New Type of Successful Collaboration to Deliver Deep Water Gas Development in Equatorial Guinea

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Agenda

1. Fortuna Field and Development Background
2. Ophir Energy Contracting Strategy and Drivers
3. McDermott and GE Coming Together for FEED Competition
4. Building Consortium
5. Competition Phases: Concept Selection, Detailed FEED
6. Lessons Learnt and Future for the McDermott & GE Approach
Fortuna Field and Development Background

Block R, Equatorial Guinea

Fortuna sits within the Block R licence, offshore Equatorial Guinea which is located in the south-eastern part of the prolific Niger Delta complex. Ophir 80% operated interest1, GEPetrol 20%.

JOINT OPERATING COMPANY KEY METRIC

- Ophir capex to first gas: $150 million (20% of equity funding)
- Ophir equity in JOC: 33.8%
- Total project capex to first gas: c.$2 billion ($450-500 million upstream and $1.5 billion midstream)
- Total estimated project cash flow per annum (@FOB $6/mmbtu): c.$420 million gross, post debt, c.$140 million net to Ophir, post debt
- Annual production: 2.2 - 2.5 mmtpa
- Ophir’s expected 2P reserve additions: 115 mmbce
- Total resource monetised: 2.6 TCF
- Ophir’s expected production: c. 16,000 boepd

1 At final investment decision the Joint Operating Company will own Ophir’s share of the Block R licence and the Gandria LNG vessel
Fortuna Field and Development Background

- **Upstream development:**
  - 17 development wells over four phases.

- **Phase 1:** four wells will be drilled pre-first gas in 2020

- A minimum of two wells are required to achieve the 2.2 mmtpa plateau.

- **First production wells:**
  - In the Fortuna and Viscata reservoirs.
  - Simple well competitions and tie-backs.

- **Gas will be produced from these wells via gathering flowlines, manifolds and risers to an external turret of the FLNG facility.**
Ophir Contracting Strategy and Drivers

midstream

Downstream

Subsurface & Reservoir

Upstream

Overarching requirements: Safety & Reliability

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Phase 1 Capex reduction to increase ROI & investor confidence

1st Gas delivery 1H'20 key for investors confidence.

Multiphase project requiring long term certainty in investment

Profitability – Rate of ROI

Why Driver is important to OPHIR

#1 Gas delivery 1H'20 key for investors confidence.
McDermott and GE coming together for FEED ITT

Previous Combined Experience on:
• Inpex Ichthys LNG Project
• Chevron Gorgon
• ONGC Vashishta

McDermott for SURF:
• Design of flowlines, PLETs, risers and umbilicals;
• Installation of SPS and SURF equipment;
• Pre-commissioning and Commissioning Support.

Ophir Fortuna FEED Project
• Collaborative Working
• Project Controls across SPS/SURF
• Integrated Project Schedule
• Common Quality Plan
• Interface Management
• Common Sourcing / Logistics Strategy

GE for SPS equipment:
• Wellheads
• Xtrees
• Manifold
• Controls equipment Topside & Subsea
• Life of Field Service Contract.
Benefits to Ophir:
- Written commitment from MDR & GE within the Pre-Qualification to formalise our partnership across Phase 1 & 2

Benefits to Ophir:
- One integrated FEED Project Execution team
- One face and point of contact to client
- Exclusive cooperation agreement between MDR & GE
- MDR-GE Agree to joint and several liability
- First step towards closer alliance > consortium

**MOU**

Ophir Energy UK

MOU included in Pre-Qual

GE O&G UK Ltd

McDermott UK

**FEED Phase**

Cooperation Agreement

Ophir Energy UK

Prime Contract
Both parties as signatories

Integrated Project Team

GE O&G UK Ltd (SPS)

Cooperation Agreement

McDermott UK (SURF)

**Project Charter – common aim for success**
**Competition Phases: Concept Selection**

- **WK 1**: Review Basis of Design
  - Identify feasible field layouts given BOD guidance and constraints

- **WK 2 to 3**: 12 field layouts -> 6
  - Technically evaluate and rank layouts vs client value drivers

- **WK 4**: 6 (Rigid) + 6 (Flex Options)
  - Client intermediate update + Iterative technical, commercial and T&I sanity check of front-runner concepts

- **WK 5 to 7**: 6 (Rigid) + 6 (Flex Options)
  - Consortium Design Review, RAM and Mini-Operation Risk Workshop

- **WK 8**: Concept Recommendation to client for detail engineering during FEED Phase

**Continuous engagement with Company on-site engineer throughout concept phase**
Main FEED Objectives:
- Maturity of Technical Solution
- Preliminary Class 3 Cost Estimate
- Lump Sum Tender Proposal

FEED Outcomes:
- Collaborative ideas
- Quick to assess
  - SME’s co-located
- Client presence
  - Provided unique opportunities

Key Success Factors:
- All commitments met on time
- Finalised List of Deliverables
- FEED Level 3 Execution Schedule
Lessons Learnt and Future of the McDermott and GE Approach

Lessons Learned
+ Delegation of Authority Matrix – key document
+ Clear scope split “who provides what”
+ Value drivers alignment and attention
+ Sticking to 8 week plan
- More interaction with Midstream could have been beneficial
  • Design protection and retaining the competitive process.

Benefits
+ SPS and SURF interfaces cleared in the FEED, this will ease the execution in the development phase
+ Fine tuned to customer requirements and competent solution based on existing in house technology
+ Competence in schedule, integrated supply chain, defined ownership
+ Reduction of Concept Development to EPCI Award Ready – all within 1 Year
**Ready for Project Execution Phase**

**Detailed Engineering**
- Defined Solution
- Specifications Aligned
- Project Requirements Set
- Transition to Project Team

**Delivery and Installation**
- Clear Execution Plan by Aligned Team
- Integrated Schedule
- Known Interfaces
- Defined Ownership
- Team Effort
- Shared Responsibility to Deliver

**CUSTOMER BENEFIT**
- Confidence in Hardware Solution
- Confidence in Integrated Schedule
- Minimised Interface Management
- Integrated Approach with Supply
References


Slide 4: https://www.ophir-energy.com/fortuna-flng/development-plan/

Slides 5 -11:
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