

Argentina E&P

Past, Present, and Future



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APPEX 2018

Outline

- Why Argentina?
- A Long History
- Current E&P Activity
- Unconventionals
- 2018-2019 Offshore License Rounds
- 2017-2018 Spectrum 2D Multiclient Surveys
- Value proposition

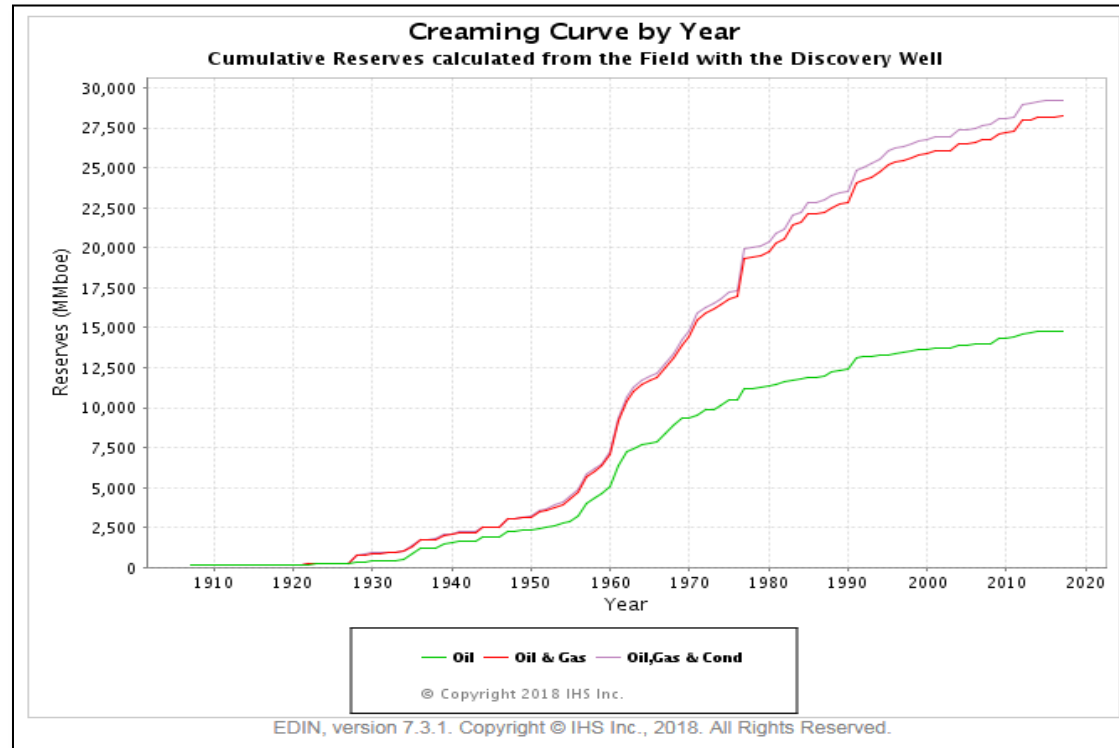
Why Argentina, why now?

- The 2014 petroleum law reform and the new government since December 2016 are big positives. Regulatory delays in importing equipment, causing high costs and low availability, and profit repatriation restrictions have been eliminated
- Oil and Natural Gas prices are among the highest in the world
- Best unconventional plays outside of North America so far
- Deepwater is rank frontier; analogous new play types are hugely successful in Brazil, Guyana, and West Africa
- The Malvinas and offshore Austral basins are underexplored with proven petroleum systems; virtually untested foldbelt play in moderate water depths
- Globally it's time for first movers into frontier exploration

A long history

- 1907- First oil discovered in the San Jorge Basin, Patagonia
 - 1922- Formation of the world's first state oil company, YPF
 - 5 producing basins- 1,248 fields and discoveries
 - Cumulative oil produced 10.7 Billion barrels
 - Cumulative gas produced 51.7 Tcf
 - Cumulative condensate produced 635 Million barrels
- 24.5 Billion boe
- More than 66,000 wells drilled. Currently producing 438,000 bo/d, 44,000 bc/d and 4.4 Bcf/d
 - 500+ Contract Blocks are currently active. 13 blocks are available for bid- 10 in the Neuquén, two in the Cuyo, and one in the Austral. Formal announcement for a Salta Province round is expected shortly

Cumulative reserves by year



Producing basins



Northwest Basins

364 Million barrels + 70 Bcf

Cuyo Basin

1.4 Billion barrels + 335 Bcf

Neuquén Basin

4.1 Billion barrels + 27.4 Tcf

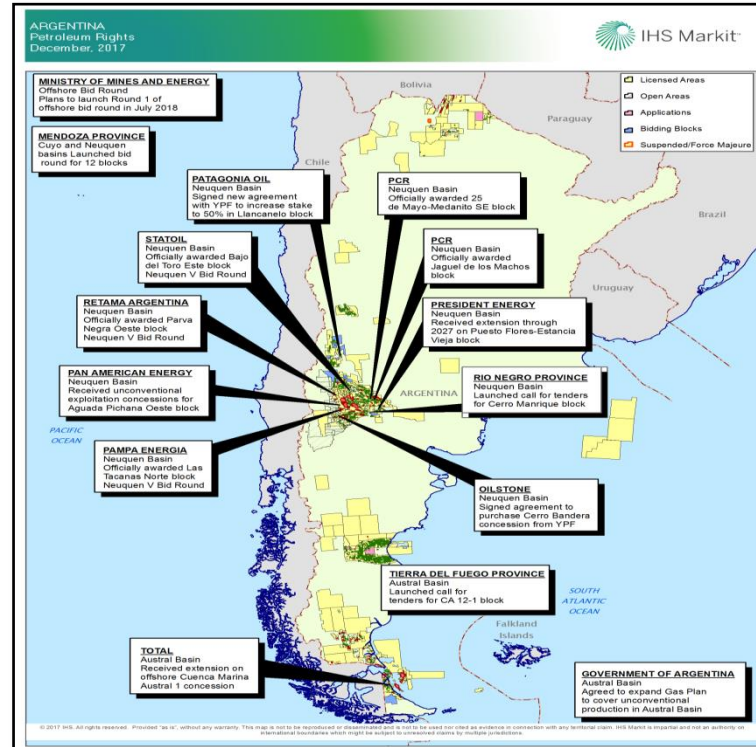
San Jorge Basin

4.8 Billion barrels + 5.5 Tcf

Austral Basin (Argentina only)

670 Million barrels + 11.6 Tcf

Current E&P Activity



The Players

Big boys

- Chevron
- ExxonMobil
- Shell
- Total
- Statoil
- Petronas

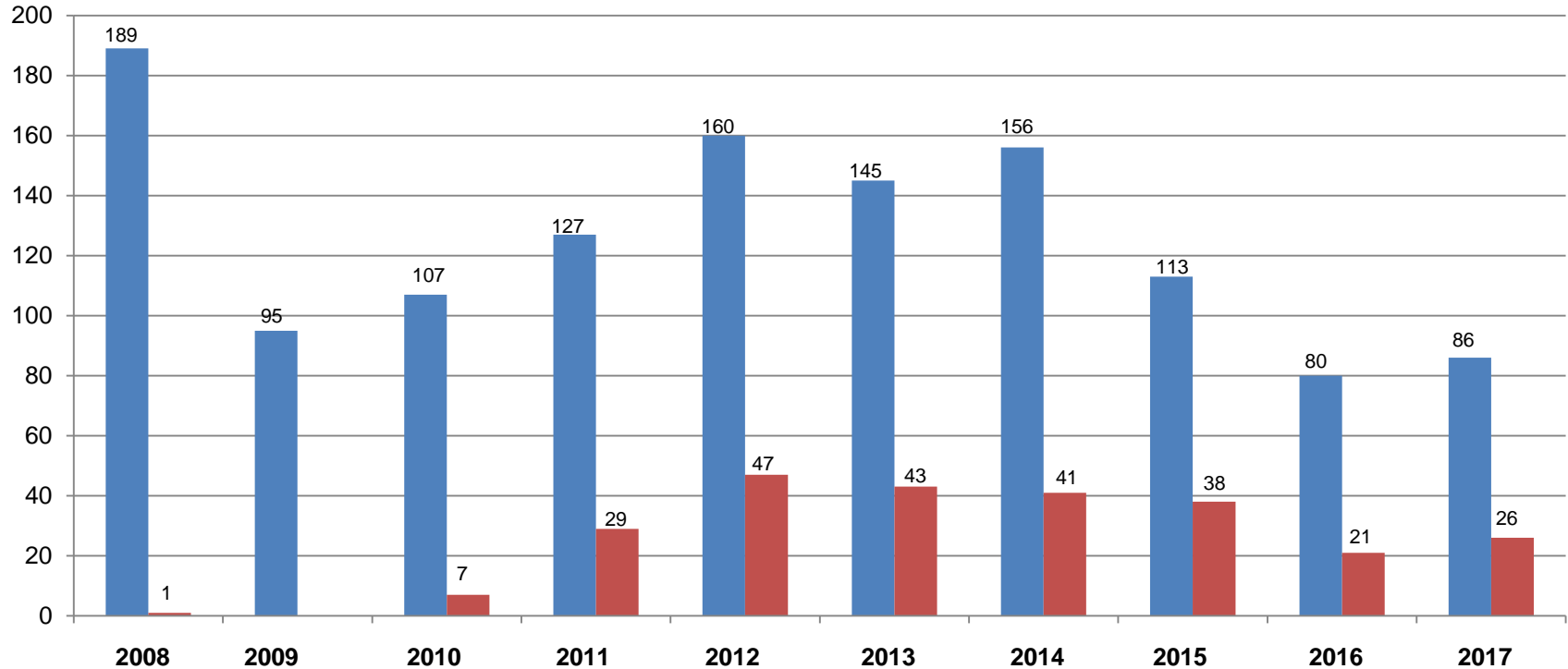
Locals

- YPF
- Pluspetrol
- Tecpetrol
- Pan American Energy
- Pampa Energia
- CGC
- CAPSA
- Roch

Indies

- Wintershall
- ENAP Sipetrol
- Andes Energia
- President Energy
- Energy Operations Argentina
- GeoPark
- PentaNova
- Retama
- Phoenix Global Resources
- Vista Oil & Gas

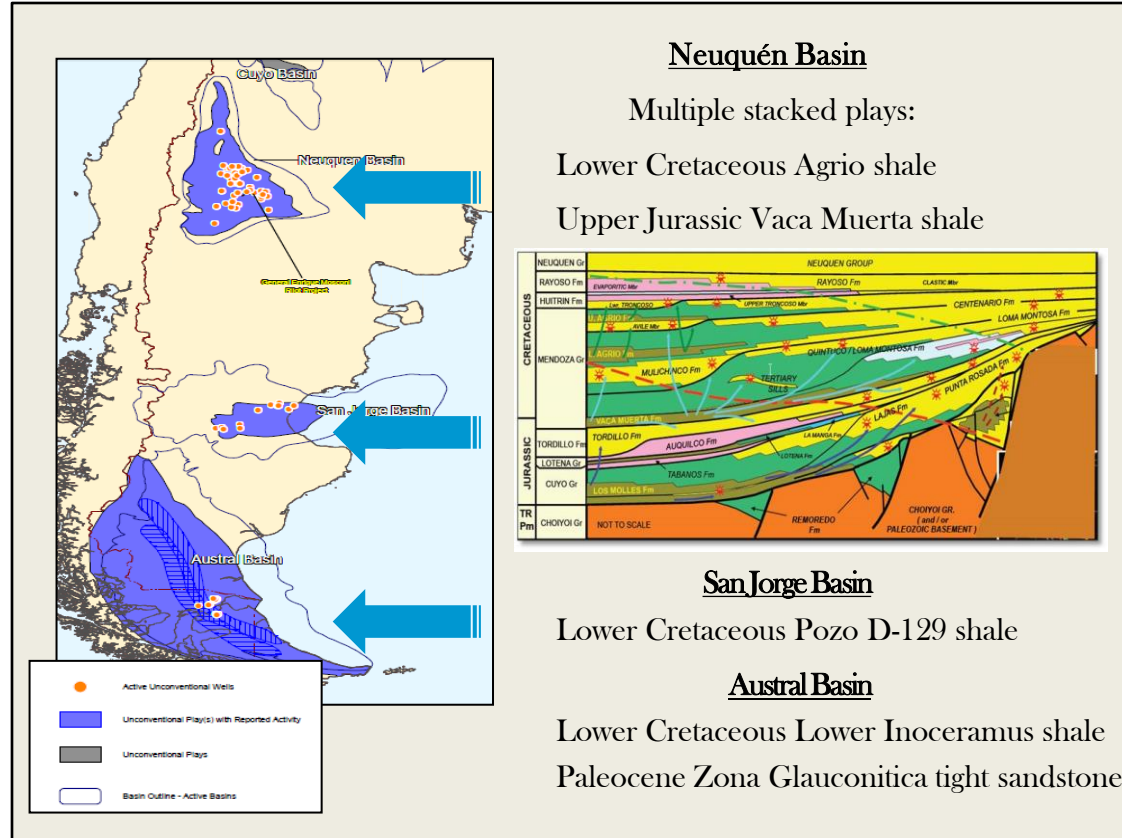
Exploratory drilling



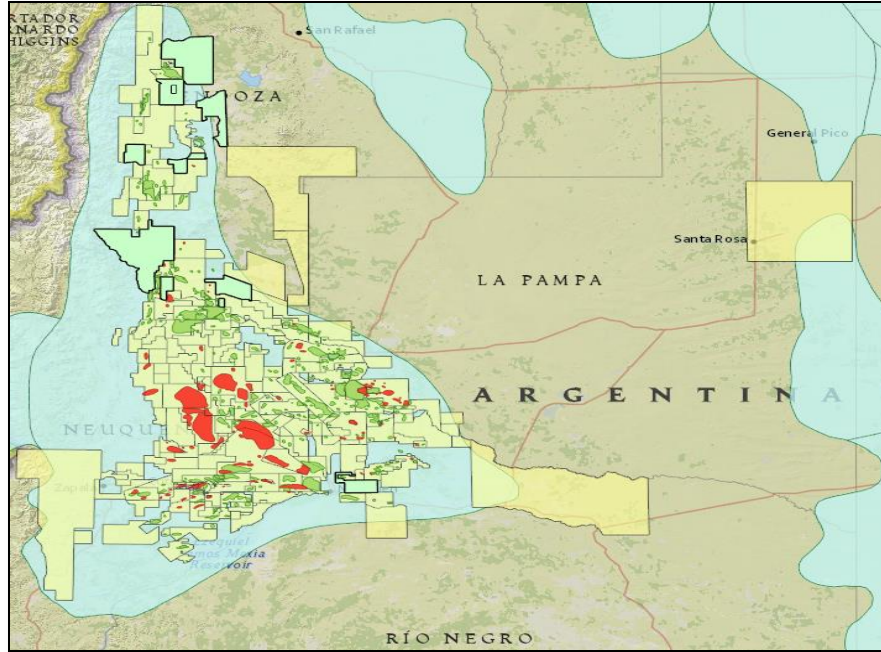
Recent E&P sector growth



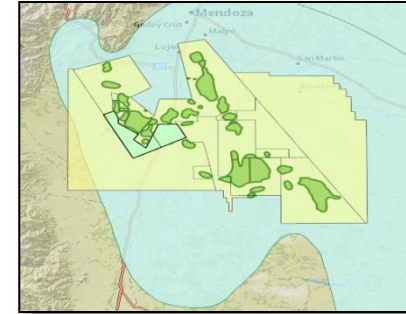
- EIA estimates unconventional shale gas resources of over 800 Tcfg
- A revival of mature basins- the focus is currently on the Vaca Muerta Formation in the Neuquén Basin, but the San Jorge, Cuyo, and Austral all have significant unconventional potential
- As of January 1 2018 ~86 wells drilling. 26 are unconventional; 23 of those are in the Neuquén and 3 are in the San Jorge
- Vaca Muerta production is ~42,000 bopd and 306,000 Mcfd from 777 wells
- Development has been constrained by a lack of capital



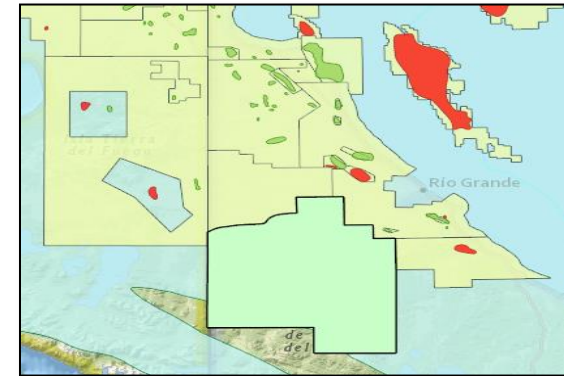
Onshore license round blocks



Neuquén

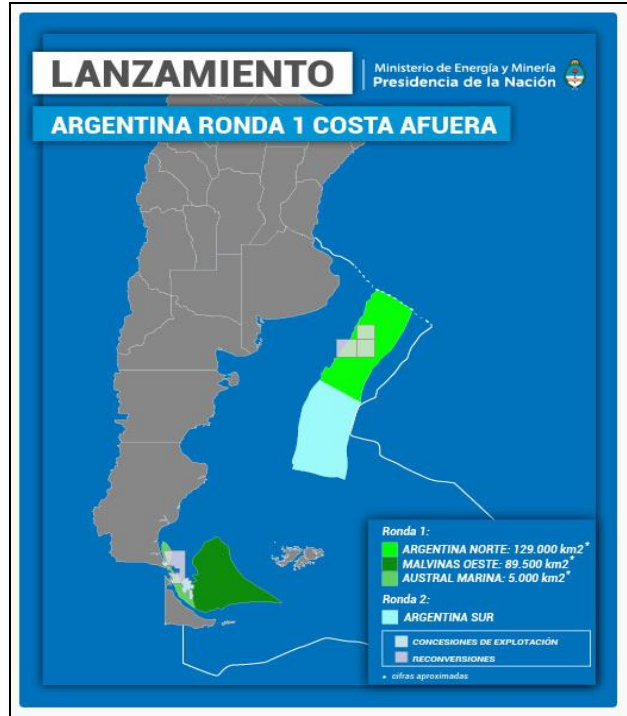


Cuyo



Austral

Offshore rounds launch

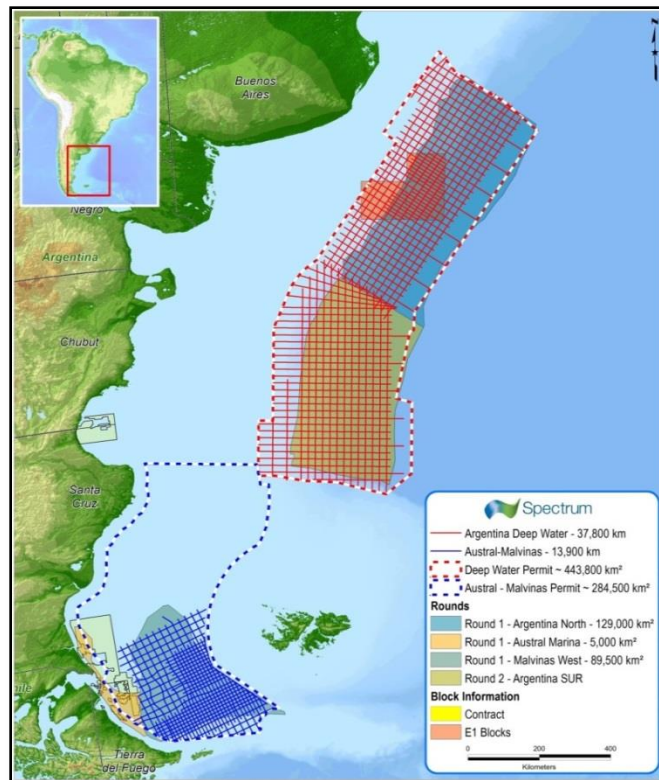


- Round 1 Austral-Malvinas
Open July 2018
Close November 2018
- Round 2 Northern deepwater
Open July 2018
Close November 2018
- Round 3 Southern deepwater
Open Q2 2019
Close Q4 2019

Offshore today

- Last exploration well drilled YPF Malvinas-1 2011
- Exploratory wells drilled 142 66% in San Jorge and Austral
- Northern margin wells 26 Last one 1997- all <110 meters water
- Exploration lease situation 1 Currently 'active' lease
- Deepwater wells drilled 3 All in the Malvinas Basin
- Producing basins 1 Austral

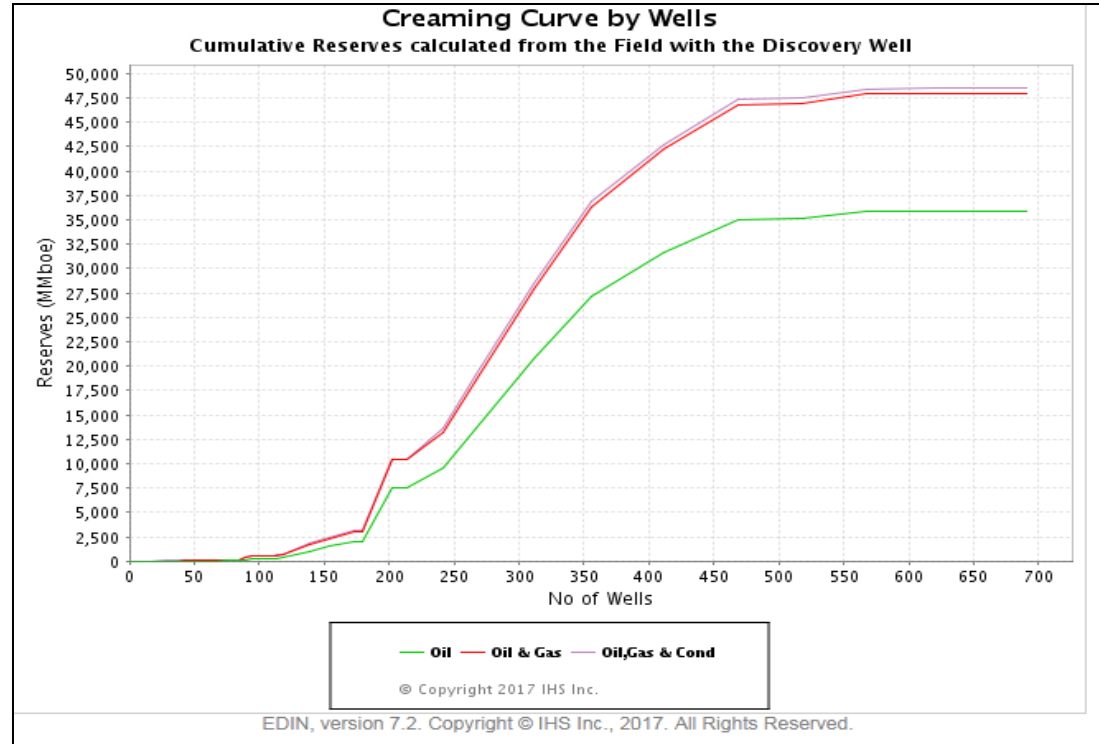
Spectrum 2017 MCS programs



Fiscal terms highlights

- Tax and Royalty contract
 - Corporate Income Tax rate currently 30%
 - Reducing to 25% in 2021
- Royalty 5-12%; Working Units bid
- 4 + 4 + 5 years Exploration and Development
 - 50% relinquishment after 2nd period
- 30 + 10 years Exploitation

Santos Basin 60 wells to first oil



Argentina value proposition

- Argentina is ready for business- world class unexplored acreage open this year
- Unconventional opportunities are available due to large capital requirements
- New technology is finally being used offshore. First regular grid of regional seismic using modern long streamer; PSTM and PSDM Broadband processing; Angle Stacks, Gathers, Gravity and Magnetics
- Northern margin- Oil in turbidite, basin floor fan and contourite plays outboard; horst and tilted fault blocks plus stratigraphic traps inboard
- Southern margin- Underexplored basins with proven petroleum systems and shallow to moderate water depths. A totally undrilled foldbelt with analogous plays being assessed and developed nearby

Muchas gracias!



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