Accelerating Greenfield Development with Business Innovation and Domain Integration

Graciete Sungua
Head of Reservoir Department, Sonangol P&P
Agenda

• Project Objectives

• Execution Strategy

• Domain Integration

• Field Development – Execution

• Collaboration and Way Forward
Background and Objectives

Block 4 - Located at the Southern Margin of Lower Congo Basin
Deep Water – 650-750m

Gimboa- Brown Field
- Declining Production from 30K bbl/d to < 4K bbl/d
- High Water Production
- Increased OPEX cost
- Under-utilized FPSO

UM6/UM7- Green Field
- Potential of Incremental production of 25-35K bbl/d
- Economically Challenging
  - Traditionally High Field Layout Cost
  - High Flowline and Infrastructure Cost
  - Complex Field- Subsurface Reservoirs

Sonangol Challenges:
- Extend life of Block-4- Declining Plateau in Gimboa
- Rejuvenate the field to enhance field production to support Angola drive to maximize production
- Lack of Economical field Development Plan for UM6/UM7
Execution Strategy - Engagement

**Phase-1 - Sub Surface Study**
- **Static Modeling**
- **Dynamic Modeling**
- **Surface Integration**
  - Sept, 2020 – May, 2021
- **Design of Scope**
- **Joint Team Collaboration**
- Training - 6 Participants
- Loc: Abu Dhabi Hub
- Reservoir Characterization Study

**Phase-2 - Surface Integration/SoR**
- **Surface Integration**
- **Detailed Economical FDP**
- **SoR Document for FID**
- **Integration between Stakeholders**
- **Project Execution Plan**
- **Additional Integration Scope**
- **Project SoR Advisor**
- **Stakeholders Reviews**
  - (Aker, SAIPAM, Sonangol)

**Post FID**
- **Contract Awards**
- **Execution**
- **Rig**
- **Subsea Architecture**
- **Wellhead and Xmas Tree**
- **Drilling Services**
- **Completions**
- **Wireline**
- **Field Execution**
- **Drill - 4 - 6 Wells**

**Think Digital**
- **FDPlan - Case Study Executed**
- **DrillPlan - Pilot - Planned**
- **DrillPlan - DrillOps Facility Planner Agora - Planned**
Multi Domain Integration

- Petrophysical Evaluation
- Dynamic Reservoir Modeling and Development Plan
- Seismic Interpretation/Inversion
- Complex Geological Model
- Geomechanical Modeling
- Life of Field Flow Assurance
- Flow Scheme Design
- Field Layout
Joint Integrated Team

- 6 Sonangol Participants in Abu Dhabi Hub Focused Execution
- Multidomain SLB Team- Lead by Advisors
Field Layout Options - Optimized Development Plan

- **Initial Case**
  - Two Drill Centres - 3 wells each

- **Optimized Case**
  - Two Drill Centres – 5 wells in total
  - Remote Injector from South Drill Center

- **Key Achievements**
  - Reduction of drilling MD ~ 3.6Km,
  - ~ 25 Million USD Saving
  - Reduction of Flowline size from 10" to 8"
    - Reduction on facility cost
  - Optimization of GasLift requirements
    - No or minimum GL
    - Reduction in Facility and Opex Cost

**Initial Field Layout**

**Optimized Field Layout ( < 3.6km)**
• Expected production around 30 MMbbls.
• Combining Gimboa, UM6 & 7 resulted on Total Field Cumulative Oil Production of 62 MMbbls.
Field Potential Incremental Outlook

- Incremental Production of 47 MMbbl
- Extending block life by 5-7 Years till 2032
Collaboration and Way Forward

- Knowledge Transfer - Local Content
- 2 x SPE Papers – SPE 202827/ SPE 202677
Thank you to the Sonangol Management, Technical Team, Schlumberger Management, Technical Team and Hub Advisors

Q&A