Pioneering **DrillPlan** Adoption in Latin America for Well Construction Planning in Large Oil Field in Peru

Manuel Pablo Zúñiga-Pflücker
PetroTal Corp, President and CEO

*September 18, 2019*
AGENDA

○ PetroTal’s Mission - Unlocking and Creating Value
○ Bretaña Field Overview
○ Well Design Challenges
○ DrillPlan Workflows and Added Value
○ Our Digital Journey
○ Results and Conclusions
**Company Overview**
- London AIM and TSX-V listed Peruvian oil company
- Strong balance sheet with no debt, crude prices off Brent, favourable fiscal regime

**Significant Progress to Date**
- Achieved first production at Bretaña oil field in June 2018, under budget and ahead of schedule
- Currently producing ~5,000 BOPD
- Low cost with target plateau of >10,000 BOPD
- Currently drilling BN-4H (horizontal) well

**Substantial Upside Potential**
- Block 95 – Bretaña Field with 330 MMBO of OOIP
- Potential to increase 2P recovery factor to 24%
- Block 107 - five leads and prospects that have an unrisked high estimate of prospective resources of 4.6 billion barrels of oil

**Management Experience**
- Management and technical team with in-depth expertise and proven track record in Peru
BRETAÑA DEVELOPMENT PLAN

- Bretaña is a 10,000-acre oil field with 330 MMBO of 2P OOIP
- 2P reserves of ~40 MMBO assumes a 12% Recovery Factor
- The highly permeable Vivian oil reservoir is supported by a strong aquifer
- To maximize oil recoveries, we plan to develop the field with:
  - horizontal oil wells completed with ESPs capable of producing 10,000 bfpd each
  - 20 horizontal oil wells should then produce 200,000 BFPD
  - hence, at a 10% oil cut, Bretaña should produce ~20,000 BOPD

EXISING:
- 1XDST, 2XD, 3D, BN1
- 2WD

PROVED:
- 8 NEW HORIZ. PRODUCERS
- 2 NEW WD

PROBABLE:
- 3 NEW HORIZ. PRODUCERS
- 1 NEW WD

POSSIBLE:
- 8 NEW HORIZ. PRODUCERS
- 2 NEW WD

3P TOTAL
- 23 PRODUCERS
- 6 WD

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GROWING PRODUCTION FASTER WITH NEW HORIZONTAL WELLS

Bretaña Oil Field Production, since June 1, 2018

Data as of September 11, 2019
COMMITTED TO DEVELOPING THE COMMUNITIES WE SERVE

CSR Team Engaged with Local Communities
- In Block 95 at Breñañ with 2,000 inhabitants, as well as the 18 communities of the Puinahua District
- In Block 107 with the indigenous Ashaninka and Yanesha ethnic groups, as well as foreign settlers

Investments in Sensitive Areas
- Pacaya-Samiria National Reserve
- San Martín–San Carlos Forest Reserve
- Oxapampa-Ashaninka-Yanesha Biosphere Reserve

Rebuilding Identity of Indigenous Communities
- Promoting processes to rebuild their identity
- Strengthening indigenous organizations
- Working with a network of NGOs, producers, and local and central government organizations

Our Strategy
- Sustainability of the projects based on strategic relationships with the local population and NGOs
- Being active members of the committees that manage the reserved or protected areas
- Having a team with experience working in sensitive areas while caring for the environment
- To be recognized as a conscious user of the land that is committed to and respected for contributing to local development

Four Pillars of CSR: Commitment to Employees, Communities, Environment, and Ethics
Rig drilling under the Puinahua Channel below the Pacaya-Samiria National Reserve
DRILLING CAMPAIGN WELL PROFILES

○ 4-section horizontal wells (~10)
  ○ With and w/o pilot hole
  ○ Completed with 4-1/2” Liner+Screen+AICD
  ○ Targeting Vivian sand reservoir

○ Production driven by ESP

○ 2 deviated Water Disposal wells
PETROTAL WELL DESIGN CHALLENGES

- Faster and collaborative drilling programs
- Integration with offset well data and events
- Evaluation of alternative scenarios and impact
- Service company programs integration
- Engineering design and validation

Organizational
Technical
## INTEGRATION AND MANAGEMENT OF DRILLING PROGRAM

- Assignment of owners and deadlines
- Place holders for service company programs
- Inputs available for all the team

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<th>Responsible</th>
<th>Deliverable</th>
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*Service company representatives*
COLLABORATIVE PROGRAMS

- DrillPlan allows creation of standard deliverables
- Inputs of different users will feed the program

**TYPE DEFINITION**

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<th>Task type</th>
<th>Custom Formation Evaluation</th>
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**DELIVERABLE**

- **File**: Programa_Evaluacion_Filled.xlsx

Template available for geologist to fill in formation evaluation requirements

Deliverable can be automatically inserted in drilling program

Faster and collaborative drilling programs
CONNECTED ENGINEERING TOOLS

- Drilling engineer can now validate the casing design and other workflows.
Trajectories can be visualized in 2D/3D and in geological context with surfaces imported from *Petrel.

Offset data was imported from third party repositories.
INTEGRATION OF GEOMECHANICS, TRAJECTORY AND RISK

- Carried out a geomechanics study for upcoming HZ well
- Shared 1D MEM from Techlog to DrillPlan
  - Data immediately available for other workflows and trajectory risk evaluation

Evaluation of alternative scenarios and impact
DRILLPLAN ADDED VALUE

- Customized program template to be applied in future wells
- Engineering tools available for the drilling engineer
- Focal point and place holder for service company programs
- Rapid validation of preliminary designs prior execution
- Offset well data integration to support the drilling program
PETROTAL STARTS A DIGITAL JOURNEY

- First DELFI adopter in Latin America
- Access to Petrotechnical Suite in DELFI through 2 domain profiles
  - Increased business agility
- Currently using cloud-based drilling activity reporting system
RESULTS AND CONCLUSIONS

- Offset well data was ingested from 2 different data repositories to support planning

- Service company programs were integrated, and engineering validated in DrillPlan for upcoming horizontal well

- Potential time saving for future well designs as ~70% of content and structure can be re-used (copy basis of design)

- DrillPlan allows efficiency in program preparation and management for reduced drilling team