Intelligent Completions Improves Economics of Brazilian Pre-Salt Development

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Intelligent Completion

Remote monitoring and control throughout the life of the field with no mechanical intervention.

• Optimization
  • Production / injection
  • Reservoir management
Using Intelligent Completions to improve economics...

• Reduce Asset life CAPEX & OPEX
• Mitigate reservoir uncertainty
• Manage water/gas distribution
• Accelerate production
• Increase recovery

Pre-Salt Uncertainties

- Complex behavior
- High flow rates
- Variable GOR
- High CO₂ and H₂S
- Flow assurance

Mitigation Plan

- High material grade (SDSS or higher)
- Early plan for Intelligent Completions
- Standard well designs (3 designs)
- Large volume contracts
- Very informed user
Notable Results

Figure 10 — Mean time for completion in Lula and Sapinhoá Fields.
Strategy for Pre-Salt

Source: OTC 174725-MS
**HighLights**

- Good Track Records (80% of total IC installed)
- Zero Equipment failures
- 95% Local personnel
- Focus on Service Quality (API Q2) 99.8% Efficiency

**Lowlights**

- Barriers for new technologies
- Restrictions to different well designs
- No leverage on performance
- Restricted ability to overcome new challenges
Trends

• Closed loop digital oilfield solution
• Single well control system (All electric or hybrid?)
• Higher density of sensing technologies
  • Array sensing
  • Pushing P&T into reservoir
  • Downhole multiphase flow meter
• Advanced well design
  • Autonomous ICDs
  • Disconnect system
  • Open-hole Completions
  • Higher density of zones (3+ zones in DW)
  • Remotely actuated devices (wireless)
Conclusion

Intelligent Completion technology improved economics of Brazilian pre-salt:

• CAPEX reduction through optimized design and reduced installation time
• Small difference in installation time compared to conventional designs
• Accelerated production with high productive wells
• Highly reliable equipment and installation services
• Early to prove expected benefits for improved oil recovery
• Difficult to implement change in the standard designs
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