

## Royalty Programs for Deep Gas Wells

*Petroleum and Natural Gas Act*

Do you drill or have an ownership interest in deep gas wells?

Do you need to know how the deep well and deep re-entry credits apply to royalties on production from gas wells?

This bulletin provides specific information on the deep well credit, the deep re-entry credit and the deep discovery well exemption for natural gas producers. The credits and exemption are earned by drilling on both Crown and freehold land, and may be applied against either gas royalties or freehold production taxes.

### Table of Contents

Overview.....	2
Obtaining a Credit or Exemption.....	2
Deep Well Credit.....	3
Deep Re-Entry Credit .....	11
Deep Discovery Well Exemption .....	14
Schedule 1: East Area for Wells With Spud Dates Before January 1, 2009 .....	16
Schedule 1b: East Area for Wells With Spud Dates on, or After, January 1, 2009 .....	17
Figure 1: Old and New East/West Lines .....	21

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This bulletin has been completely rewritten and replaces the previous version dated July 2004.

## Overview

**Effective February 1, 2009**, the Deep Well Credit and the Deep Re-entry Credit Programs have been changed to more effectively encourage greater exploratory drilling activity and to maximize the development of known gas reserves. The changes were developed with consideration to the factors that contribute to higher drilling and completion costs by reviewing depth maps, drilling costs and production histories.

The deep discovery well exemption provides royalty relief to encourage higher-risk exploration drilling.

**Please note:** Although this bulletin refers to royalties, the credits and the deep well discovery exemption applies to freehold production tax in the same manner.

## Obtaining a Credit or Exemption

The ministry determines eligibility of a well, which credits apply and the amount of the credits or exemption. Eligibility is based on the information provided by the well operator on drilling and completion reports, and on the *Notice of Suspension or Commencement of Operations (BC11)*. It is important to note that the Oil and Gas Commission verifies the depths to top of pay provided on the BC11, but is not able to do so right away. Consequently, adjustments to credits may be made a few months after the initial calculation.

The ministry allocates the deep well credits for a qualifying well between each producer having a reporting interest in the deepest deep well event, based on the information provided on the *Reporting Interest Statement (BC12)*. The ministry allocates the deep re-entry credit for a deep re-entry well event based on the ownership interests in that well event provided on the BC12.

A well can qualify for both the deep well and deep re-entry credits; however, for royalty purposes, a gas well event consists of all completions in a geological zone. Consequently, if a deep re-entry well event is in the same zone as a deep well event, the deep re-entry credit will displace any unused balance of the deep well credit. A well event may qualify for the deep discovery well exemption and either the deep well or deep re-entry credit. Producers are entitled to the exemption or credit that provides the greatest benefit.

A deep well credit is deducted from royalties on production from all deep well events within the same well. Each producer's share of the credit will be based on their

ownership interest in the deepest deep well event. A deep re-entry credit is deducted from royalties on production from the qualifying deep re-entry well event.

## Applying the Credit to Net Royalties

When marketable gas volumes are reported on the *Marketable Gas and By-Product Allocations Report (BC08)*, the ministry calculates the royalties according to the procedures as described in the *Oil and Gas Royalty Handbook*.

The ministry subtracts enough of a credit from the net royalty payable on production from the deep well event each month to reduce the royalty payable for the well event to zero. The ministry continues to subtract portions of the credit from net royalties for the well event until the full amount of the credit has been used.

The ministry's monthly invoice to a producer will show the unused balance left in each of the producer's deep well credits and deep re-entry credits. If the unused balance of the credit for a well event is less than net royalty payable for the well event, the invoice will show the net royalty payable after deducting the unused balance.

If the reporting interests in the deepest well event are changed, the ministry transfers a portion of any unused balance in the deep well credit to the purchaser based on the new reporting interests.

The sections below explain how the ministry calculates the deep well credit, the deep re-entry credit and the deep discovery well exemption.

## Deep Well Credit

The deep well credit was introduced on July 1, 2003 and modified on December 1, 2003 and January 1, 2009. The original and modified deep well credits are explained below.

### Qualifying Criteria

To earn a deep well credit, a well must be a gas well, but may not be part of a coalbed methane project. In addition, the deepest productive well event in the well is used to determine the true vertical depth (TVD).

#### Spud date on, or after, January 1, 2009

For wells with spud dates **on, or after, January 1, 2009**, the eligibility for deep well credits is based on the true vertical depth (TVD) to a completion point in the well. TVD to the completion point is the distance from the completion point to a point directly above the completion point that is at the same elevation as the kelly bushing used in drilling the well. The completion point depends on the type of well, as follows.

- For vertical wells with open hole completions, the completion point is the bottom of the casing.
- For vertical wells that do not have open hole completions, the completion point is the bottom of the deepest perforations in the casing.
- For horizontal wells, the completion point is the point in the well bore at which the angle of the well bore first exceeds 80 degrees from vertical.

Horizontal wells are wells with a wellbore that is:

- drilled at an angle of at least 80 degrees from the vertical, where the angle is measured for a line connecting the wellbore's initial point of penetration into a productive zone to the end point in that zone, and
- at least 100 metres in length from point of penetration into the productive zone to the end point in that zone.

A vertical well is any well, including a directional well, that **does not** qualify as a horizontal well.

Producers qualify for the deep well credit if the well meets the following qualifying criteria:

- the well has a spud date on, or after, January 1, 2009, and
- the deepest productive well event in the well has a TVD to a completion point in the well greater than:
  - 2,500 metres if it is in a vertical well, and
  - 2,300 metres if it is in a horizontal well.

The ministry obtains TVD to completion point information from drilling and completion data that is provided by the industry to the Oil and Gas Commission.

### **Spud date before January 1, 2009**

For wells with spud dates **before January 1, 2009**, the eligibility for deep well credits continues to be based on TVD to top of pay. The ministry will continue to obtain TVD to top of pay information from well operators for these wells from the *Notice of Commencement or Suspension of Operations (BC11)*.

Producers qualify for the deep well credit if the well meets the following qualifying criteria:

- the well has a spud date **after June 30, 2003**,
- if the well has a spud date **after June 30, 2003 and before December 1, 2003**, for both vertical and horizontal wells, the deepest productive well event in the well has a true vertical depth (TVD) to the top of pay of at least 2,500 metres, and

- if the well has a spud date **after November 30, 2003**, the deepest productive well event in the well has a TVD to the top of pay greater than:
  - 2,500 metres for vertical wells, and
  - 2,300 metres for horizontal wells.

TVD to the top of pay is the distance between the point of intersection of the wellbore with the top of the well event's pay and a point directly above the point of intersection that is at the same elevation as the kelly bushing used in drilling the well. The pay is the part of the producing zone where there is sufficient gas, pressure and permeability to justify commercial production.

## Calculating the Credit

The value of the deep well credit is designed to reflect higher drilling and completion costs that relate to factors, such as bottom hole location, the hydrogen sulphide (H<sub>2</sub>S) content and the depth of the well.

The ministry categorizes the well type, determines which of the four deep well credit tables apply and then calculates the credit amount using the appropriate formula. Each of these steps are explained further in the sections and in the examples provided below.

## Well Type

There are two variables for determining the well type:

1. bottom hole location
2. H<sub>2</sub>S content

### Bottom hole location (east or west)

To recognize the higher costs associated with drilling in specific underdeveloped areas of the province, there are two bottom hole location categories: east and west.

**Schedule 1** describes the locations within the east area for wells with spud dates **before January 1, 2009**. **Schedule 1b** describes the locations within the east area for wells with spud dates **on, or after, January 1, 2009**. Locations that are not on these schedules are considered to be in the west areas. **Figure 1** is a map of the east/west lines for wells with spud dates **before January 1, 2009** and **on, or after, January 1, 2009**.

### H<sub>2</sub>S content (special sour or sweet)

To recognize the higher costs associated with sour gas, there are two categories based on H<sub>2</sub>S content: special sour and sweet. Deep wells classified as special sour are eligible for a greater credit than wells classified as sweet.

For a well to be classified as special sour, it must meet the required distance from an urban centre and the corresponding maximum potential H<sub>2</sub>S release rate as outlined below.

<b>Distance from the Well to the Corporate Boundaries of an Urban Centre</b>	<b>Maximum Potential H<sub>2</sub>S Release Rate From the Well</b>
Within 500 metres	0.01 m <sup>3</sup> /s or greater and less than 0.1 m <sup>3</sup> /s
Within 1.5 kilometres	0.1 m <sup>3</sup> /s or greater and less than 0.3 m <sup>3</sup> /s
Within 5 kilometres	0.3 m <sup>3</sup> /s or greater and less than 2.0 m <sup>3</sup> /s
5 kilometres or greater	2.0 m <sup>3</sup> /s or greater

All deep wells that do not meet the above criteria are classified as sweet.

### **Deep Well Credit Tables**

Based on the well type, the ministry determines which of the four tables below to use for calculating the credit.

<b>West Special Sour</b>		
<b>Table Depth (Metres)</b>	<b>Cumulative Value (\$)</b>	<b>Incremental Value (\$/Metre)</b>
2,500	0	4,200
3,000	2,100,000	600
3,500	2,400,000	700
4,000	2,750,000	800
4,500	3,150,000	900
5,000	3,600,000	1,000
5,500	4,100,000	

<b>East Special Sour</b>		
<b>Table Depth (Metres)</b>	<b>Cumulative Value (\$)</b>	<b>Incremental Value (\$/Metre)</b>
2,500	0	1,500
3,000	750,000	650
3,500	1,075,000	750
4,000	1,450,000	850
4,500	1,875,000	1,000
5,000	2,375,000	1,100
5,500	2,925,000	

West Sweet		
Table Depth (Metres)	Cumulative Value (\$)	Incremental Value (\$/Metre)
2,500	0	3,800
3,000	1,900,000	550
3,500	2,175,000	600
4,000	2,475,000	700
4,500	2,825,000	800
5,000	3,225,000	900
5,500	3,675,000	

East Sweet		
Table Depth (Metres)	Cumulative Value (\$)	Incremental Value (\$/Metre)
2,500	0	1,400
3,000	700,000	600
3,500	1,000,000	700
4,000	1,350,000	800
4,500	1,750,000	900
5,000	2,200,000	1,000
5,500	2,700,000	

### The Formula

Based on one of the four tables above, the ministry calculates a producer's deep well credit for a qualifying well as follows:

$$[\text{cumulative value} + \text{incremental value} \times (\text{deep well depth of the deepest well event} - \text{table depth})] \times \text{producer's share}$$

### Deep well depth on, or after, January 1, 2009

For well events in wells with spud dates **on, or after, January 1, 2009**, deep well depth is calculated in the following ways.

- In a vertical well, deep well depth is the measured depth to the completion point (MDCP). For a well event that is in a vertical well and is **not** an open hole completion, this is the distance along the well bore from the kelly bushing of the rig used to drill the well to the bottom of the deepest perforation in the well event. For a well event that is in a vertical well and **is** an open hole completion, this is the distance along the well bore to the bottom of the casing.
- In a horizontal well, deep well depth is MDCP plus the horizontal length factor (HLF) multiplied by the positive difference between total measured depth and MDCP, as follows:

$$\text{MDCP} + [\text{HLF} \times (\text{total measured depth} - \text{MDCP})]$$

- The HLF is calculated as follows:
  - for a gas well event with MDCP between 2,300 and 2,875 metres, the HLF is:
 
$$[ 60 - 0.035 \times (\text{MDCP} - 2,300) ] / 100, \text{ and}$$
  - for a gas well event with MDCP deeper than 2,875 metres, the HLF is 0.4.

The ministry obtains MDCP information from drilling and completion data provided by the industry to the Oil and Gas Commission.

### **Deep well depth before January 1, 2009**

For well events in wells with a spud date **after June 30, 2003 and before December 1, 2003**, the deep well depth is the TVD to the top of pay of the well event.

For well events in vertical wells with a spud date **on, or after, December 1, 2003**, the deep well depth is the measured depth to top of pay (MDTP). MDTP is the distance along the wellbore from the intersection with the top of the pay of the well event to the kelly bushing used in drilling the well.

For well events in horizontal wells with a spud date on, or after, December 1, 2003, the deep well depth is MDTP plus the horizontal length factor (HLF) multiplied by the positive difference between total measured depth and MDTP, as follows:

$$\text{MDTP} + [\text{HLF} \times (\text{total measured depth} - \text{MDTP})]$$

The HLF is calculated as follows:

- for well events with MDTP greater than 2,300 metres and less than 2,875 metres, the HLF is:

$$[30 - .035 \times (\text{MDTP} - 2,300)] / 100, \text{ and}$$

- for well events with MDTP greater than 2,875 metres, the HLF is 0.1.

### **Table depth**

The table depth for a well is the deep well depth of the deepest well event rounded down to the nearest 500 metres. For example, if the deepest well event has a deep well depth of 3,785 metres, the table depth is 3,500. Possible table depths are listed in the tables above.

### **Cumulative value**

The cumulative value for a well is the amount in the cumulative value column and the same row as the table depth for the well in the appropriate table above. For example, for a west special sour well in which the deep well depth of the deepest well event is 3,785 metres, the cumulative value is \$2,400,000, as shown in the 3,500 metre row of the West Special Sour table above.

### **Incremental value**

The incremental value for a well is the amount in the incremental value column and the same row as the table depth for the well in the appropriate table above. It is the additional credit per metre of depth in excess of the table depth. For example, for

a west special sour well in which the deep well depth of the deepest well event is 3,785 metres, the incremental value is \$700 per metre, as in the 3,500 metre row of the West Special Sour table above.

### **Producer's share**

The producer's share is the producer's proportionate interest in the deepest well event in that well. If there is more than one producer with an ownership interest in production from the deepest well event, each producer will be allocated a portion of the deep well credit based on their ownership share.

### **Example 1**

<b>Spud date:</b>	November 2007
<b>Type of well:</b>	vertical
<b>H<sub>2</sub>S content:</b>	special sour
<b>Location:</b>	west
<b>MDTP:</b>	3,785 metres
<b>Producer's share:</b>	producer A owns 60% and producer B owns 40%

The deep well credit is calculated using the West Special Sour table above. Each value and the amount of the deep well credit are determined as follows:

<b>Deep well depth</b>	= the MDTP (vertical well) = 3,785 metres
<b>Table depth</b>	= deep well depth rounded down to the nearest 500 metres = 3,500 metres
<b>Cumulative value</b>	= amount in 3,500 row = \$2,400,000
<b>Incremental value</b>	= amount in 3,500 row = \$700 per metre
<b>Deep well credit</b>	= cumulative value + [incremental value x (deep well depth – table depth)] = \$2,400,000 + [\$700 X (3,785 – 3,500)] = <b>\$2,599,500</b>
<b>Producer A</b>	= \$2,599,500 X 60% = <b>\$1,599,700</b>
<b>Producer B</b>	= \$2,599,500 X 40% = <b>\$1,039,800</b>

## Example 2

<b>Spud date:</b>	November 2007
<b>Type of well:</b>	horizontal
<b>H<sub>2</sub>S content:</b>	sweet
<b>Location:</b>	east
<b>MDTP:</b>	2,655 metres
<b>Total measured depth:</b>	2,910 metres
<b>Producer's share:</b>	producer A owns 50% and producer B owns 50%

The deep well credit is calculated using the East Sweet table above. Each value and the amount of the deep well credit are determined as follows:

<b>Horizontal length factor (HLF)</b>	= $[30 - 0.035 \times (\text{MDTP} - 2,300)] / 100$ = $[30 - 0.035 \times (2,655 - 2,300)] / 100$ = 0.17575
<b>Deep well depth</b>	= MDTP + [HLF X (total measured depth - MDTP)] = 2,655 + [0.17575 X (2,910 - 2,655)] = 2,699 metres
<b>Table depth</b>	= deep well depth rounded down to the nearest 500 metres = 2,500 metres
<b>Cumulative value</b>	= amount in 2,500 row = \$0
<b>Incremental value</b>	= amount in 2,500 row = \$1,400 per metre
<b>Deep well credit</b>	= cumulative value + [incremental value X (deep well depth - table depth)] = \$0 + [\$1,400 X (2,699 - 2,500)] = <b>\$278,600</b>
<b>Producer A</b>	= \$278,600 X 50% = <b>\$139,300</b>
<b>Producer B</b>	= \$278,600 X 50% = <b>\$139,300</b>

## Deep Re-Entry Credit

The deep re-entry credit was introduced to maximize the development of known resources by encouraging producers to re-enter previously drilled wells and drill deeper.

### Qualifying Criteria

For well events in wells with spud dates **on, or after, January 1, 2009**, top of pay is replaced by the completion point in the well event. All other criteria for the credit remain the same, except that well events that are eligible for the deep re-entry credit may not be part of a coalbed methane project.

Producers qualify for the deep re-entry credit if the well event meets all of the following qualifying criteria:

- the well has a re-entry date after November 30, 2003,
- an application to alter the well has been submitted and approved before re-entry,
- if the well has a spud date before January 1, 2009, the TVD to the top of pay of the re-entry well event is greater than 2,300 metres, and
- if the well has a spud date on, or after, January 1, 2009, the TVD to the completion point of the re-entry well event is greater than 2,300 metres.

### Calculating the Credit

The value of the deep re-entry credit is designed to reflect higher drilling and completion costs related to the location of the well and the additional amount of drilling that is done (incremental drilled distance).

The ministry determines a deep re-entry credit for each deep re-entry well event using the values in one of the two tables below and the incremental drilled distance.

#### Bottom hole location (east or west)

Similar to the deep well credit, there are two bottom hole location categories: east and west. The east and west areas for deep re-entry credits are the same as the areas used for deep well credits. [Schedule 1](#) describes locations in the east area for re-entries with re-entry dates **before January 1, 2009**. [Schedule 1b](#) describes locations within the east area for re-entries with a re-entry date **on, or after, January 1, 2009**. Locations that are not on these schedules are considered to be in the west area. [Figure 1](#) is a map of the lines between the east and west areas for re-entries.

## Deep Re-entry Credit Tables

West			East		
Table Distance (metres)	Cumulative Value (\$)	Incremental Value (\$/Metre)	Table Distance (metres)	Cumulative Value (\$)	Incremental Value (\$/Metre)
100	0	750	100	0	450
300	150,000	500	300	90,000	300
1,500	750,000		1,500	450,000	

### The Formula

Based on the two tables above, the ministry calculates the deep re-entry credit using the following formula.

$$[\text{cumulative value} + \text{incremental value} \times (\text{incremental drilled distance} - \text{table distance})] \times \text{producer's share}$$

### Incremental drilled distance

This is the difference between the total measured depth (TMD) of the well after the well has been altered and the TMD before the well was altered. The TMD is the sum of the lengths of all the vertical and horizontal wellbores in the well.

### Table distance

The table distance for a deep re-entry well event is the incremental drilled distance rounded down to the nearest value in the table distance column in the appropriate table above. For example, if a re-entered well had a TMD of 5,000 metres before alteration and 5,450 metres after alteration, the incremental drilled distance would be 450 metres and the table distance would be 300 metres.

### Cumulative value

The cumulative value for a deep re-entry well event is in the cumulative value column and the same row as the table distance for the well event in the appropriate table above. For example, for a deep re-entry well event in the west with a table distance of 300 metres, the cumulative value is \$150,000, as shown in the 300 metre row of the West table above.

### Incremental value

The incremental value for a deep re-entry well event is the value in the incremental value column and the same row as the table distance for the well event in the appropriate table above. It is the additional credit per metre of incremental distance in excess of the table distance. For example, for a deep re-entry well event in the west

with an incremental distance of 450 metres, the incremental value is \$500 per metre, as in the 300 metre row of the West table above.

### Producer's share

This is the producer's proportionate interest in the deep re-entry well event. If there is more than one producer with an ownership interest in production from the well event, each producer will be allocated a portion of the deep re-entry credit based on their ownership share.

### Example

<b>Re-entry date:</b>	November 2007
<b>Location:</b>	east
<b>TMD before alteration:</b>	1,800 metres
<b>TMD after alteration:</b>	2,900 metres
<b>Producer's share:</b>	producer A owns 60% and producer B owns 40%

The deep re-entry credit is calculated using the East table above. Each value and the amount of the deep re-entry credit are determined as follows:

<b>Incremental distance</b>	= 2,900 – 1,800 = 1,100 metres
<b>Table distance</b>	= the incremental distance rounded down to the nearest amount in the table distance column = 300 metres
<b>Cumulative value</b>	= amount in 300 row = \$90,000
<b>Incremental value</b>	= amount in 300 row = \$300 per metre
<b>Deep re-entry credit</b>	= cumulative value + [incremental value x (incremental distance – table distance)] = \$90,000 + [\$300 X (1,100 – 300)] = <b>\$330,000</b>
<b>Producer A</b>	= \$330,000 X 60% = <b>\$198,000</b>
<b>Producer B</b>	= \$330,000 X 40% = <b>\$132,000</b>

## Deep Discovery Well Exemption

The deep discovery well exemption was introduced to stimulate growth in areas that are beyond existing infrastructure and to provide additional relief for extremely high risk drilling.

### Qualifying Criteria

For well events in wells with spud dates **on, or after, January 1, 2009**, top of pay is replaced by the completion point in the well event.

All other criteria for the exemption remain the same, except that well events that are eligible for the exemption may not be part of a coalbed methane project.

Producers are eligible for the deep discovery well exemption for a well event that meets all of the following criteria:

- the well event discovers a new gas pool,
- the rig release date is after November 30, 2003,
- if it is in a well with a spud date before January 1, 2009, the well event has a TVD to the top of the pay that is deeper than 4,000 metres,
- if it is in a well with a spud date on, or after, January 1, 2009, the well event has a TVD to the completion point that is deeper than 4,000 metres, and
- the surface location of the well is at least 20 kilometres away from the surface location of any well in a recognized pool of the same formation.

The Oil and Gas Commission will determine if a well event discovers a new gas pool and will provide the producer with written notification that the well event qualifies for the deep discovery well exemption.

### Calculating the Exemption

Natural gas produced from a deep discovery well event is exempt from payment of royalties for the first 36 producing months or 283,000,000 m<sup>3</sup> of raw gas, whichever comes first.

The ministry's monthly royalty invoices will include a statement showing the number of months at zero royalty and the royalty exempt gas totals.

If a deep discovery well event also qualifies for a deep well credit or a deep re-entry credit, producers are entitled to the exemption or credit, whichever one provides the greatest benefit. To ensure maximum benefit, the ministry calculates the value of the exemption each month and the cumulative value. When the end of the 36-month exemption or the maximum exempt volume has been reached, the ministry compares

the cumulative value to the deep well credit or deep re-entry credit. If the deep well credit or deep re-entry credit is greater, the additional amount will be deducted from future royalties.



## Need more info?

Oil and Gas Royalties website: [www.sbr.gov.bc.ca/business/Natural\\_Resources/Oil\\_and\\_gas\\_royalties/oil\\_and\\_gas\\_royalties.htm](http://www.sbr.gov.bc.ca/business/Natural_Resources/Oil_and_gas_royalties/oil_and_gas_royalties.htm)

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The information in this bulletin is for your convenience and guidance and is not a replacement for the legislation. The *Petroleum and Natural Gas Act* and Regulations are on our website at [www.sbr.gov.bc.ca/business/Natural\\_Resources/Oil\\_and\\_gas\\_royalties/legislation.htm](http://www.sbr.gov.bc.ca/business/Natural_Resources/Oil_and_gas_royalties/legislation.htm)

## Schedule 1

### East Area for Wells with Spud Dates Before January 1, 2009

For the purposes of determining which table to use for bottom hole location, well events in any of the following locations are in the East. Areas in subparagraphs (i) to (xvi) are described in accordance with the petroleum and natural gas grid established under the Petroleum and Natural Gas Grid Regulation, BC Reg. 321/93. Areas in subparagraph (xvii) to (xxi) are described in accordance with the Dominion Land Survey System.

- (i) The portion of Group 095-A-01 to Group 095-A-04 (inclusive) that is located within British Columbia
- (ii) The portion of Group 095-B-01 to Group 095-B-04 (inclusive) that is located within British Columbia
- (iii) Group 094-O-01 to Group 094-O-16 (inclusive)
- (iv) Group 094-P-01 to Group 094-P-16 (inclusive)
- (v) Group 094-I-01 to Group 094-I-16 (inclusive)
- (vi) Group 094-J-01 to Group 094-J-16 (inclusive)
- (vii) Group 094-G-01 to Group 094-G-16 (inclusive)
- (viii) Group 094-H-01 to Group 094-H-16 (inclusive)
- (ix) The portion of Group 094-A-01 to Group 094-A-16 (inclusive) that is located outside the Peace River Block
- (x) The portion of Group 093-P-09 that is located outside the Peace River Block
- (xi) The portion of Group 093-P-10 that is located outside the Peace River Block
- (xii) Groups 093-P-01, 093-P-02, 093-P-07 and 093-P-08
- (xiii) Group 093-I-16
- (xiv) Blocks A and G to K of Group 093-I-15
- (xv) Blocks A, B and F to K of Group 093-I-09
- (xvi) Block I of Group 093-I-08
- (xvii) The portion of the Peace River Block within Township 076 east of Range 20 W6M that is within British Columbia
- (xviii) The portion of the Peace River Block within Township 077 east of Range 20 W6M that is within British Columbia
- (xix) The portion of the Peace River Block within Township 078 east of Range 20 W6M that is within British Columbia
- (xx) The portion of the Peace River Block within Township 079 east of Range 20 W6M that is within British Columbia
- (xxi) The portion of the Peace River Block within Township 080 to Township 088 and Range 13 to Range 26 W6M that is within British Columbia

For all other well events located in British Columbia, the West tables apply.

## Schedule 1b

### East Area for Wells with Spud Dates on, or After, January 1, 2009

East deep well and deep re-entry credit tables apply to well events that have spud dates on, or after, January 1, 2009, and are located in any of the areas listed below. The areas referred to in (i) to (xxxvi) and (lxiv) to (lxxiii) are described in accordance with the National Topographical Survey. The areas referred to in (xxxvii) to (lxiii), are described in accordance with the Dominion Land Survey System.

- (i) The portion of Group 095-A-01 to Group 095-A-04 (inclusive) that is located within British Columbia
- (ii) The portion of Group 095-B-01 to Group 095-B-04 (inclusive) that is located within British Columbia
- (iii) The portion of Group 095-C-01 that is located within British Columbia
- (iv) Group 094-P-01 to Group 094-P-16 (inclusive)
- (v) Group 094-O-01 to Group 094-O-3 (inclusive)
- (vi) Blocks A to C, Units 1-7 and 11-100 of Block D, and Blocks E to L of Group 094-O-04
- (vii) Group 094-O-05 to Group 094-O-16 (inclusive)
- (viii) Units 11-100 of Block A, Units 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block B, Units 71-77, 81-87, 91-97 of Block E, Units 71-100 of Block F, Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-100 of Block G, Blocks H to K (inclusive), Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block L of Group 094-N-01
- (ix) Units 71-77, 81-87, 91-97 of Block G, Units 71-100 of Block H, Block I, Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block J of Group 094-N-07
- (x) Blocks A to C (inclusive), Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block D, Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-100 of Block E, Blocks F to L (inclusive) of Group 094-N-08
- (xi) Blocks A-D, Units 1-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block E, Blocks F-K (inclusive), Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block L of Group 094-N-09
- (xii) Block A, Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block B, Units 1-7, 11-17, 21-27 of Block G, Units 1-30 of Block H of Group 094-N-10
- (xiii) Block A, Units 1-73, 81-83, 91-93 of Block B, Units 1-70 of Block C, Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67 of Block D, Units 1-3, 11-13, 21-23, 31-33, 41-43, 51-53, 61-63, 71-73, 81-83, 91-93 of Block G, Block H and I, Units 1-3, 11-13, 21-23, 31-33, 41-43, 51-53, 61-63, 71-73, 81-83, 91-93 of Block J of Group 094-N-16
- (xiv) Group 094-J-01 to Group 094-J-03 (inclusive)

- (xv) Blocks A to C (inclusive), Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block D, Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block E, Blocks F to K (inclusive), Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block L of Group 094-J-04
- (xvi) Blocks A to C (inclusive), Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block D, Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block E, Blocks F to K (inclusive), Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block L of Group 094-J-05
- (xvii) Group 094-J-06 to 094-J-11 (inclusive)
- (xviii) Blocks A to C (inclusive), Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block D, Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block E, Blocks F to K (inclusive), Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block L of Group 094-J-12
- (xix) Blocks A to C (inclusive), Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block D, Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block E, Blocks F to K (inclusive), Units 1-7, 11-17, 21-27, 31-37, 41-47, 51-57, 61-67, 71-77, 81-87, 91-97 of Block L of Group 094-J-13
- (xx) Group 094-J-14 to Group 094-J-16 (inclusive)
- (xxi) Group 094-I-01 to Group 094-I-16 (inclusive)
- (xxii) Group 094-H-01 to Group 094-H-16 (inclusive)
- (xxiii) Block A, Units 1-3, 11-13, 21-23, 31-37, 41-47, 51-57, 61-67, 71-100 of Block B, Units 71, 81, 91 of Block C, Unit 91 of Block E, Units 1, 11-15, 21-25, 31-35, 41-45, 51-59, 61-69, 71-79, 81-89, 91-100 of Block F, Blocks G to K (inclusive), Units 1, 11, 21, 31-33, 41-43, 51-55, 61-65, 71-75, 81-85, 91-97 of Block L of Group 094-G-01
- (xxiv) Units 31, 41, 51-53, 61-63, 71-73, 81-83, 91-95 of Block A, Units 51, 61, 71-73, 81-83, 91-95 of Block G, Units 1-5, 11-17, 21-27, 31-39, 41-49, 51-100 of Block H, Block I, Units 1-5, 11-15, 21-25, 31-37, 41-47, 51-59, 61-69, 71-79, 81-89, 91-100 of Block J, Unit 91 of Block K of Group 094-G-07
- (xxv) Block A to Block C (inclusive), Units 1-7, 11-19, 21-29, 31-100 of Block D, Blocks E to L of Group 094-G-08
- (xxvi) Group 094-G-09
- (xxvii) Block A and B, Units 1, 11-13, 21-23, 31-33, 41-43, 51-55, 61-65, 71-77, 81-87, 91-100 of Block C, Unit 91 of Block D, Units 1, 11-13, 21-23, 31-37, 41-47, 51-100 of Block E, Blocks F to L (inclusive) of Group 094-G-10
- (xxviii) Units 51, 61, 71-75, 81-85, 91-99 of Block H, Units 1-9, 11-100 of Block I, Units 11-13, 21-23, 31-37, 41-47, 51-100 of Block J, Units 51, 61, 71-73, 81-83, 91-97 of Block K of Group 094-G-11
- (xxix) Units 71-73, 81-83, 91-97 of Block A, Units 71, 81, 91-95 of Block F, Units 31-35, 41-45, 51-59, 61-69, 71-100 of Block G, Units 1-7, 11-19, 21-29, 31-100 of Block H, Blocks I and J, Units 1-5, 11-19, 21-29, 31-100 of Block K, Units 31-33, 41-43, 51-57, 61-67, 71-77, 81-87, 91-97 of Block L of Group 094-G-13

- (xxx) Blocks A and B, Units 1-7, 11-100 of Block C, Units 11, 21, 31-33, 41-43, 51-59, 61-69, 71-100 of Block D, Blocks E to L (inclusive) of Group 094-G-14
- (xxxi) Group 094-G-15 and Group 094-G-16
- (xxxii) Unit 91 of Block H, Units 1, 11-13, 21-23, 31-37, 41-47, 51-57, 61-67, 71-79, 81-89, 91-100 of Block I, Units 91-93 of Block J of Group 094-B-16
- (xxxiii) The portion of Group 094-A-09 to Group 094-A-11 that is located outside the Peace River Block
- (xxxiv) The portion of Block I, Units 1, 11-15, 21-25, 31-35, 41-45, 51-57, 61-67, 71-100 of Block J, Units 71, 81, 91 of Block K of Group 094-A-12 that is located outside the Peace River Block
- (xxxv) Blocks A and B, Units 1, 11-13, 21-23, 31-35, 41-45, 51-55, 61-65, 71-77, 81-87, 91-99 of Block C, Units 11-13, 21-23, 31-35, 41-45, 51-57, 61-67, 71-79, 81-89, 91-100 of Block E, Units 1-9, 11-100 of Block F, Blocks G to L (inclusive) of Group 094-A-13
- (xxxvi) Group 094-A-14 to Group 094-A-16 (inclusive)
- (xxxvii) The portion of the Peace River Block within Sections 1-3, 10-15, 22-29, 2-36 of Township 88 Range 23 W6M
- (xxxviii) The portion of the Peace River Block with Township 88 east of Range 23 W6M within British Columbia
- (xxxix) Sections 1-3, 10-15, 22-27, 34-36 of Township 87 Range 23 W6M
  - (xl) Township 87 east of Range 23 W6M within British Columbia
  - (xli) Sections 1-5, 8-16, 21-28, 33-36 of Township 86 Range 23 W6M
  - (xlii) Township 86 east of Range 23 W6M within British Columbia
  - (xliii) Sections 1, 2, 12, 13, 24 of Township 85 Range 24 W6M
  - (xliv) Township 85 east of Range 24 W6M within British Columbia
  - (xlv) Sections 1-5, 8-16, 22-27, 35, 36 of Township 84 Range 24 W6M
  - (xlvi) Township 84 east of Range 24 W6M within British Columbia
  - (xlvii) Sections 1, 12, 13, 24 of Township 83 Range 25 W6M
  - (xlviii) Township 83 east of Range 25 W6M within British Columbia
  - (xlix) Sections 1, 2, 10-15, 22-27, 34-36 of Township 82 Range 25 W6M
    - (l) Township 82 east of Range 25 W6M within British Columbia
    - (li) Sections 12, 13, 24-26, 35, 36 of Township 81 Range 25 W6M
    - (lii) Township 81 east of Range 25 W6M within British Columbia
    - (liii) Sections 1-3, 9-16, 20-29, 31-36 of Township 80 Range 24 W6M
    - (liv) Township 80 east of Range 24 W6M within British Columbia
    - (lv) Sections 12, 13, 23-26, 34-36 of Township 79 Range 24 W6M
    - (lvi) Township 79 east of Range 24 W6M within British Columbia
    - (lvii) Section 36 of Township 78 Range 24 W6M

- (lviii) Sections 1-4, 9-17, 19-36 of Township 78 Range 23 W6M
- (lix) Township 78 east of Range 23 W6M within British Columbia
- (lx) Sections 1, 12-14, 23-27, 34-36 of Township 77 Range 23 W6M
- (lxi) Township 77 east of Range 23 W6M within British Columbia
- (lxii) The portion of the Peace River Block within Section 36 of Township 76 Range 23 W6M
- (lxiii) The portion of the Peace River Block within Township 76 east of Range 23 W6M within British Columbia
- (lxiv) Group 093-P-01
- (lxv) Units 1-5, 11-15, 21-25, 31-37, 41-47, 51-100 of Block A, Units 51, 61, 71-73, 81-83, 91-97 of Block B, Units 71, 81, 91-93 of Block E, Units 11, 21, 31-33, 41-43, 51-57, 61-67, 71-100 of Block F, Units 1-7, 11-100 of Block G, Blocks H to K (inclusive), Units 1-3, 11-15, 21-25, 31-37, 41-47, 51-100 of Block L of Group 093-P-02
- (lxvi) Units 51, 61, 71-73, 81-83, 91-95 of Block I of Group 093-P-03
- (lxvii) Units 1-5, 11-19, 21-29, 31-100 of Block A, Units 31, 41, 51-53, 61-63, 71-75, 81-85, 91-97 of Block B, Units 71, 81, 91 of Block F, Units 1-7, 11-17, 21-27, 31-39, 41-49, 51-59, 61-69, 71-100 of Block G, Blocks H to J (inclusive), Units 1, 11-13, 21-23, 31-35, 41-45, 51-55, 61-65, 71-75, 81-85, 91-97 of Block K of Group 093-P-06
- (lxviii) Group 093-P-07 and Group 093-P-08
- (lxix) The portion of Group 093-P-09 and Group 093-P-10 that is located outside of the Peace River Block
- (lxx) The portion of Blocks A, B, Units 1-7, 11-19, 21-29, 31-39, 41-49, 51-59, 61-69, 71-100 of Block C, Units 71, 81, 91-93 of Block D, Units 1-3, 11-13, 21-23, 31-33, 41-43, 51-55 of Block E, Blocks F to H (inclusive) of Group 093-P-11 that is located outside of the Peace River Block
- (lxxi) Units 51, 61, 71-73, 81-83, 91-97 of Block H, Units 1-7, 11-17, 21-27, 31-100 of Block I, Units 31, 41, 51-53, 61-63, 71-77, 81-87, 91-100 of Block J, Unit 91 of Block K of Group 093-I-09
- (lxxii) Units 51, 61, 71, 81, 91 of Block H, Units 1, 11-13, 21-23, 31-33, 41-43, 51-53, 61-63, 71-73, 81-83, 91-95 of Block I of Group 093-I-15
- (lxxiii) Blocks A, B, Units 1, 11-17, 21-27, 31-100 of Block C, Units 31, 41, 51-55, 61-65, 71-77, 81-87, 91-97 of Block D, Units 1-7, 11-19, 21-29, 31-39, 41-49, 51-100 of Block E, and Blocks F to L (inclusive) of Group 093-I-16

Figure 1: Old and New East/West Lines

