Petroleum Potential for Kavango Basin
- ReconAfrica -

BY DAN JARVIE, WORLDWIDE GEOCHEMISTRY, LLC

Daniel Jarvie
GEOCHEMIST

Mr. Daniel Jarvie is globally recognized as a leading analytical and interpretive organic geochemist, having evaluated petroleum systems around the World. Most notably, he completed the geochemical analysis for Mitchell Energy, in their development of the Barnett formation of the Fort Worth Basin, in Texas. In 2010, he was awarded "Hart Energy’s Most Influential People for the Petroleum Industry in the Next Decade."

Mr. Jarvie is retired Chief Geochemist for EOG Resources, one of the largest independent oil producers in North America. He is the President of Worldwide Geochemistry, LLC, working as a consultant to industry and has also established a research lab to evaluate various aspects of petroleum systems worldwide. His specialties include source rock characterization, especially for resource assessments, and also detailed source rock characterization for conventional petroleum systems analysis, including bulk and compositional kinetic determinations, high resolution light hydrocarbon and fingerprinting analysis, pyrolysis and catalysis studies.
FORWARD-LOOKING INFORMATION

Certain information in this Presentation may constitute “forward looking information” within the meaning of Canadian securities legislation. Forward-looking information can be identified by the use of forward-looking terminology such as “expects”, “plans”, “anticipates”, “believes”, “intends”, “estimates”, “projects”, “aims”, “potential”, “goal”, “objective”, “prospective” or variations of such words and phrases or statements that certain actions, events or conditions “will”, “would”, “may”, “can”, “could” or “should” occur. All statements other than statements of historical facts included in this Presentation constitute forward-looking information, including, but not limited to, statements with respect to the treatment of Reconnaissance Energy Africa Ltd. (“Reconnaissance” or the “Company”) under the regulatory regimes and laws of the jurisdictions in which Reconnaissance conducts its business; drilling and completion of wells; facilities costs and the timing and method of funding thereof; expected timing of development of undeveloped reserves; Reconnaissance’s potential future oil and natural gas production levels; the future performance and characteristics of Reconnaissance’s oil and natural gas properties; the estimated size of Reconnaissance’s potential oil and natural gas reserves; projections of market prices and costs; projections of supply and demand for oil and natural gas; expectations regarding the ability to raise capital and to continually add to reserves through acquisitions, anticipated exploration and development activities; future capital expenditure programs and the timing and method of financing thereof.

Forward-looking information is necessarily based on the beliefs, estimates, assumptions and opinions of the Company’s management on the date the forward-looking information is made, including assumptions regarding future prices for oil and natural gas; future currency and interest rates; Reconnaissance’s ability to generate sufficient cash flow from operations; access to debt and/or equity financing to meet its operating costs and future obligations; social, political and economic developments in jurisdictions in which Reconnaissance conducts its business; Reconnaissance’s ability to obtain qualified staff and equipment in a timely and cost-efficient manner to meet Reconnaissance’s demand; and assumptions related to the factors set forth below. While these factors and assumptions are considered reasonable by the Company as at the date of this Presentation in light of management’s experience and perception of current conditions and expected developments, these statements are inherently subject to significant business, economic and competitive contingencies and uncertainties.

Known and unknown factors and risks could cause the actual results, level of activity, performance or achievements of the Company to be materially different from those expressed by such forward-looking information, including, but not limited to: volatility in market prices for oil and natural gas; the continuation of the recent global financial crisis and economic downturn; liabilities inherent in oil and gas exploration activity including operational and environmental risks; uncertainties associated with estimating oil and natural gas reserves; competition for, among other things, capital, acquisitions, undeveloped lands and skilled personnel; incorrect assessments of the value of acquisitions; unanticipated geological, technical, drilling and processing problems; fluctuations in foreign exchange or interest rates and stock market volatility; changes in the laws or application thereof by the governments of the jurisdictions in which Reconnaissance conducts its business; political, social and economic instability in the foreign jurisdictions in which Reconnaissance operates; inability to execute on business plans and strategies; increases to capital expenditure programs and the timing and method of financing thereof; the ability of Reconnaissance to achieve drilling success consistent with management’s expectations; higher than expected operating costs; uncertainty with respect to net present values of future net revenues from reserves; lower than anticipated future production levels from Reconnaissance’s assets; delays with respect to timing and the bringing on of production; changes to expected plans and costs of drilling; drilling inventory and the presence of oil pools or gas accumulations; increased cost projections; global supply and demand for oil and natural gas; ability and costs of increasing plant capacity; expected levels of royalty rates, operating costs, general and administrative costs, costs of services and other costs and expenses; expectations regarding the ability to raise capital and to continually add to reserves through acquisitions, exploration and development; risks and uncertainties related to infectious diseases or outbreaks of viruses, including the COVID-19 pandemic; and such other risks as disclosed in this Presentation, the Company’s annual information form for the year ended December 31, 2019, which is available on SEDAR at www.sedar.com under the Company’s profile and the Company’s continuous disclosure filings. The forward-looking information contained in this Presentation is expressly qualified by these cautionary statements. Although management of the Company has attempted to identify important factors that could cause actual results to differ materially from those contained in the forward-looking information, there may be other factors that cause results not to be as anticipated, estimated or intended and readers are cautioned that the foregoing list is not exhaustive of all factors and assumptions which may have been used. There can be no assurance that such statements will prove to be accurate, as actual results and future events could differ materially from those anticipated by such statements. Readers are advised not to place undue reliance on forward-looking information.

Except as required by the securities disclosure laws and regulations applicable to the Company, the Company undertakes no obligation to update this forward-looking information if management’s beliefs, estimates or opinions, or other factors, should change.
# Estimated Petroleum Generation

BASED ON PREDICTED SOURCE ROCK PROPERTIES AND VARIOUS THICKNESSES

### Total Petroleum Generation per section/640 acres (Expelled and Retained)

<table>
<thead>
<tr>
<th>Conversion</th>
<th>200</th>
<th>300</th>
<th>328*</th>
<th>400</th>
<th>443**</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(mmboe/section)</td>
<td>(mmboe/section)</td>
<td>(mmboe/section)</td>
<td>(mmboe/section)</td>
<td>(mmboe/section)</td>
<td>(mmboe/section)</td>
</tr>
<tr>
<td>50% Kerogen Conversion</td>
<td>24</td>
<td>37</td>
<td>40</td>
<td>49</td>
<td>54</td>
<td>61</td>
</tr>
<tr>
<td>75% Kerogen Conversion</td>
<td>37</td>
<td>55</td>
<td>60</td>
<td>73</td>
<td>81</td>
<td>92</td>
</tr>
</tbody>
</table>

* net thickness from geological data
** net thickness from Shell's Permian source rock section, Karoo basin, South Africa

50% Kerogen Conversion = ~ 0.84 vitrinite reflectance
75% Kerogen Conversion = ~ 1.10 vitrinite reflectance

### Total Petroleum Generation Potential over ReconAfrica’s Kavango Basin Acreage (8.5 million acres)

<table>
<thead>
<tr>
<th>Conversion</th>
<th>200</th>
<th>300</th>
<th>328</th>
<th>400</th>
<th>443</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1641 sections**</td>
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<td>1641 sections**</td>
<td>1641 sections**</td>
</tr>
<tr>
<td></td>
<td>(billion boe)**</td>
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<td>66</td>
<td>80</td>
<td>89</td>
<td>100</td>
</tr>
<tr>
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<td>60</td>
<td>90</td>
<td>99</td>
<td>120</td>
<td>133</td>
<td>150</td>
</tr>
</tbody>
</table>

* 1641 sections represents 12% of ReconAfrica total holdings of 13,671 sections
** boe = barrels of oil equivalent

50% Kerogen Conversion = ~ 0.84 vitrinite reflectance
75% Kerogen Conversion = ~ 1.10 vitrinite reflectance
Assumptions for Geochemical Calculations

- Geological assessments suggest marine and terrigenous organic matter will be present in source rocks.
- Geochemical data from highly mature Permian section in Karoo Basin, South Africa, was used to estimate minimum TOC and Hydrogen contents.
- Thickness of net source rock intervals.
- Geological data from Namibia and Botswana was used to predict net thickness of source rocks (328 ft).
- Data from Claire Geel et al. (2013) was used for an alternate thickness at 443 ft.
- One hundred foot intervals from 200 to 500 ft in addition to above.
- Source rock was constructed to be composed of a marine source rock and terrigenous but slightly oil prone organic matter based on a total South African Karoo basin data suggesting a minimum hydrogen index (HI) of 358 mg kerogen/g TOC.
- Terrigenous source: TOC=2.5%, Hydrogen Index = 335 mg/g.
- Marine Source: TOC=5.0%, Hydrogen Index = 380 mg/g.
- Average TOC=3.75%, HI = 358 mg/g.
- A simple arbitrary low heating rate of 2oC/Ma from 15oC to 300oC was utilized for a constant heating rate model.
- Conversion of organic matter is shown for 50% and 75% conversion of the source rock organic matter.
- Of ReconAfrica’s 13,672 sections, calculations are based on 12% of that acreage or 1,641 sections only.
Depositional Systems: Mixed Marine and Terrigenous Source Rocks

KAVANGO BASIN
ReconAfrica
Namibia Licence 73 +
Botswana Licence 001/2020

KAVANGO BASIN KAROO
Interpreted to be the same depositional environment as
Shell's organic-rich Whitehill Permian formation

South Africa Karoo
Shell Whitehill Permian OGIP
390 TCF (EIA estimate)

REGIONAL KAROO PERMIAN SEAWAY
KAVANGO BASIN
ReconAfrica
Namibia Licence 73 +
Botswana Licence 001/2020

Interpreted to be the same depositional environment as
Shell's organic-rich Whitehill Permian formation

Shell Whitehill Permian OGIP
390 TCF (EIA estimate)

Country Borders

PEL 73
PEL 001/2020
Marine (shallow to deep)
Paralic/deltaic/shoreface
Deltaic/fluvial/lacustrine
Fluvial-alluvial/peat swamp
Continental depocentre

STARSS rift system
Namibian Kavango Basin has Deeper, Thicker Permian Section than the Owambo Basin

PERMIAN PETROLEUM SYSTEM
- Confirmed by ST1 Well
- Continuous with Shell South African Permian

Note: Deeper, thicker system in ReconAfrica lease block - mature for oil

Greater Permian thickness and maturity in Kavango Basin than the Owambo basin to the West
Permian Whitehill TOC, Present-Day and Restored

(ONE OF THREE SOURCE ROCK INTERVALS)

Present-day as reported in Geel et al., 2013

Restored Original TOC using HI original of 358 mg/g

![Graphs showing Total Organic Carbon (TOC) values for Permian Whitehill, South Africa.]

- **Average TOC at high conversion**: 3.81%
- **Average original TOC**: 5.44%

Difference in TOC (TOCo – TOCpd) is 1.63 % or converted to petroleum 460 boe/af
At 100 ft only of thickness, this is 29.5 mmboe/section/100 ft
Permian Data from Karoo Basin, South Africa Converted to Petroleum Yields

Ref: Geel et al., 2013
Very Conservative Mixed Source Rock Parameters

(1) SOURCE ROCK CHARACTER IS DETERMINED FROM REGIONAL PALEO-GEOGRAPHIC ASSESSMENT
(2) CONSERVATIVE BASED ON SOURCE ROCK DATA FROM KAROO BASIN, SOUTH AFRICA)

Source Rock 1
Hydrogen Index (HI) = 335 mg/g
TOC = 2.5%
Petroleum Potential = 307 boe/af

Source Rock 2
Hydrogen Index (HI) = 380 mg/g
TOC = 5.0%
Petroleum Potential = 456 boe/af

Thermal history is constant at a conservative heating rate
Average:
HI: 358 mg/g
TOC: 3.75%