Lease Continuation by Application

Guide to Geological and Geophysical Technical Packages

Objective:

- To ensure that the lease holder is successful in obtaining continuation of all lands that are eligible for "**continuation by application"** in accordance with section 58 of the *Petroleum and Natural Gas Act*

Solution:

- Creation of a package of *interpreted* geological, geophysical, and well evaluation information that clearly demonstrates how specific lands qualify for continuation under applicable parts of section 58 of the *Act*

Background on “Continuation by Application”

Continuation by application is one of three standard methods of continuing lease tenure beyond its primary term in accordance with the *Petroleum and Natural Gas Act*. These methods, with the respective governing section of the Act noted, are:

Section 62 continuation by penalty payment

Section 61 continuation by prior written commitment to drill a well

Section 58 continuation by application

Continuation by Application

- **<u>Not later than 60 days after the expiry of the lease</u>** the lessee must submit a written application, including any applicable supporting materials

- Types of continuation by application:
  - Demonstration of “eligible spacing areas” [sec. 58(3)(a)];
  - Unitization or royalty agreements with the Crown [sec. 58(3)(b)];
  - Programs of work designed to delimit pools or fields of oil or gas [sec. 58(3)(c)]; and,
  - Completing work on the establishment of a well [section 58(3)(d)]

- Leases continued under any part of section 58 are subject to stratigraphic reversion under section 59 of the *Act*

- Leases continued under section 58 are reviewed annually to determine their eligibility to be continued further

- Continuations involving “eligible spacing areas” and programs of work are obtained by application to the Oil and Gas Titles Branch (the “Branch”) of the Ministry of Energy, Mines and Petroleum Resources (“MEMPR”). The technical content of the application may range from a simple letter noting a successful well to a complex package of interpreted geophysical, geological, production, completion, and well evaluation information

Continuation by Application

Overview of Recommended Content

- Continuations involving **“eligible spacing areas”** [section 58(3)(a)] and **programs of work** [section 58(3)(c)] are obtained by technical applications ranging from a simple letter noting a successful well, to a complex package of interpreted geophysical, geological and well evaluation information with record sections, cross sections, maps and analyses, laid out to demonstrate the limits of established pools or the prospects supporting proposed programs of drilling and geophysical work

- Continuations involving **unitization** and **royalty agreements** [sec. 58(3)(b)], or **wells drilling** through the 60 day period after expiry [section 58(3)(d)] can be obtained through application in the form of a simple letter

- A record of unit outlines is maintained and revised annually by the Branch and may be obtained from Crown Publications Inc. (http://www.crownpub.bc.ca)

Continuation by Application

Recommended Content

1. “Eligible Spacing Areas”

- Normal spacing areas for gas comprise 1 section or 4 NTS units; for oil, normal spacing areas are ¼ section or 1 NTS unit

- Eligible spacing areas are defined as spacing areas**:**

  - That contain a cased well capable of producing oil or gas

  - That are part of an approved sec. 100 scheme for pressure maintenance, water or gas injection, water disposal, gas cycling, gas storage, other enhanced recovery, or an experimental scheme

  - Where an established pool of oil or gas is known by the Director of the Branch to extend over at least half of the spacing area

  - Where an established pool of oil or gas is known by the Director to extend onto a significant portion of the spacing area, ***and*** a well that is capable of adequately draining and producing the oil or gas from that pool exists on a contiguous spacing area

Continuation by Application

Recommended Content

"Eligible Spacing Areas"

1. Contains a petroleum well or a gas well

- Where a well has been drilled, cased and placed on production, a simple letter pointing out the successful well and the productive zones is sufficient to obtain continuation of the spacing area, in most cases

- If the well is very recent, or a pay zone has not been placed on production, then supporting information may be included, demonstrating the results of completing, testing or otherwise evaluating the pay zone(s)

- There is a time delay in the gathering and transport of new well data from the oil and gas commission in fort st. John to the permanent files residing in MEMPR offices in Victoria, especially during the busy winter drilling season; therefore copies of very recent supporting information are recommended to be included in an application for continuation if the well is not yet on production

Continuation by Application

Recommended Content

"Eligible Spacing Areas"

2. Part of an approved section 100 scheme

- A simple letter pointing out that a lease contains spacing area(s) subject to such a scheme, and naming that scheme, or naming the unitized zone(s) and substance(s), is sufficient to obtain continuation of those spacing areas, in most cases

- A record of section 100 scheme outlines is maintained and revised annually by the Branch and may be obtained from Crown Publications (http://www.crownpub.bc.ca)

Continuation by Application

Recommended Content

"Eligible Spacing Areas"

3 & 4. Established oil or gas pool extends onto lease

- Where drilling, well evaluation, geophysical or reservoir performance work has resulted in the discovery or extension of a pool of oil or gas, and this can be demonstrated to the director through an application containing *interpretation* of the pertinent new work, then those spacing areas contained within the recognized limits of a pool, and those partially covered by a pool as described in points 3 and 4 above, can be continued

- A record of the limits of non-confidential pools recognized by the Director is maintained, revised quarterly, and published by the Branch. These "land plats" are derived from the results of examination of lease holders' technical applications, combined with well evaluations and mapping received from the oil and gas commission, and resemble the "G orders" published by the AEUB in Alberta

- It is important for the lessee to be aware that pool mapping obtained from the Oil and Gas Commission does not include evaluation of recent wells. Therefore the applicant is strongly advised to include convincing geological, geophysical and well evaluation interpretations

- Land plats published by the Branch are available by subscription from Crown Publications under the title "Oil and Gas Pool Descriptions".

Determining the limits of pools

- The geological and reservoir evaluation principles applied by the Branch in determining the limits of pools are similar to those used by the development department of an oil company or by a reserves evaluation team in designating established reserves (proven plus a reasonable part of probable). A pool is delimited by well drilling, well evaluation, completion and production information, and geophysical information, bearing in mind the geological nature of the formation, reservoir characteristics, and trapping mechanism

- The Branch gives greater credence to geophysical interpretations in areas or formations that are well understood due to prior development and existing well control, if demonstrative record sections and useful interpreted geophysical mapping is provided in support

- Pool limits change with the arrival of new information: new wells, new evaluation work on wells, production behaviour, and geophysical interpretations

Determining the limits of pools (continued)

Note: Application content will vary widely depending on whether a pool extension is supported by hard well control and well tests, or is based partly on geophysical interpretations & conceptual geological mapping, or if the application deals with a formation with little exploration history

Bearing this in mind, useful contents of an application typically will include:

- A cover letter noting those lands that are being requested for continuation

- If known, a listing of lands that are part of, or an extension to, a recognized published pool

- A geological or geophysical discussion of the prospect or pool model, discussing reservoir distribution, quality, continuity (i.e. compartmented or continuous in lateral extent), depositional environment, structure, trapping mechanism and controls, and the evidence that indicates the presence of oil or gas and its geographical distribution over the lands of application

- Interpretations and conclusions drawn from your analysis of pertinent well, geophysical, geological and reservoir performance information; it is not necessary to include raw well data or reports except for very new information as this data exists in Ministry files

Determining the limits of pools (continued)

- A geological cross section illustrating the pay zone(s) on well logs, and its nature and extent in surrounding well control, with annotated test or production information

- If test or production data does not exist, then well log porosity, resistivity, or water saturation observations and cut-offs can be noted on a cross section

- A geological map showing the applicant's interpretation of the pool's extent or limits, e.g., a net oil or gas pay map, with well control data points for the zone mapped, and any other geological map or illustration that will strengthen the evidence for continuation

- Any useful supporting core, sample, or mud gas detector information

- If geophysical information is used to support the application, then a map or maps of those significant attributes or data measurements used to determine reservoir or pool extent. If seismic is used these attributes should be shown on a shot point or survey map showing locations of seismic control (2D lines or 3D survey area)

- If seismic information is used, interpreted record section(s) crossing or near the lands of application, showing the concept or interpretation used to delimit the pool

Continuation by Application

Recommended Content

2. Continuation by program of work [sec. 58(3)(c)]

    - Consists of a one year continuation upon discretionary approval of a one year program of work that must be designed to delimit pools of oil or gas on the lease or leases involved

    - Normally requires well drilling that results in pools being delimited by the end of the continuation year

    - **Note:** Consider that approval under this provision is discretionary, dependent on the Director being convinced that it is in the best interest of the province to have the current lessee of the expiring lease continue its work, rather than reissuing the rights by public tender. Therefore, a proposed program of work should be significant and compelling

Continuation by Application

Recommended Content

"Work Programs"

Bearing the preceding note in mind, useful contents of an application typically will include:

- A cover letter indicating where wells are planned to be drilled, geophysical work performed, and whether any of the work is contingent on the results of preceding work in the program

- A statement of which zones are planned to be evaluated by the program of work

- A geological or geophysical discussion, with exhibits, that demonstrates the current state of the lessee's knowledge, understanding, and evaluation of prospective zones of interest

- A description of those portions of a lease or leases on which pools will be delimited by the proposed program of work

- **Note:** if a program involves substantial drilling on all parts of leases, then supporting information can be minimal

In most cases, the types of exhibits listed under the first section, *"Continuation of Eligible Spacing Areas"*, will be useful in demonstrating the lessee's state of evaluation and understanding of the area, and in convincing the Director to approve the program.

Continuation by Application

Recommended Content

"Work Programs"

Exhibits may include:

- An interpreted geophysical map of important attributes, illustrating the state of advancement of the lessee's work and state of understanding of the zones of interest

- Interpreted record section(s) near the lands of application, illustrating the play concept

- A base map showing the location of planned geophysical data acquisition and well drilling that will be a part of the program of work

- A geological cross section illustrating the zone(s) of interest and the prospect concepts

- A geological map illustrating the distribution of potential pools that will be discovered or extended under the proposed program of work

- A discussion of the prospect or pool model, discussing formation depositional environments, reservoir distribution, quality, continuity, structure, trapping mechanism and controls