General that segregation between the completions has been achieved and maintained:
- (a) after the initial well completion; and
 - (b) after any change of subsurface equipment; and
 - (c) after any other operation that may disturb, or exert abnormal differential pressures on, subsurface equipment; and
 - (d) at least once in a year.
- (2) A titleholder must, within one month, after completing a test carried out to meet the requirements of subparagraph (1), provide the Director-General with a report of the test which includes all relevant data obtained from the test, and an analysis and interpretation of the results of the test to prove or confirm segregation.
- (3) The titleholder must ensure that if a test carried out to meet the requirements of this Schedule, or the production characteristics of a well, indicate that segregation between the completions is ineffective, the Director-General must be immediately informed.
- (4) The titleholder must ensure that all reasonable steps are promptly taken to re-establish segregation and, if those steps are not successful, the Director-General may order that one or more of the completions be sealed off.

- (5) If a titleholder fails to demonstrate to the Director-General in accordance with this regulation that segregation between completions has been achieved, the Director-General may require that the well be shut-in.
- (6) A titleholder must give the Director-General at least 3 days notice of an intention to carry out a test for the purpose of this regulation.

Prevention of Cross Flow

723. If a completion is shut-in for an extended period (other than in an emergency), the titleholder must ensure that the completion is left in a condition that will prevent deleterious cross flow between zones.

Evaluation of the Potential of an Oil Reservoir to Respond to Enhanced Recovery.

724. (1) Before production from an oil reservoir is commenced, the titleholder must carry out an evaluation of the potential of the reservoir to respond to enhanced recovery processes, and of the desirability of such processes.
- (2) The titleholder must ensure that if it is not practicable to comply with sub-paragraph (1) before production is commenced, a program of work to carry out such an evaluation during the course of production is submitted for approval before production is commenced.
- (3) The titleholder must ensure that where, on the commencement of this schedule, a reservoir is already in production, an evaluation of the potential of the reservoir to respond to enhance, recovery processes is carried out and the results of the evaluation submitted to the Minister within one year after the commencement of this schedule.
- (4) Despite sub-paragraph (3) in the event of unforeseen circumstances that justify an extension, the minister may, on the request of the titleholder, grant an extension of time not exceeding 4 months in which to submit the results required by sub-paragraph (3).
- (5) The titleholder must ensure that the results of each evaluation carried out under this schedule is submitted to the Director-General as soon as practicable.

Waste or Contamination

725. (1) Where there is a reasonable possibility that:
- (a) oil, gas or water is being wasted; or
 - (b) oil, gas or water is being contaminated,
- the Director-General may require the titleholder to carry out specified tests to determine if waste or contamination is occurring.
- (2) A titleholder must carry out the tests required under sub-paragraph (1) within the time directed by the Director-General and if, as result of those tests, it is established that waste or contamination is occurring, the titleholder must take such steps as may be necessary to remedy or prevent the waste or contamination.
- (3) If steps must be taken under sub-regulation (2), the Director-General may then require the titleholder to carry out further tests to determine the effectiveness of those steps in remedying or preventing the waste or contamination if the Director-General considers that the tests required by sub-paragraph (2) have been insufficient or ineffective.
- (4) The titleholder must ensure that the results of any test carried out under this paragraph are provided to the Director-General as soon as practicable.

Waste Liquid

726. The titleholder must ensure that all formation water, and other waste fluids produced from a well, are disposed of in accordance with good oilfield practice, and in no case is the disposal of formation water,

drilling fluid, waste petroleum or refuse from tanks or wells allowed to constitute a risk to public health or safety, or to contaminate water or land not specifically designated for waste disposal.

Disposition of Gas

727. (1) The titleholder must ensure that subject to these regulations, gas under the titleholder's control in the title area is not used or produced for any purpose other than:
- (a) for the recovery of petroleum from naturally occurring reservoirs; or
 - (b) as a fuel, once details have been provided to the Director-General, that the proposed use or consumption is not wasteful.
- (2) In any case to which sub-paragraph (1) applies, the Director-General may, by written notice, require the titleholder to take specified measures to minimize the waste of gas.
- (3) A person to whom a notice under sub-paragraph (2) relates must comply with the notice.

Approval to Vent or Flare

728. The titleholder must ensure that except in an emergency the flaring or venting petroleum is not carried out without approval.

Control of Quality of Discharge Water

729. (1) The titleholder must provide details to the Director-General of the means by which the quality of water discharged will be controlled to ensure compliance with the Clean Waters Act 1970 and Regulation 28.
- (2) The titleholder must ensure that a record is maintained of the quality of water discharged.

Subsurface Safety Devices

730. The Director-General may require the titleholder to ensure that a well that is capable of producing petroleum by natural flow is equipped with an approved subsurface safety device, which:

- (a) is designed so that it automatically closes off the flow of petroleum or water from the well if the wellhead or production equipment is damaged in such a way that would allow the escape of petroleum or water from the well; and
- (b) is located in an approved position; and
- (c) is operated and tested at intervals specified by the Director-General being not less than once every 3 months and not more than 6 months; and
- (d) where a test indicates that it may not operate correctly, repaired or replaced immediately.

Workover of Wells

731. (1) The titleholder, in order to operate the title area with due diligence, must ensure that a well is not worked over without prior approval.
- (2) An application for approval to work over a well must include particulars of:
- (a) the zone in the well proposed to be abandoned (if any); and
 - (b) the zone in the well proposed to be developed (if any); and
 - (c) proposed modification and changes of the equipment in the well; and
 - (d) proposed changes (if any) in the wellhead and production equipment; and
 - (e) procedures proposed to be used.
- (3) The titleholder must ensure that where a well is to be worked over for gas lift operations, an approved pressure test, that will prove the integrity of the well production casing, tubing and associated equipment is carried out within 12 months prior to the commencement of gas lift operations.

- (4) Despite sub-paragraph (3) in the event of unforeseen circumstances that justify an extension, the Director-General may, on the request of the titleholder, grant an extension of time not exceeding three months in which to carry out the test required by sub-paragraph (3).

Wireline Operations in Wells

732. The titleholder must ensure that except in an emergency, notice is given of an intention to conduct a non-routine wireline operation in a well or to move an item of subsurface equipment in a well.

Sampling Petroleum Streams

733. The titleholder must ensure that notice is given to the Director-General of an intention to sample a petroleum stream for royalty purposes.