

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

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Agenda

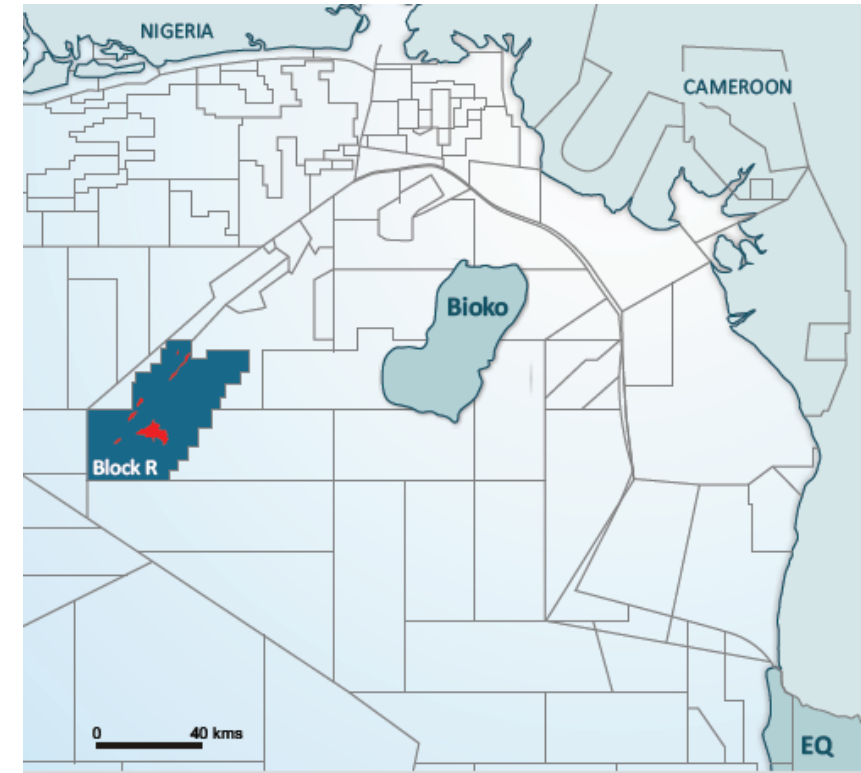
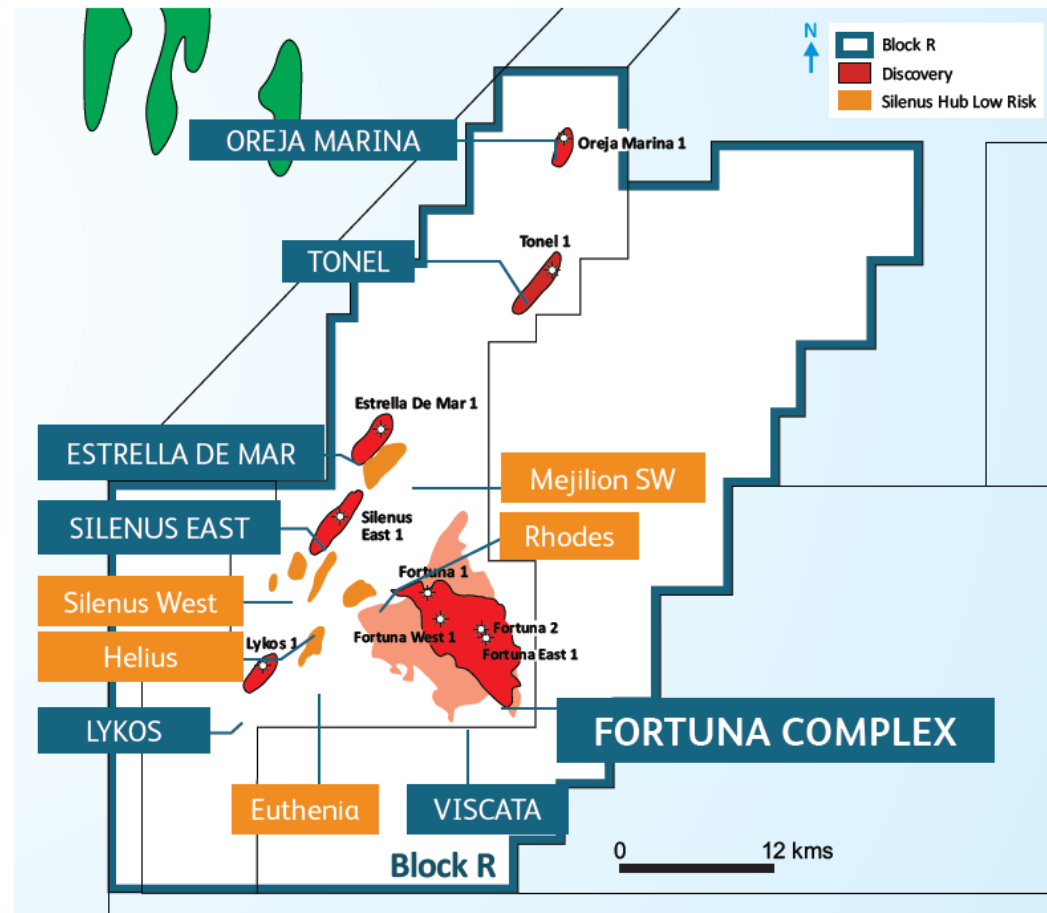
1. Fortuna Field and Development Background
2. Ophir Energy Contracting Strategy and Drivers
3. McDermott and GE Coming Together for FEED Competition
4. Building Consortium
5. Competition Phases: Concept Selection, Detailed FEED
6. Lessons Learnt and Future for the McDermott & GE Approach



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

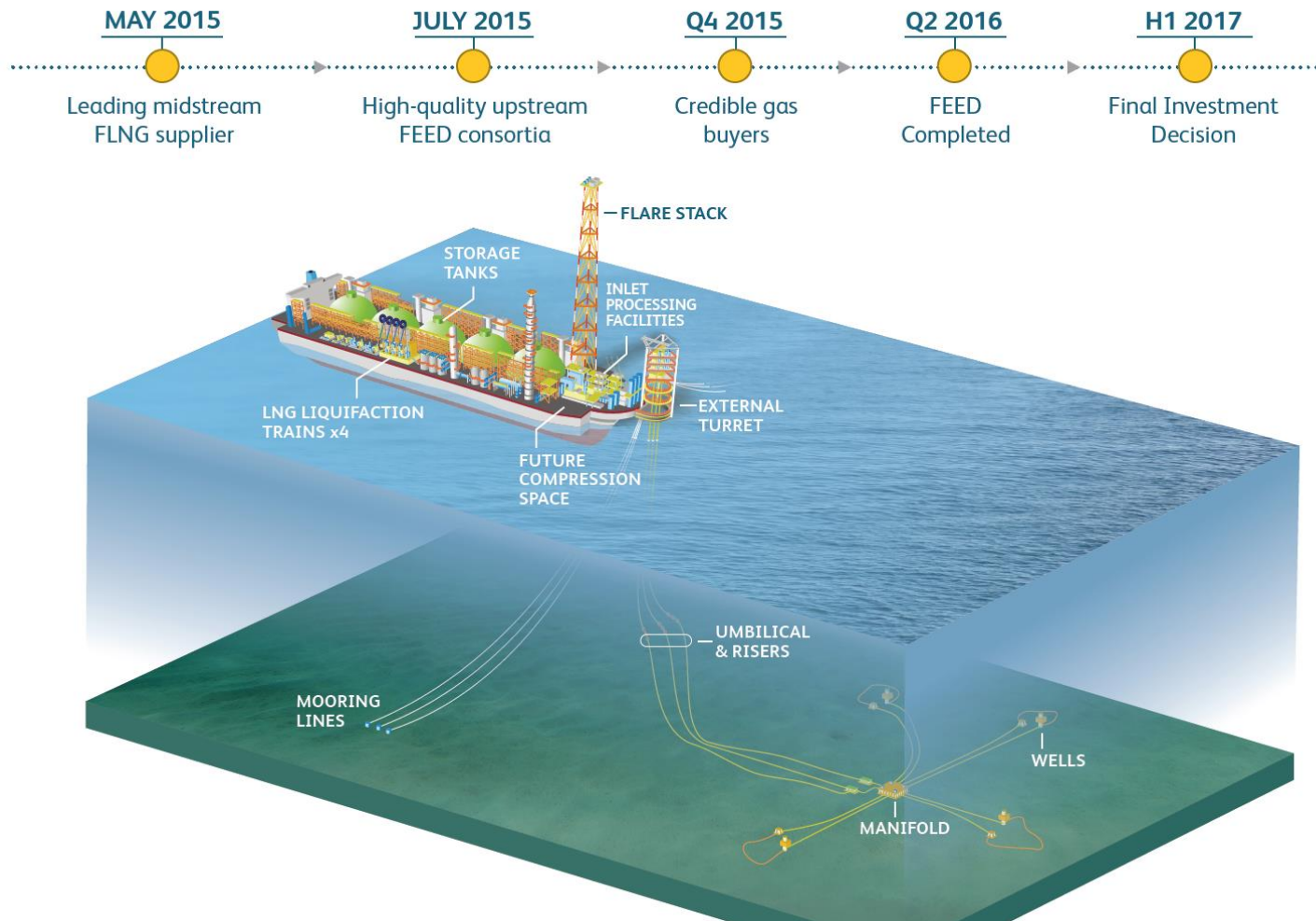
Ophir capex to first gas	\$150 million (20 % of equity funding)
Ophir equity in JOC	33.8%
Total project capex to first gas	c.\$2 billion (\$450-500 million upstream and \$1.5 billion midstream)
Total estimated project cash flow per annum (@FOB \$6/mmbtu)	c.\$420 million gross, post debt c.\$140 million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

¹At 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

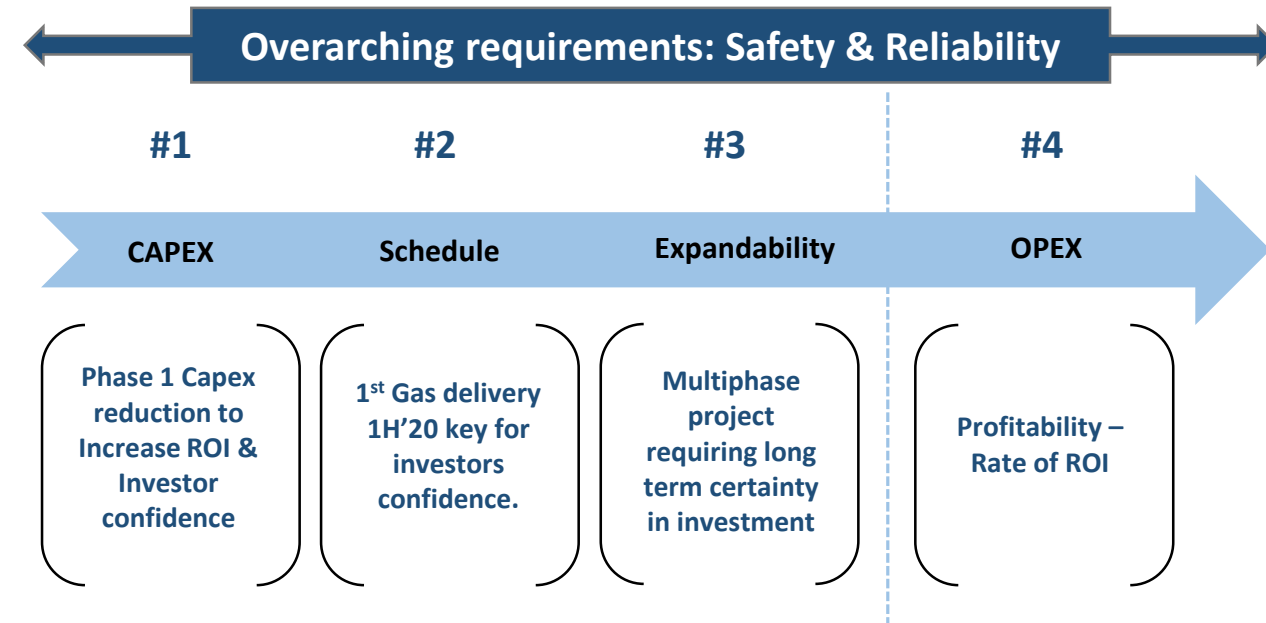
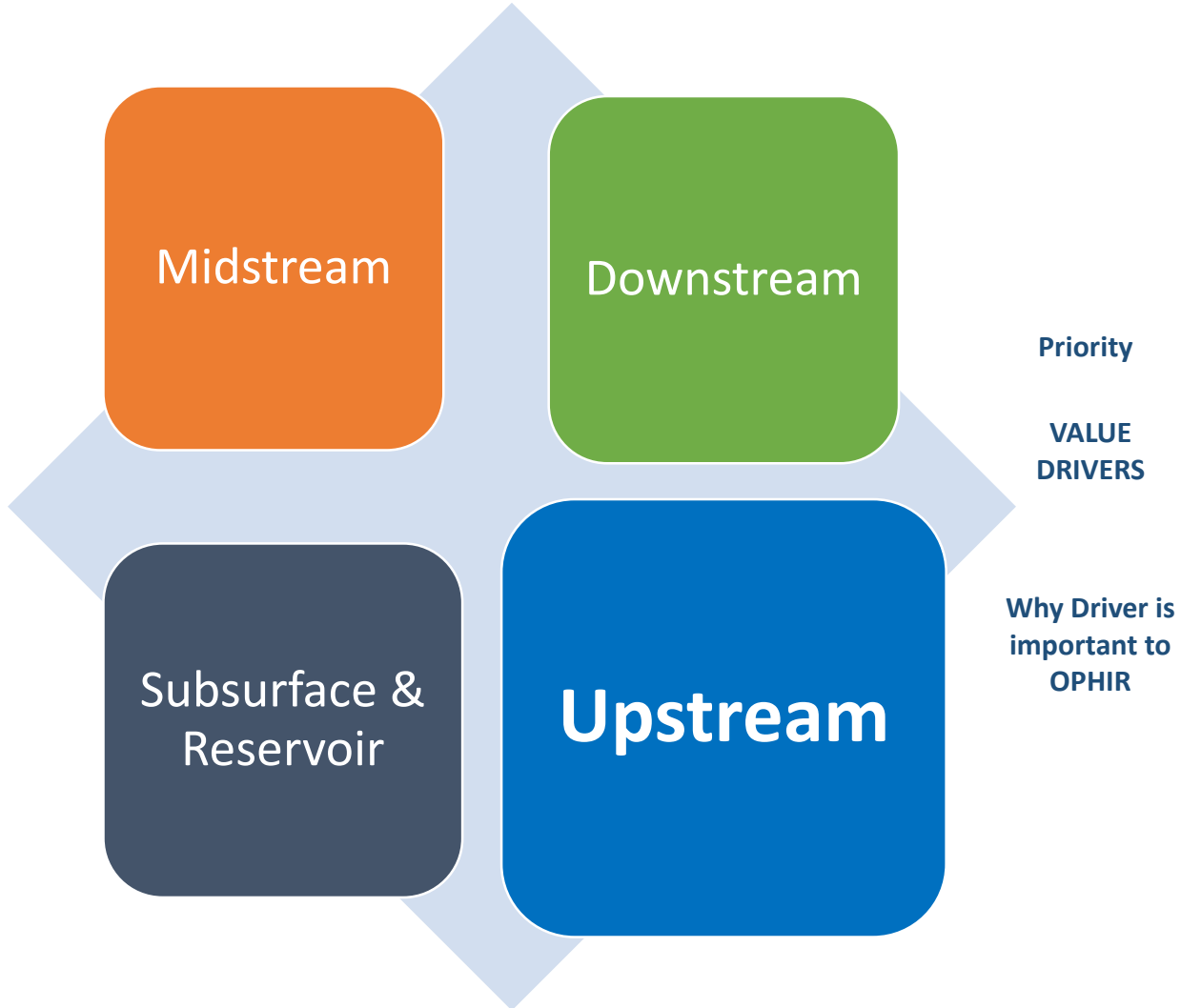


COMMERCIAL MILESTONES



- 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

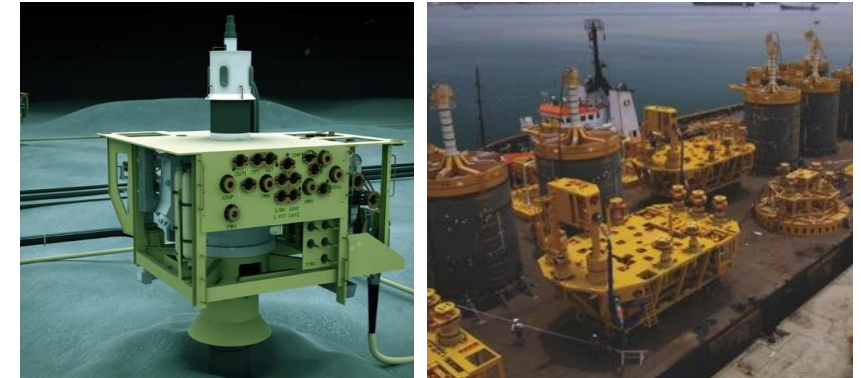


McDermott and GE coming together for FEED ITT



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

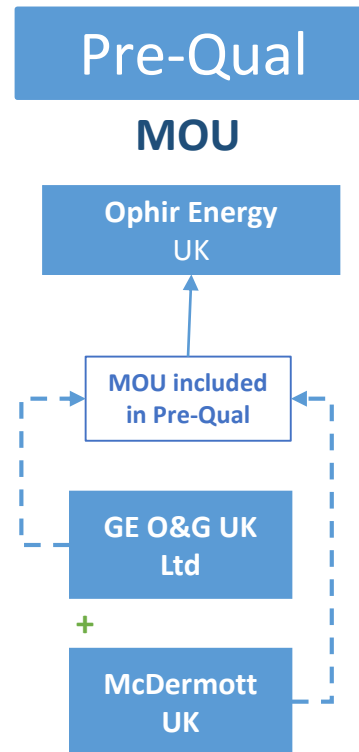
- Collaborative Working
- Project Controls across SPS/SURF
- Integrated Project Schedule
- Common Quality Plan
- Interface Management
- Common Sourcing / Logistics Strategy

GE for SPS equipment :

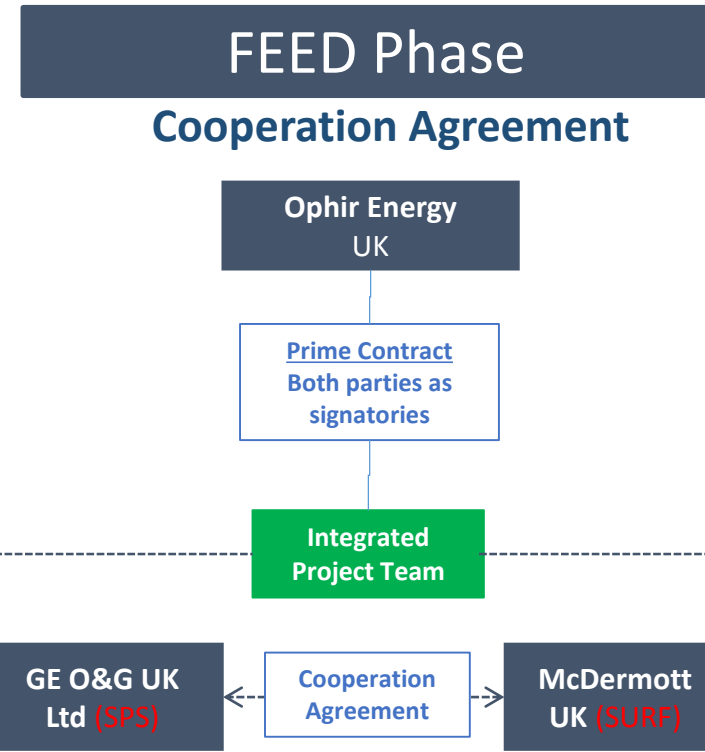
- Wellheads
- Xtrees
- Manifold
- Controls equipment Topside & Subsea
- Life of Field Service Contract.



Building Consortium

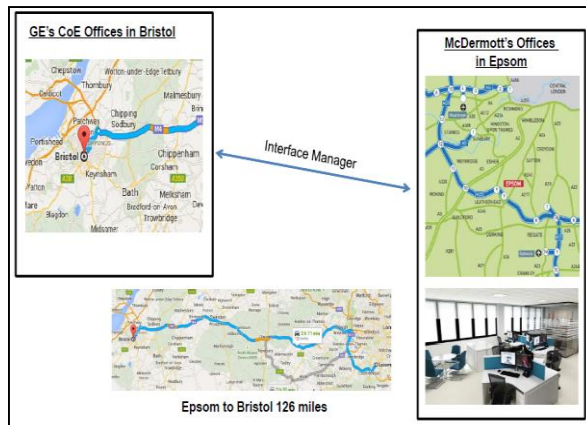
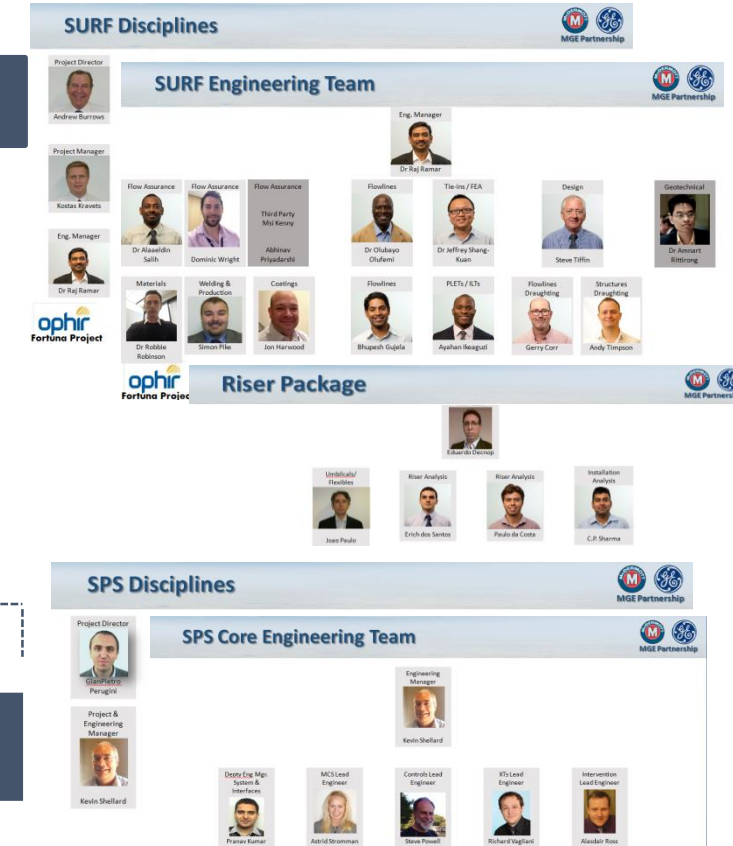


Benefits to Ophir:
Written commitment from MDR & GE within the Pre-Qualification to formalise our partnership across Phase 1 & 2



- 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

Project Charter – common aim for success



Competition Phases: Concept Selection

WK 1

WK 2 to 3

WK 4

WK 5 to 7

WK 8

**Concept
Recommendation
to client for detail
engineering during
FEED Phase**

**Review Basis
of Design**

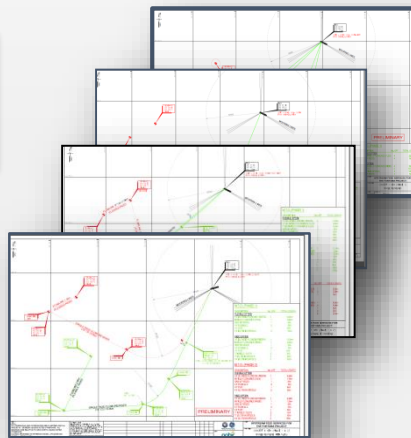
**12 field layouts -> 6
Identify feasible
field layouts
given BOD
guidance
and constraints**

**6 (Rigid) + 6 (Flex Options)
Technically
evaluate and
rank layouts
vs client value
drivers**

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

**6 (Rigid) + 6 (Flex Options)
Consortium Design
Review, RAM and Mini-
Operation Risk
Workshop**

**FEED
Contract**



Overarching requirements: Safety & Reliability				
Priority	R1	R2	R3	R4
Value Drivers	Layout	Structure	Operability	OP&I
Why Clients are important to O&P	Phase 1 Layout (compliance with BOD guidance)	Phase 2 Layout (compliance with BOD guidance)	Reliability (compliance with BOD guidance)	Operability (compliance with BOD guidance)
Key Systems to be considered	Structure (compliance with BOD guidance)	Structure (compliance with BOD guidance)	Structure (compliance with BOD guidance)	Structure (compliance with BOD guidance)

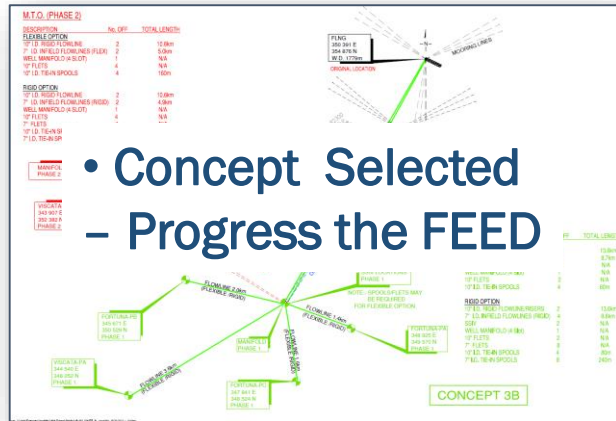
Ophi Fortune - Layout Evaluation Scorecard (Workshop Scores)						
Layout	Layout	Structure	Operability	Reliability	Operability	Reliability
1	10	10	10	10	10	10
2	10	10	10	10	10	10
3	10	10	10	10	10	10
4	10	10	10	10	10	10
5	10	10	10	10	10	10
6	10	10	10	10	10	10

Ophi Fortune - Layout Evaluation Scorecard (Weighted Scores)						
Layout	Layout	Structure	Operability	Reliability	Operability	Reliability
1	10.0	10.0	10.0	10.0	10.0	10.0
2	10.0	10.0	10.0	10.0	10.0	10.0
3	10.0	10.0	10.0	10.0	10.0	10.0
4	10.0	10.0	10.0	10.0	10.0	10.0
5	10.0	10.0	10.0	10.0	10.0	10.0
6	10.0	10.0	10.0	10.0	10.0	10.0



Continuous engagement with Company on-site engineer throughout concept phase

Competition Phases: Detailed FEED



Main FEED Objectives:

- Maturity of Technical Solution
- Preliminary Class 3 Cost Estimate
- Lump Sum Tender Proposal

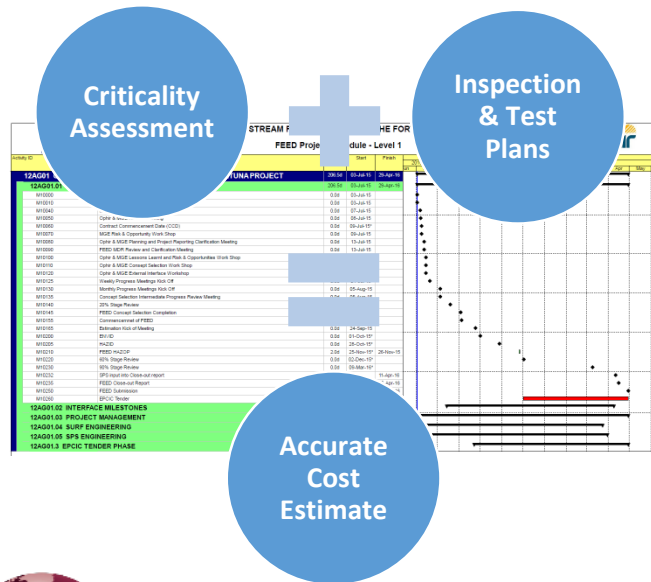
FEED Outcomes:

- 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

ESTIMATE CLASS	MATURITY LEVEL OF PROJECT DEFINITION DELIVERABLES Expressed as % of complete definition	END USAGE Typical purpose of estimate	METHODOLOGY Typical Estimating Method	EXPECTED ACCURACY RANGE Typical variation in low and high ranges
Class 5	0% to 2%	Concept Screening	Capacity Factored, parametric models, judgement or analogy	L: -20% to -50% H: +30% to +100%
Class 4	1% to 15%	Study or Feasibility	Equipment factored or parametric models	L: -15% to -30% H: +20% to +50%
Class 3	10% to 40%	Budget, Authorisation or Control	Semi-detailed unit costs with assembly level line items	L: -10% to -20% H: +10% to +30%
Class 2	30% to 75%	Control or Bid/Tender	Detailed unit cost with forced detailed material take-off	L: -5% to -15% H: +5% to +20%
Class 1	65% to 100%	Check Estimate or Bid/Tender	Detailed unit cost with detailed material take-off	L: -3% to -10% H: +3% to +15%



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



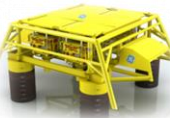
Ready for Project Execution Phase

Detailed Engineering

Delivery and Installation

Defined Solution
Specifications Aligned
Project Requirements Set
Transition to Project Team

Clear Execution Plan by Aligned Team



Integrated Schedule

Known Interfaces



Defined Ownership



Team Effort



CUSTOMER BENEFIT

Confidence in Hardware Solution
Confidence in Integrated Schedule
Minimised Interface Management
Integrated Approach with Supply

Shared Responsibility to Deliver

References

Slide 3: <https://cdn-ophir-energy.azureedge.net/wp-content/uploads/2017/02/Ophir-Fortuna-Factsheet-Jan-2017.pdf>

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

Slides 5 -11 :

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