

# **YPF** | Vaca Muerta “Shale oil”

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The information contained herein has been prepared to assist interested parties in making their own evaluations of YPF.



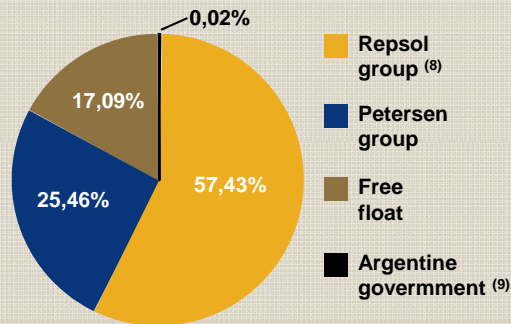


**Sales <sup>(1)</sup>**  
**US\$ 11,107 MM**

**EBITDA <sup>(1)</sup>**  
**US\$ 3,799 MM**

**Net Income <sup>(1)</sup>**  
**US\$ 1,456 MM**

**Shareholder Structure<sup>(7)</sup>**



(7) As of 31/10/11

(8) Eton Park have a call option for 1.63% of Repsol's shares

(9) Argentine Government has Class A shares and Provinces have Class B shares

**Exploration and Production**

- Leadership in Hydrocarbons Production
- Production<sup>(2)(3)</sup>: 107 MMbbl of Liquids and 88 MMboe of Natural Gas
- 2010 Proved Reserves<sup>(3)</sup>: 531 MMbbl of Liquids and 451 MMboe of Natural Gas

**Downstream – Refining and Logistics**

- Leadership in Refining
- Refining Capacity: 333 Mbbl/d<sup>(4)(5)</sup> (more than 50%<sup>(5)</sup> of Argentina´s total capacity)
- High level of conversion and complexity
- More than 2,700 km<sup>(5)</sup> of oil pipelines and 1,801 km<sup>(5)</sup> of pipelines

**Downstream - Chemistry**

- Integrated petrochemical business with the rest of the productive sectors (E&P, refining and natural gas)
- Production Capacity: 2.2<sup>(5)</sup> million tons per year

**Marketing**

- Leader in the marketing of fuels (57%<sup>(5)</sup> of the market share in diesel and gasoline)
- 1,622<sup>(5)(6)</sup> Service Stations

**Major Affiliates**

- \_ MEGA: Liquid Separation Plant
- \_ Pluspetrol Energy: Exploration and Production and Electricity Generation
- \_ Refinor: Refining, Transportation and Marketing of Refined Products
- \_ Profertil: Leader in the Production of Fertilizers, Urea and Ammonia
- \_ AESA: Engineering, Manufacturing, Construction, Operation and Maintenance Services, oriented to energy sector

(1) Statements of YPF alued according to accounting standards Argentinas converted to dollars at the exchange rate of the end of the year

(2) Includes crude oil, condensates and liquids, including Pluspetrol and USA

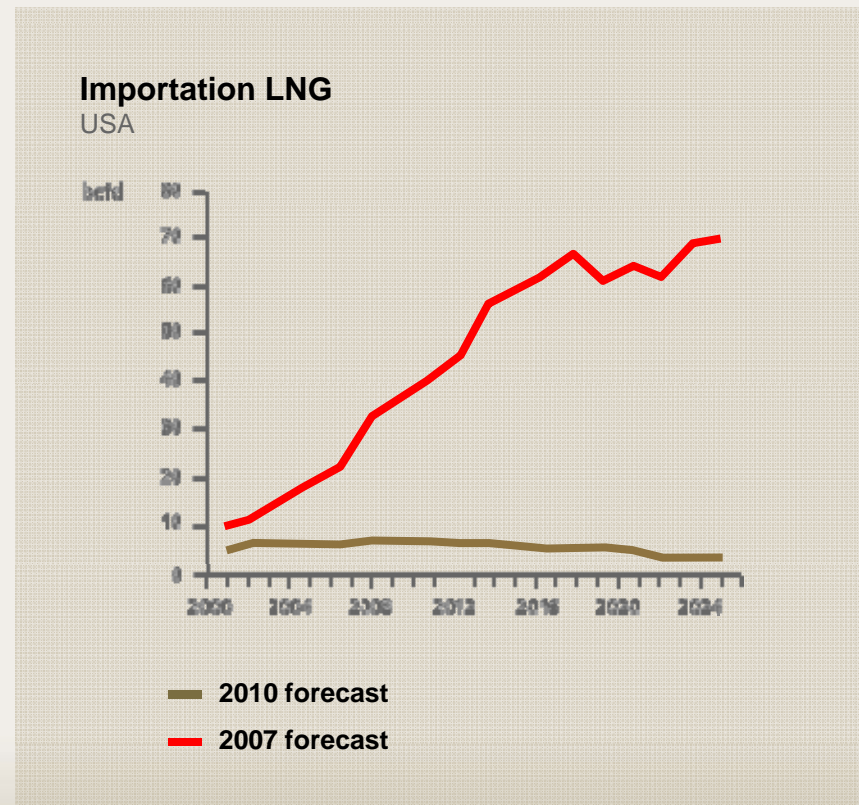
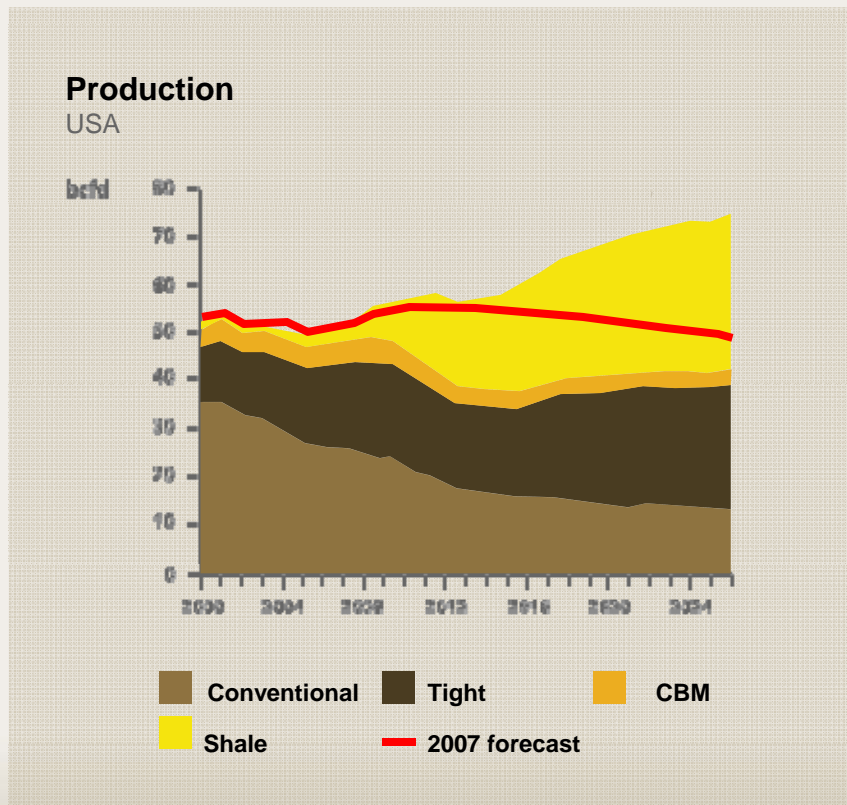
(3) 20F 2010; excludes investments in companies by the equity method, converted using 1 boe = 5.615 Mcf of gas. Source: 20-F 2010

(4) Includes 50% of Refinor (13 Mbbl/d)

(5) 20F 2010

(6) Excludes 35 Refinor Service Stations

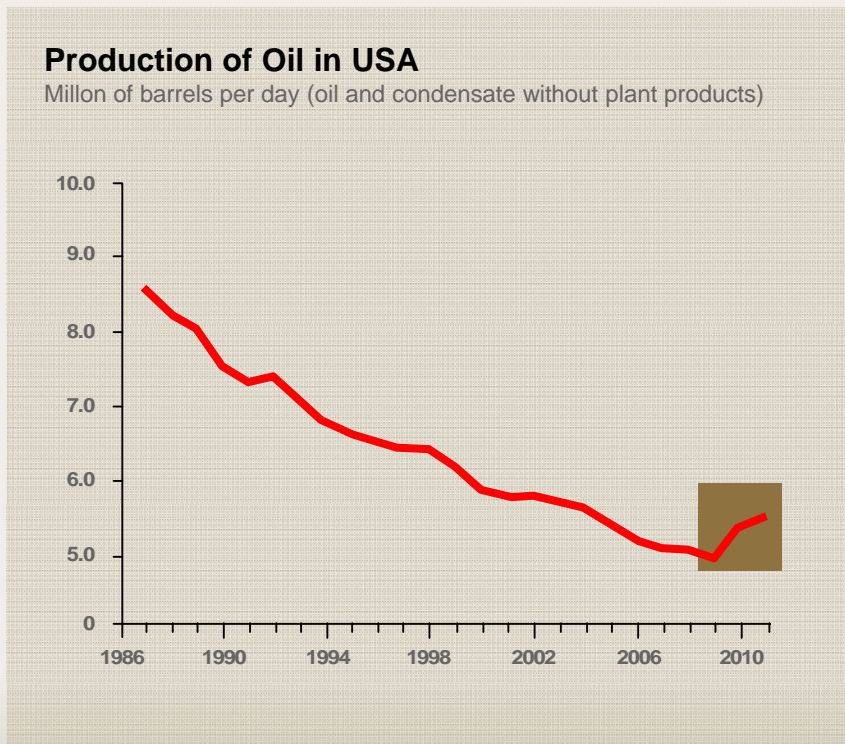
- The development of Shale Gas resources in the USA has totally changed the energy balance and largely eliminated the need to import LNG.
- 23% of US gas production currently comes from Shale Gas.



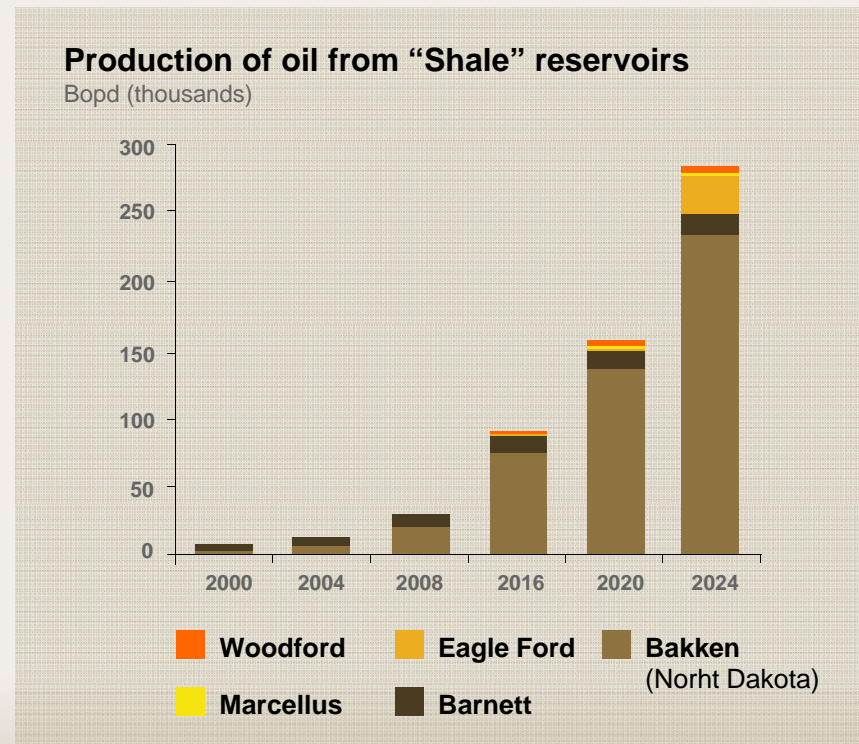


EIA, TODAY IN ENERGY, APR 27, 2011

- "...While much of the increase in 2009 was associated with deepwater developments in the Federal Gulf of Mexico, the increase in 2010 was led by escalating horizontal drilling programs in U.S. shale plays, notably the North Dakota section of the Bakken formation."
- **"Domestic Oil Production Reversed Decades-Long Decline in 2009 and 2010."**



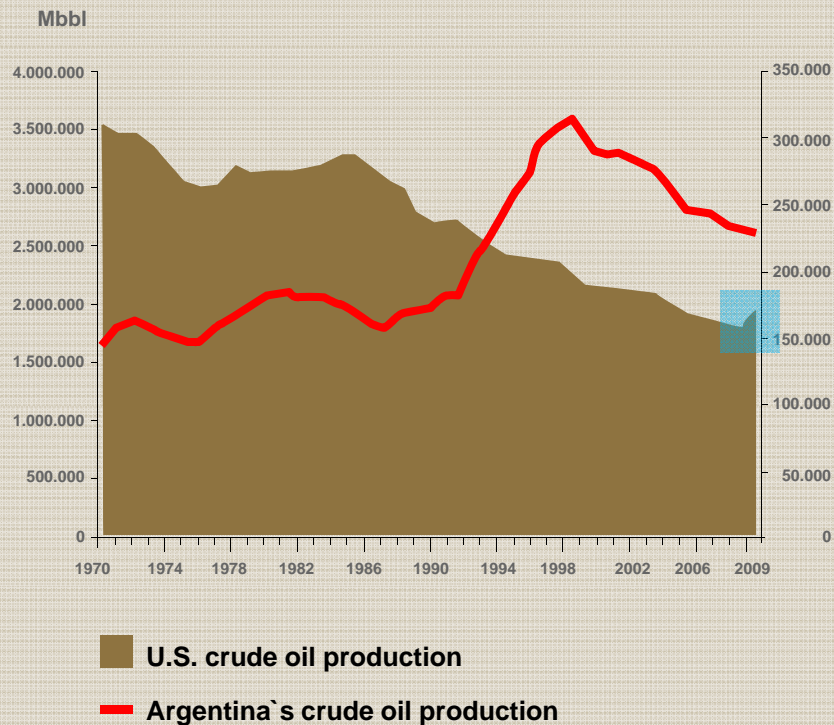
Source: U.S. Energy information administration



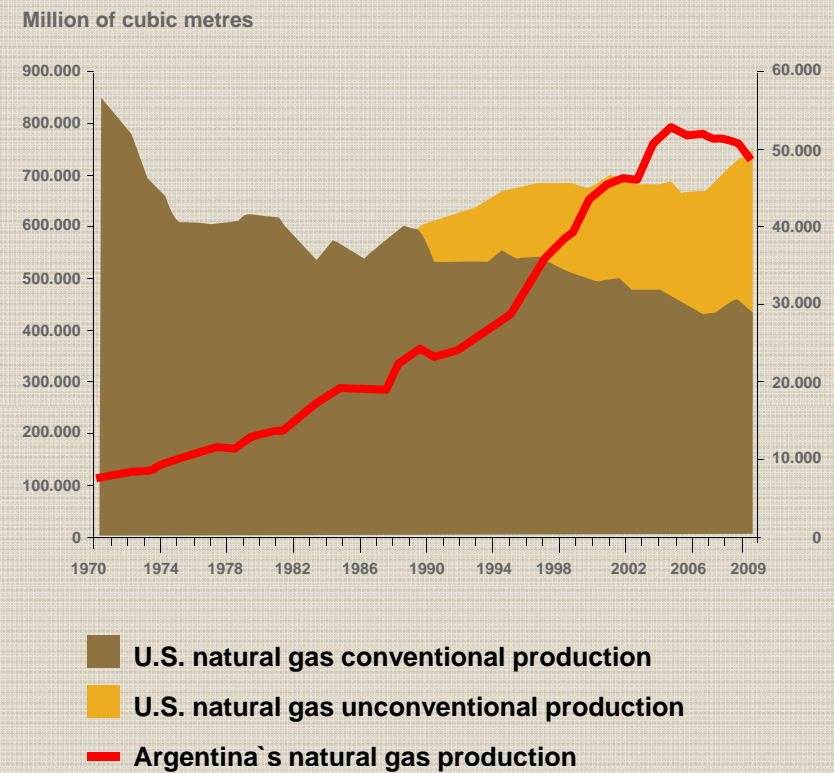
Source: HPDI, LLC

EVOLUTION OF THE OIL AND THE NATURAL GAS IN U.S. AND ARGENTINA

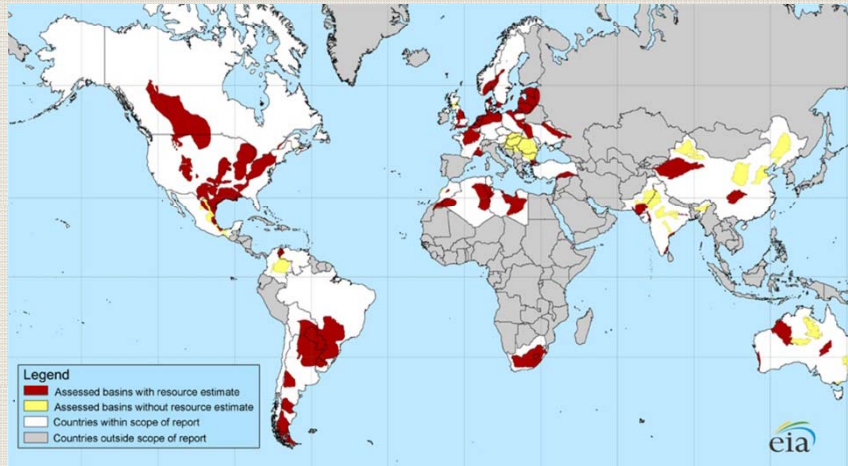
**U.S. and Argentina's crude oil production**



**U.S. and Argentina's natural gas production**



**MAIN SHALE GAS BASINS**



Continent	Risked technically recoverable (Tcf)
North America	1.931
South America	1.225
Europe	624
Africa	1.042
Asia	1.404
Australia	396
<b>Total</b>	<b>6.622</b>

**12% of total world resources reported in Argentina**

- The EIA report (April 2011, “World Shale Gas Resources”) estimated Argentina as having the third largest resource base (The study excluded the Middle East, Russia, SubSaharan Africa))
- Conventional and unconventional resources are estimated as being roughly equivalent (6,622 vs. 6,609Tcf) (study excluded the Middle East, Russia, SubSaharan Africa)

Source: EIA



**PROJECTS AND RECOVERABLE RESOURCES**



Shale Oil resources

**USA**  
24 Bbbl

**Francia**  
4 Bbbl

**Australia**  
17.8 Bbbl

**United States**  
24 Bbbl of shale oil resources

**Argentina**  
YPF pioneering the development of Shale Oil in Vaca Muerta.

**Brasil**  
The potential of the onshore Parana basin remains to be evaluated.

**Egypt**  
Resources estimated between 700 Mbbl and 2,2 Bbbl in East Bahariya.

**Australia**  
17.8 Bbbl of resources estimated for the Falcon Australia Beetaloo Basin Project.

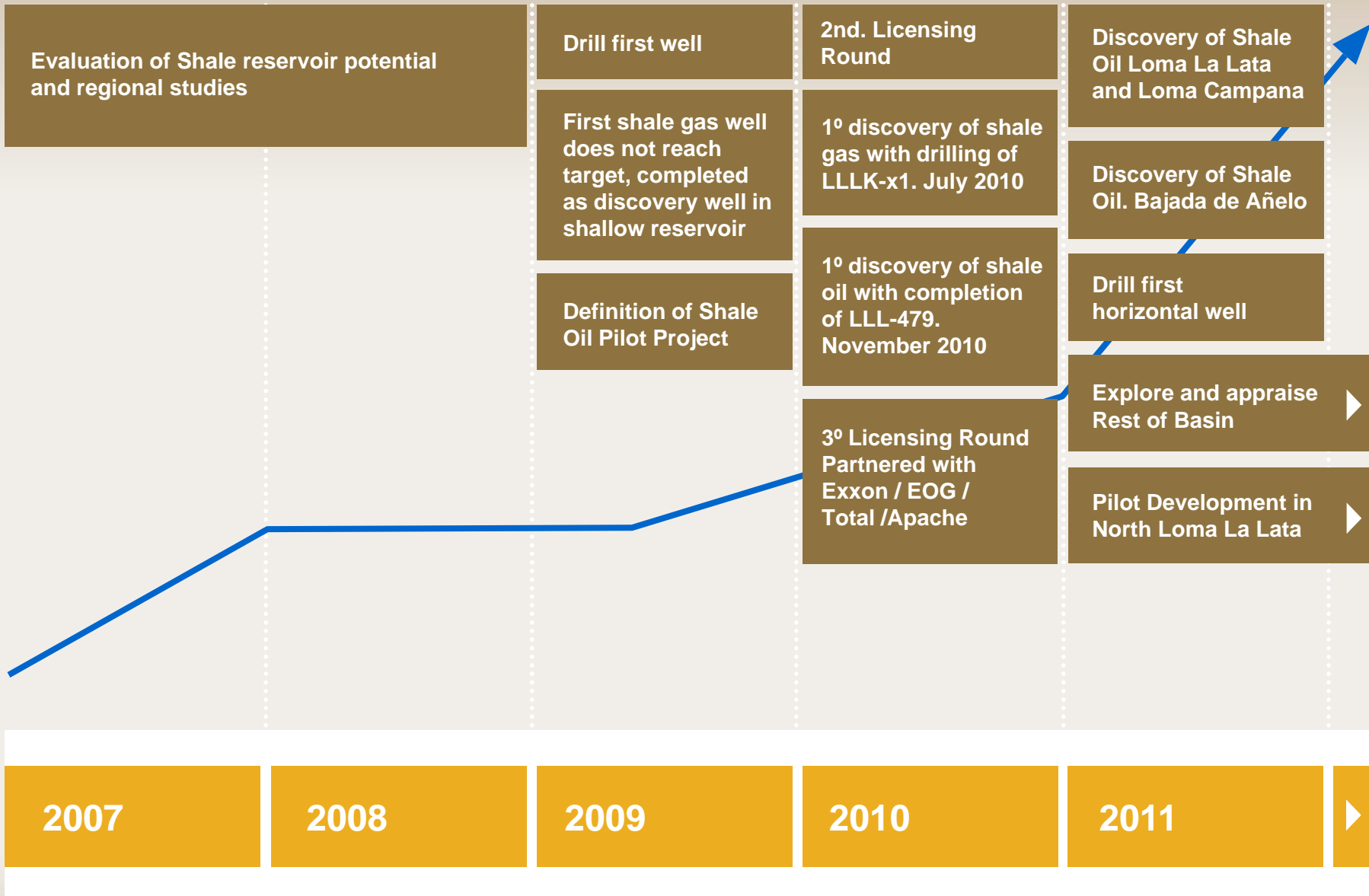
**Poland and Sweden**  
Defining the Unconventional potential portfolio, production forecast for 2014.

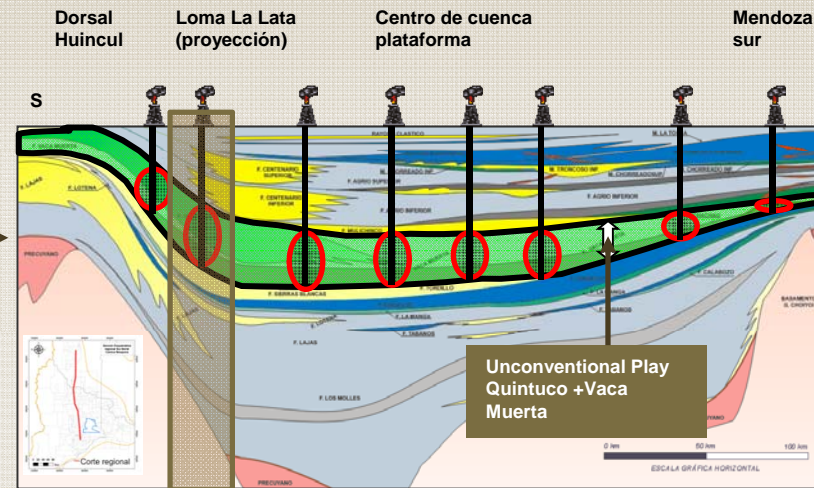
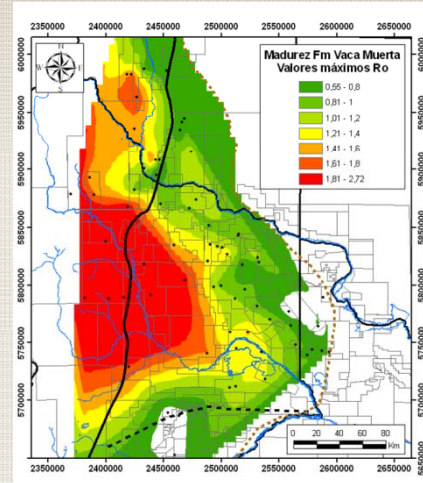
**China**  
Recent discovery of Shale Oil by PetroChina in the Liaohe depression, north east Bohal Gulf Basin joint ventures with US companies with proven track record.

**France**  
The Paris Basin should have recoverable shale resources of 4 Bbbl, projects on hold due to environmental issue.

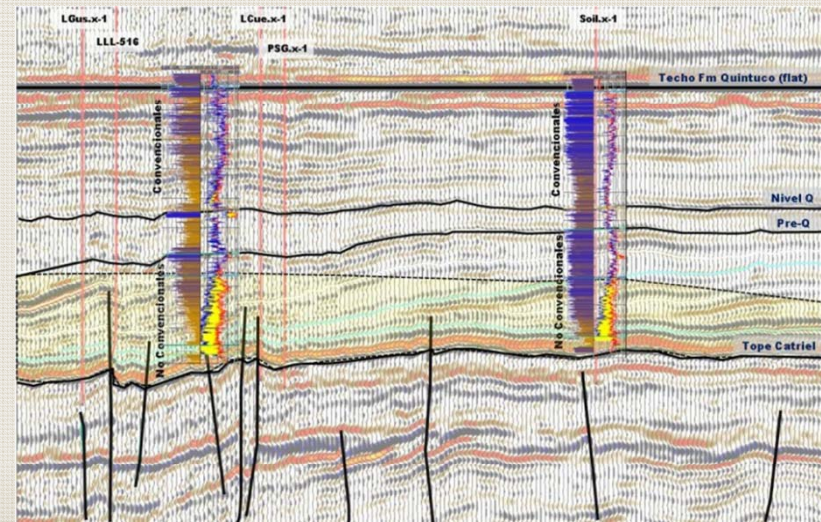
**Canada**  
Main effort centered on Shale gas with potential for LNG export. Shale Oil less important for the moment.



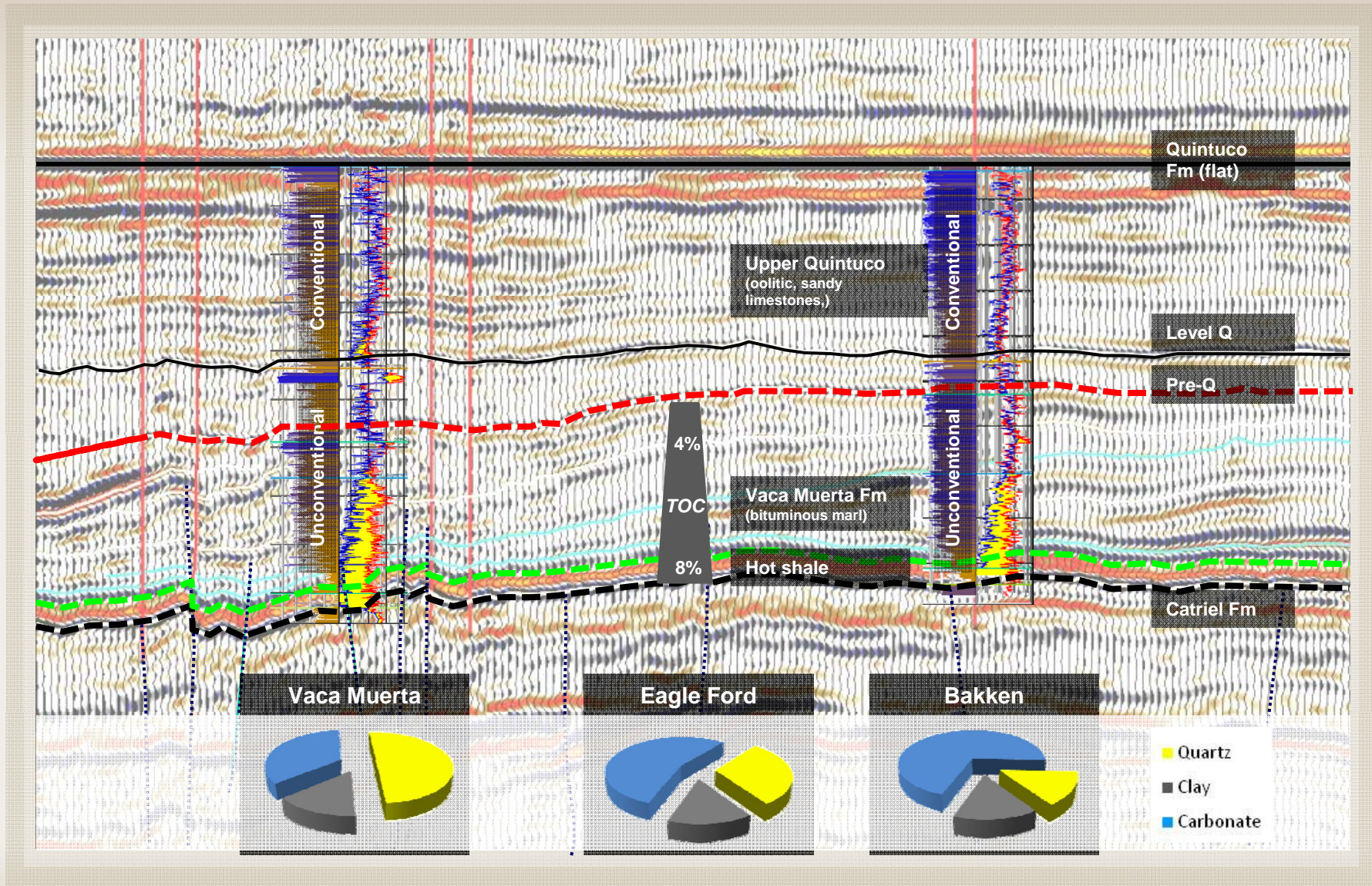




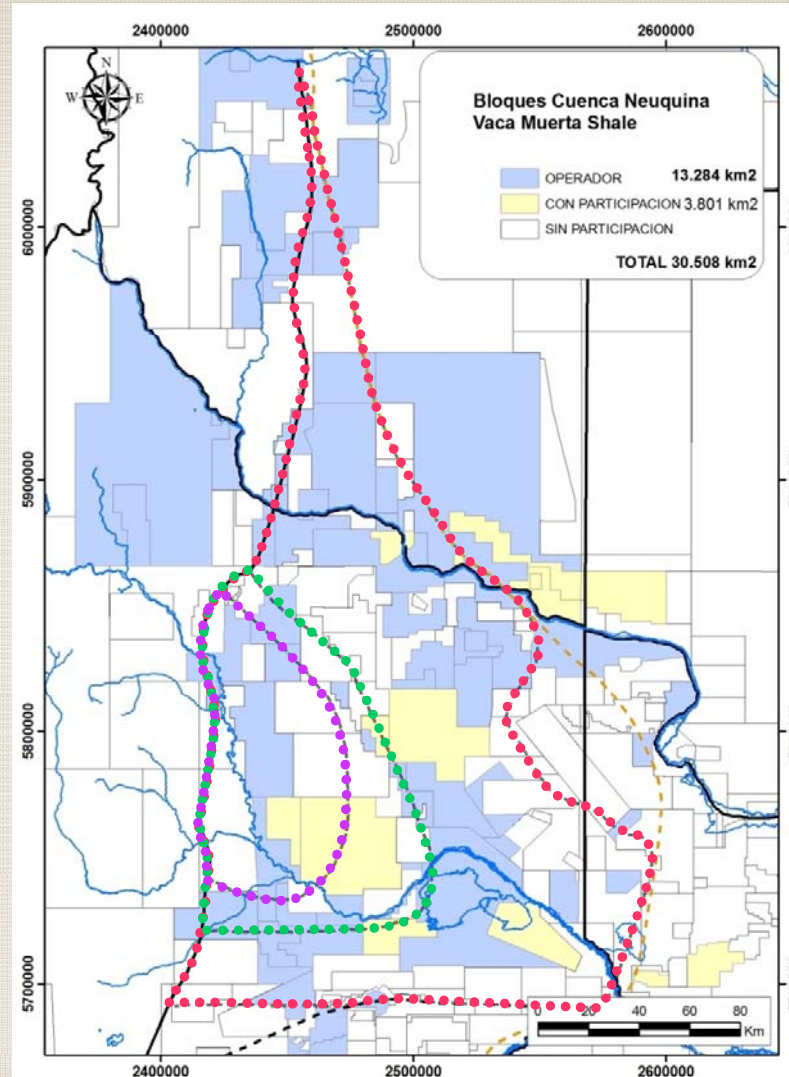
- Extention of 30,000 km<sup>2</sup>
- Thickness greater than 250 m.
- Evidence of light oil, wet and dry gas
- Overpressure gradient from 0.67 to 0.97 psi/ft
- Additional conventional opportunities









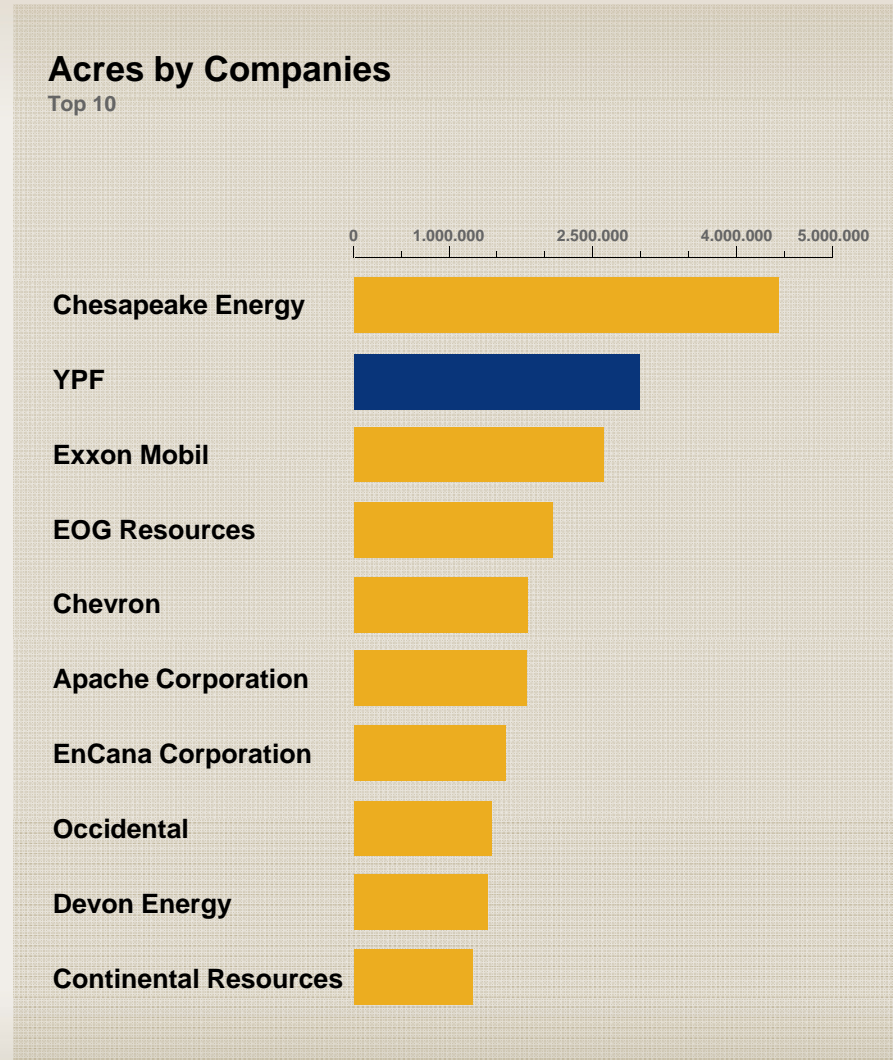
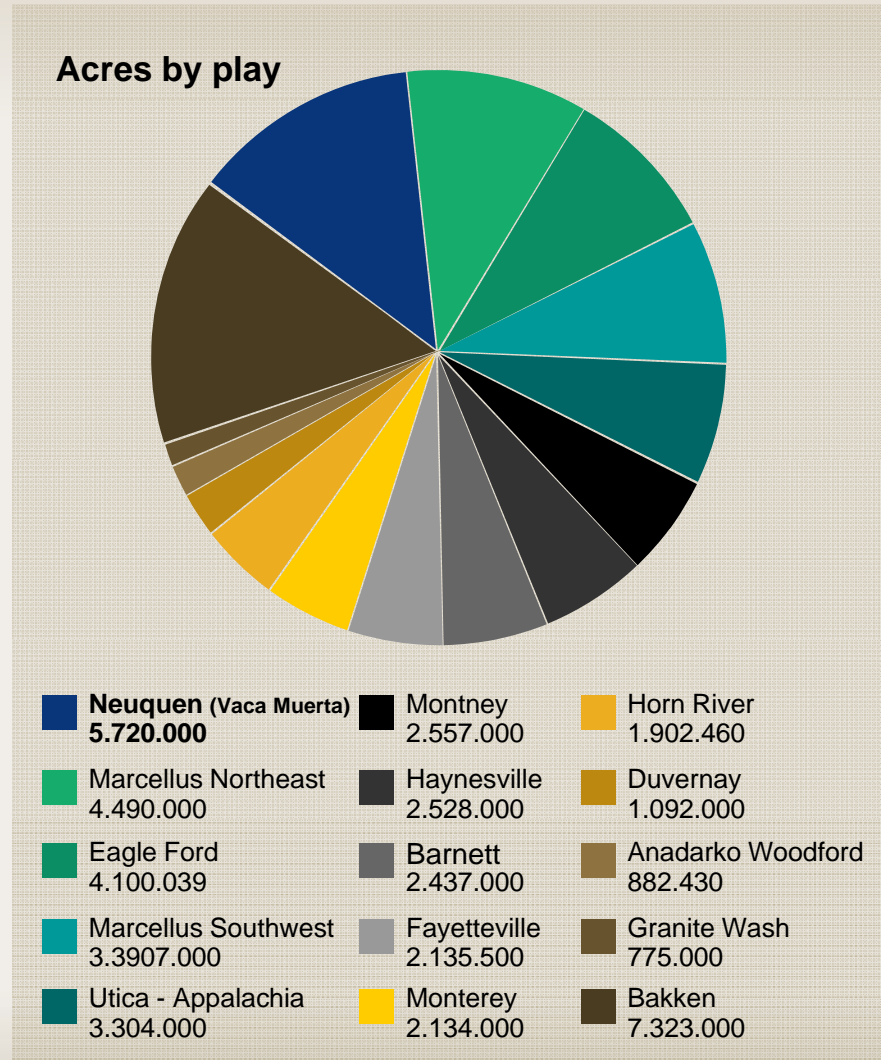


- Oil Window
- Wet Gas Window
- Dry Gas Window

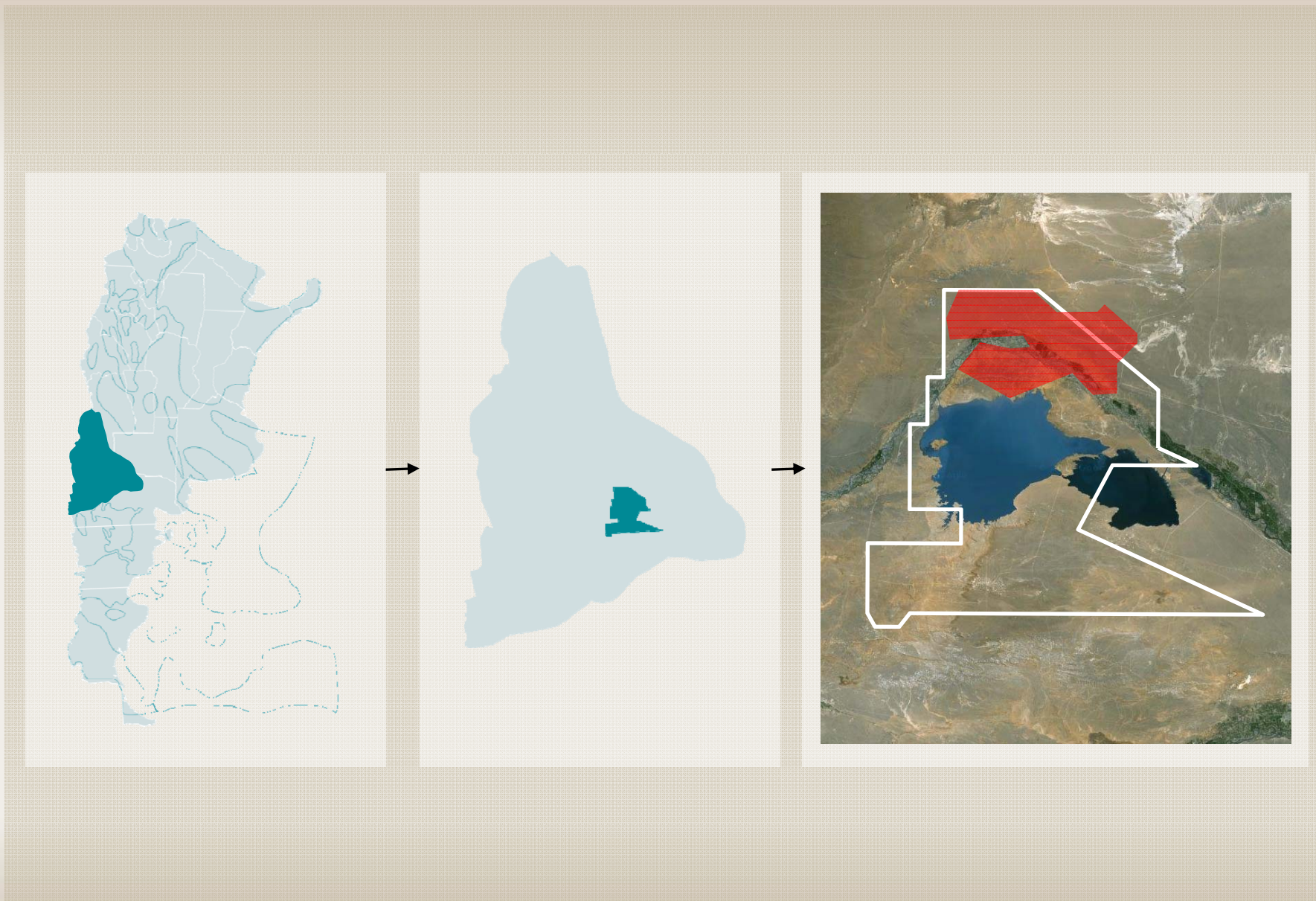
- Vaca Muerta is present in an area of 30.000 Km<sup>2</sup> (7.4 million acres).
- Of this area, YPF participates in 12.000 Km<sup>2</sup> (3.0 million acres - 40% of the total).
- 9,311 km<sup>2</sup> oil
- 670 km<sup>2</sup> wet gas
- 2019 km<sup>2</sup> dry gas



**PLAYS WITH PROVEN POTENTIAL IN U.S. AND ARGENTINA.  
ACREAGE DECLARED BY MAIN COMPANIES**



Source: Wood Mackenzie NAGS

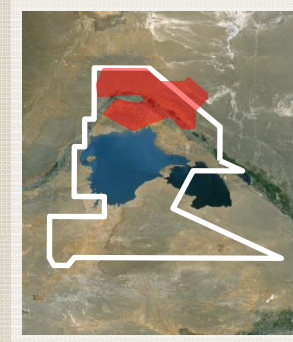
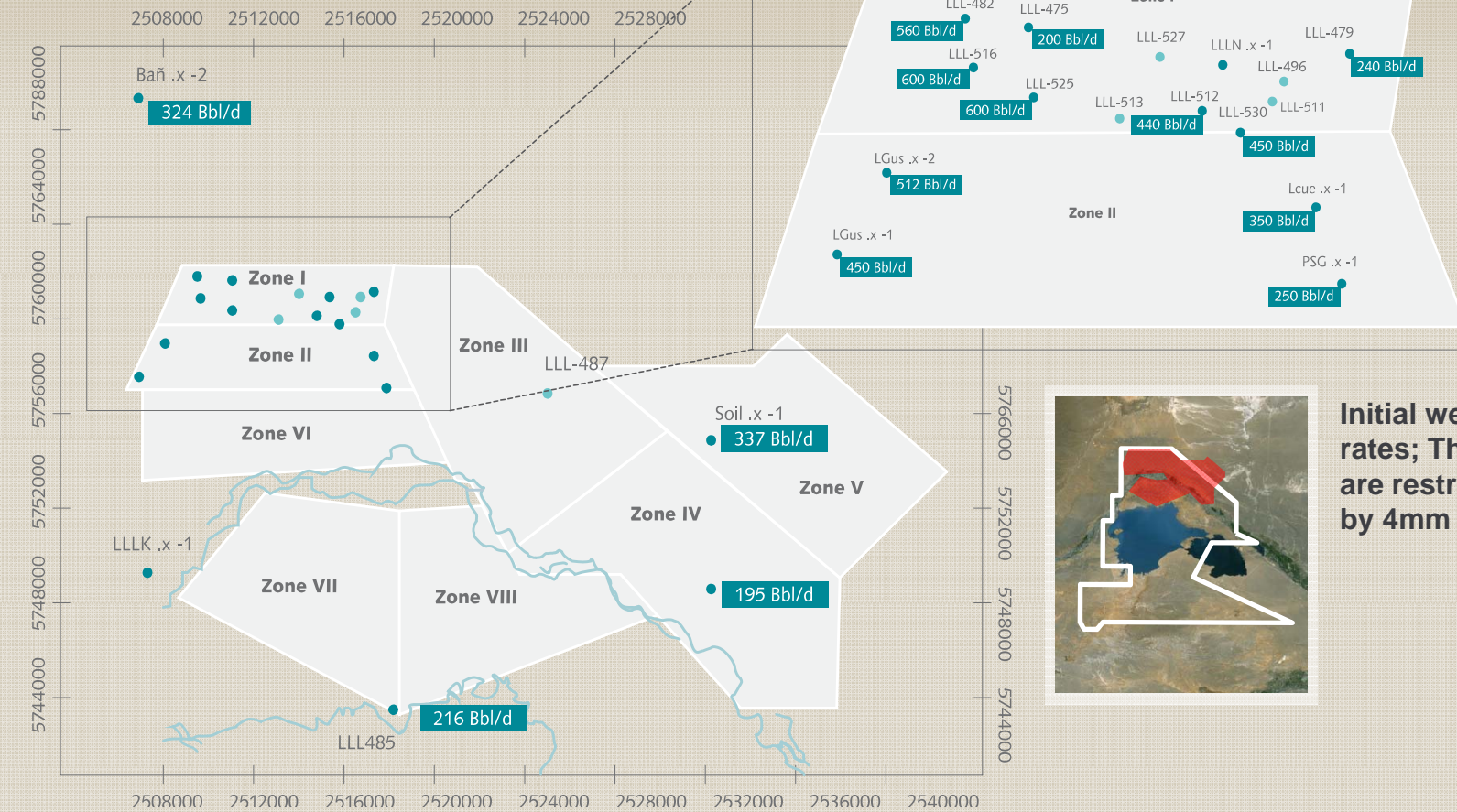




# YPF Discovery of Shale Oil Northern Loma La Lata

## Results by the end of September

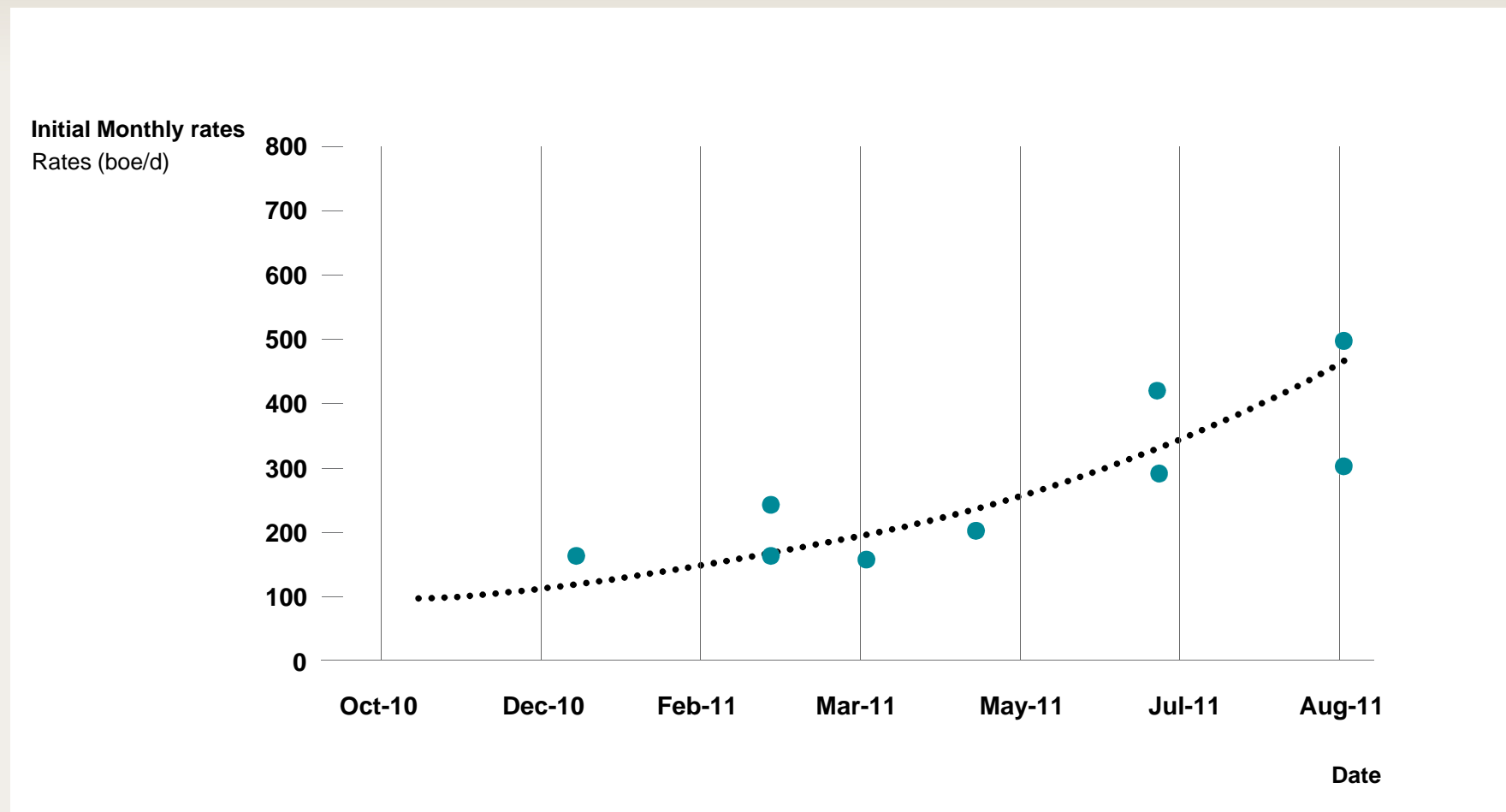
### VERTICAL WELLS IN PRODUCTION



**Initial well rates; The wells are restricted by 4mm chokes**

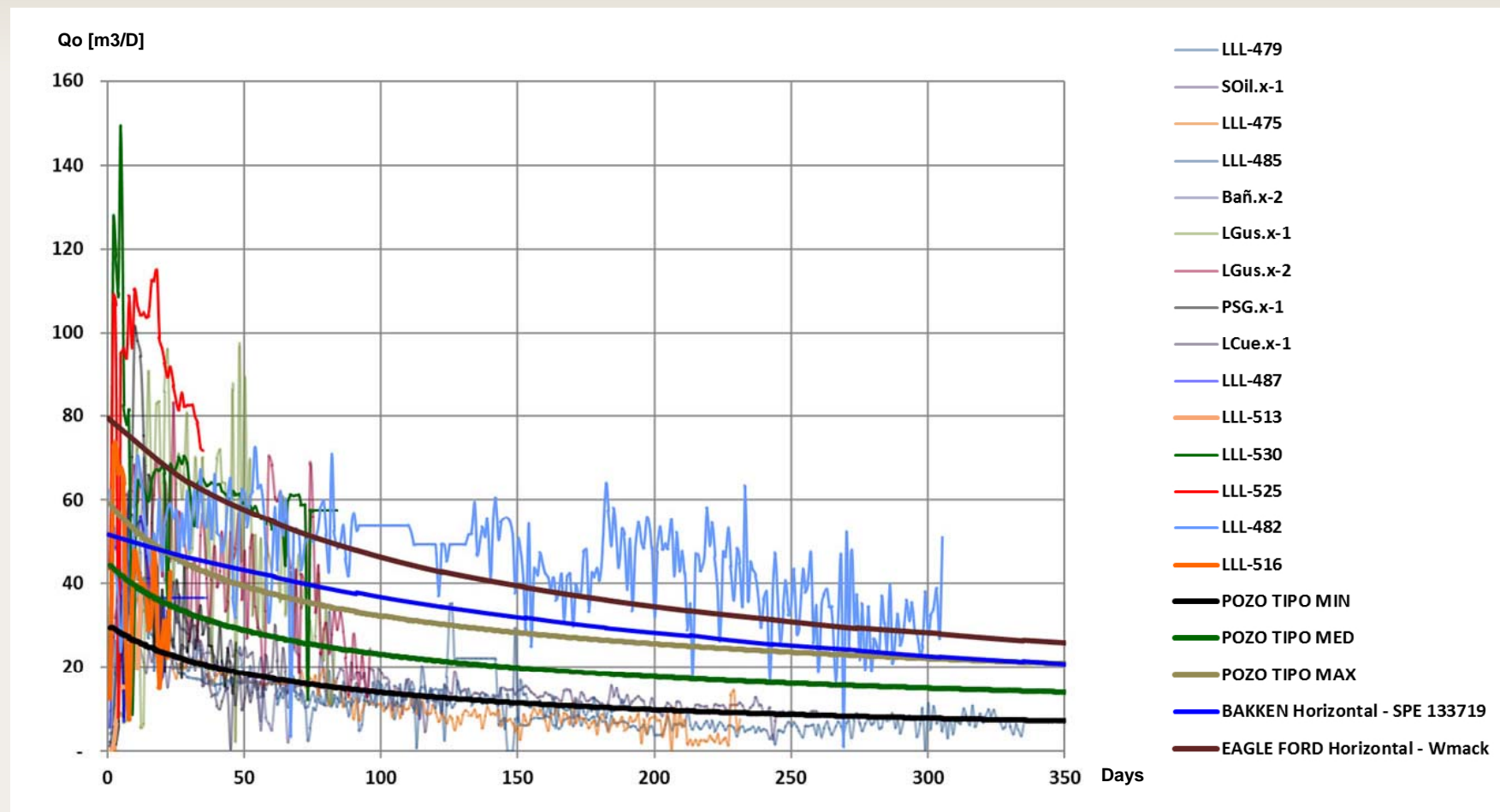
- 15 wells producing (14 new wells, 1 Workover)
- The wells were drilled in the Loma de la Lata, Loma Campana and Bajada de Añelo Blocks
- Initial choked vertical well rates range between 200 and 600 bopd

PRELIMINARY RESULTS VACA MUERTA

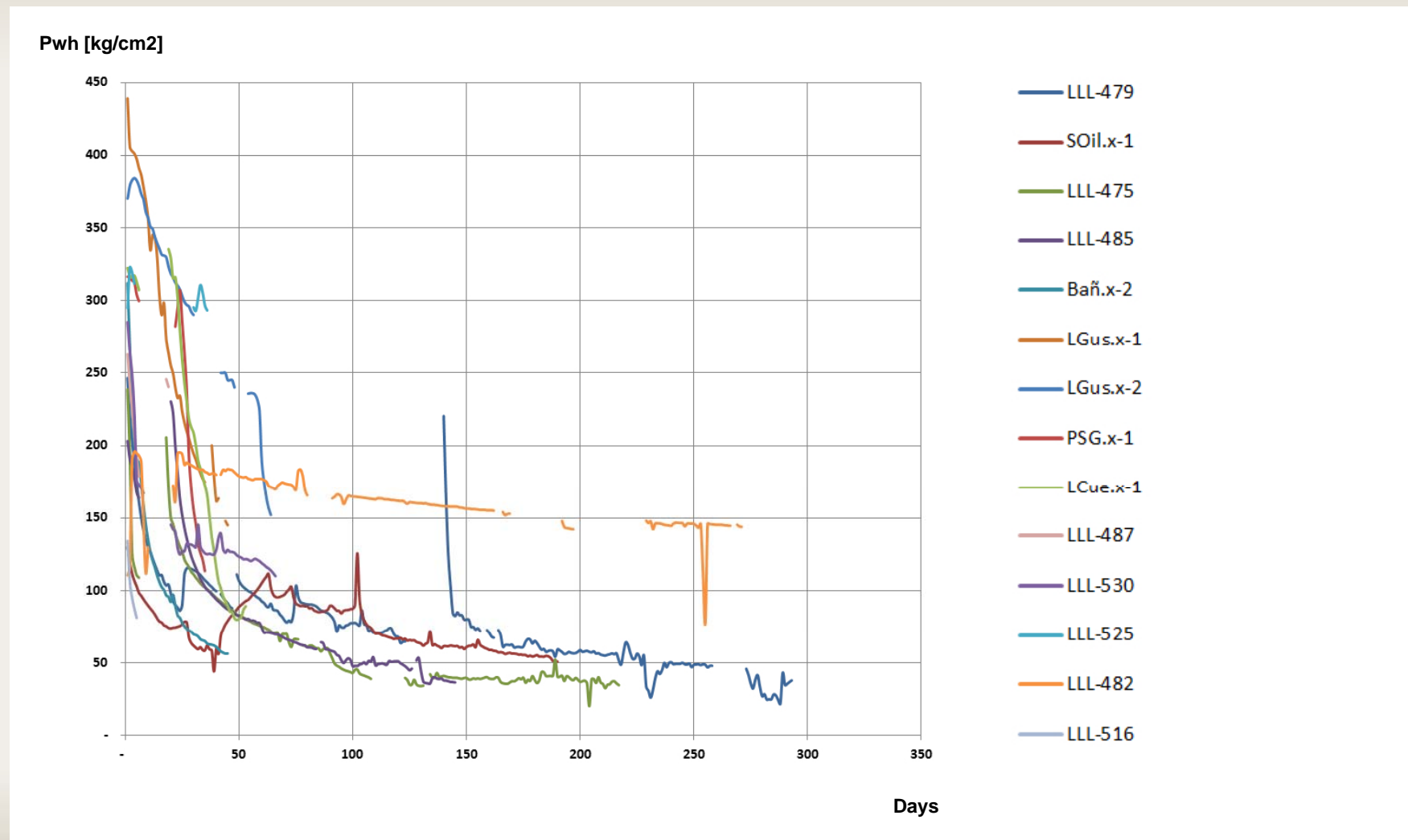




COMPARISON WITH VACA MUERTA

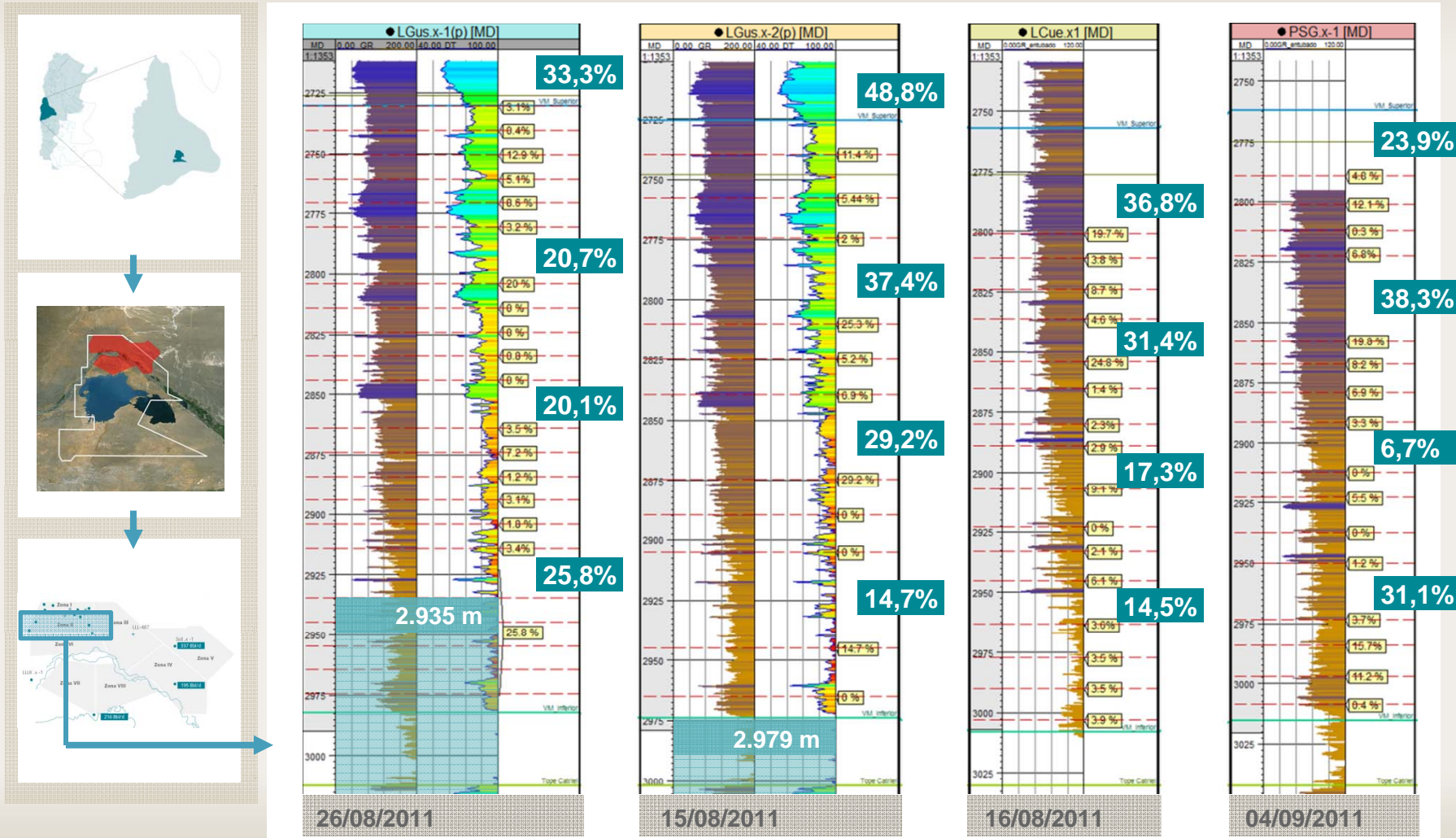


(\*) Wood Mackenzie





**RESULTS OF PLTS**



OIL AND GAS PROPERTIES



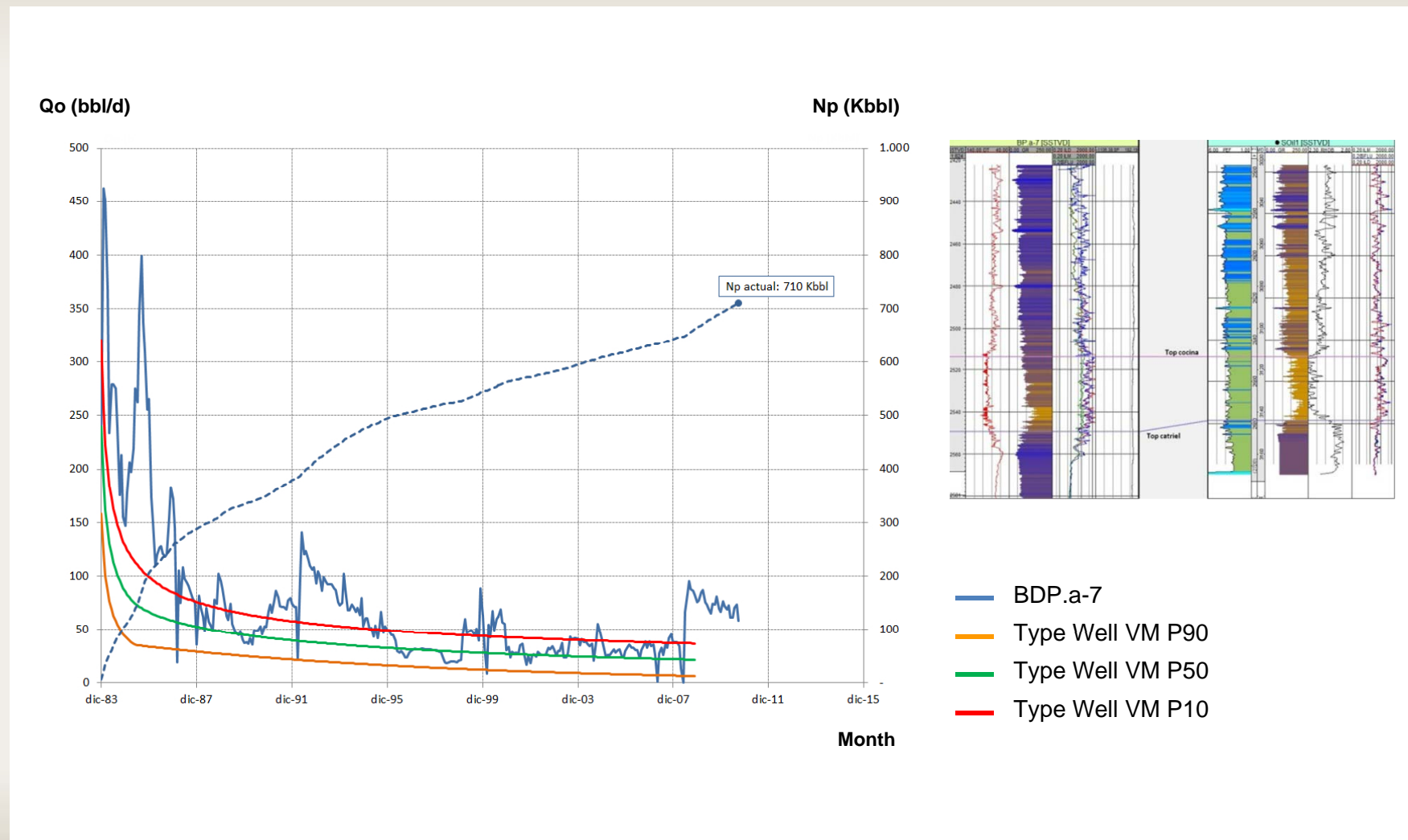
**Characteristics**

- Pres. = 550 - 650 kg /cm<sup>2</sup> at 2.800 m
- °API: 40 - 45
- Pb: 120-200 Kg/cm<sup>2</sup>
- GOR: 100-500 m<sup>3</sup>/m<sup>3</sup>
- Bo @ Pb: 1,5 – 1,7
- Viscosity @ Pb: 0,3 – 0,8 cP
- No H<sub>2</sub>S, Minor CO<sub>2</sub>

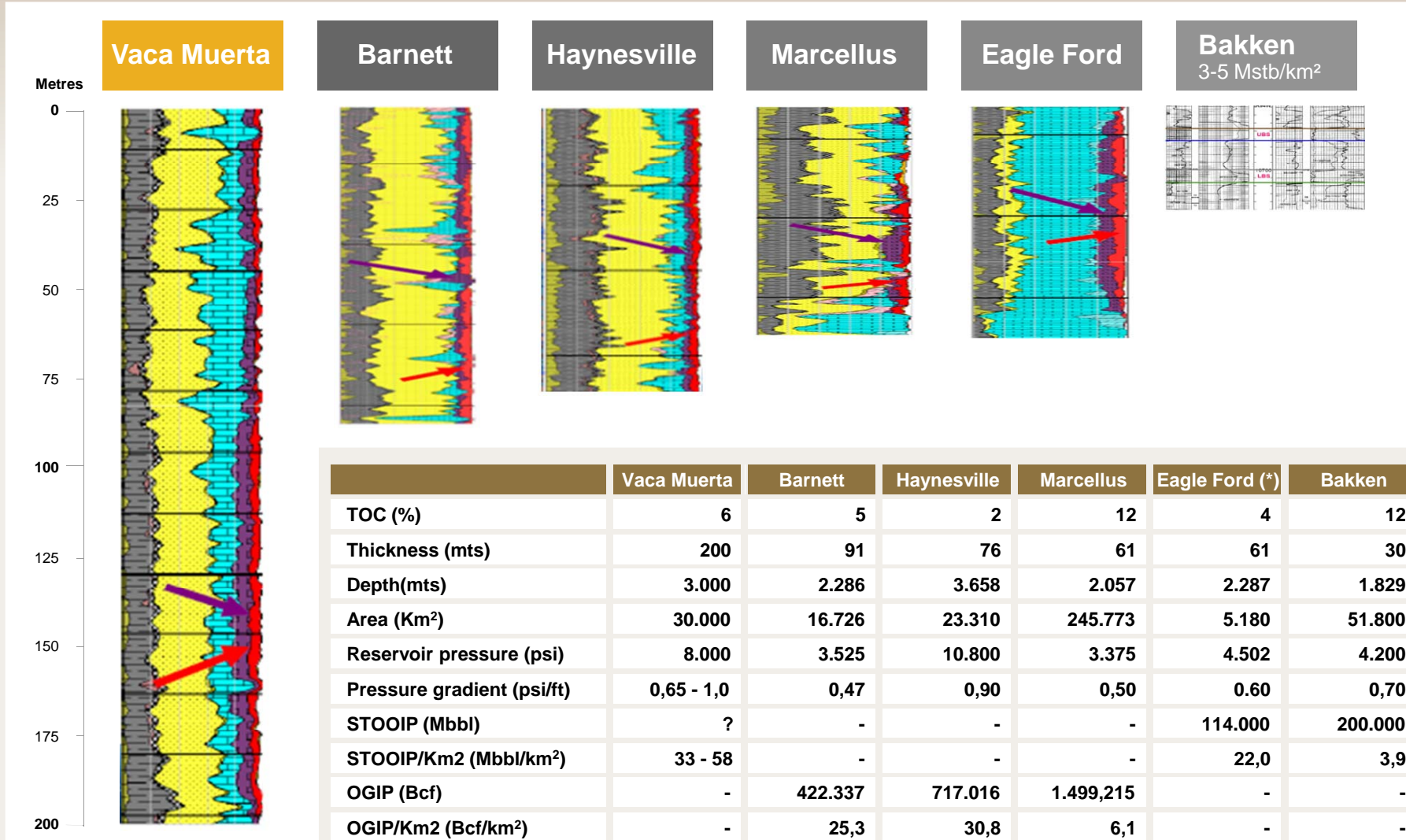
Plant products – Gas		
	m <sup>3</sup> /mm <sup>3</sup>	bbl/mcft
<b>C2</b>	<b>45,25</b>	<b>79,29</b>
<b>C3</b>	<b>366,07</b>	<b>65,19</b>
<b>C4</b>	<b>199,58</b>	<b>35,54</b>
<b>C5</b>	<b>64,92</b>	<b>11,56</b>
<b>C6</b>	<b>16,79</b>	<b>2,99</b>
<b>C7+</b>	<b>11,63</b>	<b>2,07</b>
<b>C5+</b>	<b>93,34</b>	<b>16,62</b>



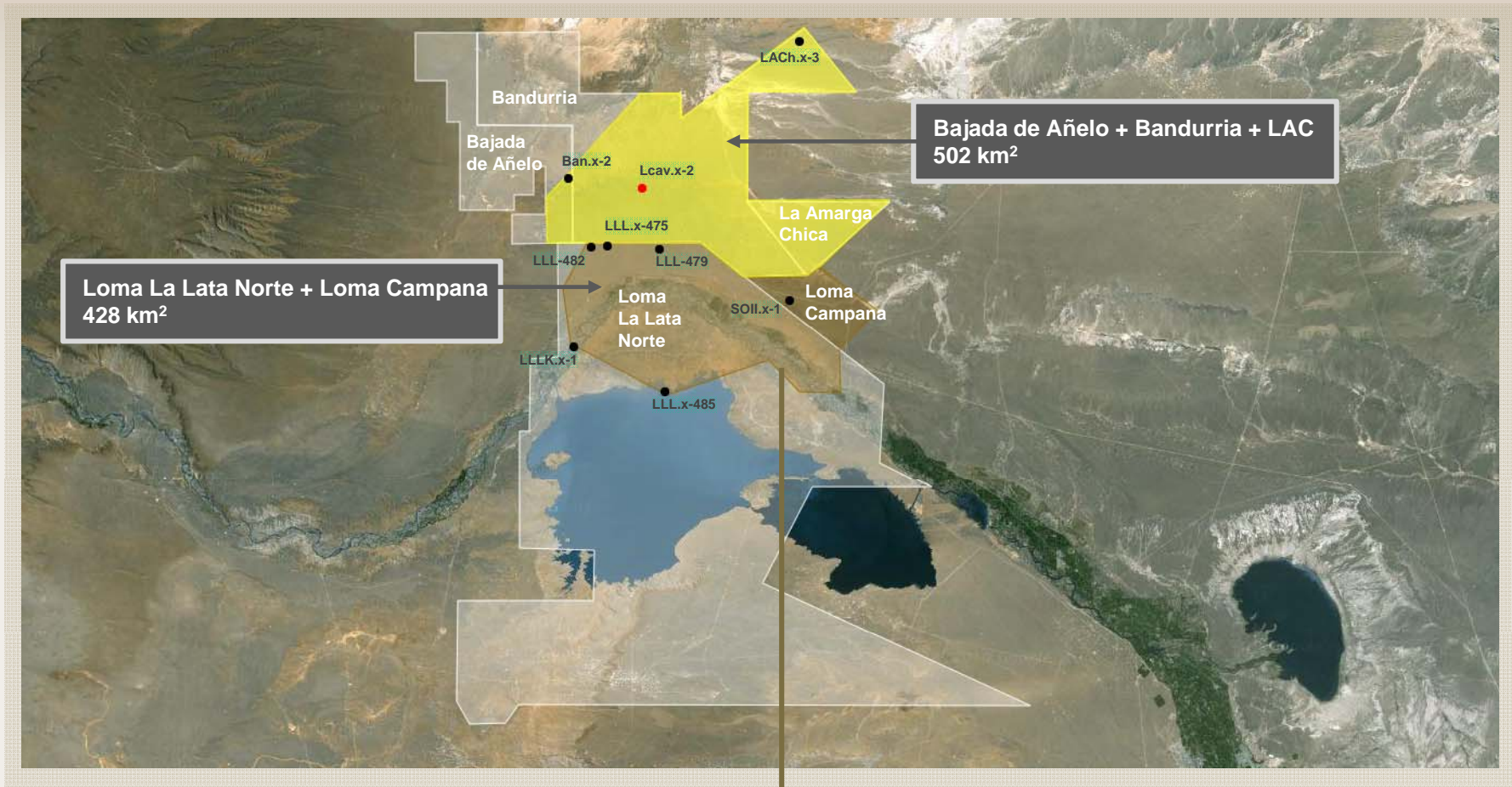
**UNFRACTURED WELL IN VACA MUERTA**



The comparison with Shale Plays in the USA shows Vaca Muerta to have very good properties

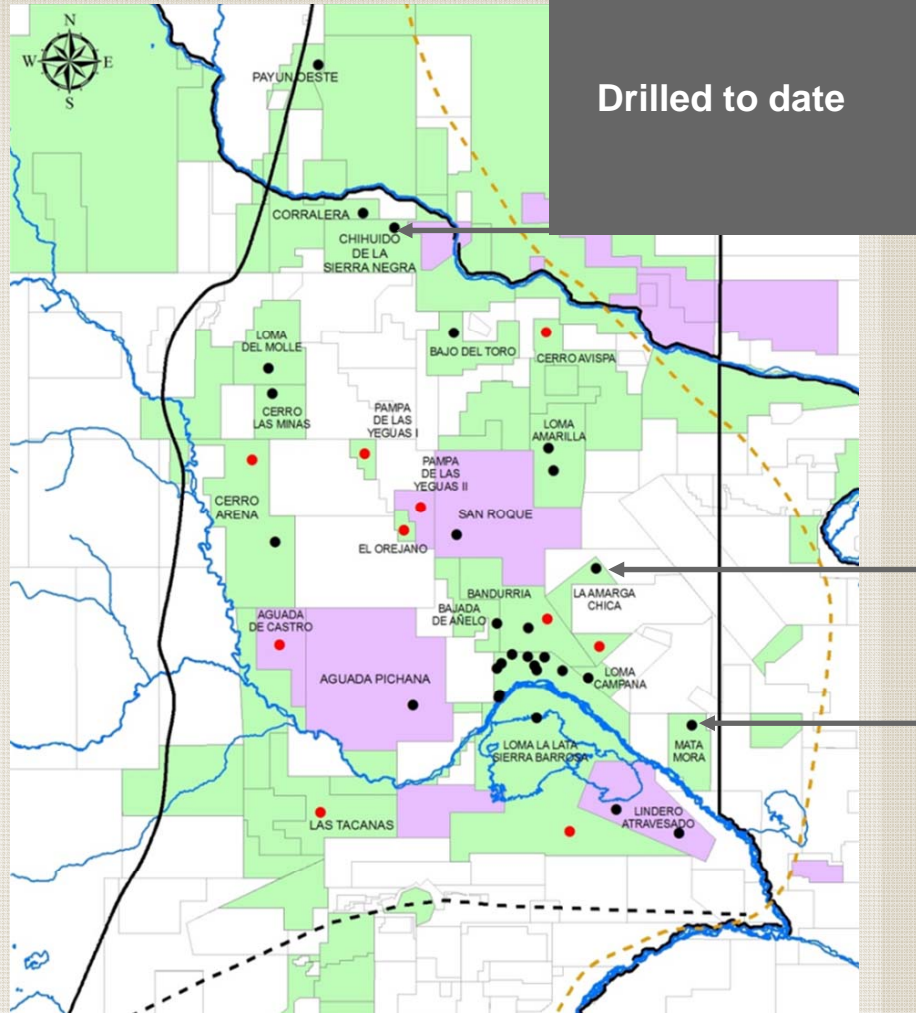


Vaca Muerta: High Quality Crude in over pressured conditions, and with high thickness



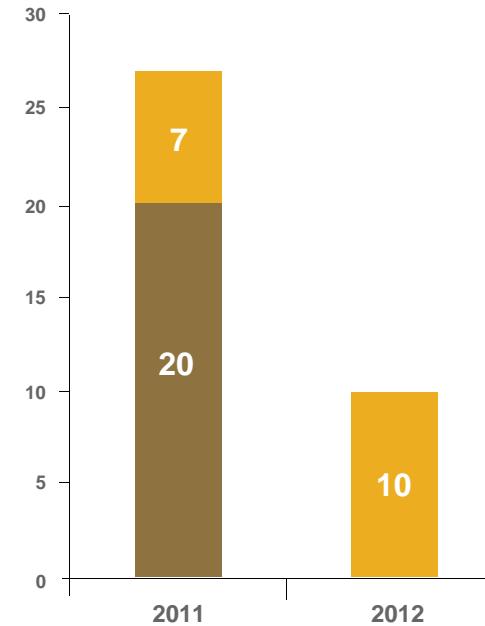
	Gross				Net			
	Surface (km2)	Oil (Mbbbls)	Gas (BCF)	BOE (Mboe)	Surface (km2)	Oil (Mbbbls)	Gas (BCF)	BOE (Mboe)
Loma La Lata Norte + Loma Campana	428	741	1040	927	428	741	1040	927





**Exploration plan**

2011-2012



■ Drilled  
■ To drill

The discovery of shale oil & gas in the USA has started a new cycle in the oil & gas industry and is changing the scenario for exploration activity in many countries throughout the world.

In Argentina, the discovery of Vaca Muerta shale and the data from the 15 vertical wells on production indicate that this shale has better properties than the principal productive shales in the USA.

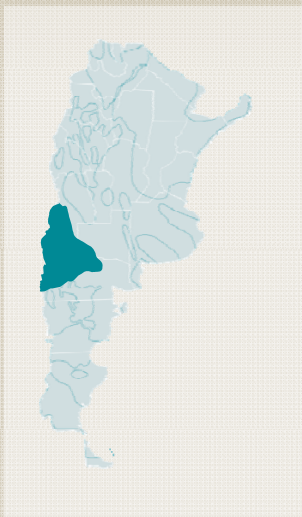
The results obtained to date confirm independent reports, which present Argentina as having great potential for shale Oil and gas and should allow Argentina to successfully repeat US Shale Gas and Oil experience.



**In Argentina, YPF is pioneer in unconventional oil exploration and development with the discovery of the Vaca Muerta Shale Oil Play**

**Results to date show the potential for high quality crude oil resource development in an area of 428 km<sup>2</sup> (105,000 acres) in Loma Campana and the North of Loma La Lata Blocks.**

**Based upon exploration activity undertaken by YPF, its partners and other companies in the Neuquen basin, the true potential of the Vaca Muerta Shale Oil & Gas Plays should be revealed within the next 18 months.**





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