Reservoir Management at Pluspetrol S.A.

Telmo Gerlero
Pluspetrol S.A.
86th ARPEL Experts Level Meeting (RANE) “Management of Reservoirs”
October 6-7, 2014 – Buenos Aires, Argentina

Agenda

✓ The Company, Expertise and History of its Evolution
✓ Production Growth, a parallelism with Company Evolution
✓ Operational Excellence: The Foundation for Reserves Progression
✓ Redesigning the Processes
✓ Maturity and Operations Cycle
✓ Human Resources

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Strong Presence in Latin America and Growing in Africa

- **Colombia**
  - Exploration in Llanos, Sinu-San Jacinto and Putumayo basins

- **Peru**
  - #1 oil and gas producer in the country
  - Largest operator in the Amazon
  - Responsible for the development of gas giant Camisea field
  - 2 exploration licences

- **Chile**
  - Non-operated interest in El Tranquilo block

- **Angola**
  - Operator of Cabinda South block
  - Partners: Sonangol, Force.
  - Castanha oil discovery already producing
  - Noz discovery under evaluation

- **Venezuela**
  - Operator of gas licenses: gas discovery in development phase (Tiznado block)
  - Entering Faja through acquisition of Harvest NFR

- **Bolivia**
  - 4 producing fields
  - Exporting gas to Argentina
  - Large exploration portfolio

- **Argentina**
  - 3rd oil producer in the country
  - 5th gas producer in the country
  - Well-positioned in both, Neuquina and Northwestern basins
  - Small interests in midstream and downstream

- **Chile**
  - Non-operated interest in El Tranquilo block

**History of Company Evolution**

- **Beginning**
- **80’s**
- **Focus on Argentina**
- **Early 90’s**
- **International Expansion**
- **Mid 90’s**
- **Mid 00’s**
- **00’s**
- **10 years in Peru**
- **Diversification in LatAm**
- **LatAm Cons., Africa Eval.**
- **Today**

**Evolution**
- 10 years in Peru
- International Expansion
- Focus on Argentina
- Mid 90’s
- Mid 00’s
- 00’s
- 10 years in Peru
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- LatAm Cons., Africa Eval.
- Today
Experience in Operating High Pressure Multi-TCF Gas Fields

Camisea Project (Peru)

- Gas Production
- Oil Production

Ramos Field (Argentina)

- Gas Production
- Oil Production

Reactivation of Marginal Fields and Operation in Remote Areas

Centenario (Argentina) – Production

- Production: 11.2 Mbbl/d
- Cumulative Production
- Remaining Reserves (2013)

Block 8 (Peru) – Reserves

- Initial Reserves (1996)
- Added by Pluspetrol
- Cumulative Production
- Remaining Reserves (2013)
**Expertise In Operations that Require Complex Logistics**

- **Argentina – North District**
  - Ramos Field

- **Peru – Camisea Project**
  - Block 88
  - Block 56

- **Peru – North Jungle**
  - Block 8
  - Block 1AB

- **Angola – Onshore Cabinda**
  - Cabinda South Block

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**Surfing the Knowledge Wave...**

**Chemical EOR Project Development**

- **EOR in-house multidisciplinary team**
- **Member of the CEOR JIP (University of Texas – Austin)**
- **Integration with external partners**
- **Technology implementation through field pilots**

- **El Corcobo (P/ASP)**
- **Centenario (SP)**
- **Chilacó (SP)**
- **Aguada Baguales (SP)**

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Interesting position for unconventional developments in the Neuquen Basin – Vaca Muerta

Pluspetrol’s position in Neuquen Basin

Unconventionals Overview

- Pluspetrol holds over 2.5 million acres in the Neuquen Basin
- Pluspetrol’s net acreage with shale potential is **352,000 acres**
- Our acreage position is diversified across different maturity windows
- We have recently acquired an important position through a deal with YPF regarding Apache’s assets

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Operated Production Growth, a parallelism with Company Evolution

- Production has continually been increasing in parallel with Company Growth
- Today’s operated production is slightly over half a million BOED
- Around 65% is Gas, 35% is related to associated condensate & LPG, light crude and heavy oil
Operational Excellence is the defined **Strategy** that will support Company Growth and Sustainability.

**Operational Excellence**

- Foundation for Operation Growth

- IMPACT ON:
  - Integrity and Safety
  - Production Efficiency
  - Reserves Replacement
  - Operation Costs
  - Capital Productivity
  - Operational License
Reservoir Management & Reserves Progression

The Mission

To assure company sustainability through constant reserve replacement and opportunities progression

(3C) → P3 → P2 → P1

Core processes helped defining key roles and accountabilities
Motivated multidisciplinary, multifunctional team working environment
Established a common language
Integrated all main areas involved in the value chain from Exploration through Production
Reservoir Management Processes
Company Resources & Reserves

Reserves Progression & Reservoir Management

- Progress reserves and resources based on a deep understanding of reservoir models and their uncertainties
- Identify new opportunities and convert them into feasible projects (PROA)
- Design surveillance plans and pilots projects to reduce reservoir uncertainties
- Generate integrated long term depletion scenarios (DP) that include all ongoing and new development projects
- Consolidate processes outputs into a clear reserve & resource company position

PROA: Progression of Opportunities Administration

- Generate new development opportunities
- Perform feasibility studies
- Execute, monitor and evaluate URP

Planning for Reservoir Depletion...
Not a Synonym of Declining

- Represents an integrated platform that provides complete development scenarios and uncertainties to support decision making
- Contains developed forecasts, current scenarios and new projects from PROA
- Assures execution and consensus through a decision gate composed by first line managers
How Mature Our Operations are

- A diversified asset portfolio including different maturity stages
- Supports company’s sustainability through resources and reserves progression
- Acquisitions in the first half of the maturity curve help balancing company portfolio

Human Resources... the Capital for this Endeavor

- HR are one of the foundations for Operational Excellence
- External context is demanding... internal one is challenging
- Hiring, developing and retaining HR are crucial for company sustainability
- Benchmarking of professional skills and retention policies
- Top-growth companies have higher technical headcount
An important gap for middle-aged professionals

Gap could impact on company’s expertise and/or leadership

Need to classify technical skills and identify gaps by seniority and areas of work

Develop a program to strengthen technical careers

It’s important to have well-defined processes and its implementation can be challenging

There’s a need for interdisciplinary work

Implementation of processes drive opportunities progression through discipline integration and systematic approach

Knowledge spread to different geographies

Importance of corporation quality standards

The important role of HR strategy

New technologies