

Today's Challenges in EPC Procurement

Presented By: Karl Farrow

C.E.O. PETROTEC Project Management Consultants



What This Means

- Energy demand continues to rise
- Oil and gas remain dominant – around 75% of total demand
- Only constraint is global production capacity
- New sources of supply:
 - Oil from West Africa, Caspian and Russia
 - Gas from Trinidad, Algeria and Indonesia
- Deepwater oil is the new frontier: Gulf of Mexico, Brazil, North Atlantic, West Africa
- Many markets previously closed now being liberalised

Changing Nature of the Industry

- Many strong trends have emerged over the last few years
 - Alliancing and partnering
 - Longer term relationships
 - Longer term service contracts
 - Clients require both cost reimbursable and lump sum projects
 - Client consolidation and competitor consolidation
- New trends
 - Some contractors withdrawing from certain EPC offshore contracts
 - Service contracts turning 'evergreen'
 - Commoditisation, e-procurement, on-line bidding
 - Majors restructuring their portfolios in the North Sea
 - Truly global procurement

Barriers to EPC Success are Extremely High

- Requirements for success include:
- Proven health and safety management systems
- Robust environmental systems – and commitment
- Highly skilled workforce
- Global supply chain
- Regional presence
- Demonstrable track record
- Long-term relationships with clients



Bonga Project EPC Case Study

Derek Harwood, Project Director

On Behalf of AMEC Upstream Oil and Gas



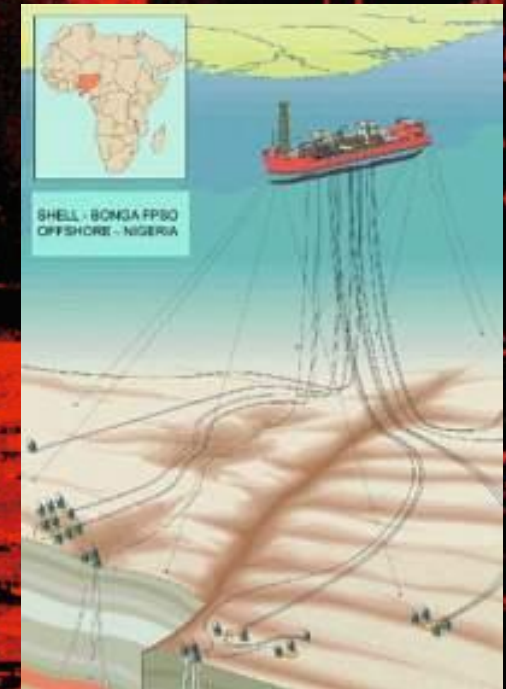
Truly Global Procurement

Bonga field development, Nigeria, West Africa

Client in USA orders -

- Design from UK
- Hull from Korea
- Fabrication in UK, US and Monaco

- all for delivery offshore Nigeria



Bonga Project Development Description

Client

SNEPCO

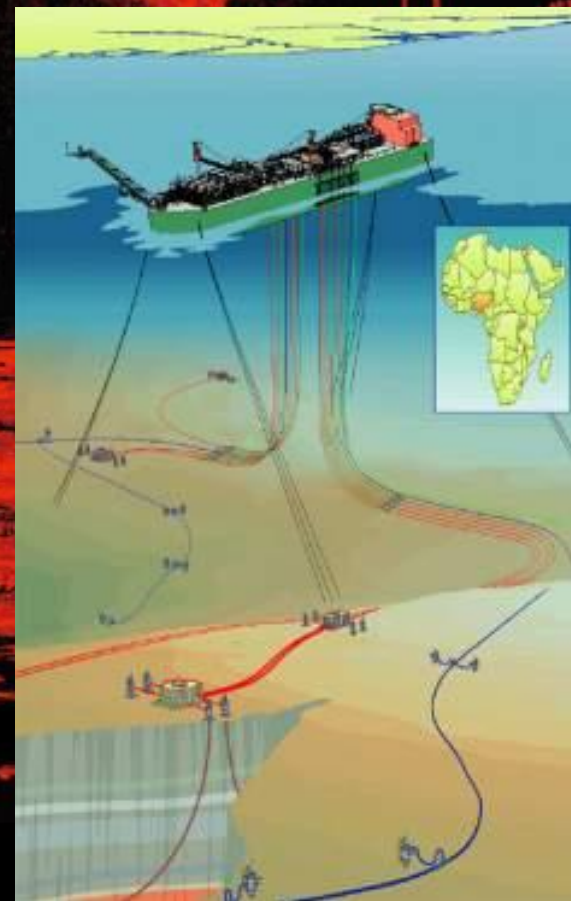
Shell
Nigeria
Exploration and
Production
Co Ltd

Five contracts:

Topsides	AMEC
Hull	Samsung (Korea)
Moorings	SBM (Monaco)
Subsea & Umbilicals	ABB Vetco Gray (Houston / UK)
Flowlines & Risers	Stolt Offshore (Houston / Paris)

Bonga Oil and Gas Field Development Offshore Nigeria

- Floating Production, Storage and Offloading (FPSO) vessel
- 120 kilometres offshore Nigeria
- Moored in 1,030 metres of water
- Subsea wells for oil and associated gas and for water injection
- Storage for two million barrels of crude oil
- Oil exported by tanker
- Gas exported to Bonny Island liquefied natural gas (LNG) plant



Bonga FPSO Topsides Processing Plant

- 10 main modules
- Total of 22,000 tonnes
- Processing capacity
 - 225,000 barrels of oil per day
 - 170 million standard cubic feet of gas per day



Key Interfaces Scope of Work

- Project management
- Engineering and procurement (three centres)
- Module construction (UK, The Netherlands and Nigeria)
- Hull tow from Korea
- Integration in UK
- Completion to pre-commissioning in UK and Nigeria



Sustainability

Details of Local Content Strategy

- Technology transfer and training
 - Ongoing, Netco in London
 - Technical seminars in Lagos
- Develop engineering design capability in Nigeria
 - Ongoing, Netco in Lagos
- Develop module fabrication capability in Nigeria
 - Ongoing, Daewoo in Warri
- Establish an offshore support base
 - Subcontractor to be selected



Execution Strategy

UK - Hartlepool - Module Fabrication

UK - Wallsend - Integration

UK - Wallsend - Module Fabrication

UK - London/Wallsend -
Design and Project Management

Nigeria - Design

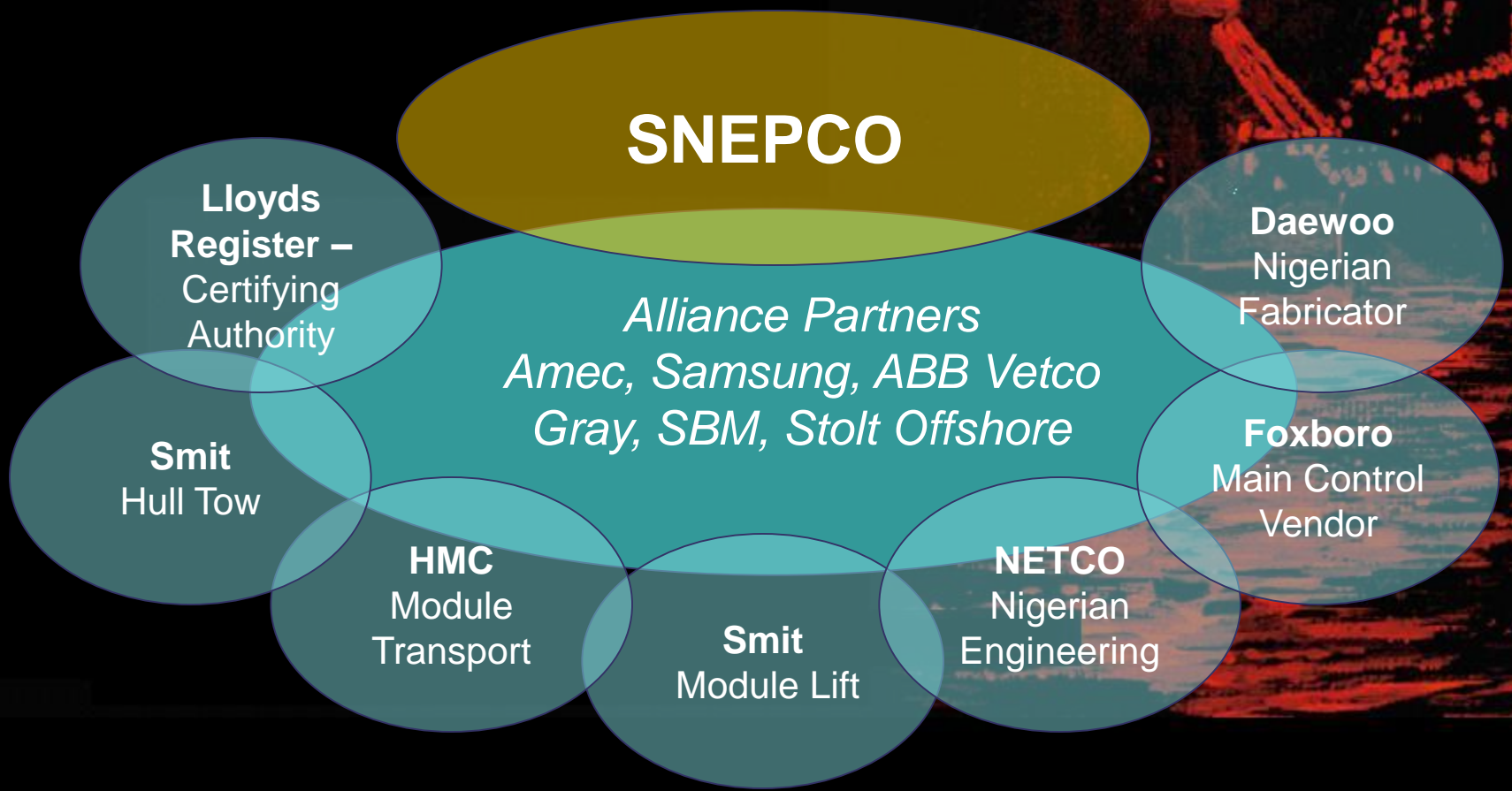
Nigeria - Module Engineering and Fabrication

Nigeria - Offshore Hook-Up and Commissioning

The Netherlands - Zwijndrecht - Module Fabrication

Korea - Hull Collection

Project Team



Execution Services Engineering

- Three design offices
- 90% in-house capability
- Known personnel and known systems (e.g. 3D CAD model)



Execution Services Procurement Management

- International procurement strategy
- Value of approx \$150 million
- Management based in London with field support using in-house systems
- Over 100 orders placed
- Bulk and equipment deliveries currently ongoing to sites



Execution Services Construction Management

- Four yards
 - Two in UK, one in The Netherlands, one in Nigeria
- Co-ordination of subcontractors' yards
 - Heerema at Hartlepool
 - Heerema at Zwijndrecht
 - Daewoo, Warri



FPSO and Deepwater Development

A Growing Market

- **Market for FPSOs remains strong**
 - More oil and gas reserves being discovered in deeper waters
 - Majority of these projects will use floating production units
 - Nearly 200 deepwater oilfield developments planned before 2008
 - Likely spend over next four years nearly US\$ 80 billion
 - 40% in West Africa, 30% in the Gulf of Mexico.