

ALBERTA PETROLEUM ROYALTY GUIDELINES

PRINCIPLES AND PROCEDURES

TABLE OF CONTENTS

1.0 PRINCIPLES AND PROCEDURES OVERVIEW	5
1.1 Authority and Scope	5
1.2 Crown Ownership of Crude Oil	5
1.3 Crown Royalty Share of Crude Oil	6
1.3.1 Crown Royalty Trigger Point	6
1.3.2 Crown Royalty Share	6
1.3.3 Communication of Crown Calculation	6
2.0 CROWN ROYALTY ADJUSTMENTS	6
2.1 Programs and Royalty Rates	6
3.0 DELIVERY AND REPORTING OF THE CROWN ROYALTY SHARE	7
3.1 Delivery of the Crown Royalty Share	7
3.2 Reporting of the Crown Royalty Share	7
4.0 GLOSSARY OF TERMS/ACRONYMS	8
APPENDIX A. ALBERTA ROYALTY FRAMEWORK	11
APPENDIX B. NEW WELL ROYALTY REDUCTION	15
APPENDIX C. NEW WELL ROYALTY RATE	16
APPENDIX D. HORIZONTAL NEW WELL ROYALTY RATE	17
APPENDIX E. DEEP OIL EXPLORATORY WELL PROGRAM	19
APPENDIX F. DRILLING ROYALTY CREDIT PROGRAM	20
APPENDIX G. ENHANCED OIL RECOVERY ROYALTY RELIEF	21
APPENDIX H. QUALIFICATION CHECKLISTS	22
APPENDIX I. CLIENT STATEMENTS	25
APPENDIX J. OIL ROYALTY CALCULATION EXAMPLES	29
APPENDIX K. CALCULATION OF TOTAL MEASURED DEPTH	34
APPENDIX L. LAHEE CLASSIFICATIONS	37
APPENDIX M. DENSITY OF OIL	38
APPENDIX N. CONVERSION FACTORS	39

1.0 PRINCIPLES AND PROCEDURES OVERVIEW

1.1 Authority and Scope

The Alberta Petroleum Royalty Guidelines (the guidelines) are issued to assist with the calculating and the interpretation of Alberta's Crown royalty share of crude oil produced from lands under a Crown lease.

These guidelines reflect the policies and procedures as of January 1, 2009. In case of a conflict, the *Mines and Minerals Act* and the various regulations, will take precedence over these guidelines.

Alberta Energy (the Department) periodically updates the guidelines to incorporate relevant policy or legislative changes. The Department often conducts presentations and/or training sessions with oil and gas industry groups such as the Canadian Association of Petroleum Producers (CAPP), Explorers and Producers Association of Canada (EPAC), and Canadian Association of Petroleum Production Accountants (CAPP).

Information Letters are sent to royalty clients who subscribe to electronic delivery. These letters provide notification of:

- Par prices
- Legislation and policy changes

Information Bulletins are sent to royalty clients who subscribe to electronic delivery. These bulletins provide notification of:

- Business principle and procedure changes
- Filing dates and reminders
- General information relating to the ongoing administration of Crown crude oil royalty

Royalty clients or other persons directly affected by the administration of Alberta Crown crude oil royalty, who wish to access copies of Information Letters, Information Bulletins, and the guidelines, should check Alberta Energy's website at www.energy.alberta.ca or contact an Oil Royalty Operations representative for details.

1.2 Crown Ownership of Crude Oil

The Crown owns approximately 80% of the subsurface mineral rights (includes crude oil and natural gas) in Alberta. As established in the *Mines and Minerals Act* and Crown agreements, the Crown has the right to receive an owner's share (Crown royalty share) of the minerals produced and recovered under a Crown agreement. The amount of Crown royalty levied on crude oil is established in the *Petroleum Royalty Regulation, 2009* (AR 222/2008) and volumes are taken in kind by the Crown.

The Crown interest percentage (Crown's ownership of crude oil produced from a well event) is based on the area of the Crown agreement that lies within the drilling spacing unit for the well event, as compared to the total area of that spacing unit. Depending on the Crown/non-Crown ownership of the crude oil and natural gas rights from which production is obtained, this percentage varies from 0% (no Crown agreement within the drilling spacing unit) to 100% (Crown agreement covers the entire drilling spacing unit). Where a unit agreement exists, the Crown interest percentage is determined according to that agreement's Exhibit A.

1.3 Crown Royalty Share of Crude Oil

The objectives of the crude oil royalty regime are:

- to ensure the Crown receives a fair share of the Crown minerals (crude oil) produced. This share is determined according to the regulations.
- to ensure Alberta's fiscal royalty regime is stable and predictable. Industry clients are able to assess the economics of exploration and development to carry out business planning.
- to maintain a basic and accurate reporting structure with the least administrative cost for both Crown and industry, while ensuring a fair share can be collected for the province.

1.3.1 Crown Royalty Trigger Point

The Crown royalty share is determined at the well event. Crown royalty applies to **all** crude oil produced and recovered, and is based on the Crown's percentage interest. It is calculated monthly, based on the oil production reported on Petrinex. The Alberta Energy Regulator (AER or the Regulator) Directive 007 and Directive 017 cover measurement and reporting requirements.

1.3.2 Crown Royalty Share

The Crown royalty share is calculated as follows:

$$\text{Gross Royalty} = (\text{Total Monthly Production} \times \text{Royalty Rate } \%) \times \text{Crown Interest } \%$$

NOTE: Crown royalty formulae and the calculation of the Crown royalty share are described in the Appendix A.

1.3.3 Communication of Crown Calculation

Crude Oil Crown Royalty Statement packages are issued to each facility operator who had current month or amendments to prior period calculations (i.e. the December package would contain information up to and including the November production month). Refer to Appendix I for examples and details.

2.0 CROWN ROYALTY ADJUSTMENTS

2.1 Programs and Royalty Rates

The programs and rates that are currently part of the crude oil royalty regime are listed below. See the attached Appendices for detailed business rules for each.

- *New Well Royalty Reduction (AR 204/2009)* effective January 1, 2009 to March 31, 2010
- *New Well Royalty Rate (AR 32/2011)* effective April 1, 2010 to current
- *Horizontal New Well Royalty Rate (AR 32/2011)* effective April 1, 2010 to current
- *Deep Oil Exploratory Well program (AR 225/2008)* effective January 1, 2009 to December 31, 2013

- *Drilling Royalty Credit program (AR 245/2009)* effective April 1, 2009 to March 31, 2011
- *Enhanced Oil Recovery Royalty Relief program (AR 348/1993)* effective January 1, 1994 to current

3.0 DELIVERY AND REPORTING OF THE CROWN ROYALTY SHARE

3.1 Delivery of the Crown Royalty Share

Crude oil royalty is delivered in kind to the Crown Agent's account. Although royalty is calculated for individual well events, it is delivered and reported as total royalty for a facility.

Liability for the crown royalty share occurs at the time and place that crude oil is produced and recovered. Crown royalty is calculated monthly based on verified well event production reported on Petrinex.

3.2 Reporting of the Crown Royalty Share

It is the responsibility of the facility operators to account for the quantities of crude oil produced and delivered through their facilities during a production month. For the purposes of accounting to the Department, the facility operator is the operator of record with the AER for that facility.

The facility operator is also responsible for delivering the Crown's royalty share of crude oil produced from each well event connected to the facility, unless the Minister directs otherwise. The royalty volumes will be delivered to the nearest pipeline sales point.

4.0 GLOSSARY OF TERMS/ACRONYMS

Crown Interest – The percentage of Crown ownership of crude oil recovered from a well event as determined by the Minister in accordance with section 26.1 of the *Petroleum and Natural Gas Tenure Regulation* (AR 263/97).

Crude Oil – A mixture mainly of pentanes and heavier hydrocarbons that may be contaminated with sulphur compounds, which is recovered (or recoverable) at a well from an underground reservoir, and that is liquid at the conditions under which its volume is measured or estimated, and includes all other hydrocarbon mixtures so recovered (or recoverable) except raw gas, condensate or crude bitumen.

Deepening – Deepening is any operation by the existing licensee whereby a wellbore of an existing well is re-entered and new drilling extends the total depth of the wellbore resulting in a significant change in the vertical depth.

Deeper Pool Test (DPT) – A DPT well is located within or in close proximity to a known pool(s) and is drilled with the objective of exploring for a new, undiscovered pool(s) below the deepest of the known pool(s). Only the interval below the deepest of the known pool(s) is exploratory and carries a high geological risk. The remaining metreage in a DPT is development, with low geological risk. In circumstances where the exploratory portion of the well is in relatively close proximity to the limits of a known pool(s), the DPT classification must be based on technical data suggesting that a new pool will be encountered.

Density – See Appendix M for density classifications.

Excluded Production – Excluded production as described in section 8 of the *New Well Royalty Rate Regulation* AR 32/2011.

Facility – As defined in the *Oil and Gas Conservation Act*

Finished Drill Date (FDD) – A finished drilling date for a well according to the records of the Regulator.

Gas – Raw gas or marketable gas, or any constituent of raw gas, condensate, crude bitumen or crude oil that is recovered in processing and that is gaseous at the conditions under which its volume is measured or estimated.

Heavy Oil – Crude oil obtained from a well event during a month in which all crude oil obtained in that month from the well event has a density that is greater than or equal to 900 kilograms per cubic meter and less than 925 kilograms per cubic meter. (25.7° API to > 21.5° API) (for the purposes of calculating royalty).

Lahee – A Lahee classification is a “**pre-spud**” assignment given to each well based on the geological complexities and the known existence of hydrocarbon accumulations (pools) in the area where the well is to be drilled. The classification takes into account the general degree of risk of geological failure. See Appendix L for lahee classifications.

Lengthening – Any operation by the existing licensee whereby a wellbore of an existing well is re-entered and new drilling extends the total depth of the wellbore without a significant change on the total vertical depth.

License – A license for a well issued under the *Oil and Gas Conservation Act* or the *Oil Sands Conservation Act*.

Light Oil – Crude oil obtained from a well event during a month in which all crude oil obtained in that month from the well event has a density that is less than 850 kilograms per cubic meter. (> 35° API) (for the purposes of calculating royalty)

Medium Oil – Crude oil obtained from a well event during a month in which all crude oil obtained in that month from the well event has a density that is greater than or equal to 850 kilograms per

cubic meter and less than 900 kilograms per cubic meter. (35° API to >25.7° API) (for the purposes of calculating royalty).

Oil and Gas Conservation Act – An Alberta Regulation administered by the AER. Oil and Gas Conservation Act O-6 RSA 2000 and Oil and Gas Conservation Rules 151/1971.

Oil Well – A well that produces primarily liquid hydrocarbons from a pool or portion of a pool wherein the hydrocarbon system is liquid or exhibits a bubble point on reduction of pressure, or any well so designated by the AER.

New Field Wildcat (NFW) – A NFW well is located a considerable distance beyond the limits of known pools and is outside the boundaries of existing fields. The well is drilled in an area where hydrocarbons have not yet been discovered. The geological risk of this type of well is very high. In the absence of the discovery of a new pool, the well would be deemed unsuccessful.

New Pool Wildcat (NPW) – The objective of an NPW well is the discovery of a new pool(s) in all zones that the well encounters. The well is located in an already discovered field. The geological risk of this type of well is very high: in the absence of the discovery of a new pool, the well would be deemed unsuccessful. In circumstances where the well is in relatively close proximity to the limits of a known pool(s), the NPW classification must be based on technical data suggesting that a new pool will be encountered. A well drilled within or in close proximity to the limits of a known pool(s) but terminating shallower than the known pool(s) is normally classified as NPW, except in the case where pre-existing wells in close proximity to the well have logs and/or tests that strongly suggest the existence of shallower pools to be penetrated by the well.

Non-project Oil Sands well event – A non-Project oil sands well event as described in section 1(r) of the *New Well Royalty Rate Regulation AR 32/2011*.

Par Price – Four par prices are determined on a monthly basis by the Minister and are published in an Information Letter. The par price is used in the formulae for calculating royalties for oil. There is a par price issued for each density - light, medium, heavy and ultra-heavy.

Petroleum – The production from any well that, in the opinion of the Minister, initially produces oil either alone or with gas at a gas-oil ratio of less than 1800:1, but does not include any production that may be obtained from any well that, in the opinion of the Minister, initially produces oil with gas at a higher gas-oil ratio.

Pool – A natural underground reservoir containing, or appearing to contain, an accumulation of petroleum or natural gas separated, or appearing to be separated, from any other such accumulation.

Re-entry – As defined in the *Oil and Gas Conservation Act*.

Reactivation – As defined in the *Oil and Gas Conservation Act*.

Rig Release Date – As defined in the *Oil and Gas Conservation Act*.

Solution Gas – The gaseous component of petroleum that is separated from crude oil after the recovery of petroleum from a well.

Spud Date – The day the spudding or commencement of deepening of a well occurs.

Ultra Heavy Oil – Crude oil obtained from a well event during a month in which all crude oil obtained in that month from the well event has a density that is greater than or equal to 925 kilograms per cubic meter. (21.5° API and less) (for the purposes of calculating royalty).

Unique Well Identifier (UWI) – A 16 digit alphanumeric code assigned by the AER to a well event to give it a unique identity. Although it is based on the legal survey position of a well, the UWI is primarily for identification rather than location (e.g., xxx/xx-xx-xxx-xxWx/xx).

Well – An orifice in the ground completed or being drilled as follows:

- for the production of oil or gas,

- for injection to an underground formation,
- as an evaluation well or test hole, ***or***
- to or at a depth of more than 150 m;

for any purpose, but does not include such an orifice for the purpose of discovering or evaluating a solid inorganic mineral that does not or will not penetrate a stratum capable of containing a pool or oil sands deposit.

Well event – Defined as:

- a part of a well completed in a zone and given a unique well identifier by the AER,
- parts of a well completed in two or more zones and given a single unique well identifier by the AER,
- a part of a well completed in and recovering crude oil from a zone, but which has not yet been given a unique well identifier by the AER, ***or***
- parts of a well completed in and recovering crude oil from two or more zones during the period when the parts are considered by the Minister as a single well event for the purposes of the Petroleum Royalty Regulation and before the AER makes a decision whether or not to give the parts a single unique well identifier.

APPENDIX A**ALBERTA ROYALTY FRAMEWORK (ARF)
(AR 248/1990)**

The Alberta Royalty Framework (ARF) came into effect January 1, 2009. The ARF rates are based on price (rp) and quantity (rq).

The historic Non-heavy and Heavy densities were replaced by four new density categories:

- Light Oil – density $< 850 \text{ kg/m}^3$ ($> 35^\circ$ API)
- Medium Oil – density 850 kg/m^3 and greater, but less than 900 kg/m^3 (35° API to $> 25.7^\circ$ API)
- Heavy Oil – density 900 kg/m^3 and greater, but less than 925 kg/m^3 (25.7° API to $> 21.5^\circ$ API)
- Ultra Heavy Oil – density 925 kg/m^3 and greater (21.5° API and less)

These density categories relate to the density of the pool that the well event is producing from. The pool densities are established by AER.

Each month The Department publishes an Information Letter (IL) posted on our website (www.energy.alberta.ca) which identifies par prices for the four density categories. The title of the IL will be “Petroleum Royalty Regulation, 2009 – Par Prices for (Month Year) Production Month”. This information is required to calculate the ‘r_p’ portion of the royalty formulae.

Transitional Royalty rates (ARF-T) also came into effect January 1, 2009, but could only be elected until December 31, 2010. The licensee of a well event could make a one-time election via Petrinex for ARF-T. Each well event had to be elected separately – the election could not be done at the well level. The election had to be made prior to the end of the first calendar month in which the leased substance was produced from the unique well event.

The decision to elect the ARF-T rate was based on the applicant’s assessment of the well event’s projected performance against the ARF and ARF-T royalty formulae curves.

Qualified well events use the ARF-T rate formulae from January 2009 or the first production month for the well event, until December 31, 2013.

To be eligible for ARF-T a well event was required to:

- a) have a measured depth between 1,000 m and 3,500 m, and
- b) be spudded between January 1, 2009 and December 31, 2010.

Formulae for both ARF and ARF-T are displayed in the following schedules. **Please note:** There are specific formulae for different time periods.

Schedule 1

**Alberta Royalty Framework Formulae – Conventional Oil
Effective January 1, 2009 to December 31, 2010**

RR% = Royalty Rate Percent

RR% = Price Component (r_p) + Quantity Component (r_q)

RR% has a **minimum** of **0%** and a **maximum** of **50%**

Par Price	Formula
par price greater than zero and less than or equal to \$250.00 per cubic metre	$r_p \% = ((\text{par price} - 190.00) \times 0.0006) \times 100$
par price greater than \$250.00 per cubic metre and less than or equal to \$400.00 per cubic metre	$r_p \% = [((\text{par price} - 250.00) \times 0.0010) + 0.0360] \times 100$
par price greater than \$400.00 per cubic metre	$r_p \% = [((\text{par price} - 400.00) \times 0.0005) + 0.1860] \times 100$
par price has a maximum r_p % of 35%	

Quantity	Formula
quantity greater than zero and less than or equal to 106.4 cubic meters	$r_q \% = ((\text{quantity} - 106.4) \times 0.0026) \times 100$
quantity greater than 106.4 cubic meters and less than or equal to 197.6 cubic meters	$r_q \% = ((\text{quantity} - 106.4) \times 0.0010) \times 100$
quantity greater than 197.6 cubic meters and less than or equal to 304.0 cubic meters	$r_q \% = [((\text{quantity} - 197.6) \times 0.0007) + 0.0912] \times 100$
quantity greater than 304.0 cubic metres	$r_q \% = [((\text{quantity} - 304.0) \times 0.0003) + 0.1657] \times 100$
quantity has a maximum r_q % of 30%	

Schedule 2

**Alberta Royalty Framework Formulae – Conventional Oil
Effective January 1, 2011**

RR% = Royalty Rate Percent

RR% = Price Component (r_p) + Quantity Component (r_q)

RR% has a **minimum** of **0%** and a **maximum** of **40%**

Par Price	Formula
par price greater than zero and less than or equal to \$250.00 per cubic metre	$r_p\% = ((\text{par price} - 190.00) \times 0.0006) \times 100$
par price greater than \$250.00 per cubic metre and less than or equal to \$400.00 per cubic metre	$r_p\% = [((\text{par price} - 250.00) \times 0.0010) + 0.0360] \times 100$
par price greater than \$400.00 per cubic metre and less than or equal to \$535.00 per cubic metre	$r_p\% = [((\text{par price} - 400.00) \times 0.0005) + 0.1860] \times 100$
par price greater than \$535.00 per cubic metre	$r_p\% = [((\text{par price} - 535.00) \times 0.0003) + 0.2535] \times 100$
par price has a maximum $r_p\%$ of 35%	

Quantity	Formula
quantity greater than zero and less than or equal to 106.4 cubic meters	$r_q\% = ((\text{quantity} - 106.4) \times 0.0026) \times 100$
quantity greater than 106.4 cubic meters and less than or equal to 197.6 cubic meters	$r_q\% = ((\text{quantity} - 106.4) \times 0.0010) \times 100$
quantity greater than 197.6 cubic meters and less than or equal to 304.0 cubic meters	$r_q\% = [((\text{quantity} - 197.6) \times 0.0007) + 0.0912] \times 100$
quantity greater than 304.0 cubic metres	$r_q\% = [((\text{quantity} - 304.0) \times 0.0003) + 0.1657] \times 100$
quantity has a maximum $r_q\%$ of 30%	

Schedule 3

Transitional Formula – Conventional Oil
Effective January 1, 2009 to December 31, 2013

RR% = Royalty Rate Percent

RR% = Price Component (r_p) + Quantity Component (r_q)RR% has a **minimum** of **0%** and a **maximum** of **50%**

Par Price	Formula
par price greater than zero and less than or equal to \$250.00 per cubic metre	$r_p \% = ((\text{par price} - 210.00) \times 0.00035) \times 100$
par price greater than \$250.00 per cubic metre and less than or equal to \$350.00 per cubic metre	$r_p \% = [((\text{par price} - 250.00) \times 0.0001) + 0.0140] \times 100$
par price greater than \$350.00 per cubic metre	$r_p \% = [((\text{par price} - 350.00) \times 0.00005) + 0.0240] \times 100$
par price has a maximum r_p % of 35%	

Quantity	Formula
quantity greater than zero and less than or equal to 30.4 cubic meters	$r_q \% = ((\text{quantity} - 30.4) \times 0.0013) \times 100$
quantity greater than 30.4 cubic meters and less than or equal to 152.0 cubic meters	$r_q \% = ((\text{quantity} - 30.4) \times 0.0013) \times 100$
quantity greater than 152.0 cubic meters and less than or equal to 273.6 cubic meters	$r_q \% = [((\text{quantity} - 152.0) \times 0.0008) + 0.1581] \times 100$
quantity greater than 273.6 cubic metres	$r_q \% = [((\text{quantity} - 273.6) \times 0.0002) + 0.2554] \times 100$
quantity has a maximum r_q % of 35%	

APPENDIX B**NEW WELL ROYALTY REDUCTION
(AR 204/2009)
Effective January 1, 2009 to April 30, 2010**

The New Well Royalty Reduction (NWRR) applied to wells subject to payment of Alberta Crown royalty under the *Petroleum Royalty Regulation, 2009 (AR 222/2008)*, the *Natural Gas Royalty Regulation, 2009 (AR 221/2008)*, or under Section 27 of the *Oil Sands Royalty Regulation, 2009 (AR 223/2008)* from January 1, 2009 to April 30, 2010. Eligible wells had their royalties on oil, non-Project oil sands, natural gas and field condensate calculated at a gross maximum 5% royalty rate. No application was required.

Eligibility Criteria

- A well had to come on production between April 1, 2009 and April 30, 2010, or
- Have no production from the wellbore from January 1, 2009 to March 31, 2009, or
- Have no production between January 1, 2007 and March 31, 2009 or had an average of less than 100 m³ of oil, including equivalents, over the last 3 months with production between January 1, 2007 and December 31, 2008.
- If a well had less than three months of non-zero production in the period, then an average of those months was used.

Program cap

- All well events within a **license** contributed to a single cap.
 - The volume cap of 7,949 m³ was used as the single cap; all products contributed to the cap and were converted to oil equivalent. See Appendix N for conversion factors.
 - Applied only to crown production.
- The cap was reached by determining whichever comes first of the following:
 - 12 production months, or
 - 50,000 barrels (7,949 m³) of crown oil production including all associated products, or
 - 500 million cubic feet of crown gas volumes(14,158 10³m³), or
 - March 31, 2012.
- When the volume cap was reached during a month, any excess was calculated at the regular royalty rate the well event qualifies for (i.e. ARF or ARF-T).
- Although the date constraints and volume limits for each program ran concurrently, the Deep Oil Exploratory Well program was processed first and any potential calculation on the NWRR program happened after the Deep Oil Exploratory Well program had expired.
- Wells qualified for the NWRR program whether the ARF-T rate had been elected or not.

Non Eligibility Criteria

- Wells that were classified as Gas over Bitumen.
- Wells drilled with no crown %.
- Oil Sands wells subject to calculation of royalty under the *Oil Sands Royalty Regulation 2009, (AR223/2008)* with the exception of Section 27.

When the New Well Royalty Reduction ended, wells that had a cap remaining were re-qualified under the New Well Royalty Rate.

APPENDIX C

NEW WELL ROYALTY RATE
(AR 32/2011)
Effective May 1, 2010

Effective May 2010, the New Well Royalty Rate (NWRR) became a permanent feature of the royalty regime and replaced the New Well Royalty Reduction.

Changes from the previous regulation (AR 204/2009) (Appendix B):

- The March 31, 2011 end date for the program has been removed.
- A re-entry well commencing production on or after April 1, 2011 may also qualify if it did not produce crude oil or gas (other than excluded production) at any time in the 36 months prior to commencing production.
- Wells commencing production on or after April 1, 2011 may produce from January 1, 2007 to December 31, 2008 if the average production for the last 3 months did not exceed 100 m³.

A well is eligible for NWRR if (one of the following):

Rule	Description
A	<ul style="list-style-type: none"> • Commences production on or after April 1, 2009 • No prior production is permitted
or	
B	<ul style="list-style-type: none"> • Recommences production on or after April 1, 2009 to April 30, 2010 • No production during the period January 1, 2007 to March 31, 2009
or	
C	<ul style="list-style-type: none"> • Recommences production on or after April 1, 2009 to April 30, 2010 • No production during the period January 1, 2009 to March 31, 2009 • Total average monthly production (converted into equivalent volumes of oil) is less than 100 cubic metres during the last 3 production months within the period January 1, 2007 to December 31, 2008
or	
D	<ul style="list-style-type: none"> • Recommences production on or after May 1, 2010. • No production during the 36 consecutive months prior to the first month of production
or	
E	<ul style="list-style-type: none"> • Recommences production on or after May 1, 2010. • No production during the period January 1, 2009 to April 30, 2010. • Total average monthly production (converted into equivalent volumes of oil) is less than 100 cubic metres during the last 3 production months within the period January 1, 2007 to December 31, 2008

Applications are not required for NWRR

Caps

- Twelve production months with Crown production (oil and/or gas) or 7,949 m³ whichever comes first (**period caps are based on production months not calendar months**).
- All eligible Crown production volumes from the well are converted to oil equivalent volumes and contribute to the volume caps.

Excluded Production

- Application must be submitted to the Department along with your daily production reports.

APPENDIX D**HORIZONTAL OIL NEW WELL ROYALTY RATE
(AR 32/2011 Schedule 4)**

Effective May 1, 2010, the Horizontal Oil New Well Royalty Rate (HONWRR) became a permanent feature of the royalty regime. Royalty for a qualified well event will be adjusted to a maximum 5% for all products until either the volume or production month cap is reached (whichever occurs first).

Eligibility criteria

To be eligible a well event:

- must be spud on or after May 1, 2010, and
- must be defined as an Oil or non-project Oil Sands well event when it commences production (the well event had NO prior production), and
- must have a Crown interest greater than zero when it commences production, and
- must continue to be an Oil or non-project Oil Sands well event and have a Crown interest greater than zero to continue to receive the royalty rate, and
- must be identified as a horizontal oil or non-project Oil Sands well event. The AER Kickoff Reason Code (Directional Drill Reason Code) on the well event must be Horizontal (code 4);
- multiple legs must be part of a continuous drilling operation.

Non Eligibility Criteria

- A well event that is part of a Project under the *Oil Sands Royalty Regulation, 2009*.
- A re-entry, reactivation, lengthened or deepened well event.

Caps

- Depth is the Measured Depth of a horizontal oil well event.
- The depth is defined as the measured distance along the bore of the well from the kelly bushing to the end of the first qualified horizontal oil well event plus all the additional qualified horizontal well events (measured from the last common kick off point with previous well events) in a continuous drilling operation (no rig release).

Caps are calculated as below:

Depth (MD)	Volume Cap of Oil Equivalent	Production Month Cap
more than zero metres but less than 2,500 metres	7,949 m ³	18 months
2,500 metres or more but less than 3,000 metres	9,539 m ³	24 months
3,000 metres or more but less than 3,500 metres	11,129 m ³	30 months
3,500 metres or more but less than 4,000 metres	12,719 m ³	36 months
4,000 metres or more but less than 4,500 metres	14,309 m ³	42 months
4,500 metres or more	15,899 m ³	48 months

Note: The rate expires when either the volume cap or production month cap is reached, whichever occurs first.

- All horizontal oil well events in a well bore will contribute to a single HONWRR cap.
- Production that contributes to a HONWRR cap also contributes to a NWRR cap. The rates run concurrently.
- A well event within the well bore that is NOT a horizontal oil well event will NOT contribute to the HONWRR cap.
- Production from a horizontal oil well event receiving benefits under the Deep Oil Exploratory Well program contributes to the HONWRR cap.
- The Department will manually review written requests from clients to determine if any substance from a well is considered excluded production. If the production months are determined to be excluded production those months and volumes would not contribute to the cap and would calculate using ARF or ARF-T.

Applications are not required for HONWRR

APPENDIX E**DEEP OIL EXPLORATORY WELL PROGRAM
(AR 225/2008)**

The Deep Oil Exploratory Well program is a five year program for exploratory oil wells that provides a royalty adjustment to incent producers to pursue new, deeper oil plays that would be marginally economic under the Alberta Royalty Framework.

Eligibility criteria

To qualify a well:

- must be spud on/after January 1, 2009, and before December 31, 2013.
- must have a True Vertical Depth greater than 2,000 m.
- must have a producing interval base below TVD of 2,000 m.
- must have a Crown interest greater than zero.
- must be classified with a lahee of New Pool Wildcat (NPW), New Field Wildcat (NFW), or a Deeper Pool Test (DPT) well.
- must have first production of oil from an oil well.
- must be the first well event in the pool.

Non Eligibility Criteria

- Wells spud after December 31, 2013 are ineligible.

Caps

Whichever condition occurs first:

- 12 production months, *or*
- \$1 million in royalty valued at par price, *or*
- At the end of the calendar month in which the well has reached 5 years from the earliest Finished Drill Date (FDD).
- Well events that qualify for NWRR/HONWRR and approved for Deep Oil will have the royalty calculated first using these rates and then the royalty will be waived under the Deep Oil Program.
- The royalty valued cap is reduced by the Crown interest.
 - i.e. Crown interest is 50.0000000%, then the value cap would be \$500,000.00

Termination of Program

- At the end of the calendar month in which a well has received a closed status from the Regulator.
- At the end of the calendar month in which the exploratory well is abandoned or, if a twin well has been designated, at the end of the calendar month in which the twin well is abandoned.
- At the end of the calendar month in which the exploratory well or twin well became an ineligible well according to section 2(4) of the *Deep Oil Exploratory Well Regulation AR 225/2008*.
- No adjustments to royalty under *Deep Oil Exploratory Well Regulation* will occur after December 31, 2018.

Applications are not required for the Deep Oil Exploratory Well program unless it is a re-entry well

APPENDIX F

DRILLING ROYALTY CREDIT (DRC) PROGRAM
(AR 24/2009)

The Drilling Royalty Credit program offered credits based on drilling activity and royalties owed in fiscal 2009/10 and 2010/2011. The two year program provided a royalty credit to companies on a sliding scale based on their production levels from 2008.

This program is no longer available.

APPENDIX G**ENHANCED OIL RECOVERY ROYALTY RELIEF
(AR 348/93)**

The Enhanced Oil Recovery (EOR) Royalty Relief applies only to crude oil obtained in 1994 and later years for schemes approved under the *Enhanced Recovery of Oil Royalty Reduction Regulation (AR 348/93)*. A scheme approved under *section 11* of the *Petroleum Royalty Regulation (AR 248/90)* is considered approved under the *Enhanced Recovery of Oil Royalty Reduction Regulation*.

Scheme operators must apply to The Department for EOR royalty relief under the Regulation and to the AER for scheme approval under *section 39* of the *Oil and Gas Conservation Act*. Detailed procedures for application are described in the "Conventional Enhanced Oil Recovery Royalty Guidelines" available on our website at www.energy.alberta.ca. Click on "Our Business"; "Oil"; "Legislation, Policy and Guidelines"; "Guidelines"; and "Enhanced Oil Recovery Guidelines".

The Crown shares in the allowable incremental costs for an approved scheme. Relief is granted through a reduction of the monthly crude oil royalty otherwise owed to the Crown for incremental tertiary crude oil produced and recovered from the scheme.

APPENDIX H

New Well Royalty Rate (NWRR) Checklist

Rule	Description	Yes	No
Mandatory	Is the well classified as oil, non-project oil sands or gas?		
Mandatory	Does the well event have continuous Crown Interest greater than zero?		
and/or	A		
	Commences production on or after April 1, 2009		
	No prior production is permitted (other than excluded production)		
and/or	B		
	Recommences production between April 1, 2009 and April 30, 2010		
	No production during the period January 1, 2007 to March 31, 2009 (other than excluded production)		
and/or	C		
	Recommences production between April 1, 2009 and April 30, 2010		
	No production during the period January 1, 2009 to March 31, 2009 (other than excluded production)		
	Total average monthly production is less than 100 m ³ during the last 3 non-zero production months within the period January 1, 2007 to December 31, 2008		
and/or	D		
	Recommences production on or after May 1, 2010		
	No production during the 36 consecutive months prior to the first month of production (other than excluded production)		
and/or	E		
	Recommences production on or after May 1, 2010		
	No production during the period January 1, 2009 to April 30, 2009 (other than excluded production)		
	Total average monthly production is less than 100 m ³ during the last three non-zero production months within the period January 1, 2007 to December 31, 2008		

Horizontal Oil New Well Royalty Rate (HONWRR) Checklist

Rule	Description	Yes	No
Mandatory	Is the well classified as oil or non-project oil sands?		
Mandatory	Does the well event have continuous Crown Interest greater than zero?		
Mandatory	Does the well event have a spud date on or after May 1, 2010 ?		
Mandatory	Is the well event horizontal as defined by the AER?		
Mandatory	Were the well events in a continuous drilling operation (if there are multiple well events in the licence all spud dates must be the same and all rig release dates must be the same)		
	Are the well events re-entered, reactivated, lengthened or deepened? (they do not qualify for HONWRR)		

Deep Oil Exploratory Well Program (DOEP) Checklist

Rule	Description	Yes	No
Mandatory	Is the well classified as oil or non-project oil sands?		
Mandatory	Does the well event have continuous Crown Interest greater than zero?		
Mandatory	Does the well event have a spud date on or after January 1, 2009?		
Mandatory	Is the well drilled to a True Vertical Depth (TVD) greater than 2,000 metres?		
Mandatory	Is the well event the first well event in the pool?		
Mandatory	Is the well in an EOR scheme or less than 0.8 km from an EOR scheme boundary?		
Mandatory	Is the first production from the well event oil (not gas)?		
Mandatory	Does the well event have a lahee classification of New Pool Wildcat (NPW), New Field Wildcat (NFW) or Deeper Pool Test (DPT)?		

APPENDIX I

Client Statements



RAMEOR0006
Confidential

ROYALTY AND MARKETING
CRUDE OIL CROWN ROYALTY STATEMENT
SCHEME LEVEL EOR RELIEF DETAILS FOR PRODUCTION PERIOD 2012/09

Report Date: 2013/09/03
Business Period: 2013/02

XXXX Example Oil Company Ltd.

ALL VOLUMES ARE M3

SCHEME	FACILITY		TOTAL	RELIEF RATIO
AB IS xxxxx	AB BT xxxxxxx	CROWN ROYALTY		
		PREVIOUS RECORD	9,903.8	
		ADJUSTED RECORD	9,893.5	
		NET ADJUSTMENT	-10.3	
		EOB RELIEF		
		PREVIOUS RECORD	6,958.6	0.7026190
		ADJUSTED RECORD	6,958.6	0.7033500
		NET ADJUSTMENT	0.0	

UNIQUE WELL IDENT - WELLS TIED TO SCHEME / FACILITY:

AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx
AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx	AB WI xxx xx xx xxx xxWx xx

*** End of Report ***

NOTES:

- (1) THE FACILITY RELIEF VOLUME FOR EACH SCHEME IS CARRIED FORWARD TO THE "SUMMARY - EOB RELIEF ADJUSTMENTS" STATEMENT
- (2) WELLS LISTED WERE TIED TO THE SCHEME FOR PURPOSES OF THE CURRENT PROCESSING CYCLE.



RAMEOR007
Confidential

**ROYALTY AND MARKETING
CRUDE OIL CROWN ROYALTY STATEMENT
SUMMARY - EOR RELIEF FOR PRODUCTION PERIOD 2012/09**

Report Date: 2013/09/03
Business Period: 2013/02

XXXX Example Oil Company Ltd.

ALL VOLUMES ARE M3

<u>FACILITY CODE</u>	<u>SCHEME</u>		<u>TOTAL CROWN ROYALTY RELIEF</u>
AB BT xxxxxxxx	AB IS xxxxxx	PREVIOUS RECORD	6,958.6
		ADJUSTED RECORD	6,958.6
		NET ADJUSTMENT	<u>0.0</u>
		TOTAL FACILITY ADJUSTMENT	<u><u>0.0</u></u>

*** End of Report ***

NOTES:

- (1) BATTERY TOTALS ARE CARRIED FORWARD TO DETAIL OF ADJUSTMENTS FOR "PRIOR MONTH" STATEMENT
- (2) SEE SCHEME LEVEL EOR RELIEF ADJUSTMENTS FOR "PRIOR MONTH" STATEMENT



RAMROY0033
Confidential

ROYALTY AND MARKETING
CRUDE OIL CROWN ROYALTY STATEMENT
CURRENT MONTH DETAIL FOR PRODUCTION PERIOD 2013-01
ABBT xxxxxx

Report Date: 2013/08/03
Business Period: 2013/02

XXXX Example Oil Company Ltd.		ALL VOLUMES ARE M3								
FACILITY	WELL EVENT ID	TOTAL PROD	CROWN %	CROWN PROD	DEN	FORMULA	GROSS CROWN ROYALTY	CROWN ROYALTY ADJUSTMENT	REASON CODE(S)	NET CROWN ROYALTY
ABBT xxxxxx	AB WI xxx xx xxx xxW% xx	337.3	100.0000000	337.3	L	ARF	134.9	0.0		134.9
SUB-TOTALS		<u>337.3</u>		<u>337.3</u>			<u>134.9</u>	<u>0.0</u>		<u>134.9</u>
FACILITY TOTAL								<u>0.0</u>		<u>134.9</u>

*** End of Report ***

LEGEND

Density: L - Light, M - Medium, H - Heavy, U - Ultra Heavy
Formula: ARF - Alberta Royalty Framework

NOTES:

- (1) ONLY THOSE CROWN ROYALTY FEATURES GIVEN UP AS VOLUMES ARE INCLUDED IN "CROWN ROYALTY ADJUSTMENT"
- (2) FACILITY TOTALS ARE CARRIED FORWARD TO "CURRENT MONTH SUMMARY" STATEMENT



**ROYALTY AND MARKETING
CRUDE OIL CROWN ROYALTY STATEMENT
DETAIL OF ADJUSTMENTS FOR PRODUCTION PERIOD 2012-12**

Report Date: 2013/09/03
Business Period: 2013/02

RAMROY0034
Confidential

XXXX Example Oil Company Ltd.

ALL VOLUMES ARE M3

FACILITY	WELL EVENT ID	TOTAL PROD	CROWN %	CROWN PROD	DEN	FORMULA	GROSS CROWN ROYALTY	CROWN ROYALTY ADJUSTMENT	REASON CODE(S)	NET CROWN
AB BT XXXXX	AB WT XXX XX XXX XXW'S XX									
	PREVIOUS RECORD	12.8	100.00000000	12.8	L	NWRR	0.0	0.0		0.0
	ADJUSTED RECORD	12.9	100.00000000	12.9	L	NWRR	0.0	0.0		0.0
	NET ADJUSTMENT	0.1		0.1			0.0	0.0		0.0
SUB-TOTALS										
							0.0	0.0		0.0
TOTAL FACILITY										
		0.1		0.1			0.0	0.0		0.0

*** End Of Report ***

LEGEND

Density: L - Light, M - Medium, H - Heavy, U - Ultra Heavy
Formula: NWRR - New Well Royalty Rate

NOTES:

- (1) ONLY THOSE CROWN ROYALTY FEATURES GIVEN UP AS VOLUMES ARE INCLUDED IN "CROWN ROYALTY ADJUSTMENT"
- (2) FACILITY TOTALS ARE CARRIED FORWARD TO "CURRENT MONTH SUMMARY" STATEMENT

APPENDIX J

OIL ROYALTY CALCULATION EXAMPLES

RR% = Royalty Rate Percent

RR% = Price Component (r_p) + Quantity Component (r_q)

Royalty = (Total Production * Royalty Rate) * Crown Percentage

All examples use the ARF formulae effective January 1, 2011.

EXAMPLE ONE: Basic calculation.

Density: Medium

Par Price: \$530.91

Crown Percentage: 100.0000000%

Total Production Amount: 451.6 m³

Par Price: \$530.91

r _p	a) < \$250.00	$[(PP - 190.00) * 0.0006] * 100$
	b) > \$250.00 but ≤ \$400.00	$\{[(PP - 250.00) * 0.0010] + 0.0360\} * 100$
	c) > \$400.00 but ≤ \$535.00	$\{[(PP - 400.00) * 0.0005] + 0.1860\} * 100$
	d) > \$535.00	$\{[(PP - 535.00) * 0.0003] + 0.2535\} * 100$

$$r_p = \{[(\$530.91 - \$400.00) * 0.0005] + 0.1860\} * 100$$

$$r_p = 25.15\% \text{ (Note: Maximum of 35.00\%)}$$

Quantity 451.6 m³

r _q	a) < 106.4 m ³	$[(Q - 106.4) * 0.0026] * 100$
	b) ≥ 106.4 m ³ but ≤ 197.6 m ³	$[(Q - 106.4) * 0.0010] * 100$
	c) > 197.6 m ³ but ≤ 304.0 m ³	$\{[(Q - 197.6) * 0.0007] + 0.0912\} * 100$
	d) > 304.0 m³	$\{[(Q - 304.0) * 0.0003] + 0.1657\} * 100$

$$r_q = \{[(451.6 \text{ m}^3 - 304.0 \text{ m}^3) * 0.0003] + 0.1657\} * 100$$

$$r_q = 21.00\% \text{ (Note: Maximum of 30.00\%)}$$

$$RR\% = 25.15\% + 21.00\% = 46.15\% \text{ (Note: Maximum of 40.00\%)}$$

$$RR\% = 40.00\%$$

$$\text{Royalty} = (451.6 \text{ m}^3 * 40.00\%) * 100.0000000\%$$

Royalty = 180.6 m³ (rounded to one decimal)

EXAMPLE TWO: Low production results in a negative r_q .

Density: Medium

Par Price: \$530.91

Crown Percentage: 100.0000000%

Total Production Amount: 24.3 m³

Par Price: \$530.91

r_p	a) < \$250.00	$[(PP - 190.00) * 0.0006] * 100$
	b) > \$250.00 but ≤ \$400.00	$\{[(PP - 250.00) * 0.0010] + 0.0360\} * 100$
	c) > \$400.00 but ≤ \$535.00	$\{[(PP - 400.00) * 0.0005] + 0.1860\} * 100$
	d) > \$535.00	$\{[(PP - 535.00) * 0.0003] + 0.2535\} * 100$

$$r_p = \{[(\$530.91 - \$400.00) * 0.0005] + 0.1860\} * 100$$

$$r_p = 25.15\% \text{ (Note: Maximum of 35.00\%)}$$

Quantity: 24.3 m³

r_q	a) < 106.4 m³	$[(Q - 106.4) * 0.0026] * 100$
	b) ≥ 106.4 m ³ but ≤ 197.6 m ³	$[(Q - 106.4) * 0.0010] * 100$
	c) > 197.6 m ³ but ≤ 304.0 m ³	$\{[(Q - 197.6) * 0.0007] + 0.0912\} * 100$
	d) > 304.0 m ³	$\{[(Q - 304.0) * 0.0003] + 0.1657\} * 100$

$$r_q = [(24.3 \text{ m}^3 - 106.4 \text{ m}^3) * 0.0026] * 100$$

$$r_q = -21.35\% \text{ (Note: Maximum of 30.00\%)}$$

$$RR\% = 25.15\% + -21.35\% = 3.80\% \text{ (Note: Maximum of 40.00\%)}$$

$$RR\% = 3.80\%$$

$$\text{Royalty} = (24.3 \text{ m}^3 * 3.80\%) * 100.0000000\%$$

$$\text{Royalty} = \mathbf{0.9 \text{ m}^3} \text{ (rounded to one decimal)}$$

EXAMPLE THREE: Crown is less than 100.0000000%.

Density: Medium

Par Price: \$530.91

Crown Percentage: 15.2367888%

Total Production Amount: 451.6 m³

Par Price: \$530.91

r _p	a) < \$250.00	$[(PP - 190.00) * 0.0006] * 100$
	b) > \$250.00 but ≤ \$400.00	$\{[(PP - 250.00) * 0.0010] + 0.0360\} * 100$
	c) > \$400.00 but ≤ \$535.00	$\{[(PP - 400.00) * 0.0005] + 0.1860\} * 100$
	d) > \$535.00	$\{[(PP - \$535.00) * 0.0003] + 0.2535\} * 100$

$$r_p = \{[(\$530.91 - \$400.00) * 0.0005] + 0.1860\} * 100$$

$$r_p = 25.15\% \text{ (Note: Maximum of 35\%)}$$

Quantity: 451.6 m³

r _q	a) < 106.4 m ³	$[(Q - 106.4) * 0.0026] * 100$
	b) ≥ 106.4 m ³ but ≤ 197.6 m ³	$[(Q - 106.4) * 0.0010] * 100$
	c) > 197.6 m ³ but ≤ 304.0 m ³	$\{[(Q - 197.6) * 0.0007] + 0.0912\} * 100$
	d) > 304.0 m ³	$\{[(Q - 304.0) * 0.0003] + 0.1657\} * 100$

$$r_q = \{[(451.6 \text{ m}^3 - 304.0 \text{ m}^3) * 0.0003] + 0.1657\} * 100$$

$$r_q = 21.00\% \text{ (Note: Maximum of 30.00\%)}$$

$$RR\% = 25.15\% + 21.00\% = 46.15\% \text{ (Note: Maximum of 40.00\%)}$$

$$RR\% = 40.00\%$$

$$\text{Royalty} = (451.6 \text{ m}^3 * 40.00\%) * 15.2367888\%$$

$$\text{Royalty} = 27.5 \text{ m}^3 \text{ (rounded to one decimal)}$$

EXAMPLE FOUR: Royalty Calculation for Multiple Royalty Rates used for the same production Month

When a well event has reached its volume cap for NWRR or HONWRR the remaining production volumes are calculated using ARF or ARF-T formulae.

This is an example of a well event where the 7,949.0 m³ volume cap was reached for NWRR. The ARF-T option was **not** selected.

Production Month: 2013/06

Density: Light

Par Price: \$548.10

Crown Percentage: 100.0000000%

End of 2013/05 NWRR to date = 7,421.2 m³

Total Production Amount: 637.2 m³

STEP ONE: Calculate royalty for the well event using the ARF royalty rate

ARF Royalty = (Total Production * Royalty Rate) * Crown Percentage

$$r_p = \{ [(\$548.10 - \$535.00) * 0.0003] + 0.2535 \} * 100 = 25.74\%$$

$$r_q = \{ [(637.2 \text{ m}^3 - 304.0 \text{ m}^3) * 0.0003] + 0.1657 \} * 100 = 26.57\%$$

Royalty Rate = 25.74% + 26.57% = 52.31% (Note: Maximum of 40.00%)

$$\text{ARF Royalty} = (637.2 \text{ m}^3 * 40.00\%) * 100.0000000 = 254.9 \text{ m}^3$$

STEP TWO: Calculate royalty for the well event using the NWRR

NWRR Royalty = (Total Production * 5.00% NWRR Royalty Rate) * Crown Percentage

$$\text{NWRR Royalty} = (637.2 \text{ m}^3 * 5.00\%) * 100.0000000\% = 31.9 \text{ m}^3$$

STEP THREE: Determine volumes allocated to NWRR

The well licence had total crown oil equivalent production at the end of 2013/05 of 7,421.2 m³. Calculate volumes allocated for the 2013/06 production month to NWRR:

Volume cap for NWRR 7949.0 m³ minus the total volumes allotted at 2013/05

$$7949.0 \text{ m}^3 - 7421.2 \text{ m}^3 = 527.8 \text{ m}^3 \text{ remaining for NWRR for 2013/06}$$

STEP FOUR: Determine volumes allocated to ARF

Step three confirmed that 527.8 m³ are allocated to NWRR.

(Total Production) – (production Allocated to NWRR Cap) = ARF production volumes

$$637.2 \text{ m}^3 - 527.8 \text{ m}^3 = 109.4 \text{ m}^3 \text{ for ARF calculation for 2013/06}$$

STEP FIVE: Establish percentage of Crown production for each rate

Steps three and four determined how much of the total production needed to be calculated at each rate. Step five establishes the percentage of royalty each of those production amounts contributes to total royalty payable for the month. Each allocated production amount must be divided by the total production amount to establish the **Royalty Rate Percentage**.

Royalty Rate Percentage:

$$\text{NWRR: } 527.8 \text{ m}^3 / 637.2 \text{ m}^3 * 100 = 82.8311362\%$$

$$\text{ARF: } 109.4 \text{ m}^3 / 637.2 \text{ m}^3 * 100 = 17.1688638\%$$

STEP SIX: Calculate the gross royalty split by rate

Rate One: NWRR Royalty * Royalty Rate Percentage for NWRR

$$31.9 \text{ m}^3 * 82.8311362\% = 26.4 \text{ m}^3$$

Rate Two: ARF Royalty * Royalty Rate Percentage for ARF

$$254.9 \text{ m}^3 * 17.1688638\% = 43.8 \text{ m}^3$$

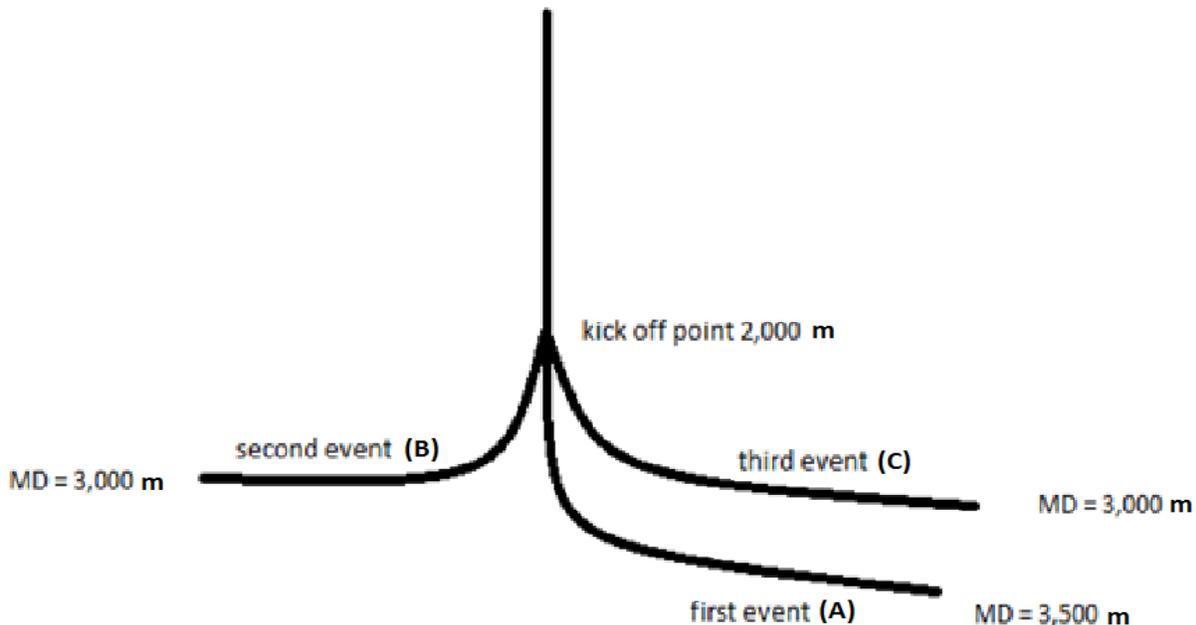
STEP SEVEN: Total Gross Royalty = Sum of Split Gross Royalty

$$\begin{aligned} \text{Total Gross Royalty} &= 26.4 \text{ m}^3 + 43.8 \text{ m}^3 \\ &= 70.2 \text{ m}^3 \end{aligned}$$

APPENDIX K**CALCULATION OF TOTAL MEASURED DEPTH**

To determine the applicable production month and volume caps used in the Horizontal Oil New Well Royalty Rate (HONWRR), a well's measured depth (MD) in metres (m) must be used. The MD of the first qualified well bore ("0" event) is measured from surface to bottom hole.

Any additional qualifying legs (events) are measured from the last common shared kick off point with previous legs when they begin producing. The following are examples of wells that have multiple horizontal legs (events).

EXAMPLE ONE:

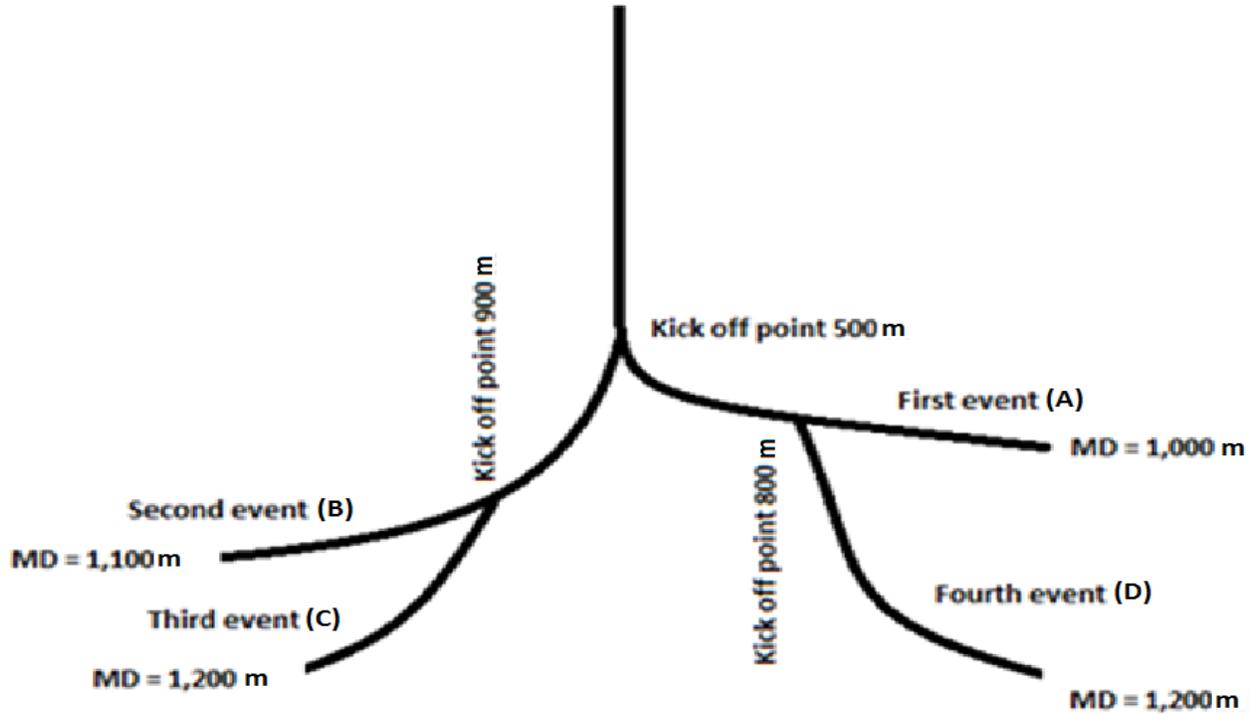
The first event (A) has an MD of 3,500 m. The second event (B) has an MD of 3,000 m and has a kick off point from the original well bore at 2,000 m. The third event (C) has an MD of 3,000 m and has the same kick off point at 2,000 m.

The first event (A) would have a total 3,500 m contributing towards the total MD. The second event (B) would contribute a total of 1,000 m, measured as the MD of the event minus the depth of the kick off point (3,000 m – 2,000 m = 1,000 m) to the total MD. The third event (C) would contribute a total of 1,000 m, measured as the MD of the event minus the depth of the kick off point (3,000 m – 2,000 m = 1,000 m) to the total MD. The total MD of the well would be 5,500 m. The calculation would look like this:

$$(A)[3,500 \text{ m}] + (B) [3,000 \text{ m} - 2,000 \text{ m}] + (C) [3,000 \text{ m} - 2,000 \text{ m}] = 5,500 \text{ m total MD}$$

EXAMPLE TWO:

If a well has multiple qualified legs with multiple kick off points, the last depth of the last common kick off point is subtracted from the MD of the leg.



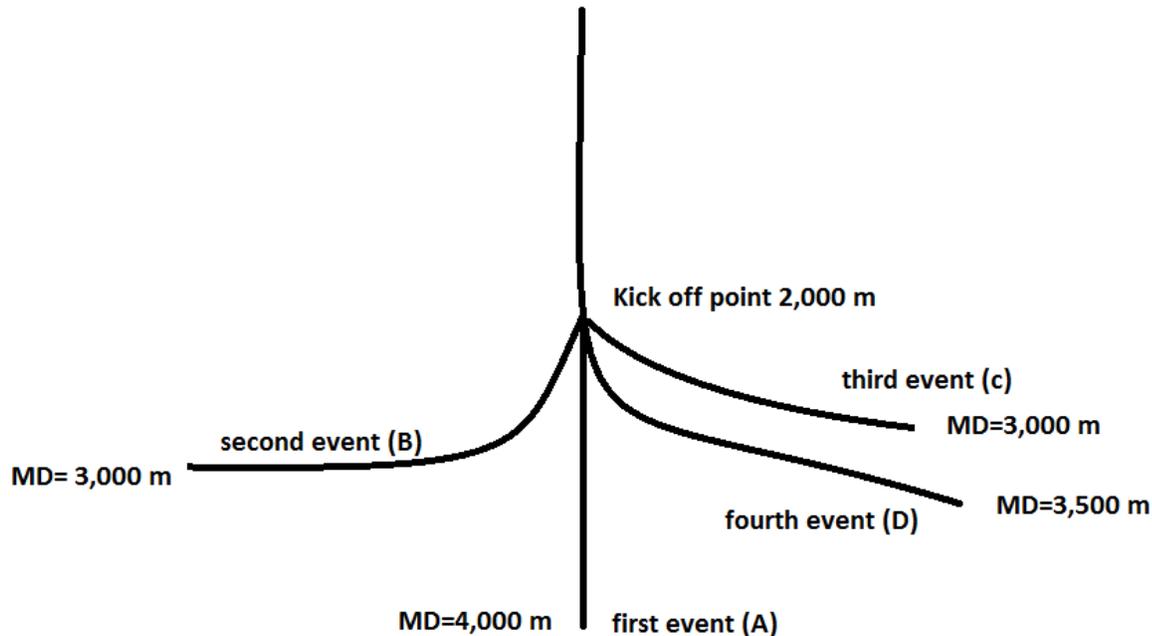
This well has four legs with three kick off points. The first event (A) has an MD of 1,000 m with one kick off point at 500 m. The second event (B) has an MD of 1,100 m with two kick off points; one at 500 m shared with the original well bore and one at 900 m. The third event (C) has an MD of 1,200 m with two kick off points; one at 500 m shared with the original well bore and one at 900 m shared with the second event. The fourth well event (D) has an MD of 1,200 m with two kick off points; one at 500 m shared with the original well bore; and one at 800 m shared with the first well event.

The first well event (A) would be measured as the total 1,000 m. The second event (B) would be measured as the MD of the event minus the depth of the last common kick off point with the prior events (1,100 m – 500 m = 600 m). The third event (C) would be measured as the MD of the event minus the depth of the last common kick off point with the prior events (1,200 m – 900 m = 300 m). The fourth event (D) would be measured as the MD of the event minus the depth of the last common kick off point with the prior events (1,200 m – 800 m = 400 m). The total MD of the well would be 2,300 m. The calculation would look like this:

$$(A) [1,000 \text{ m}] + (B) [1,100 \text{ m} - 500 \text{ m}] + (C) [1,200 \text{ m} - 900 \text{ m}] + (D) [1,200 \text{ m} - 800 \text{ m}] = 2,300 \text{ m total MD}$$

EXAMPLE THREE:

If a well has multiple legs, that include both horizontal and vertical wells; the vertical well will not contribute to the calculation of the MD, the horizontal wells will.



The second event (B) has an MD of 3,000 m. The third event (C) has an MD of 3,000 m and has a kick off point from the original well bore at 2,000 m. The fourth event (D) has an MD of 3,500 m and has the same kick off point at 2,000 m. The first event (A) does not contribute to the calculation of the MD.

The second event (B) would have a total 3,000 m contributing towards the total MD. The third event (C) would contribute a total of 1,000 m, measured as the MD of the event minus the depth of the kick off point (3,000 m – 2,000 m = 1,000 m) to the total MD. The fourth event (D) would contribute a total of 1,500 m, measured as the MD of the event minus the depth of the kick off point (3,500 m – 2,000 m = 1,500 m) to the total MD. The total MD of the well would be 5,500 m. The calculation would look like this:

$$(B) [3,000 \text{ m}] + (C) [3,000 \text{ m} - 2,000 \text{ m}] + (D) [3,500 \text{ m} - 2,000 \text{ m}] = 5,500 \text{ m total MD}$$

APPENDIX L

LAHEE CLASSIFICATIONS

A Lahee classification is a “**pre-spud**” assignment given to each well based on the geological complexities and the known existence of hydrocarbon accumulations (pools) in the area where the well is to be drilled. The classification takes into account the general degree of risk of geological failure. Lahee classifications are assigned by AER.

New Field Wildcat (NFW) – A NFW well is located a considerable distance beyond the limits of known pools and is outside the boundaries of existing fields. The well is drilled in an area where hydrocarbons have not yet been discovered. The geological risk of this type of well is very high. In the absence of the discovery of a new pool, the well would be deemed unsuccessful.

New Pool Wildcat (NPW) – The objective of an NPW well is the discovery of a new pool(s) in all zones that the well encounters. The well is located in an already discovered field. The geological risk of this type of well is very high: in the absence of the discovery of a new pool, the well would be deemed unsuccessful. In circumstances where the well is in relatively close proximity to the limits of a known pool(s), the NPW classification must be based on technical data suggesting that a new pool will be encountered. A well drilled within or in close proximity to the limits of a known pool(s) but terminating shallower than the known pool(s) is normally classified as NPW, except in the case where pre-existing wells in close proximity to the well have logs and/or tests that strongly suggest the existence of shallower pools to be penetrated by the well.

Deeper Pool Test (DPT) – A DPT well is located within or in close proximity to a known pool(s) and is drilled with the objective of exploring for a new, undiscovered pool(s) below the deepest of the known pool(s). Only the interval below the deepest of the known pool(s) is exploratory and carries a high geological risk. The remaining metreage in a DPT is development, with low geological risk. In circumstances where the exploratory portion of the well is in relatively close proximity to the limits of a known pool(s), the DPT classification must be based on technical data suggesting that a new pool will be encountered.

APPENDIX M**DENSITY OF OIL**

Density is the mass of a fluid substance per unit of standard volume.

Light Oil – Crude oil obtained from a well event during a month in which all crude oil obtained in that month from the well event has a density that is less than 850 kilograms per cubic meter. (> 35° API) (for the purposes of calculating royalty)

Medium Oil – Crude oil obtained from a well event during a month in which all crude oil obtained in that month from the well event has a density that is greater than or equal to 850 kilograms per cubic meter and less than 900 kilograms per cubic meter. (35° API to > 25.7° API) (for the purposes of calculating royalty)

Heavy Oil – Crude oil obtained from a well event during a month in which all crude oil obtained in that month from the well event has a density that is greater than or equal to 900 kilograms per cubic meter and less than 925 kilograms per cubic meter. (25.7° API to > 21.5° API) (for the purposes of calculating royalty)

Ultra Heavy Oil – Crude oil obtained from a well event during a month in which all crude oil obtained in that month from the well event has a density that is greater than or equal to 925 kilograms per cubic meter. (21.5° API and less) (for the purposes of calculating royalty)

APPENDIX N

CONVERSION FACTORS

Conversion Factors – The factors used to convert gas and condensate to oil equivalents are:

- 10^3m^3 of solution gas to m^3 of oil, divide by 1.78110
- m^3 of condensate to 10^3m^3 of gas equivalent, multiply by 0.78783