

SCHEDULE FOR ONSHORE EXPLORATION FOR PETROLEUM, COAL SEAM GAS, SHALE GAS OR GEOTHERMAL SUBSTANCES

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PART 1: PRELIMINARY MATTERS

1. Objectives

The objectives of this schedule are to ensure that petroleum and geothermal exploration is conducted in accordance with good oilfield practice, and that the environmental, health and safety hazards and risks involved in undertaking petroleum or geothermal operations are eliminated or minimised so far as is practicable.

2. Workplace Health and Safety Act, 1995

This schedule does not alter any duties, obligations or procedures which apply under the *Workplace Health and Safety Act 1995*. The licensee shall ensure that drilling and other petroleum or geothermal operations conform with the requirements of the Act.

3. Definitions

In this Schedule:

'Completion' means a flowpath in a well that allows the production of fluids from, and the injection of fluid into, a discrete formation interval through the well, and includes the equipment necessary for that production or injection independent of other flowpaths in the well;

'Directional drilling' in relation to drilling a well means drilling that involves intentional changes in the direction of drilling;

'Facility' means a structure that:

- (a) is used or constructed for the purpose of recovering petroleum or geothermal energy; or
- (b) carries, contains or includes equipment for the drilling or workover of a well;

'Good oilfield practice' means all those things that are generally accepted as good and safe in:

- (a) the carrying on of exploration for petroleum; or
- (b) petroleum recovery operations.

'Incident' means an accident or dangerous occurrence;

'Lifecycle' of an operation, includes the design, construction, abandonment and rehabilitation stages of the operation;

'Practicable' in relation to eliminating or minimising hazards and risks means practicable having regard to:

- (a) the severity of the hazard or risk;
- (b) the state of knowledge about the hazard or risk and any means of eliminating or minimising that hazard or risk;
- (c) the availability and suitability of ways to eliminate or minimise that hazard or risk;
- (d) the cost of eliminating that hazard or risk;

'Workover operation' means a modification, maintenance or repair operation made to a well.

4. Suspension of operation of this schedule

The Director may give approval for the suspension of all or part of this schedule on the basis of a risk assessment where he is convinced that it is safe to do so.

PART 2: GENERAL CONDITIONS

5. Good Oil Field Practice

- (1) The Licensee must ensure that exploration is carried out to good oil field practice to protect persons, the environment and petroleum resources.
- (2) Work programs must be designed and carried out by persons with appropriate qualifications and experience.
- (3) Where geothermal drilling is proposed, the licensee must demonstrate that procedures meet the same standard of safety and environmental control as that required by good oil field practice in petroleum exploration.

6. Equipment validation

Before any drilling commences, the Licensee shall provide the Director with reports from suitably qualified and independent assessors confirming that the drill rig and associated equipment has the capability to undertake the program in question and that the state of maintenance of the equipment satisfies current oilfield standards. Relevant Australian standards must be applied and otherwise those of the American Petroleum Institute must apply. Drilling may not commence without such certification.

7. Competent Persons

The Licensee shall ensure that employees and independent contractors associated with petroleum operations are competent, by reason of having the necessary skills, training and ability, to undertake their duties.

8. Control of environmental, health and safety hazards

- (1) The Licensee shall ensure that each environmental, health and safety hazard associated with the lifecycle of a petroleum operation is eliminated or, if it is not practicable to eliminate the hazard, must ensure that the risk associated with the hazard is minimised so far as is practicable and according to good oil field practice.
- (2) The Licensee shall ensure that the control of the hazards and risks is maintained in the event of significant change in conditions, and
 - (a) that systems are established to detect and respond to emergency situations;
 - (b) that the systems are documented and the documentation retained for inspection purposes;
 - (c) that there are regular audits and reviews of the systems for their continuous improvement.
- (3) The Licensee shall establish and maintain management systems to ensure and demonstrate compliance with condition (8)(2).

9. Control of fire

Before any drilling commences, the Licensee shall obtain confirmation that precautions to control a fire in the event of flaring meet the requirements of the Tasmania Fire Service. The Licensee shall provide the Director with a copy of the confirmation.

10. Noise

- (1) Where residences exist within two kilometres of a well site the Licensee shall advise those residents of the operating hours and expected noise levels before any drilling commences. The Licensee should employ a noise consultant in this situation.
- (2) The Licensee shall ensure that noise emissions are controlled. Noise levels at nearby residences must conform with those which would be applied to permits for industrial operations in a similar situation.
- (3) If requested by the Director the licensee shall provide him with a copy of report from an independent consultant predicting noise levels at nearby residences and providing details of control measures which should be applied to comply with this condition.

11. **Submission of data**

Reports on operations, copies of original data and the results and interpretations of all processing tests, surveys, measurements and analyses must be submitted as soon as is practicable, in accordance with MRT guidelines.

12. **Daily drilling reports**

- (1) A licensee who undertakes any drilling on any day must furnish to the Director a **daily drilling report** in accordance with the requirements listed below.
- (2) A daily drilling report —
 - (a) must relate to a period not exceeding 24 hours, calculated from the end of the period reported on in the immediately preceding daily drilling report (unless the report is the first report for the well);
 - (b) must be provided to the Director —
 - (i) unless subparagraph (ii) applies — within 12 hours after the end of the period to which it relates;
 - (ii) if the end of the period of 12 hours under subparagraph (i) would fall on a Saturday, Sunday or public holiday — by 10 am on the first business day following the end of that 12 hour period.
- (3) A daily drilling report must include —
 - (a) the name and number of the well;
 - (b) a report number or the number of days from spud;
 - (c) the time and date of well spud and rig release;
 - (d) the depth of the well at the end of the reporting period (in metres);
 - (e) information on operations carried out during the reporting period;
 - (f) the mudlog for the reporting period;
 - (g) resource show descriptions;
 - (h) a description of the formations, and the depth of any geological formation tops, encountered during the reporting period;
 - (i) well logs acquired during the reporting period;
 - (j) the drill stem test intervals and results, including recoveries and the API gravity of any liquid hydrocarbons recovered during the reporting period, and the resistivity of any water recovered during the reporting period;
 - (k) results of cement calculation; and
 - (l) results of formation integrity tests (including leak off tests).

13. **Well completion reports**

- (1) A licensee who undertakes any drilling must furnish to the Director, within 6 months after rig release, a **well completion report** in accordance with the requirements of this schedule.
- (2) A well completion report must include —
 - (a) the name and number of the well;
 - (b) a summary page or pages, located at the beginning of the report, which set out in a concise form basic information relating to the well found in the report; and
 - (c) a diagram that shows —
 - (i) the latitude and longitude of the well in GDA 94 values, computed within accuracy levels approved by the Director;
 - (ii) the direction of true north;

- (iii) any other well and all roads, access tracks, public utilities or substantial buildings or other structures within 300 metres of the site of the well, and any significant topographical, environmental or cultural features;
 - (iv) where applicable, the boundaries and legal description of the section of land within which the well is situated;
 - (d) the name of any drilling contractor;
 - (e) the spud date, the date of rig release, and the total depth drilled (to drillers and loggers depths, in metres);
 - (f) a summary of the lithologies encountered during the drilling, and a summary of the geological formations taken to have been encountered during drilling;
 - (g) a composite log, formulated to a scale comparable with the wireline logs used in connection with the drilling, that includes the following:
 - (i) the bit record;
 - (ii) the penetration rate;
 - (iii) the casing record;
 - (iv) a lithological summary;
 - (v) geological formation tops;
 - (vi) representative open hole and cased hole logs;
 - (vii) sidewall core points;
 - (viii) palaeontological analysis results;
 - (ix) hydrocarbon shows;
 - (x) the drillstem test intervals and results;
 - (xi) core intervals and recoveries;
 - (xii) the log analysis result;
 - (h) core and sidewall sample descriptions, and an analysis of these;
 - (i) relevant petrographic descriptions;
 - (j) the palaeontological analysis results and interpretation, if undertaken;
 - (k) the formation test reports, charts and interpretation;
 - (l) log interpretations;
 - (m) details of hole sizes, casings and cementing that has been undertaken;
 - (n) details of well completion or abandonment;
 - (o) a velocity survey, if undertaken;
 - (p) for exploration and appraisal wells — an interpreted post drill structure map of the primary objective and an interpreted seismic section;
 - (q) a location survey;
 - (r) headflow data — downhole temperature, thermal conductivity etc. for geothermal wells.
- (3) For the purposes of clause (2), all depth references for a well must be in metres.

14. Petroleum reservoir fluid analysis reports

- (1) A licensee who samples reservoir fluid (including water) must furnish to the Director, within 6 months after the date of sampling, a **petroleum reservoir fluid analysis report** in accordance with the requirements of these regulations.
- (2) A petroleum reservoir fluid analysis report must include —
 - (a) the name and number of the well;
 - (b) the date on which the reservoir fluid was sampled;
 - (c) the interval from which the sample was obtained;
 - (d) a description of any analysis or test that has been performed on the sample;
 - (e) the results of any analysis or test;
 - (f) the name of the laboratory or other place at which any analysis or test was undertaken.
- (3) A copy of a report under this regulation will be available for public inspection after the expiration of two years from the date on which the sampling was carried out.

15. Other technical reports

- (1) A licensee who prepares or commissions any other technical report in connection with an activity conducted under the licence must furnish a copy of the report to the Director within two months after the report is in a reasonable state of completion or received by the licensee (as the case may be).

16. Reporting of incidents

- (1) Where an incident occurs that:
 - (a) involves the release or spill of more than 80 litres of petroleum; or
 - (b) involves the release of a petroleum emulsion in which the petroleum concentration is greater than 30 milligrams per litre; or
 - (c) involves any uncontrolled escape by ignition of flammable or combustible material; or any uncontrolled escape of high temperature (>40° Celsius) fluid or gas,the Licensee shall submit to the Director a report of as soon as is practical after the incident occurs.
- (2) The report must include:
 - (a) the date, time and place of the incident;
 - (b) a description of the incident;
 - (c) any known or suspected causes of the incident;
 - (d) a description of the steps taken to minimise the impact of the incident;
 - (e) a description of the steps taken or proposed to prevent a recurrence of the incident.

PART 3: DRILLING AND WORKOVER OPERATIONS

17. Operation plan for drilling or workover operations

- (1) The Licensee shall submit a operation plan in accordance with good oilfield practice and satisfactory to the Director for drilling or workover operations.
- (2) An operation plan for drilling or workover operations must include:
 - (a) details of the operation, including the location of wells and any equipment to be used;
 - (b) an environment and safety assessment which:
 - (i) identifies the environment, health and safety hazards and risks associated with the operation;
 - (ii) provides an assessment of the risks;
 - (iii) identifies the measures to be used to eliminate the hazards and to minimise the risks so far as is practicable.
 - (c) a description of the management systems.
- (3) The operation plan must be submitted at least one month before the proposed start of the drilling or workover operations, unless the Director agrees otherwise. The plan must demonstrate compliance with good oilfield practice.

18. Drilling at location not approved

- (1) The Director may direct that a well that is drilled at a location that is not identified in an operation plan for drilling operations must be plugged and abandoned.
- (2) The holder of an authority must comply with such a direction within the time specified by the Director in giving the direction.

19. Casing requirements

The Licensee shall ensure that a well is lined with casing and that the casing is cemented in accordance with good oilfield practice.

20. Blow-out prevention equipment

The Licensee shall ensure that the blow-out prevention equipment (including accumulators) of a well is installed, operated, maintained and pressure tested in accordance with good oilfield practice.

21. Formation integrity testing

The Licensee shall ensure that formation integrity testing of a well is undertaken before drilling to the next casing point in accordance with good oilfield practice.

22. Drilling fluid

The Licensee must ensure that the characteristics and the use of drilling fluid and equipment used in a well provide adequate control of any sub-surface pressures likely to be encountered in the well.

23. Cuttings, cores and fluid samples

- (1) The Licensee shall ensure that any cuttings, cores or fluid samples recovered in connection with the drilling of a well are processed and stored in accordance with good oilfield practice and that undue deterioration and loss of the cuttings, cores and fluids is prevented.
- (2) The Licensee shall ensure that the results obtained from any analysis of a fluid sample is submitted to the Director as soon as is practicable after the results are obtained.
- (3) If directed to do so by the Director, the Licensee shall give the Director cuttings, cores or fluid samples in accordance with the direction.

24. Well samples

- (1) A licensee must provide all cuttings and core obtained from a well to the Core Library within one month after rig release.
- (2) Each cutting sample must —
 - (a) be at least 200 g weight;
 - (b) be washed and dry;
 - (c) be contained in a container suitable for long-term storage, as determined by the Director;
 - (d) be clearly and permanently marked with the well name and number and the depth interval represented by the cutting (in metres).
- (3) A licensee may, with the approval of the Director, retain a $\frac{2}{3}$ proportion of a core (split length wise) for analysis.
- (4) Cuttings and core must be accompanied by a statement that includes —
 - (a) the name and number of the relevant well;
 - (b) the depth ranges from which the samples were obtained;
 - (c) the cuttings sample interval for each depth range;
 - (d) a statement identifying any variation from an evaluation program previously proposed under this schedule;
 - (e) a statement as to whether the core is complete and, if it is not complete —
 - (i) a list of the intervals that are not complete; and
 - (ii) a statement as to why the core is not complete.

25. Coring, logging and testing

- (1) If the Director considers that the Licensee is not undertaking sufficient coring, logging or testing to evaluate an occurrence, or potential occurrence, of petroleum, the Director may direct the Licensee to carry out any coring, logging and testing that the Director thinks is necessary and reasonable in the circumstances.
- (2) The Licensee shall comply with such a direction within the time specified by the Director.

26. Age dating

- (1) The Director may direct the Licensee to undertake all reasonable steps to ascertain the ages of rock strata penetrated by an exploration well.
- (2) The Licensee shall comply with such a direction within the time specified by the Director.

27. Well evaluation logs

- (1) Other than with surface or intermediate casing, the Licensee shall ensure that before a well is cased, completed or abandoned, a suite of logs is run and recorded.
- (2) The Licensee shall ensure that the suite of logs is sufficient to at least provide a proper determination of:
 - (a) formation porosity;
 - (b) formation fluid saturation;
 - (c) stratigraphic correlation with surrounding wells;
 - (d) if inadequate control exists in the vicinity of the well velocity control.
- (3) Condition 27(2) does not apply if:
 - (a) there is an immediate threat to the integrity of the well; or
 - (b) the Director states in writing that a suite of logs is not required before casing in certain circumstances, and those circumstances exist.
- (4) The Licensee shall ensure that a copy of each log run is submitted to the Director as soon as is practicable after it is recorded.

28. Protection of aquifers

The Licensee shall ensure that all reasonable steps are undertaken during an operation on a well to prevent communication between, leakage from, or the pollution of, aquifers.

29. Consent to conduct production or drill stem tests

- (1) The Licensee shall not conduct a production or drill stem test in an exploration or development well that has not been opened to production except with, and in accordance with, the written consent of the Director.
- (2) An application for consent must provide details of the testing program and the equipment to be used.

30. Well completion

- (1) As far as is practicable, the Licensee shall ensure that the surface, and sub-surface, equipment of a completed well is arranged to allow the pressure and temperature to be measured, at the well-head and at the bottom of the well and also to allow for any other test required for the maintenance or management of the well or the reservoir.
- (2) The Licensee shall ensure that the surface equipment is fitted with sampling means.
- (3) On the completion and any re-completion of a well, the Licensee shall make and retain for inspection purposes an accurate record of all:
 - (a) sub-surface equipment; and
 - (b) material remaining in the well as a result of maintenance work.
- (4) The Licensee shall ensure that before opening a well to production and after every major repair, re-completion or workover operation, the well-head and flow line of the well is pressure tested.

31. Protection of well site

The Licensee shall ensure that adequate controls are in place to protect a completed well site from outside interference and to ensure the safety of the public.

32. Disposal of oil or gas produced

The Licensee shall ensure that any oil or gas; or high temperature (>40° Celsius) fluid or gas:

- (a) that is circulated out of, or produced from, a well during a drilling, testing or repair operation; and
- (b) that has not flowed through the flow line of the well to a gathering facility

is disposed of in a manner that minimises any environmental damage in accordance with good oilfield practice.

33. Consent for workover operations

- (1) The Licensee shall ensure that a well is not worked over except with, and in accordance with, the written consent of the Director.
- (2) An application for consent must include details of:
 - (a) the zone in the well to be abandoned (if any);
 - (b) the zone in the well to be developed (if any);
 - (c) the proposed modifications, maintenance or repair to equipment in the well;
 - (d) the proposed modifications, maintenance or repair to the well-head and production equipment;
 - (e) the proposed procedures for undertaking the workover operation.
- (3) The Licensee shall ensure that a well that is to be worked over for gas lift operations is pressure tested in the 12 months before the operations start to prove the integrity of the well production casing, tubing and associated equipment.

34. Cessation of drilling operations

The Licensee shall ensure that a well is made safe in accordance with good oilfield practice whenever drilling operations cease.

35. Consent to suspend or abandon a well

- (1) The holder of an authority must ensure that a well is not suspended except with, and in accordance with, the written consent of the Director.
- (2) The Licensee shall ensure that a well with a measurable interval of petroleum is not abandoned except with, and in accordance with, the written consent of the Director.
- (3) An application for consent to suspend or abandon a well must include:
 - (a) the name and number of the well;
 - (b) the reasons for the proposed suspension or abandonment;
 - (c) details of the proposed suspension or abandonment program, including the method by which the well will be made safe.
- (4) Confirmation of completion of the approved abandonment or suspension program must be provided to the Director at the completion of the program.
- (5) Where a well has been suspended a report is to be provided at six monthly intervals following the suspension outlining the proponent's plans for development or abandonment of the well.