
BMO CAPITAL MARKETS

OIL & GAS

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BMO TECHNICAL UPDATE: THE ALBERTA BAKKEN PETROLEUM SYSTEM (ABPS) IS “STEADY AS SHE GOES” AN EMERGING UNCONVENTIONAL TIGHT OIL RESOURCE PLAY

Summary

- The “Alberta Bakken Petroleum System” (ABPS) is an emerging unconventional tight oil resource play in southwestern Alberta and northwestern Montana, consisting of three potential reservoir zones: Big Valley/Stettler carbonates, Middle Bakken/Exshaw dolomitic siltstones and overlying Basal Banff carbonates
- BMO Capital Markets scouted 12 new wells (Shell - 4; Crescent Point - 3; Argosy - 3; and Nexen - 2) to determine status and to ascertain which wells were completed and on production
- Recent drill results from 5 wells (Argosy 03-31-010-25W4, Shell 10-20-001-22W4, Crescent Point 03-08-001-18W4, 15-01-002-20W4 and 14-07-001-22W4) indicate oil production from the ABPS fairway. Results are indicative of an overpressured area that stretches for ~175 miles (north-south) by 50 miles (east-west) from southern Alberta into northern Montana. To the east of this fairway is a zone of potential conventional hydrocarbon-over-water plays in the same stratigraphic zones similar to those found in SE Saskatchewan
- Significant activity and capital has been directed toward the ABPS since January 2009 including:
 - o Land/bonus/farm-in to establish land positions along the ABPS totalling approximately \$520MM
 - o A total of 59 wells (32 in Alberta; 27 in Montana) have either been drilled or licensed where the primary target has been the ABPS. At an estimated \$4MM/well for 59 wells, this would indicate that approximately \$245MM has been committed for drilling this play to date
 - o Two additional large deals have been announced recently (NARP - Kainaiwa Partnership; Bowood - Legacy Farm-in) each committing significant additional dollars for development
- Companies with large established land positions in the ABPS include: Crescent Point, Shell, Murphy, Bowood/Legacy, Argosy, Nexen, Rosetta and Newfield

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ABOUT BMO CAPITAL MARKETS

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Introduction

In October 2010 BMO Capital Markets published an initial report highlighting the potential of the emerging Alberta Bakken Resource Play.

In this update, BMO Capital Markets has re-evaluated the available public well data, integrated a new structural interpretation of the Alberta Bakken Petroleum System (ABPS) Fairway with recently completed detailed isopach mapping, analyzed recent drilling and landsale activity and obtained information by scouting 12 of the new well locations to improve our understanding of the ABPS play in southwestern Alberta and northwestern Montana. This report is structured into two parts, as follows:

- Part 1 provides information on the available recent well production results, drilling and landsale activity along the ABPS Fairway. These results are indicative of an emerging new Light Tight Oil (LTO) resource play in a fairway that is approximately 175 miles long (north-south) by 50 miles (east-west)
- Part 2 provides new geologic information focusing on the fairway limits, pressure systems, structural framework, isopach trends and structural/stratigraphic play types that characterize the ABPS

Information on the key operators along the fairway, including land position and upcoming drilling activity is summarized within the Appendix.

Production Activity

While a significant number of wells have been drilled and completed since October 2010, only three wells have had publicly released production data in Alberta (Figures 1a and 1b). Scouting of the locations shows that two additional wells are producing, and corporate releases indicate two additional wells are producing in Montana. Figure 2 highlights these key wells and their position along the fairway. It is estimated that this fairway is approximately 175 miles north-south by 50 miles east-west.

Three Crescent Point wells (03-08-001-18W4; 15-01-002-20W4; 14-07-001-21W4) display between one and three months of production (Figure 1a). It is important to note that this information is very preliminary and is recorded as cumulative monthly volumes negating the possibility of calculating actual IP or realistic decline curve. The data, however, confirm the presence of movable oil in the system with calculated first month oil cut ranging between 3 – 78%. It should be noted that, in the early stages of production, load fluids have most likely not been recovered and therefore initial oil cut may not be a good indicator of ultimate stabilized oil cuts.

On March 31, 2011, BMO Capital Markets had the wells scouted (Figure 1a and 1b) and the 15-01 and 14-07 wells were still on production. The 15-01 well was producing via pumpjack into two (2) 400 bbl tanks on location with a small incinerator assembly assumed to be burning off small volumes of gas (Figure 4).

The 14-07 well was also on production with a pumpjack installed and two (2) 400 bbl tanks on location with a small (0.5m) flare. The 03-08 well was standing with a pumpjack installed but not operational, most likely due to impassable road conditions. The Argosy 03-31-010-25W4 (Figure 3) well was pumping oil into a 400 bbl test vessel, with some burnable gas.

Figure 1b summarizes some of the key observations from the scouting of the wells. The CPA 15-01 well, based on estimated stroke length, stroke rate and tubing diameter had a calculated fluid rate of about 194 bbl/d. The Crescent Point 14-07 well also had an estimated fluid rate of 194 bbl/d. The Argosy 03-31 well had an estimated fluid rate of 466 bbl/d, possibly indicative of higher reservoir pressure.

The best indication of well deliverability was from the Shell 10-20-001-22W4 well (Figures 1b and 5). This well was flowing fluid (although a pumpjack was on site but not attached to the wellhead) into eight (8) 400 bbl tanks on location. Tanker trucks were observed hauling fluid off lease; rates and cut are not known (Figure 6). The free flowing fluid production is interpreted to indicate overpressure in the systems, similar to that in the 10-30 well which was also overpressured.

Figure 1a: Table of the key new wells along the extent of the ABPS Fairway

Well	Operator	Status	Terminating Formation	March 31, 2011 Comment	First Month Oil Cut %	Monthly Production									
						Oil (bbl)	Jan-11 Gas (Mmcf)	Wtr (bbl)	Oil (bbl)	Dec-10 Gas (Mmcf)	Wtr (bbl)	Oil (bbl)	Nov-10 Gas (Mmcf)	Wtr (bbl)	
03-08-001-18W4	Crescent Pt	Oil	Wabamun	Standing with Pumpjack installed but not operational - Access road is impassable	62%	617	117	376							
14-07-001-21W4	Crescent Pt	Oil	Wabamun	Pumping Oil	78%	178	0	132	266	0	287	886	1150	252	
15-01-002-20W4	Crescent Pt	Oil	Wabamun	Pumping Oil	3%	60	117	1993							
10-20-001-22W4	Shell		Big Valley	Flowing oil with no pumpjack into eight (8) 400 bbl tanks on location; hauling petroleum crude; rates and cut not known											
03-31-010-25W4	Argosy		Wabamun	Pumping oil into 400 bbl test vessel, some burnable gas											
Sheriff 1-11H	Newfield	Oil	Bakken	Company reports well on production											
Tribal Gunsight 31-16H	Rosetta	Oil	Souris River	Company reports well on production											

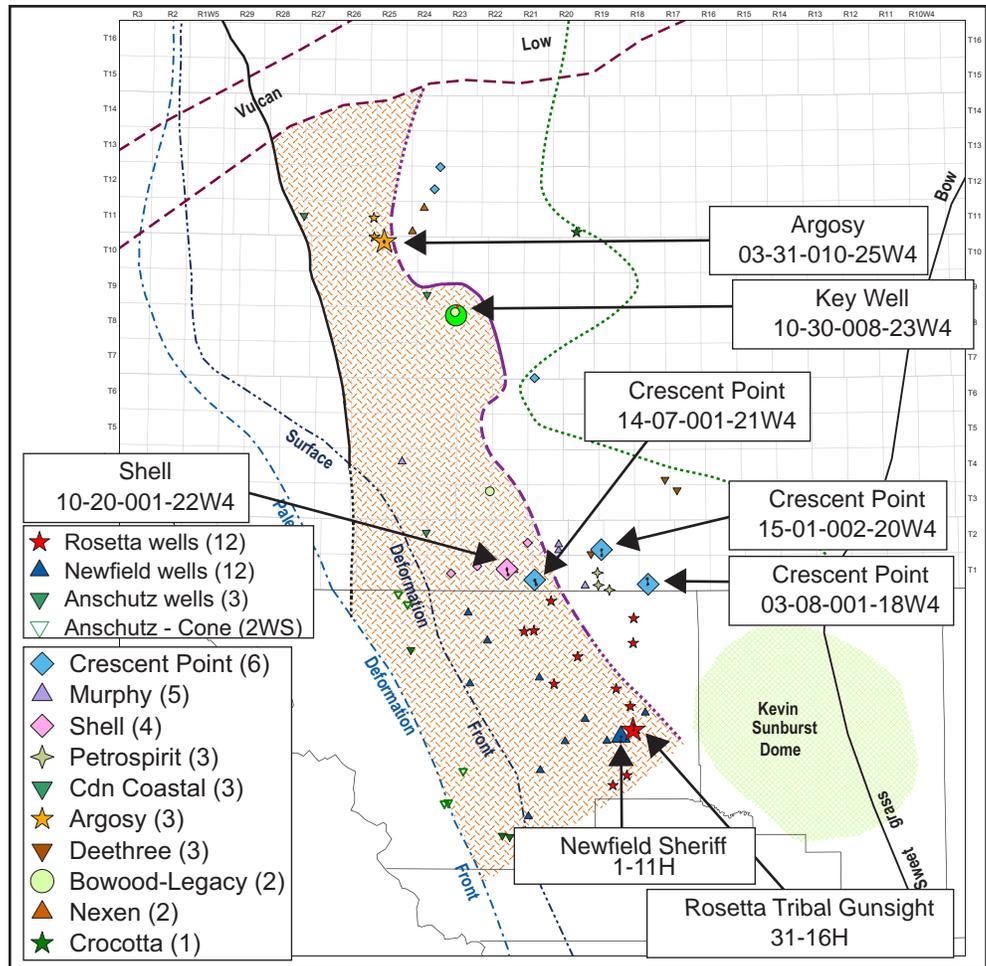
Source: BMO Capital Markets, Scouting Service

Figure 1b: Table of observations from the new wells scouted March 31, 2011

SCOUTING RESULTS - March 31, 2011								
Well Location	Estimated Stroke Length (m)	Stroke Rate (strokes/min)	Estimated Tubing Diameter (inches)	Effluent Rate (m3/d)	Effluent Rate (bbl/d)	Tanks on Location	Visible Flare	Well head pressures
CPG 14-07-001-21W4	3.0	2.5	2.375	31	194	(2) 400 bbl	0.5 m flare, no smoke	100 kPa (tbg), 0 kPa (csg)
CPG 15-01-002-20W4	3.0	2.5	2.375	31	194	(2) 400 bbl	heat waves visible	none visible
ARGOSY 03-31-010-25W4	3.0	6.0	2.375	74	466	(1) 400 bbl test vessel	some smoke	could not determine
CPG 03-08-001-18W4	Pumpjack installed, but not operational. Well has produced, but poor road conditions preclude current production.							
ARGOSY 02-24-011-26W4	Drilled and being completed with CTU on wellhead. (2) Trican frac pumpers on location with (20) 400 bbl tanks full of fluid. Testers on site with flare stack, but no visible gas.							
ARGOSY 15-35-010-26W4	Drilling with (5) 400 bbl tanks on location. Unable to confirm depth but there is no drill pipe standing in the derrick.							
SHELL 10-20-001-22W4	Pumpjack is on location but not installed. Well is flowing into (8) 400 bbl tanks. 30 m flare stack with orange flame and black smoke. Tanker trucks observed hauling fluid.							
SHELL 02-28-001-23W4	Not drilled, lease is partially under water.							
SHELL 04-13-002-22W4	Drilling rig over the hole. (8) 400 bbl tanks on location with test flare and equip. No operations right now.							
SHELL 13-14-001-24W4	Not drilled yet. Location is built and partially matted. Conductor barrel drilled and set.							
NEXEN 13-28-011-24W4	Drilled and being completed. Testers on site with p-tanks and flare stack. (20) 400 bbl tanks on location.							
NEXEN 13-06-011-24W4	Currently being drilled. A string of 7-inch csg on site, appears to have not reached intermediate casing point.							

Source: BMO Capital Markets, Scouting Service

Figure 2: Updated Alberta Bakken Petroleum System with graded overpressured fairway in relation to the key wells along the ABPS fairway and highlighted in Figures 1a and 1b



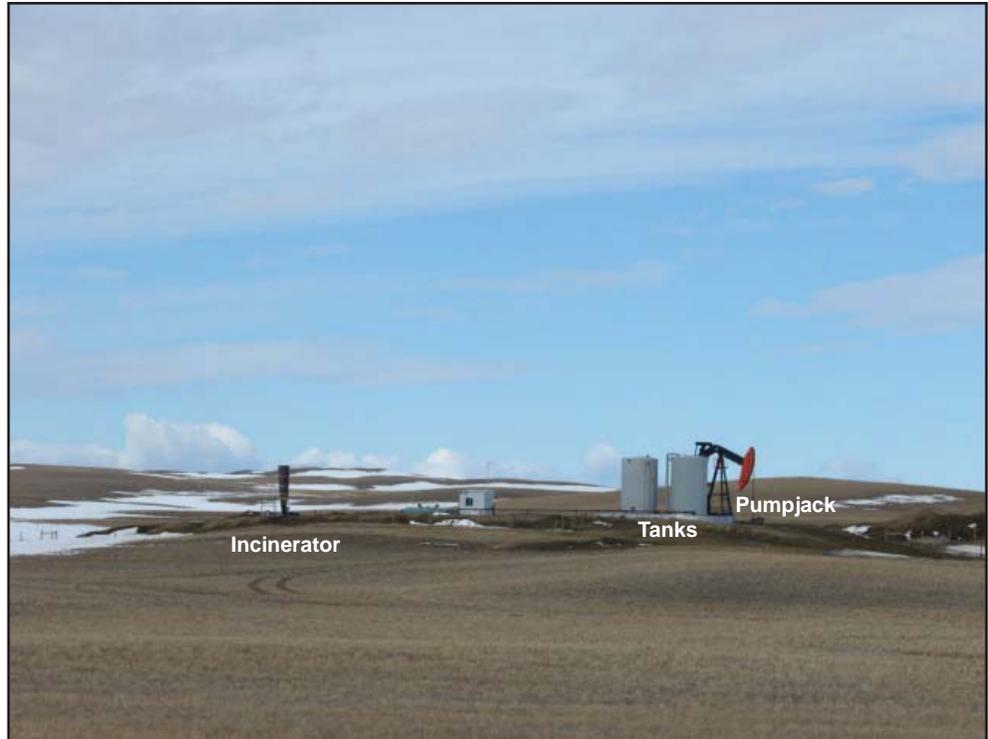
Source: BMO Capital Markets, GeoScout, Scouting Service

Figure 3: Photograph of the Argosy 03-31-010-25W4 with a pumpjack and well flowing into a 400 bbl test vessel, and burner assembly showing small levels of visible smoke. March 31, 2011



Source: BMO Capital Markets, Scouting Service

Figure 4: Photograph of the Crescent Point 15-01-002-20W4 well site equipped with a pumpjack, two 400 bbl tanks and incinerator. March 31, 2011



Source: BMO Capital Markets, Scouting Service

Figure 5: Photograph of the Shell 10-20-001-22W4 well site showing the pumpjack on location but not attached to the wellhead. Well appears to be flowing into eight 400 bbl tanks on location. There is a 3m orange flare trailing black smoke from the flare stack. March 31, 2011



Source: BMO Capital Markets, Scouting Service

Figure 6: Photograph of two tankers hauling fluid off the Shell 10-20-001-22W4 lease on March 31, 2011. TDG placards UN#1267 on side of tanker trucks indicate that they are hauling petroleum crude oil



Source: BMO Capital Markets, Scouting Service

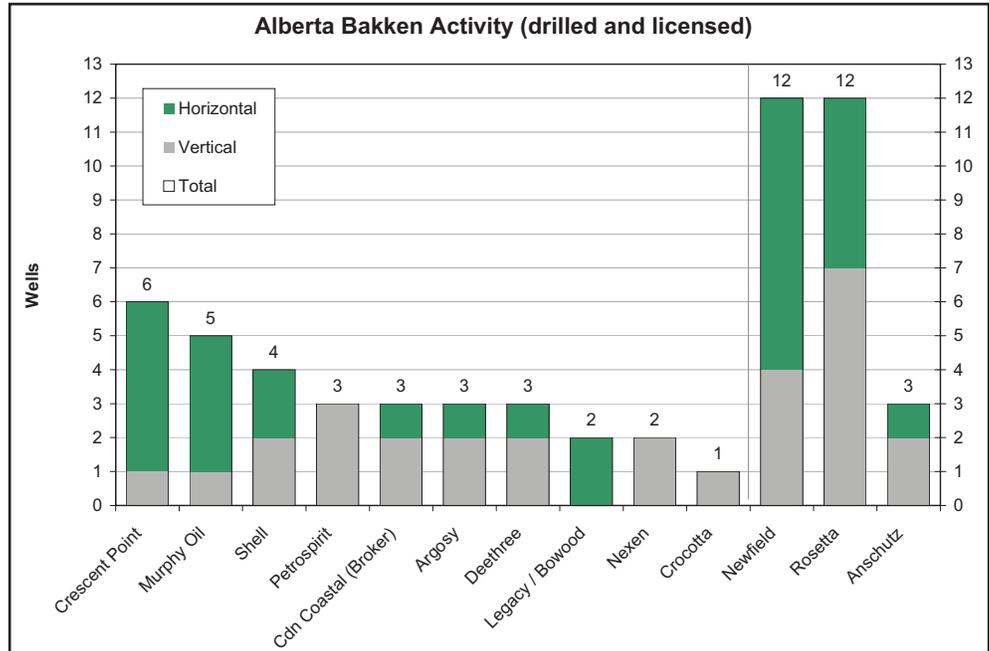
Drilling Activity

Drilling and well licensing activity has dramatically increased from the October 2010 Alberta Bakken report.

As of March 2011 there are 32 wells producing, drilled or licensed in Alberta targeting the Alberta Bakken and an additional 27 wells identified in Montana (Figures 7 and 8). At an estimated ~\$4MM/well, this would indicate that approximately \$245MM has been committed for drilling this play (assuming that all licensed wells are in fact drilled). According to publicly available records, BMO Capital Markets believes 5 of the recently drilled horizontal wells are presently producing (3 in Canada and 2 in the US: Figures 1a and 1b). Additional vertical wells (2 in Canada and 2 in the US) may also be on production. The 16 vertical wells licensed in Canada and 13 in the US are considered to be delineating the play fairway, and the horizontal wells for proving commercial viability along the play fairway. It is interesting to note that almost all of the recent US activity is targeting the area west of the overpressure zone, whereas there is greater variability of well placement on the Alberta portion of the fairway. (Figures 9 and 10)

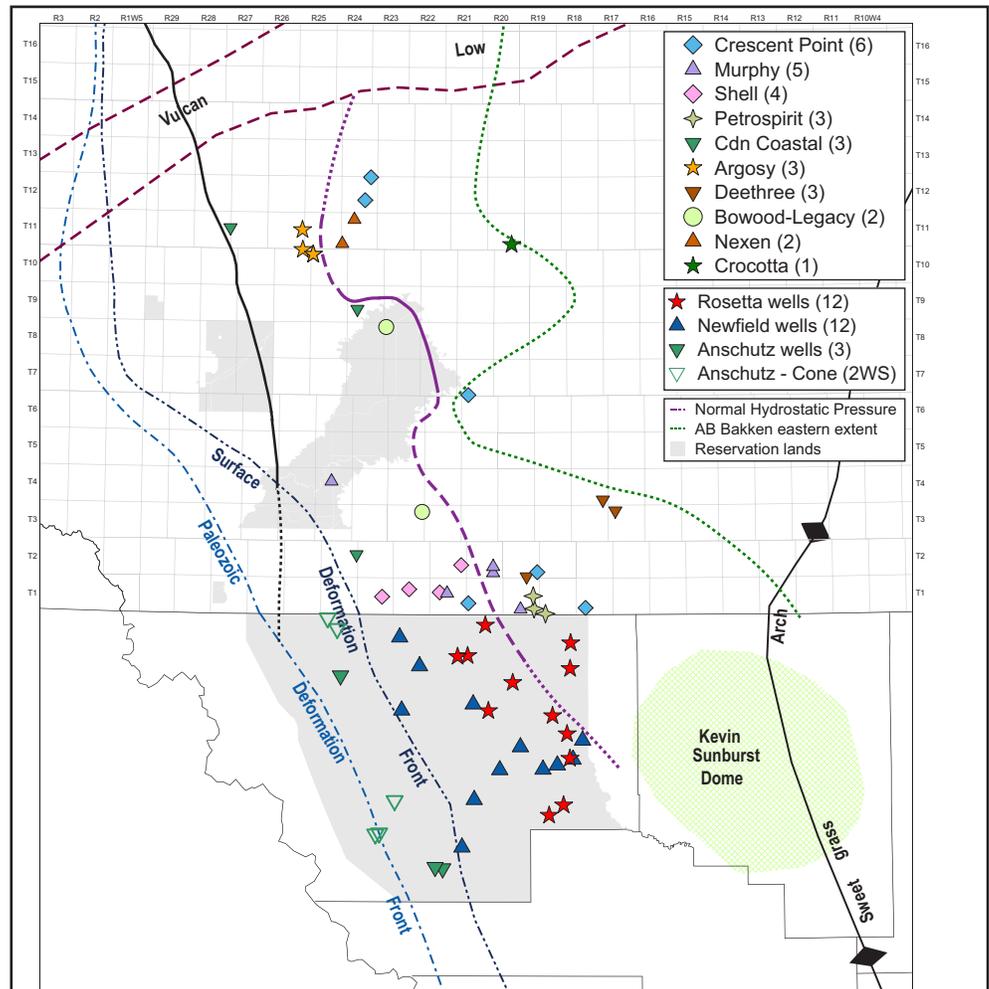
The key companies operating in the play are shown in Figures 7-10. In Canada, Crescent Point, followed by Murphy Oil and Shell are the top 3 operators. In the U.S., Rosetta and Newfield, at 12 wells each, are the most active to date.

Figure 7: Alberta Bakken horizontal and vertical wells (drilled and licensed) current to March 31, 2011 by company



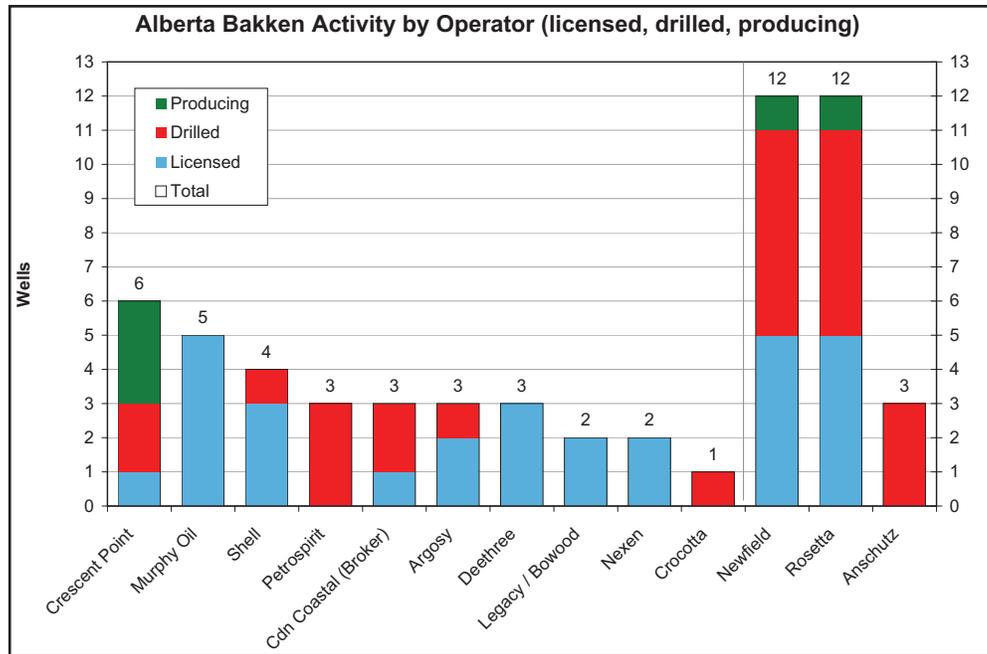
Source: BMO Capital Markets, GeoScout, Corporate Presentations

Figure 8: Alberta Bakken wells and well licenses current to March 31, 2011 by company in relation to the ABPS fairway



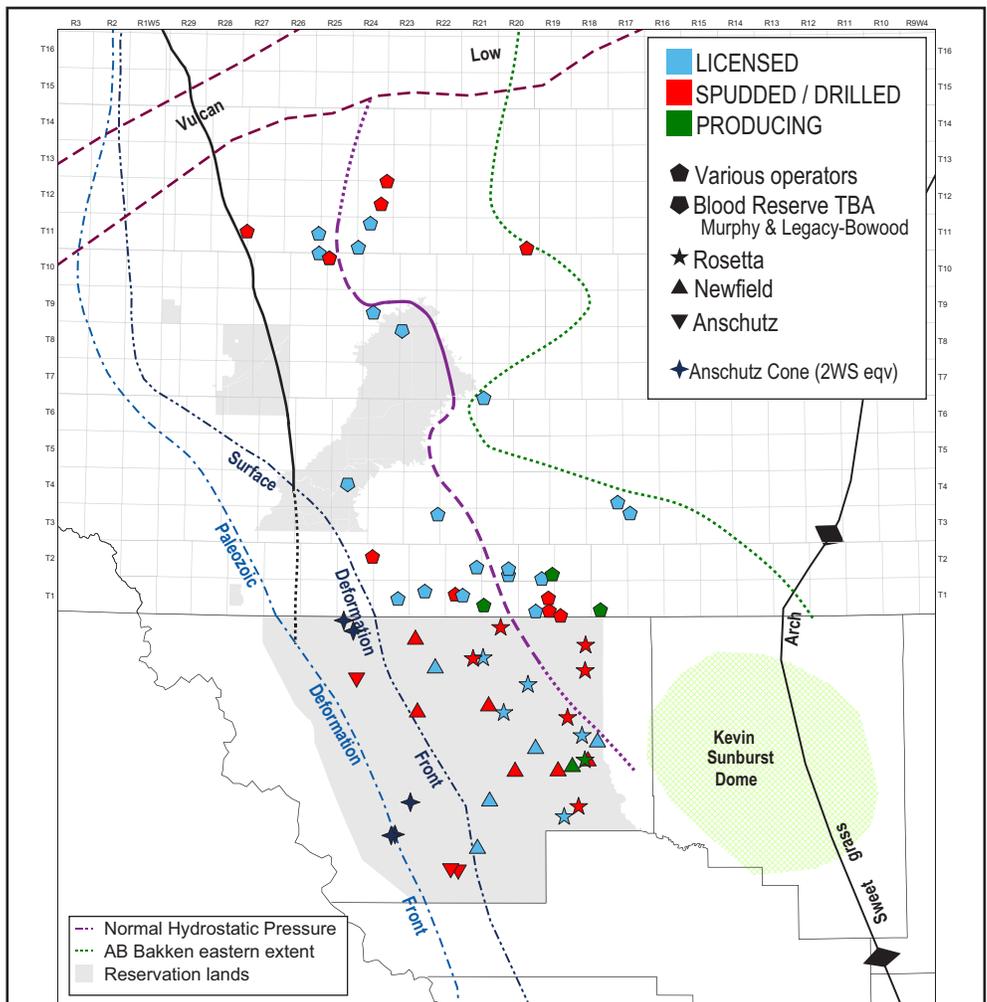
Source: BMO Capital Markets, GeoScout, Corporate Presentations

Figure 9: Alberta Bakken producing, drilled, or licensed wells current to March 31, 2011 by company



Source: BMO Capital Markets, GeoScout, Corporate Presentations

Figure 10: Alberta Bakken producing drilled or licensed wells current to March 31, 2011 in relation to the ABPS fairway

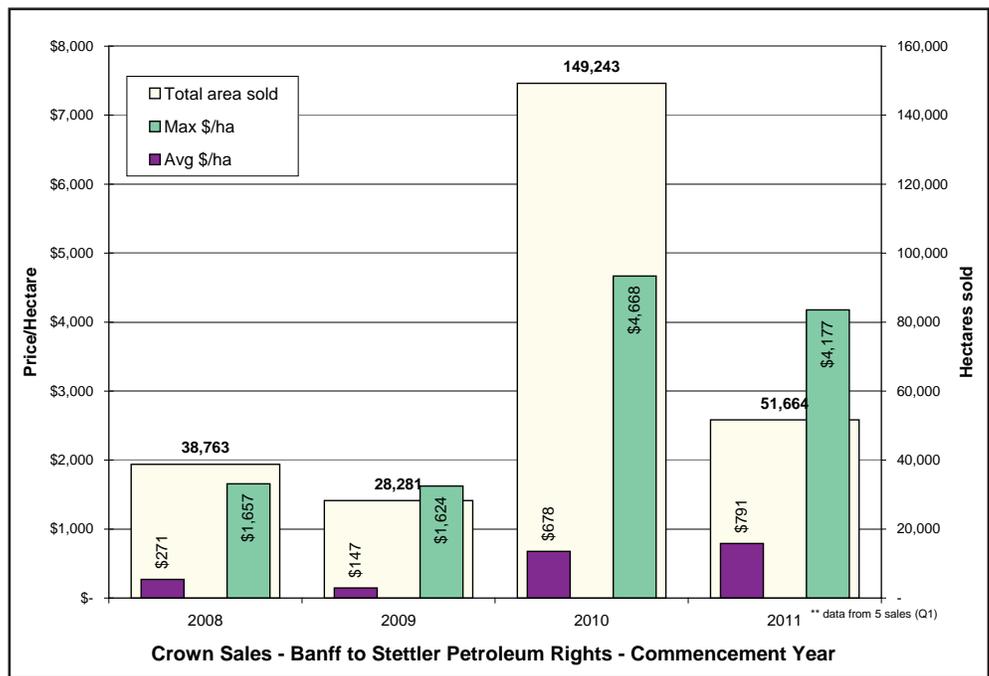


Source: BMO Capital Markets, GeoScout, Corporate Presentations

Land Activity

Significant landsale and farm-in activity has occurred consolidating land positions and expanding the limits of the Alberta Bakken Fairway since the October 2010 report was released. It appears that the play was first identified in northern Montana in 2009 based on the activity and farm-ins on the Blackfeet Indian Reserve by Rosetta and Newfield Resources. BMO Capital Markets assumes the same starting point in Alberta (January 2009) for the ABPS play. Figure 11 shows that a total of 229,188 ha (566,333 acres)* has been sold for \$146MM at Alberta Government Landsales. Average yearly \$/ha values have escalated from \$147 to \$678 to \$791/ha between 2009 and the present, with maximum \$/ha bids increasing from \$1,624 to 4,668/ha in Q3 of 2010 (Figures 11 and 12).

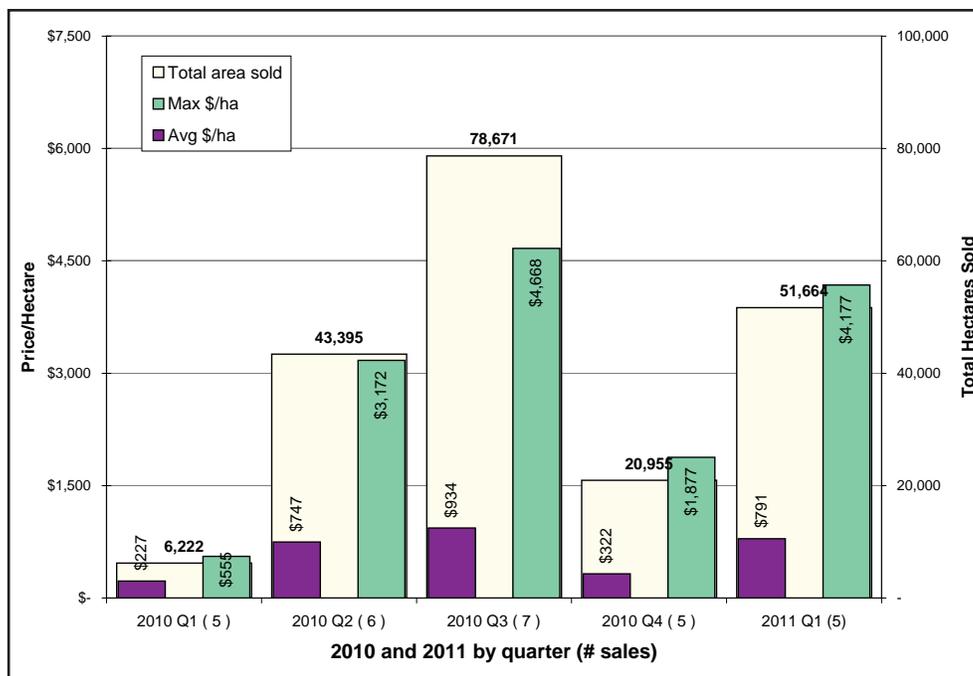
Figure 11: Landsale Statistics for the Alberta Bakken for 2008–2011



Source: BMO Capital Markets, GeoScout

*1 ha = 2.471 acres

Figure 12: Landsale Statistics for the Alberta Bakken for 2010 and 2011 by Quarter



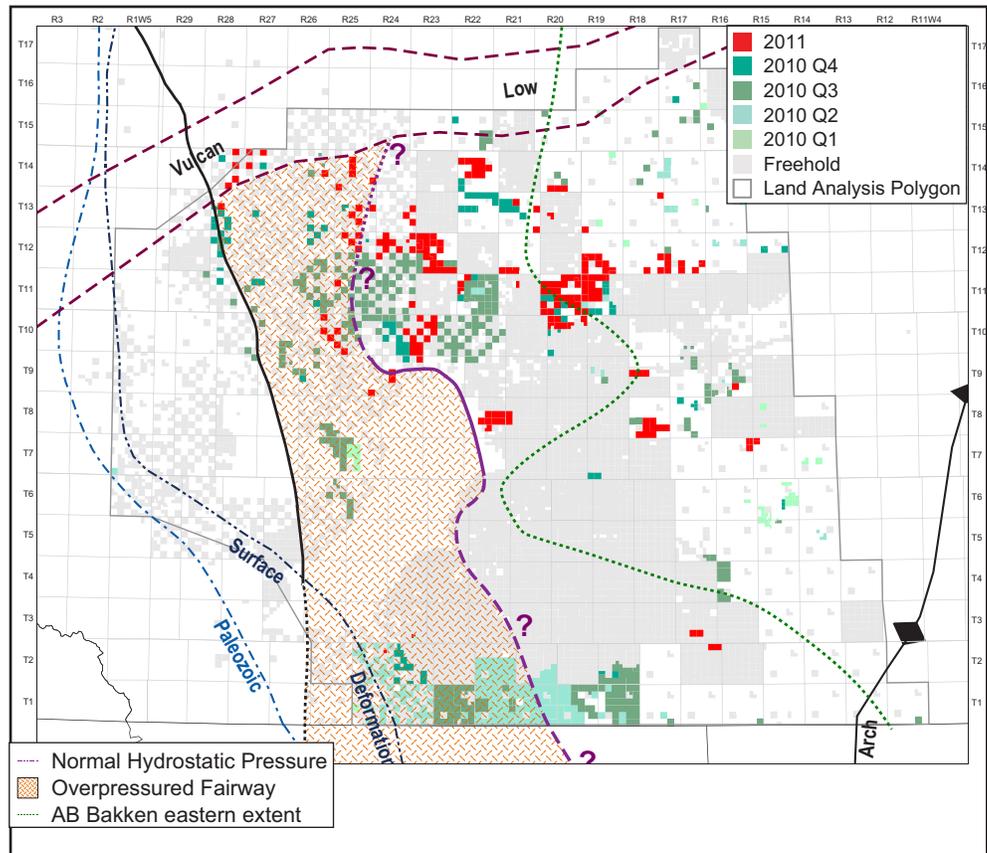
Source: BMO Capital Markets, GeoScout

In 2009, 28,281 ha was sold at Alberta Crown Landsales. During the first 3 quarters of 2010 in southern Alberta, approximately 128,288 ha (317,005 acres) have been purchased via Alberta Crown Landsale for the Alberta Bakken. Since Q3 2010, an additional 72,619 ha (179,441 acres) have been purchased via Alberta Crown Landsale. The total bonus for Alberta Bakken lands in 2009 was \$4.2MM; in 2010 was \$101MM; and in 2011 an additional \$40.9MM. BMO Capital Markets believes the total Alberta Landsale bonus over this time period was \$146.2MM for 229,188 ha (566,323 acres) (average \$637.95/ha), and was dominantly directed toward the emerging new ABPS Light Tight Oil (LTO) resource play. Figure 13 shows the distribution of 2010 and Q1 2011 Alberta Crown Landsale in Southern Alberta.

Figure 14 depicts upcoming Alberta Crown Landsale Activity and potential 2011 expiries in relation to the ABPS Fairway. It is interesting to highlight the concentrated land base (landsale and expiring lands) of ~1.25 Townships around Twp 7 R25-26W4 that could be developed directly west of the Blood Indian Reserve in the heart of the ABPS Fairway.

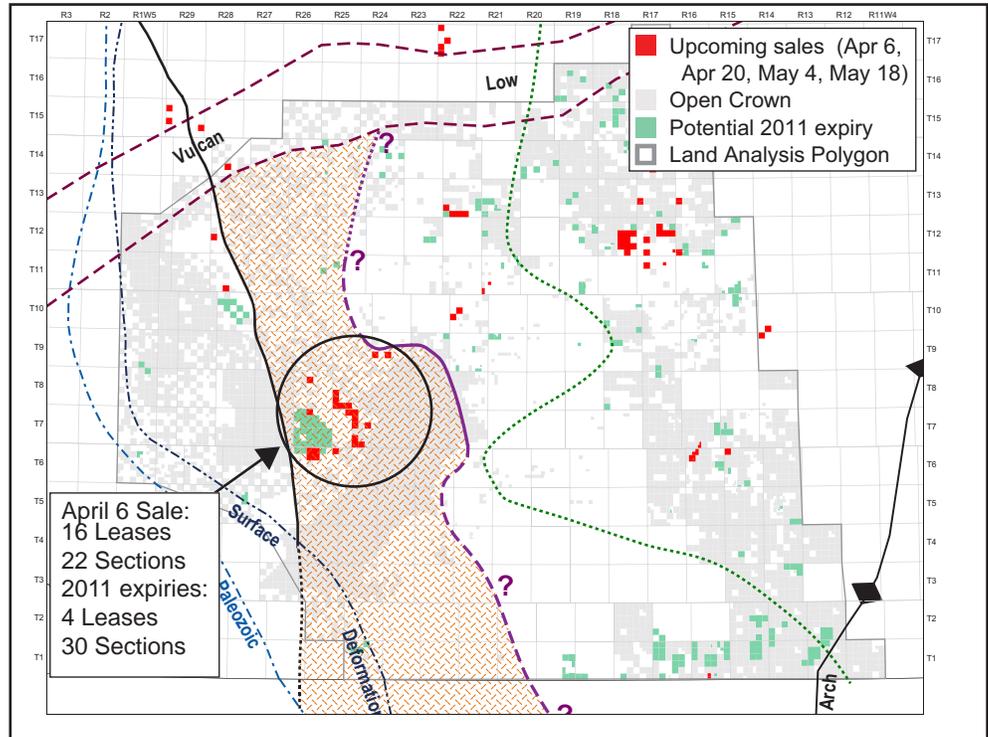
In addition to the Alberta Crown Landsale activity, a number of companies have established significant land positions via differing entry strategies. Crescent Point Energy, for example, acquired 1,000,000 acres (404,687 ha) of land from Darian Exploration, which was in receivership, for \$96MM. Murphy Oil (129,000 ha) (318,764 acres), and Bowood Energy (60,640 ha) (149,841 acres), have paid \$29.7MM and \$13.9MM respectively, as bonus payment to access lands on the Blood Indian Reserve. Towards the end of 2010, Bowood farmed out ~50% of its position to Legacy Oil and Gas for land equalization, well commitments and a rolling-option on prospective ABPS lands in Southern Alberta. On April 4, Native American Resource Partners (NARP), a portfolio company of Houston based Quantum Energy Partners announced a partnership with Kainaiwa Resources (Blood Indian Tribe) with a capital commitment of \$100MM.

Figure 13: Distribution of 2010 and Q1 2011 Alberta Crown Landsales in relation to the BMO-defined ABPS Fairway



Source: BMO Capital Markets, GeoScout

Figure 14: Distribution of Upcoming Alberta Crown Landsales and expiries in relation to the BMO defined ABPS Fairway. Circled area highlights expiring land in heart of the ABPS Fairway



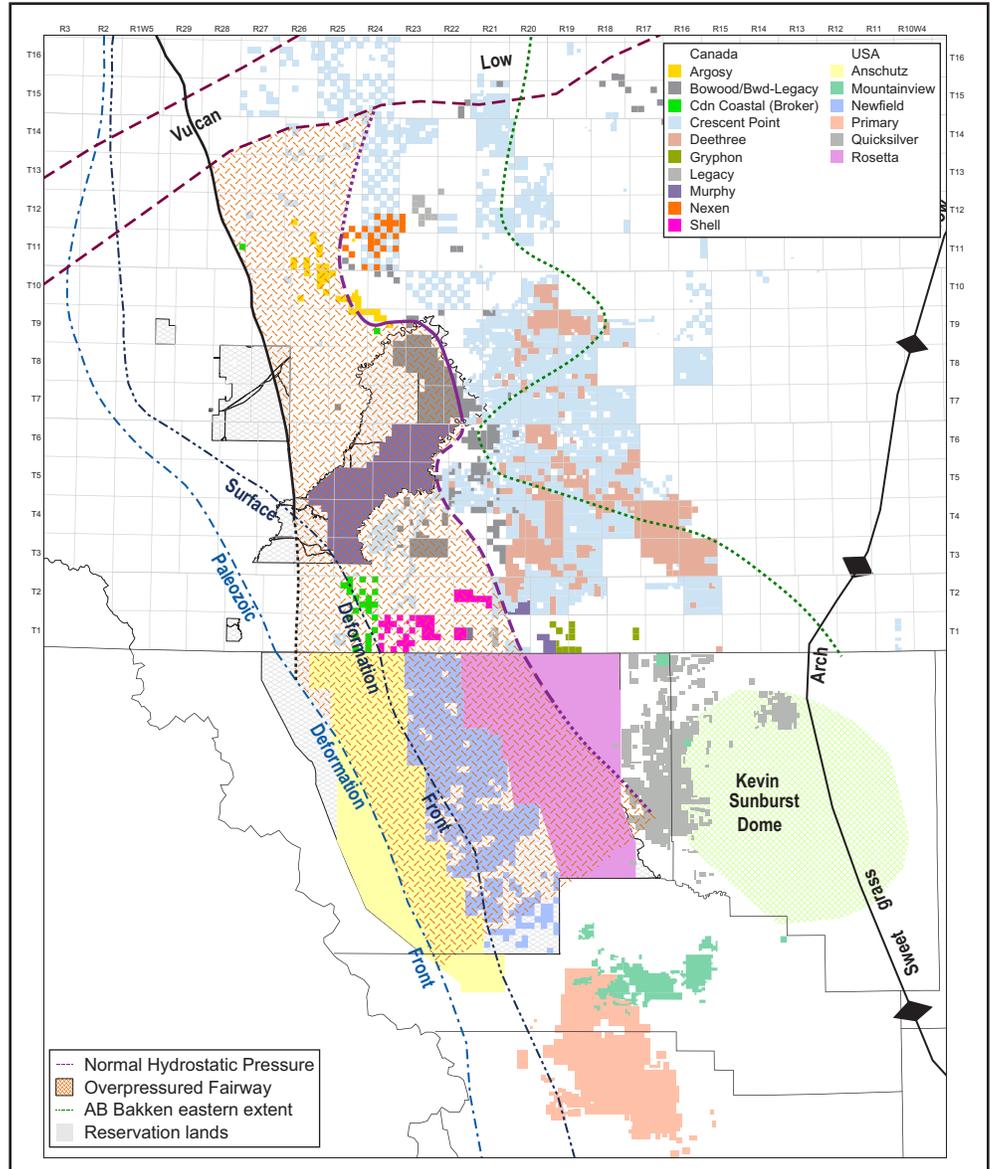
Source: BMO Capital Markets, GeoScout

In Montana, Rosetta resources paid an approximately \$30MM* estimated bonus payment to access ~200,000 acres (80,937 ha) of Blackfeet lands in a southern extension of the prospective fairway in Northern Montana (Figure 15). It has been assumed that Newfield has paid an estimated \$28MM* bonus payment to also access the Blackfeet lands in Northern Montana utilizing a similar rationale to Rosetta. In addition, \$75.1MM* is estimated as a land payment for ~750,000 acres (303,515 ha) of land off the Blackfeet Reserve by a variety of companies (Quicksilver, Abraxus, Anshultz, Primary Petroleum, Arkanova, American Eagle, Mountainview Energy, Passport Energy) active on the Montana side of the Alberta Bakken Basin. Figure 15 depicts the known land positions by company along the ABPS Fairway in Alberta and Montana.

The total estimated capital outlay for land and bonus is approximately \$518MM along the Alberta Bakken Fairway in Southern Alberta and Northern Montana current to end Q1, 2011.

*(the estimated land costs in Montana were calculated by taking publicly announced acreage positions multiplied by a nominal \$100/acre land value; not including bonus on Blackfeet lands)

Figure 15: Map of the key operators and their land position in relation to the ABPS Fairway (hatched)



Source: BMO Capital Markets, Geoscout, Corporate Presentations

Geologic Framework Update

Introduction

This section concentrates on new geologic information focusing on the fairway limits, pressure systems, structural framework and isopach trends and structural/stratigraphic play types that characterize the ABPS (Figure 16). The basic interpretation of the ABPS being an emerging Deep Basin Light Tight Oil resource play appears to be holding firm (Figure 17), however:

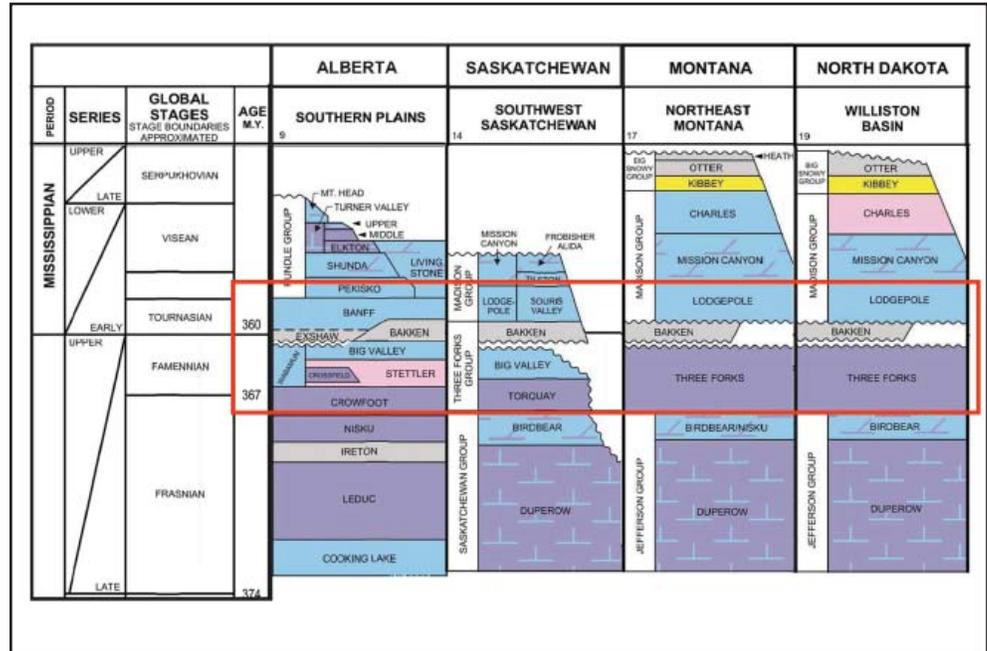
1. Recent drilling results have modified the position of the over pressured fairway dividing the Deep Basin Tight Oil Fairway to the west from the more conventional (Viewfield-like) fairway to the east of the overpressure line (Figure 18). Positioning of wells relative to this line is important in evaluating formation water risk between a conventional and deep basin play.
2. A new interpretation of the structural framework based on extensional tectonics with later compressional inverted structures from Iltech Inc. This interpretation was constructed utilizing aeromagnetic and gravity data allowing for the recognition of (Figure 18):
 - a. Thru-going graben and extensional features that result in preserved trends of northwest southeast isopach thicks of the Exshaw-Big Valley/Stettler units with potential greater EURs
 - b. Graben areas have an increased potential for natural fracturing, and where positioned in the Deep Basin fairway, may lead to higher deliverability
 - c. Recognition of inverted anticlines (e.g. DelBonita, Regan) that may have enhanced fracturing but may also have a higher risk of being breached causing lower reservoir pressure and risk of bottom water.
3. Production, drilling and landsale activity can be placed in a comprehensive geologic context to help interpret early production and drilling results, and to assist in extrapolating trends from these early data points.

Background

Resource plays are increasing in their importance in the overall North American energy mix. The goal is the identification of new or emerging LTO resource plays in areas of enhanced reservoir potential. When exploring in mature basins for new LTO plays, it is important to understand the entire hydrocarbon system within the structural framework. Integrated studies including well data, regional seismic, high resolution magnetic and gravity data in association with new drilling and completion technology (e.g. horizontal multifraced wells) have been key in the development and testing of a variety of emerging new tight oil resource plays in the Western Canada Sedimentary Basin (WCSB).

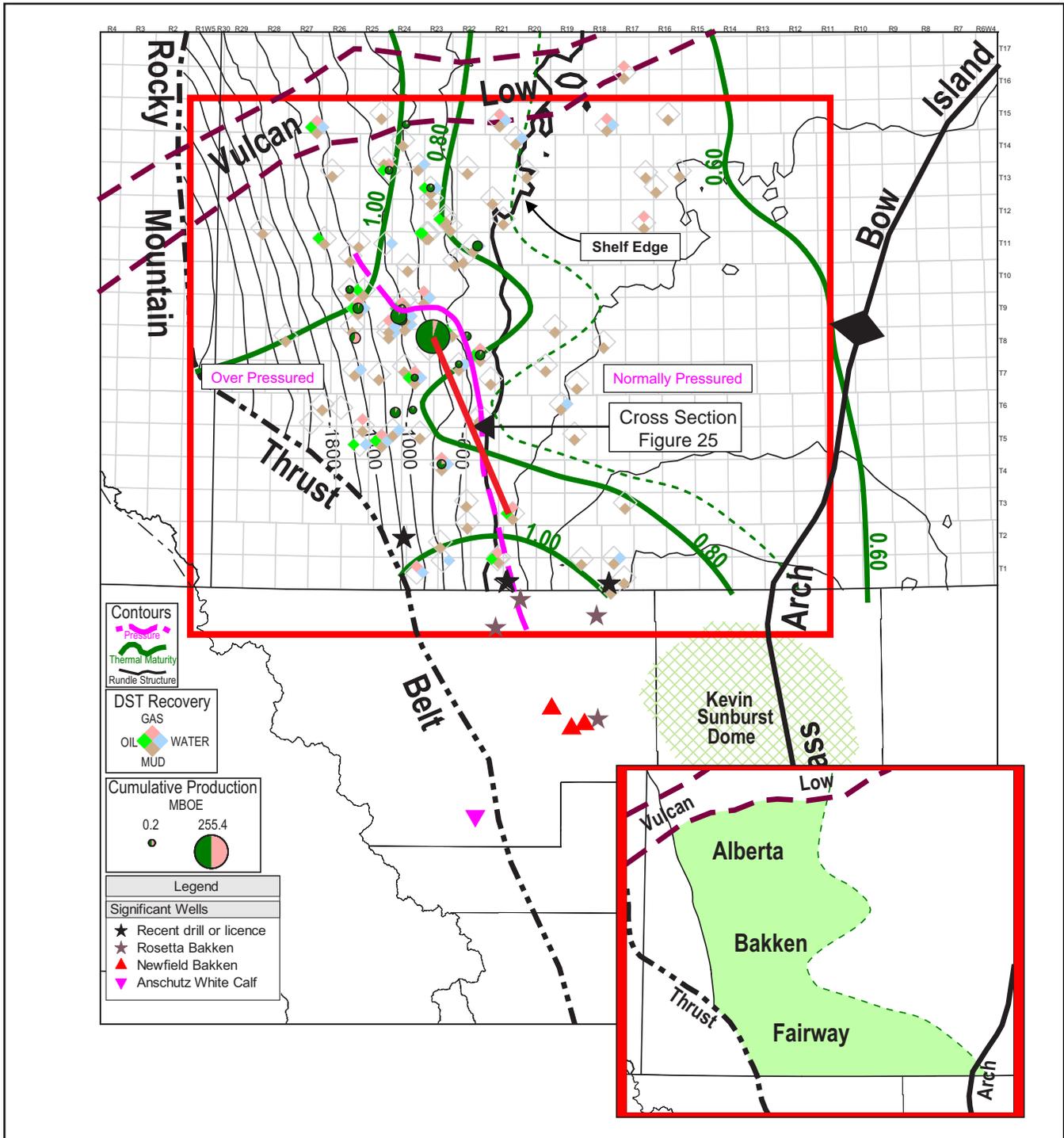
In October 2010, BMO Capital Markets completed a research report highlighting the potential of the “Alberta Bakken Petroleum System” (ABPS) as an emerging unconventional LTO resource play (Figures 16 and 17). The 2010 report demonstrated that the ABPS was a proven hydrocarbon system based on proven production from both the underlying Stettler/Three Forks formations and overlying Banff Formation and DST recoveries from the Big Valley/Stettler, Middle Bakken/ Lodgepole-Bakken-Three Forks/Bird Bear-Torquay) in Saskatchewan, Montana and North Dakota

Figure 16: Stratigraphic nomenclature for the Alberta Bakken Hydrocarbon System (ABPS - Banff – Exshaw – Big Valley-Stettler/ Wabamun) in Alberta. The ABPS is comparable to the Williston Basin Bakken Petroleum System (WBPS - Lodgepole-Bakken-Three Forks/Bird Bear-Torquay) in Saskatchewan, Montana and North Dakota



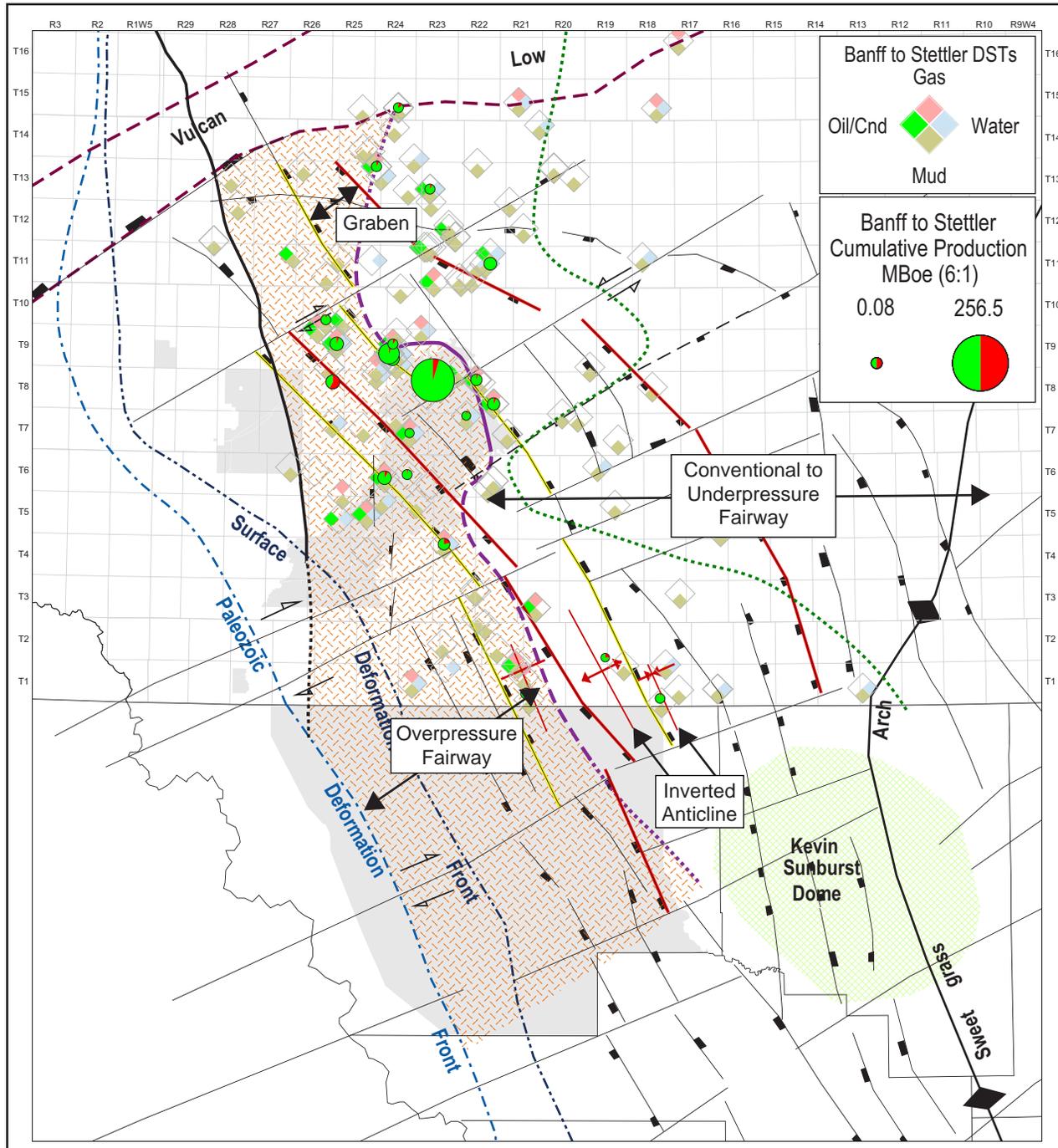
Source: Zaitlin et al., BMO Capital Markets, 2010, Core Labs Stratigraphic Chart, 2010

Figure 17: The Original BMO Capital Markets 2010 Alberta Bakken Geology Fairway Map (Figure 9 from Zaitlin et al., 2010) with cumulative production from the Big Valley/Stettler to Banff and DSTs from the Big Valley/Stettler – Banff formations. Highlighted are source rock maturity from Ro (vitrinite reflectance), Mississippian (Rundle) subsea structure (with dark line approximating the shelf break), key structural elements and the approximation of the original overpressure line from Canadian Discovery defining the original Alberta Bakken Fairway (modified in Figure 18). Drilling and license activity depicted was current to end September 2010



Source: BMO Capital Markets, 2010, Geological Survey of Canada Report 4341, Geoscout and various corporate presentations

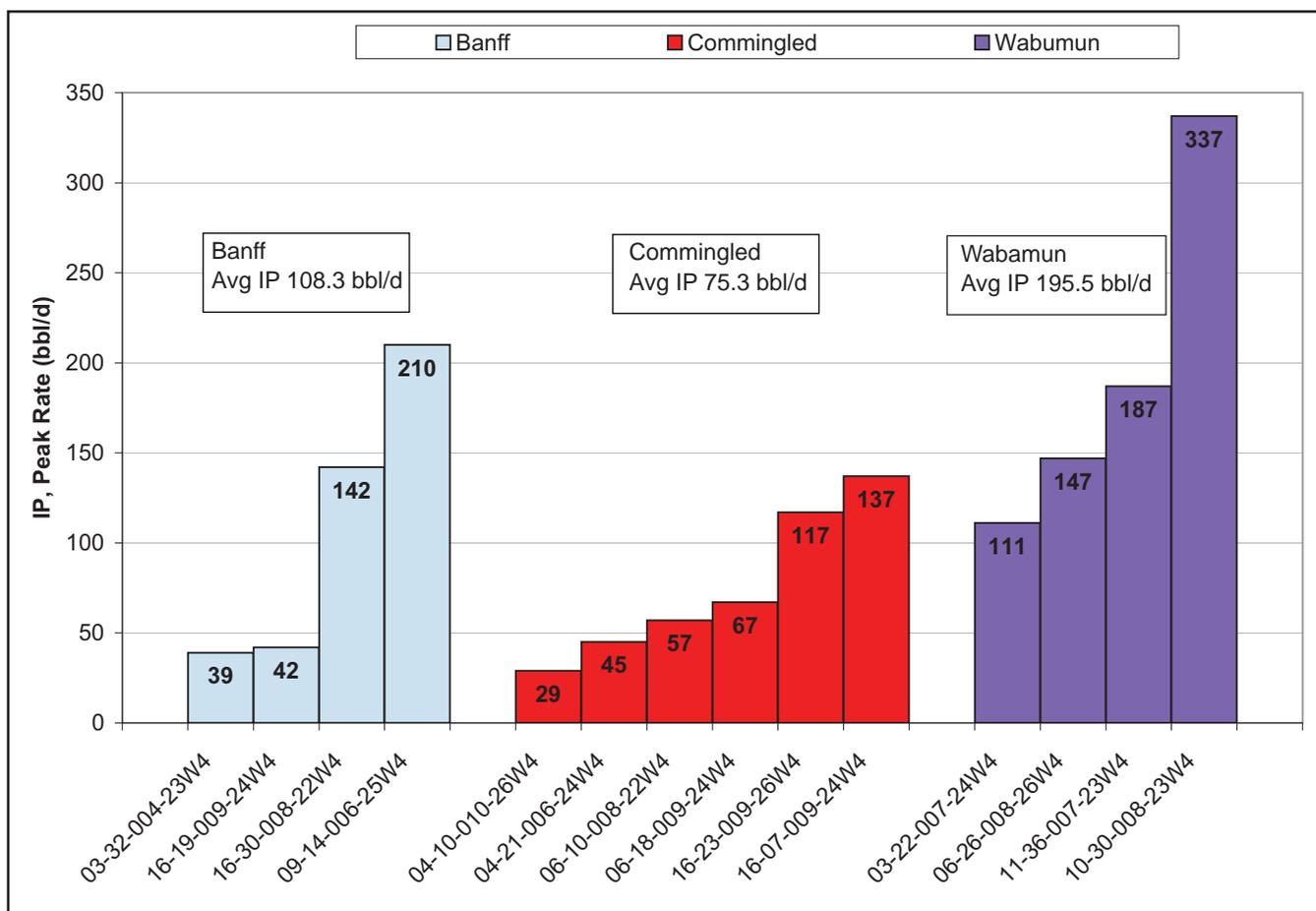
Figure 18: Updated Alberta Bakken Petroleum System (ABPS) Fairway Map in relation to cumulative production and DSTs from the Wabamum (Stettler-Big Valley) – Bakken - Banff formations. Highlighted are source rock $R_o = 0.75$ maturity line (for details see Figure 17), key structural elements derived from Aeromagnetic Interpretation (courtesy of Z. Berger at IItech Inc – expanded on in later sections), and the modified position of the overpressure zone from Canadian Discovery. It is important to note that ABPS production and DST recoveries are located dominantly to the west of the overpressure line defining the Deep Basin Oil System, whereas east of the overpressure line the ABPS is a conventional hydrocarbon system requiring structural and/or stratigraphic traps. The proposed ABPS Fairway is bounded to the north by the position of the Vulcan Low, west by the -1800 subsea Rundle contour line (see Figure 17 for details), to the east by the overpressure line and is extended to the south into Montana.



Source: BMO Capital Markets; BMO Capital Markets, 2010, Geological Survey of Canada Report 4341, Geoscout and various corporate presentations

Figure 19 exhibits historical Initial Production (IP) peak rate (bbl/d) for the Banff, Commingled (Banff to Exshaw or Wabamun) and Big Valley/Stettler (Wabamun) shown in Figure 18. Average calculated IP (bbl/d): Banff = 108.3; Commingled Banff-Wabamun = 75.3 and Wabamun = 195.5 bbl/d. The DST hydrocarbon recovery viability shown in Figures 17 and 18, in conjunction with production data, together prove the viability of the ABPS.

Figure 19: Historical Initial Production (IP) peak rate (bbl/d) for the Banff specific, Commingled (Banff to Exshaw or Wabamun) and Big Valley (Wabamun) shown in Figure 18. Average calculated IP (bbl/d): Banff = 108.3; Commingled Banff-Wabamun = 75.3 and Wabamun = 195.5 bbl/d



Source: BMO Capital Markets; Geoscout

The available production and DST data was utilized by Canadian Discovery to postulate the position of a western area of overpressure versus an eastern area of normal to underpressure that BMO Capital Markets have subsequently modified based on new structural interpretation (Figure 18). The northern and southern extensions of the overpressure line was modified and integrated with the structural model developed as part of this report (Figure 18).

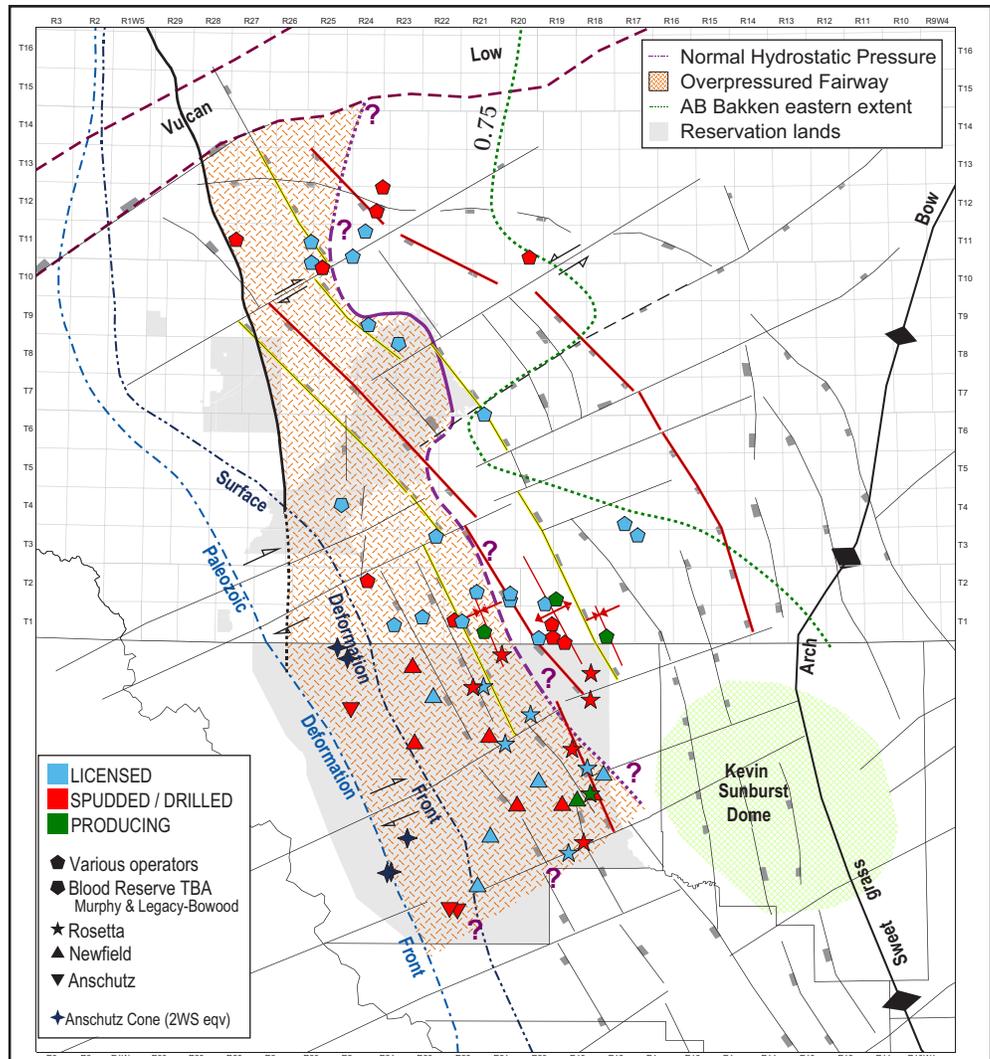
To the end of March, 2011, 59 wells have been licensed along the fairway. It appears that industry may be targeting three distinct plays along the ABPS fairway: 1) Basal Banff 2) Exshaw Siltstone and 3) Big Valley/Stettler of the Wabamun. Secondary zones may also include the Jurassic Swift/Rierdon and Cretaceous Barons and Second White Specks zones (termed the Cone Member in the U.S.).

Figures 17 and 18 exhibit the main geological elements of south-western Alberta and northern Montana during Alberta Bakken time. The western boundary of the Alberta Bakken play is defined by the Rocky Mountain Thrust Belt. Alberta Bakken reservoirs are influenced by structure, enhancing inherent low permeability by naturally fracturing dolostones and silty dolostones. The eastern boundary of the Alberta Bakken is defined by the Sweetgrass Arch/Bow Island Arch and Kevin Sunburst Dome. The northern limit of the Alberta Bakken is defined by the Vulcan Aeromagnetic Low. The bolded subsea contours on the Mississippian Rundle Formation exhibit widely spaced contours to the east and more closely spaced contours to the west, indicating a hinge and change of slope aligned north-south through the study area.

The shales of the Exshaw and Bakken represent important petroleum source rocks in the Western Canadian Sedimentary Basin. Figure 17 displays the contours of thermal maturity as defined by vitrinite reflectance (R_o) values as taken from GSC Report for the Alberta Bakken area. Oil generation from organically rich shale units is considered to start at $R_o \sim 0.65$, with peak oil generation occurring at $R_o \sim 1.00$ and the end of oil generation occurring when $R_o > \sim 1.3$. As is shown in Figure 17, R_o values associated with the Alberta Bakken range from ~ 0.6 in the east to > 1.00 toward the west and south. This indicates that the Alberta Bakken Petroleum system is an active hydrocarbon system. Important points in support of a locally sourced area of maturity are: 1) DST recoveries (Figure 17) indicate that all live oil or gas recoveries occur at or west of the $R_o = 0.75$ line; and 2) a review of production (Figures 17 and 18) indicates that no proven production occurs east of the $R_o = 0.80$ line.

Subsequent to the original report, BMO Capital Markets in association with Iitech Inc. have investigated further the structural framework and control on thickness distribution in the ABPS with the aim to place in context the significant landsale, acquisition and drilling activity in the ABPS play area since the original 2010 report.

Figure 20: Updated Alberta Bakken Petroleum System Fairway from Figure 17 with drilling and license activity current to end March 2011



Source: Zaitlin et al. 2002, BMO Capital Markets, Geoscout and various corporate presentations

Figure 20 displays the refined Alberta Bakken Petroleum System Fairway Map based on cumulative production and DSTs from the Wabamun (Stettler-Big Valley) – Bakken - Banff formations (Figure 18). Highlighted are source rock $R_o = 0.75$ maturity line, key structural elements derived from Aeromagnetic Interpretation (courtesy of Z. Berger at Iltech Inc), and BMO Capital Markets modified position of the overpressure zone from Canadian Discovery. It is important to note that ABPS production and DST recoveries are mostly to the west of the overpressure line. The proposed ABPS Fairway is bounded to the north by the Vulcan Low, west by the -1800 subsea Rundle contour line (Figure 17), east by the overpressure line, and is open to the south into Montana. In addition, Figure 20 displays the drilling and license activity current to end March 2011.

Based on all available data, the ABPS is interpreted to be an example of a Deep Basin Light Tight Oil resource play characterized by:

- i) pervasive petroleum saturation;
- ii) abnormally (over) pressured;
- iii) the absence of downdip water;
- iv) updip water defining a conventional hydrocarbon system to the east of the pressure line;
- v) the ABPS is characterized by upper and lower carbonate reservoir units (Big Valley/Stettler and Banff respectively) bracketing low-permeability and low-matrix porosity reservoirs for the Bakken/Exshaw dolomitic siltstone;
- vi) postulated that reservoir quality could have been enhanced by fracturing (both structural and potentially by catagenesis);
- vii) the Alberta Bakken shales were characterized by sufficient total organic carbon (TOC) and maturity (based on vitrinite reflectance (Ro) shown in Figure 17 to be considered a self sourcing hydrocarbon system coincident with the thermally mature Exshaw source rock fairway; and
- viii) proven production and hydrocarbon recoveries with little or no water west of the zone of overpressure with oil API in the ABPS between 23 and 33 API.

Structural and Isopach Framework of the ABPS

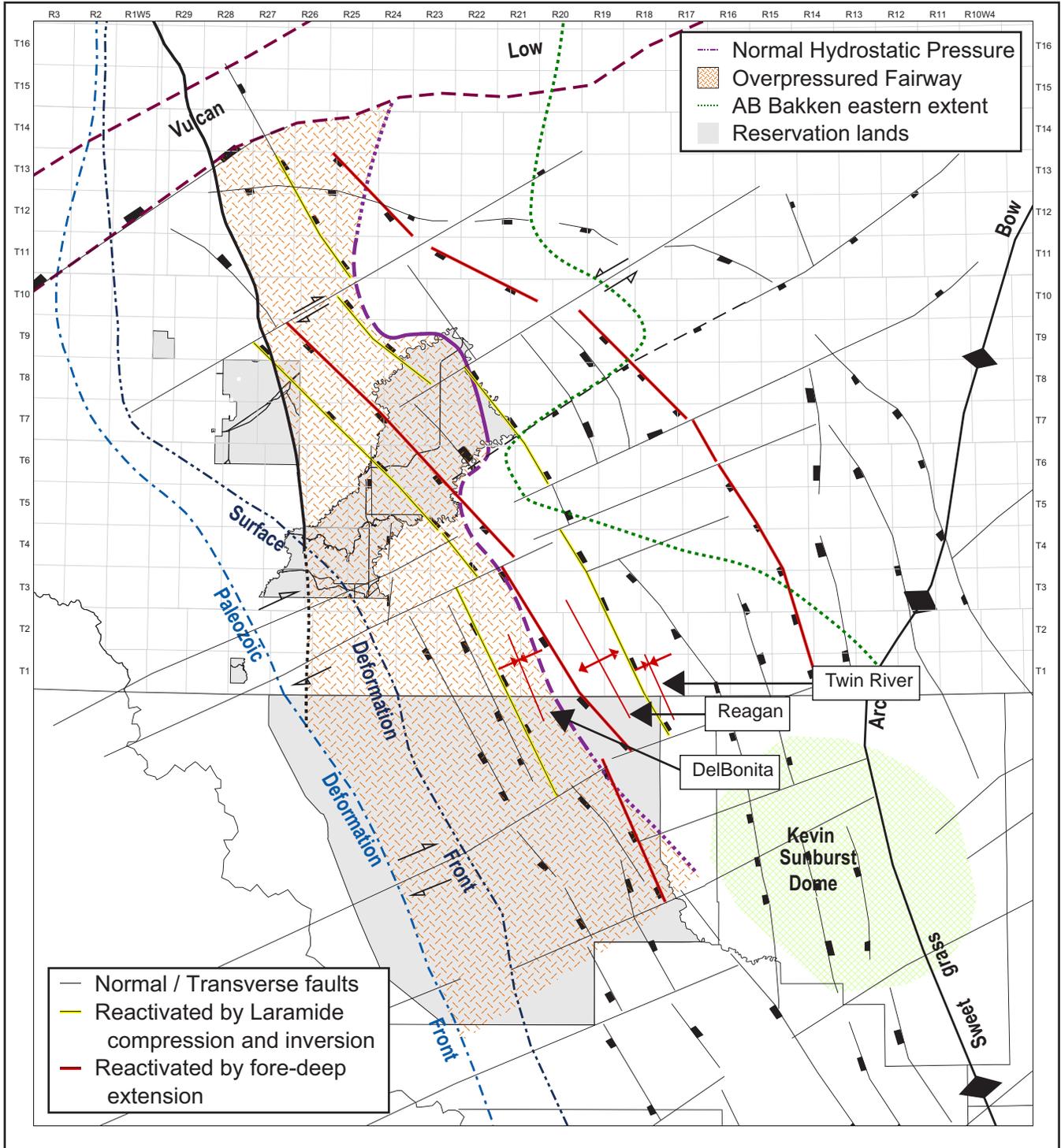
Areas of enhanced reservoir potential appear to be controlled by the structural framework of the ABPS. In order to understand the larger scale structural framework of the ABPS, an Aeromagnetic and Gravity interpretation of the available data was performed by Z. Berger of Iltech Inc.

The major structural elements that control both conventional and unconventional plays in the southern half of the WCSB are shown in Figure 21. The map illustrates that the overall NNW-SSE structural fabric of the ABPS Fairway is crosscut by a number of NNE-SW oriented shear zones. From the Aeromagnetic and Gravity interpretation, the study area appears to consist of four different types of structures:

1. A major basement lithological boundary, the Vulcan Low, acts as a zone of weaknesses throughout the tectonic history of the basin. This Low appears to be the northern structural limit of ABPS Fairway;
2. A series of graben and half graben features that were formed during Devonian and Mississippian extension, and later divergent wrench tectonics, affected the area;
3. A series of down-to-the-basin normal faults that were formed as hinge lines during the formation of the Foreland Basin at Triassic and Jurassic time along the southwestern margin of the ABPS Fairway; and
4. Exposed and buried thrust faults as well as reactivated and inverted structures (e.g. DelBonita and Reagan anticlines) that reflect the development of the Rocky Mountain Thrust Belt by Laramide compression.

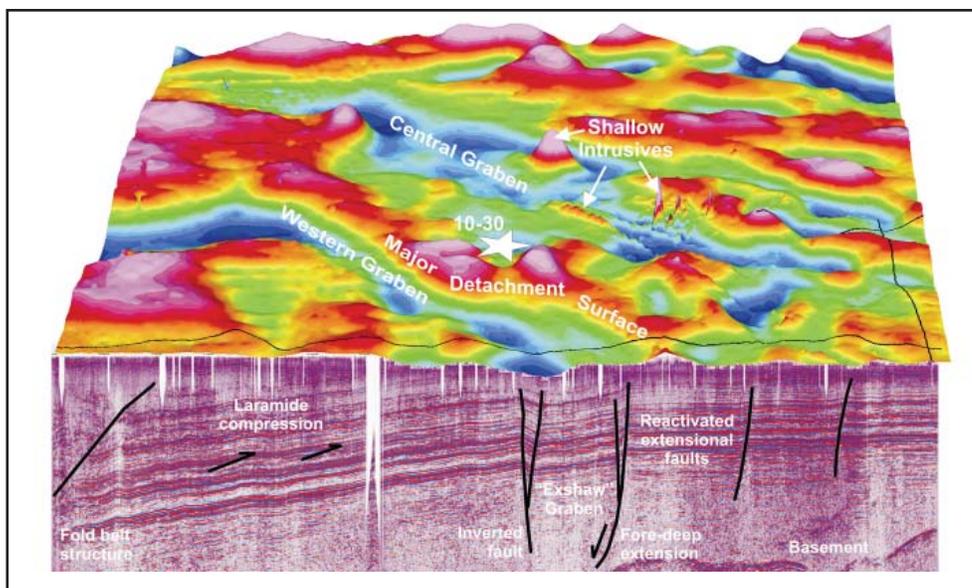
In Figure 21, there is a clearly demonstrated coincidence of structural shear faulting on the orientation/offsetting of both the overpressure line and $R_o=0.75$ vitrinite reflectance contour. Figure 22 demonstrates the relationship between Aeromagnetic and Gravity interpreted lows (e.g. Western and Central Graben with publicly available SALT seismic data (Lemieux, 1999)). The extension of the Western Graben Low to the seismic line demonstrates the structural low developed due to extension and graben formation.

Figure 21: Structural Elements Map from Iitech Inc. with overpressure fairway highlighted



Source: BMO Capital Markets, Geoscout

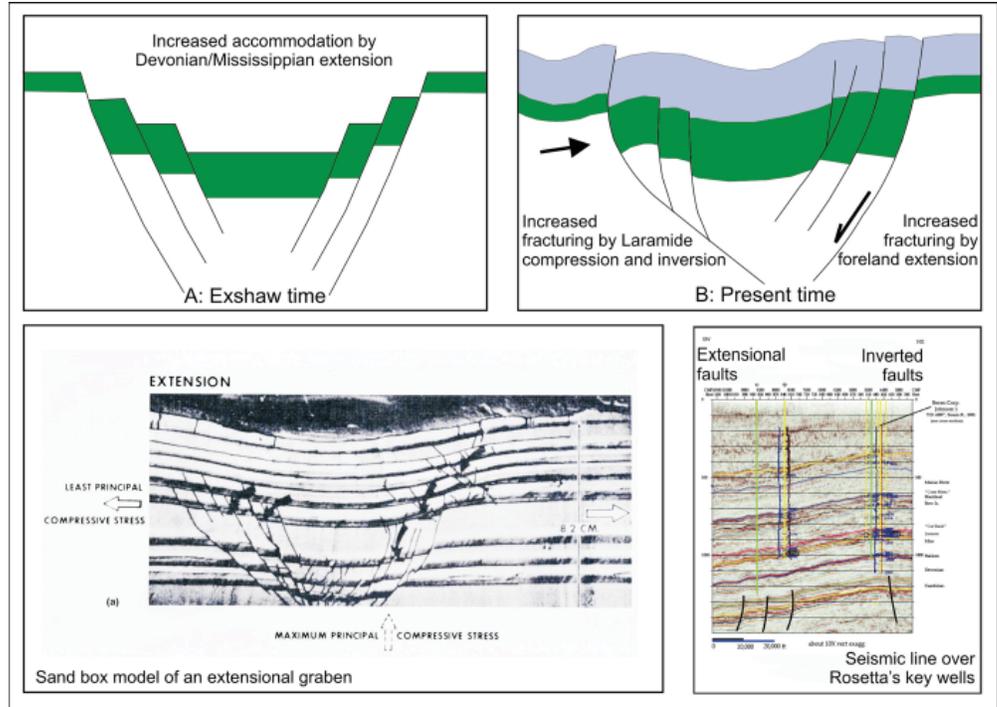
Figure 22: 3D diagram showing the relationships between structures identified with a regional seismic and those identified with GSC HRAM data



Source: BMO Capital Markets, Iltech Inc., Lemieux, 1999

Inversion due to interpreted Laramide compression toward the west results in a series of “stair-case” westward directed faults (Figure 22) creating additional accommodation for the Exshaw Shale to Base Stettler in the southwestern corner of the ABPS in Alberta. Structures that exhibit extensional graben features are the most important in controlling isopach thickening in the ABPS (Figures 21 – 26). An isopach map of the top Exshaw Shale to Base Big Valley was constructed and then contoured in association with the structural element map (Figure 26). Data was only available from wells on the Alberta portion of the fairway. When isopach trends are compared to areas of high accommodation in extensional settings, (grabens and “stair-case” westward directed faults) patterns of ABPS thicks with potential greater EURs are identified. The cross-section in Figure 25 is an excellent example of the isopach variations to be expected in areas of higher accommodation vs. areas of low accommodation.

Figure 23: Structural models for Exshaw shale play in southern Alberta. The “sweet-spots” of this play are likely to develop along the reactivated margins of the “Exshaw-graben”



Source: BMO Capital Markets, Bureau of Land Management Report 2010, Z. Berger, Iltech Inc

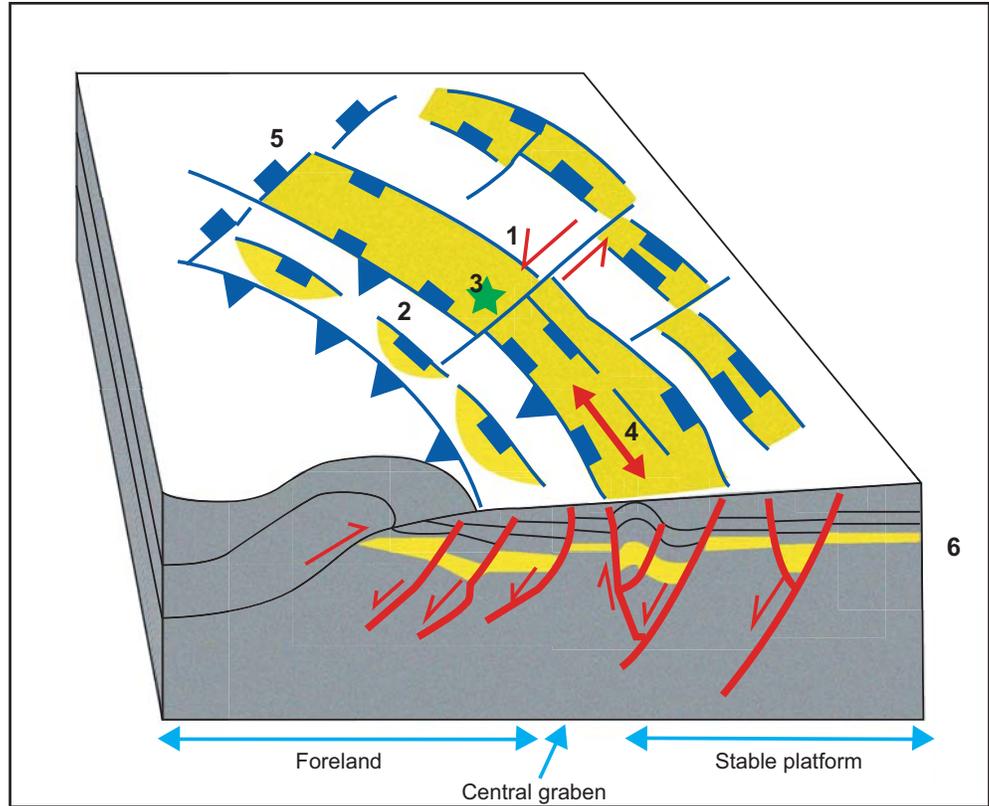
Figure 23 is a model describing the importance of the extensional graben features ABPS play. Extensional tectonics create additional preserved accommodation. Enhanced fracturing was developed along the graben edges. Wells are located in the “Deep Basin Oil” over pressured fairway, basal water risk is minimized. The implication of this model is that preferred fairways are:

1. Associated with extensional graben or “stair-case” westward directed faults
2. Adjacent to fault zones with enhanced fracturing
3. Structurally controlled isopach thicks in areas of increased accommodation
4. West of the overpressure line

Areas with these characteristics appear to form the focal point of deposition of a thick section of Exshaw - Bakken sediments and therefore are likely to become the major “sweet-spots” of this play. Late Laramide inversion and reactivation may lead to further enhancement of the ‘sweet-spot’ by local increase in natural fracture densities. It is postulated that areas to the east of the over pressure line can be characterized as conventional hydrocarbon-over-water play fairways. Oil migration updip from the Exshaw shales would require either stratigraphic/structural traps and would have a higher risk of breaching, underpressure and water. A potential example of such an inverted anticlinal structure would be the Reagan anticline.

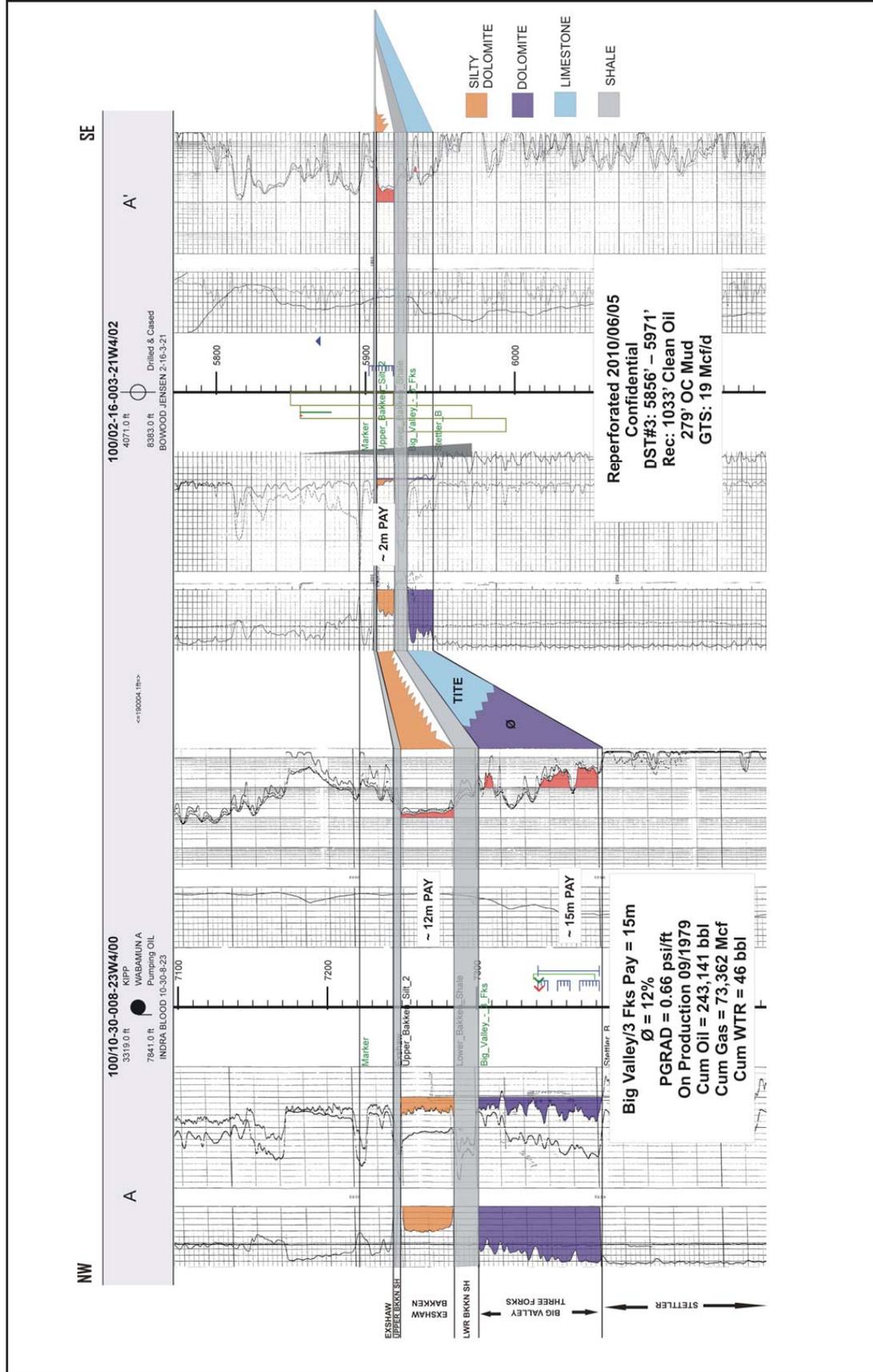
Figure 24: Model of the key structural elements/ styles interpreted from the analysis of aeromagnetic and gravity data. Six major play elements are interpreted

- 1. Major detachment fault forming a regional hinge line and the eastern boundary of over pressure.
- 2. Major zone of inversion
- 3. Known production
- 4. Del Bonita inverted anticline
- 5. Vulcan Low
- 6. Exshaw Reservoir



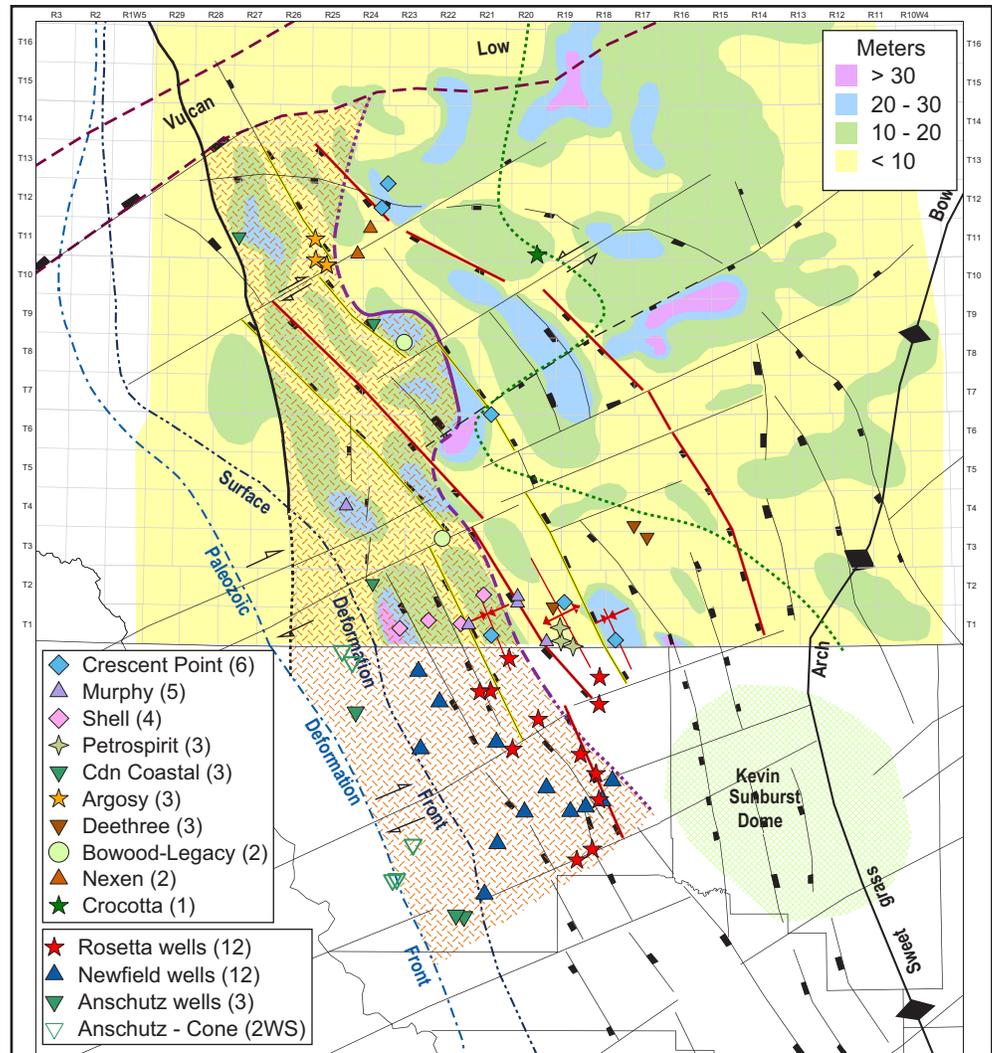
Source: BMO Capital Markets, Iltech Inc.

Figure 25: A two-well cross-section shows the thinning of the Stettler/Big Valley-Bakken succession eastward. The 10-30 well displays a full AB Bakken succession. The silty dolostone of the Big Valley has approximately 15m of pay at 12% average porosity cutoff, and has produced ~ 243 Mmbl of oil with no water with a pressure gradient calculated at PGrad = 0.65 psi/ft (approximately 50% overpressure). Using a dolomite baseline of 0% and interpreting the Middle Bakken/Exshaw as a silty dolostone, it is possible to calculate 12m of potential pay with an Rt~15 (total pay of 27m). The Big Valley in 2-16 is interpreted as a tight limestone and forms an updip facies trap. The Middle Bakken/Exshaw displays approximately 2m of >6% pay, and recovered ~300 feet of live oil from a straddle DST with an Rt ~35. The low Rt value may be indicative of low resistivity pay due to the mineralogical composition. A hydrodynamic study of the Alberta Bakken shows a potential change from normal pressure in the 2-16 well to overpressure in the 10-30 well. Cross Section location is shown in Figure 17



Source: BMO Capital Markets, GeoScout

Figure 26: Map of the Exshaw to Stettler isopach in Canada super imposed on the ABPS Fairway, structural framework and known well/well licenses



Source: BMO Capital Markets, Iitech Inc., GeoScout

When examining Figure 26, one can also observe where the line of overpressure is located in reference to isopach thicks and drilling activity. The 10-30 well shown in the Figure 25 cross-section is located in a central graben isopach thick, along the western margin of the graben, west of the overpressure line, and to date has the best production for a vertical well from the Stettler-Big Valley. The well produced >243k Mbbl of oil with <50 bbls of water, and has a calculated Pressure Gradient of 0.66 (~30% over pressured).

Summary and conclusions

As has been shown throughout this report, the Alberta Bakken Petroleum System (ABPS) is an example of an emerging new unconventional tight oil resource play. The ABPS consists of three potential reservoir zones: Big Valley/Stettler carbonates, Middle Bakken/Exshaw dolomitic siltstones and overlying Basal Banff carbonates. Based on historical production data and DST, in addition to the recent drill results, the ABPS is indicative of a viable hydrocarbon system.

From the analysis, the ABPS Deep Basin Light Tight Oil Fairway stretches for ~175 miles (north-south) by 50 miles (east-west) in southern Alberta into northern Montana. To the east of this fairway is a zone of potential conventional hydrocarbon-water plays in the same stratigraphic zones.

Significant activity and capital has been directed toward the ABPS since January 2009 including:

- Land/bonus/farm-in to establish land positions along the ABPS totalling approximately \$520MM
- Potential drilling activity (licensed and/or drilled) to test the Alberta Bakken on both sides of the border; at an estimated \$4MM/well for 59 wells, would indicate that approximately \$245MM has potentially been committed for drilling this play to date

Companies with significant established land positions in the ABPS include: Crescent Point, Shell, Murphy, Bowood/Legacy, Argosy and Nexen in Canada, with Rosetta and Newfield in the U.S.. In addition, Native American Resource Partners LLC (portfolio company of Houston based Quantum Energy Partners) announced April 4, 2011 that it will form a new partnership with Kainaiwa Resources (E&P company for the Blood Indian Tribe in S. Alberta) and will make a \$100MM capital commitment, and provide technical expertise and capital to meet funding requirements by Murphy and Bowood/Legacy on the reserve.

The next 6 to 12 months will prove very interesting as drill results are released to help refine the play fairway boundaries and test the deliverability and economics of the play. Results to date, in conjunction with our improved understanding of structural control on reservoir development and distribution in the play, allow us to consider that the evaluation of the play fairway is progressing in an orderly, “Steady as She Goes” fashion.

Appendix

Canadian Operators

Argosy

In their March, 2011 corporate presentation, Argosy indicates it has acquired 35.5 sections (22,720 acres, 9,195 ha) of land with “Bakken, Exshaw/Bakken, Big Valley Potential”. To date they have 5 horizontal wells planned for 2011 with a budget of \$18MM. Three (3) of the 5 planned horizontal wells have been licensed so far, with one drilling at 15-35-010-26W4 and one producing at 03-31-010-25W4 (scouted) and one currently being completed at 02-24-011-26W4. Argosy has also recently licensed a single-well crude oil battery licensed at 03-31-010-25W4 to accommodate the production.

Bowood (Legacy)

Bowood’s total land holdings are estimated to be 117,900 acres (47,713 ha) consisting of 60,640 acres (25,541 ha) on the Blood Reserve, with an additional 22,000 acres (8,903 ha) of freehold lands, and 35,260 acres (14,270 ha) Crown lands. Bowood has recently entered into a joint venture agreement with Legacy Oil and Gas Inc., in which Legacy can equalize into Bowood’s interest over the next 24 months with a 16 well commitment. To date, Bowood has recompleted an existing vertical well at 02-16-003-21W4, is currently drilling a horizontal well at 15-25-003-23W4 and is expected to spud a well on the Blood Lands in Twp 008-23W4 before the end of Q2, 2011.

Canadian Coastal (Broker)

Canadian Coastal is a land broker who actively buys on behalf of oil and gas companies at landsales, when the purchasing company wishes to retain their anonymity. Since January of 2009, Canadian Coastal has leased in Crown landsales 15,024 acres (net) or 6,080 ha (~ 23.5 sections). A more unusual activity was the licensing of wells by Canadian Coastal (CCRL), once again to maintain anonymity, while drilling into landsales. Currently 3 wells are licensed by CCRL; a well at 16-24-002-25W4 that was drilled in September 2010 and is currently standing cased. A second well was drilled at 08-24-011-28W4 in October of 2010 and is indicated in the public record to be abandoned. The final well was licensed in March 2011 at 02-17-009-24W4 and was spud on March 29, 2011.

Crescent Point

Crescent Point has one of the largest land positions with more than 1,000,000 net acres (404,694 ha). A majority of the land position, which is mostly freehold, was acquired in July of 2010, through the acquisition of Darian Resources assets from the receiver, for about \$96MM. Crescent Point reports production of more than 900 boed from the area and has indicated plans to drill 14 net wells in 2011 (including as many as 5 exploratory wells). Currently, Crescent Point has 5 wells,

3 of which are horizontal wells and are indicated as producing with volumes reported in the public record; the 15-01-002-20W4, the 03-08-001-18W4 and the 14-07-001-21W4 (all scouted). In addition, each of these wells has a single-well crude oil battery facility licensed for the wellsite. A further 2 wells at 01-15-012-24W4 and 16-35-012-24W4 are drilled and cased.

Crocotta

Crocotta total land position is unknown although in the public record they hold 791 acres (320 ha). To date one location was drilled in December of 2010 at 16-03-011-20W4 and is currently standing cased.

Dee Three

Dee Three currently holds more than 280 net sections (179,200 acres, 75,521 ha) with the majority of land east of the overpressure line where the potential may be for a conventional style of play. Dee Three has identified 7 initial horizontal locations with 3 currently licensed to test the play. The first well has been drilled into the Stettler, rig released in February 2011 and is waiting on completion at 01-03-002-20W4. The second well at 102/04-32-003-17W4 is currently drilling with the Leduc identified as the target on the license. The third well, 13-01-004-18W4 was licensed to the Stettler on March 11, 2011

Murphy

Murphy's land position includes 318,764 acres (129,000 ha) on the Blood Reserve and a further 51,891 acres (21,000 ha) off the Blood Reserve. They have announced plans for 6 locations, 5 of which have been identified. The first of which at 16-04-001-20W4 spud early in March and is drilling, the second at 08-21-001-22W4 was licensed at the end of March 2011 and has yet to spud. Note that this location is about 1 mile east of the Shell well at 10-20-001-22W4. The final two locations are 1 mile apart at 14-02-02-21W4 and 14-11-002-21W4 and have yet to spud. As well the proposed location on the Blood Reserve, 15-21-004-25W4 to our knowledge has not yet spud.

Nexen

Nexen's total land holding is unknown however there are 3 locations targeting the Wabamun at various stages of development: the 13-06-011-24W4 well which spud on March 18, 2011 and is drilling; the 13-28-011-24W4 which has been drilled and was either about to be completed or had just been completed when reviewed by the scout on March 31, 2011; and 01-12-012-25W4 which was licensed on March 31, 2011.

Petrospirit

Petrospirit's total land holding is unknown, but there are 3 locations that have been drilled to the Stettler and are standing and cased at 01-06-001-19W4, 13-01-001-20W4 and 01-23-001-20W4.

Shell

Shell's total land holding is unknown with no lands identified in the public domain but 4 horizontal wells are in various stages of development and some were also scouted. The well 10-20-001-22W4/02 was rig released at the end of January and at the end of March appeared to be on production flowing into eight 400 bbl tanks on the lease. The 13-14-001-24W4 well was licensed at the end of November 2010 and has yet to be drilled, however, the location is prepared with the conductor barrel set. The 02-28-001-23W4 was also licensed at the end of November 2010 and has yet to be drilled, however, the conductor barrel has been set but the lease is very wet. The 04-13-002-22W4 well appears to currently be drilling.

Canadian Companies with Land Positions but unknown Drilling Activity

Wildstream has 31,750 net acres (12,849 ha)

Blacksteel has 2,530 net acres (1,024 ha)

Canadian Companies that potentially have Exposure but unknown Land Positions

Encana

Exxon

ConocoPhillips

Yangarra

Connaught

U.S. Operations*Rosetta*

Rosetta's original exploration options to lease 200,000 net acres (80,937 ha) from the Blackfeet Indian Nation were acquired in 2009. The total 10 well commitment involves drilling 2 wells per year for 5 years, and each commercial well earns 20,000 acres for a 10 year term. Currently, they have access to 300,000 acres (121,406 ha) within the fairway, including 52,000 acres (21,044 ha) leased from Allottee (Blackfeet Families), 30,000 acres (12,141 ha) leased from Wave Energy, another 18,000 acres (7,286 ha) of fee lands off the reserve as well as the original Blackfeet Nation option.

Rosetta's initial 2009 discovery well (Gunsight 31-16V) found oil saturation in the Lodgepole, Bakken, Three Forks and Nisku formations. Their horizontal Tribal Gunsight 31-16H well at the same location was fracture-stimulated and produced oil to on-site test facilities. To date, Rosetta has drilled six exploratory wells, and has confirmed "significant oil hydrocarbons in place (13-15 MMboe per section) and over-pressured reservoirs". Their multi-well vertical delineation program is well underway, currently drilling Tribal Gunsight S 12-15V, Glacier Farms 3207-22-12 and Simonson 3608-34-01 and have an additional three wells permitted.

Newfield

In late 2009, Newfield Exploration reached an agreement with the Blackfeet Tribe for 156,000 net acres (63,132 ha). Later agreements enabled them to add additional leases, and their current position is 280,000 acres (113,314 ha) on the Blackfeet Reserve, but the drilling terms are unknown. To date, they have drilled five wells, all of which encountered oil. The Sheriff 1-11H horizontal well is currently pumping ~200 bbl/d, and their Peacemaker 1-5H well is being prepared for production. Newfield's vertical / horizontal drilling program targets the Lodgepole, Bakken, Three Forks and Nisku formations, and they have permits for seven additional locations, at least one of which is currently being drilled (Tribal Rumney 1-21H).

Anschutz Exploration Corporation

Anschutz was one of the first companies to lease acreage from the Blackfeet Nation. Their leases lie on the western margin of the reservation, but total acreage exposure or drilling terms are unknown. They are primarily targeting Upper Cretaceous Cone Member reservoirs (Second White Specks equivalent), but have drilled three wells to deeper depths to presumably test the Bakken (Pine Ridge 1-26, White Calf 1-3 and White Calf 1-4). A production casing ticket is recorded for the Pine Ridge well on the Montana Government website.

U.S. Companies with land positions but unknown Drilling Activity

Guardian Exploration has 9,000 acres (3,642 ha)

Primary Petroleum Corporation has 262,000 acres (106,030 ha)

Quicksilver Resources has 175,000 acres (70,822 ha)

U.S. Companies that potentially have Exposure but unknown Land Positions

Abraxas Petroleum Corporation

American Eagle Energy

Arkanova Energy Corporation (Provident Energy)

Mountainview Energy

Passport Energy

Stone Energy Corporation

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