COLOMBIA: The perfect environment for hydrocarbons
OPPORTUNITIES AND IMRESSIONS

G. Warfield Hobbs, MSc., PG  
Managing Partner, Ammonite Resources  
Robert K. Merrill, PhD, PG, PGeol  
Senior Exploration Advisor, Ammonite Resources  
Steven Schamel, PhD, PG  
Senior Consultant, Ammonite Resources
Colombia

= Diverse Geology

= Something For All Explorers!
Texas is about 60% of the size of Colombia

**Colombia**
1,141,748 Km$^2$

**Texas**
696,241 Km$^2$
Alberta is about 60% of the size of Colombia

Colombia
1,141,748 Km²

Alberta
661,848 Km²
Colombia is blessed with a large number of proven and highly potential oil and gas basins:

**Mature and emerging pericratonic and intermountain basins in the east and center of Colombia.**

**Emerging and frontier coastal and offshore basins in the west and north of Colombia.**
Pericratonic Basins
Cordillera and Inter-Cordillera Basins

- Catatumbo
- Middle Magdalena Valley
- Cordillera Oriental
- Upper Magdalena Valley
Significant Opportunities For Bold Explorers!

Forearc Basins And Delta Complexes

Emerging and Frontier Basins

Emerging Basins of Colombia:
- Guajira and Guajira Offshore (GUA and GUOFF)
- Cesar-Rancheria (CR)
- Sinú-San Jacinto (SSJ)
- Lower Magdalena Valley (VIM)

Frontier Basins of Colombia:
- Los Cayos (CAY)
- Urabá (URA)
- Chocó and Chocó Offshore (CHO and CHOOFF)
- Tumaco and Tumaco Offshore (TUM and TUMOFF)
- Cauca-Patía (CAU)
Opportunity

Western Sedimentary Basin of Canada

Approx. 525,000 wells
1 well / 2.5 km²

Eastern Cordillera-Llanos-Putumayo
2,026 wells
1 well / 200 km²

Colombia has room to explore!
Colombia has World-Class Source Rock!

- Mid-Cretaceous La Luna / Cansonna – A rich, regional hydrocarbon source rock
- Tertiary carbonaceous shale and coals

In the shallower basins, these rocks are known to generate commercial quantities of biogenic methane.

Late Cenomanian-Turonian paleogeography of NW South America. La Luna / Cansonna deposition in purple and blue.

From Villamil, 2003, AAPG
Colombia has Reservoirs!

Middle Magdalena Basin Reservoirs

<table>
<thead>
<tr>
<th>Sandstones</th>
<th>Porosity: 15 – 20%</th>
<th>Permeability: 20 – 600 md</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado Fm</td>
<td>Mugrosa Fm</td>
<td>Esmeralda Fm</td>
</tr>
<tr>
<td>La Paz Fm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Luna Fm</td>
<td>Tablazo Fm</td>
<td>Rosablanca Fm</td>
</tr>
</tbody>
</table>

Fractured Limestone
You Want Structure? Colombia Has it!

From: Villamil, 2003, AAPG
Colombia Has World Class Structure!

Middle Magdalena Valley

Catatumbo

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Colombia Has World Class Structure!

Trap styles within Llanos Basin
- Antithetic normal faults
- Inversion structures
- Anticlines over inversion faults
- Stratigraphic traps
- Fault-propagation folds
- Potential Paleozoic structures
A Range of Crude Oils

Probability Plot of API Gravity

Variable
- Llanos
- Putumayo
- Middle Magdalena
- Upper Magdalena
- Catatumbo

API Gravity vs. Percent
3D Seismic is Transforming Colombia!

- Better imaging has led to high success rates
- Delineating stratigraphic traps
- Optimizing mature field in-fill drilling programs
- Imaging subthrust prospects in the Upper and Middle Magdelena basins.

From: Petrominerales, 2009
>40% Wildcat Success - 2008

No. of wildcats

![Chart showing the number of wildcats from 2002 to 2009 with a peak in 2008.

Producer Success (%)

![Bar chart showing producer success rates for each year with specific data points for 2008.

Under test

Dry

Success

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Technology is Opening the Frontier Basins

For Example:

✓ Satellite Imagery
✓ Seismic field acquisition
✓ Geochemical Survey methods
✓ High resolution gravity and magnetics
✓ Slim-hole stratigraphic tests

Satellite image of the heavily forested southern Chocó Basin
### Area of Mature Basins

<table>
<thead>
<tr>
<th>BASIN</th>
<th>AREA (Km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EASTERN LLANOS (LLA)</td>
<td>225,603</td>
</tr>
<tr>
<td>PUTUMAYO-CAGUÁN (PUT - CAG)</td>
<td>110,304</td>
</tr>
<tr>
<td>MIDDLE MAGDALENA VALLEY (VMM)</td>
<td>32,949</td>
</tr>
<tr>
<td>UPPER MAGDALENA VALLEY (VSM)</td>
<td>21,513</td>
</tr>
<tr>
<td>CATATUMBO (CAT)</td>
<td>7,715</td>
</tr>
<tr>
<td>EASTERN CORDILLERA (COR)</td>
<td>71,766</td>
</tr>
</tbody>
</table>
Multiple Oil and Gas seeps
Good stratigraphic control
Large structures

No drilling since 1983!

After: Cediel, et al., 2003
The Sinu-San Jacinta, Cauca-Patia, Choco and Tumaco are all forearc basins or successor basins in forearc settings.

- Deep sediment-filled trough containing sandstone reservoirs.
- Sacramento Basin in Northern California is an excellent analog, which has produced about 10Tcf of gas with minor condensate and oil.
- The Sacramento and Chocó basins have similar depths.
- Active petroleum system indicated by oil and gas seeps.
The offshore Sinú, southern Chocó, and Tumaco basins are large Tertiary delta complexes.

About 15% of known giant oil & gas fields are found in delta provinces.

A close analog is:

*Barum/Brunei Delta* - Traps generated by complex interaction of gravity-driven tectonics and transpressive or compressive basement tectonics
The Opportunity

Colombian Coastal Fore-Arc Basins
Drilled 1956-1983

Prior drilling has demonstrated active petroleum systems.

ANH shooting new seismic and drilling
Deep stratigraphic wells

New Data + New Technologies + New Licenses = New Discoveries!
Emerging Basin Opportunities

Discoveries in the Lower Magdalena Valley

Abundant oil and gas seeps in the San Jacinto – Sinú Basin

These basins have seen very little Exploration!

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Cauca-Patía Basin

A northeast trending, 440 km intermountain depression separating the Cordillera Central and Cordillera Occidental.

Gas and oil prone coals

- Gas shows in wells in the Cali area (red circle)
- Cali is a good gas market for any discoveries in the basin.
- Surface oil seeps in the Patía sub-basin (green circle).

- Only 5 wells drilled in Basin
Rank Frontier Basins

Los Cayos Basin
Numerous structures
Potentially mature
Source rocks
Carbonate reservoirs
The "Golden Triangle"

Cañón Limón
1.3 Billion BO

Cusiana-Cupiagagua
1.3 Billion BO

Rubiales
344 Million BO

E. Cordillera + Llanos + Putumayo = 2,026
Total Wells Drilled
(1 well/201 km²)

Giants yet to be Discovered?
ANH has an excellent geological and geophysical database that is user friendly.

<table>
<thead>
<tr>
<th></th>
<th>No. Wells</th>
<th>Seismic (Km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1 E&amp;P Mature Basins</td>
<td>192</td>
<td>25,194</td>
</tr>
<tr>
<td>Type 2 E&amp;P Emerging and Frontier Basins</td>
<td>147</td>
<td>24,017</td>
</tr>
<tr>
<td>Type 3 Technical Evaluation Agreements (TEA)</td>
<td>50</td>
<td>11,449</td>
</tr>
<tr>
<td>Total</td>
<td>389</td>
<td>60,660</td>
</tr>
</tbody>
</table>

Legend:
- Stratigraphic Wells to be drill during 2010
- Faults
- TD, in all cases aprox. 10,500'
## Mature Basins

### Basin Statistics as of July 2009

<table>
<thead>
<tr>
<th>Basin</th>
<th>Current Production (BOPD)</th>
<th>Percent National Production</th>
<th>N. Fields</th>
<th>Light Oil</th>
<th>Medium Oil</th>
<th>Heavy Oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Llanos</td>
<td>425,231</td>
<td>66.45%</td>
<td>118</td>
<td>50</td>
<td>33</td>
<td>35</td>
</tr>
<tr>
<td>Middle Magdalena Valley</td>
<td>98,687</td>
<td>15.42%</td>
<td>61</td>
<td>10</td>
<td>17</td>
<td>34</td>
</tr>
<tr>
<td>Upper Magdalena Valley</td>
<td>88,149</td>
<td>13.78%</td>
<td>44</td>
<td>11</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Putumayo-Caguán</td>
<td>24,000</td>
<td>3.75%</td>
<td>26</td>
<td>8</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>Catatumbo</td>
<td>3,283</td>
<td>5.10%</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Eastern Cordillera</td>
<td>79</td>
<td>1.00%</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>639,429</strong></td>
<td><strong>100 %</strong></td>
<td><strong>256</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Basin Statistics as of July 2009
### Emerging Basins

<table>
<thead>
<tr>
<th>Basin</th>
<th>Basin Area (Km²)</th>
<th>Production</th>
<th>Discoveries</th>
<th>Number of wells</th>
<th>2D seismic (Km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guajira and Guajira offshore</td>
<td>66,639</td>
<td>3.72 TCFG</td>
<td>5 gas</td>
<td>78</td>
<td>24,074</td>
</tr>
<tr>
<td>Cesar-Ranchería</td>
<td>11,668</td>
<td>ND</td>
<td>2 oil + 3 gas (NCP)</td>
<td>67</td>
<td>3,458</td>
</tr>
<tr>
<td>Sinú-San Jacinto</td>
<td>69,221</td>
<td>ND</td>
<td>3 gas</td>
<td>205</td>
<td>26,343</td>
</tr>
<tr>
<td>Lower Magdalena Valley</td>
<td>38,017</td>
<td>0.35 TCFG + 64.2 MBO</td>
<td>4 oil + 8 gas</td>
<td>273</td>
<td>16,704</td>
</tr>
</tbody>
</table>

### Frontier Basins

<table>
<thead>
<tr>
<th>Basin</th>
<th>Basin Area (Km²)</th>
<th>Production</th>
<th>Oil &amp; Gas Seeps</th>
<th>Wells with Shows</th>
<th>Number of wells</th>
<th>2D seismic (Km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Los Cayos</td>
<td>144,755</td>
<td>-</td>
<td></td>
<td>2 oil &amp; gas</td>
<td>2</td>
<td>4,739</td>
</tr>
<tr>
<td>Urabá</td>
<td>9,449</td>
<td>-</td>
<td>✓</td>
<td>2 gas</td>
<td>5</td>
<td>4,665</td>
</tr>
<tr>
<td>Chocó and Chocó offshore</td>
<td>73,675</td>
<td>-</td>
<td>✓</td>
<td>1 oil &amp; gas</td>
<td>5 (Atrato)</td>
<td>6,599</td>
</tr>
<tr>
<td>Tumaco and Tumaco offshore</td>
<td>58,285</td>
<td>-</td>
<td>✓</td>
<td>1 oil &amp; 2 gas</td>
<td>5</td>
<td>9,452</td>
</tr>
<tr>
<td>Cauca-Patía</td>
<td>12,823</td>
<td>-</td>
<td>✓</td>
<td>1 gas</td>
<td>5</td>
<td>968</td>
</tr>
</tbody>
</table>

Basin Statistics as of July 2009
Future Potential

New Ideas + New Technologies + New Licenses = Significant new discoveries
Reserves and Potential (BBOE)

**Reserves**

<table>
<thead>
<tr>
<th>Proven</th>
<th>Probable</th>
<th>Possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>~2.3 (1)</td>
<td>~2.5</td>
<td>~5.6</td>
</tr>
</tbody>
</table>

**Potential Resources**

~35 - 82 (2)

**Billion BOE (P50)**

(1) Last updated on April 30th 2009 by the operators
(2) Compiled sources: IHS, UIS, ZIFF Energy, EAFIT, Universidad Nacional, Halliburton
Colombia: A GREAT PLACE TO INVEST IN PETROLEUM EXPLORATION & DEVELOPMENT

- Diverse geology and play opportunities
- Small to giant field discovery potential
- Light to heavy oil, and natural gas
- Onshore and offshore opportunities
- Well-established oil services industry
- Production infrastructure
- Atlantic and Pacific export markets

Opportunities for the small independent to the major international oil companies
Colombia:

OPPORTUNITIES FOR THE SMALL INDEPENDENT TO THE MAJOR, INTERNATIONAL OIL COMPANIES

- A good business environment.
- Favorable contract terms under a new institutional framework.
- Competitive licensing rounds.
- Educated workforce.
- Access to growing domestic and international markets for oil and gas

Security has returned to Colombia!
¿Why Colombia?

Ammonite Resources believes Colombia has excellent exploration opportunities on a global scale in mature, emerging and frontier basins.

We urge you to talk with ANH About the 2010 Round!
Advisors to ANH for the 2010 Licensing Round

G. Warfield Hobbs, MSC., PG. – Ex-Texaco, Amerada Hess
Robert K. Merrill, PhD., PG, Ex- Cities Service, Unocal
Steven Schamel, PhD., PG, Ex- ESRI (U of South Carolina)

*Each consultant has more than 35 years international E&P experience, including experience in Colombia*

[www.ammoniteresources.com](http://www.ammoniteresources.com)
Gracias,
See you in Colombia!