Session 1

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Subsea 7
Subsea Technology to Exploit the Potential

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Developments and Planning Manager Business Development, TOTAL E&P UK
Subsea technology …
To Exploit The Potential
Background and Outline

Oil and Gas production 2005-2012

Source: UK Oil and Gas 2007 Activity Survey
Subsea 09 Aberdeen: “Exploiting the Potential”

- What role for subsea technology in an era of declining production, reducing average size of new discoveries and low oil price/high cost environment?
- Do we need to consider different ways of exploiting these resources?
- Can we learn from others’ experiences?
- Are emerging technologies developed for other conditions (eg. deepwater) equally applicable in the UKCS or NCS?
EXPLOITING THE POTENTIAL: UK CONTEXT

Potential?: UKCS is a mature production area
- 38 Billion barrels already produced
- 10 to 15 remain to be produced, 5 to 10 yet to be discovered
- 90% of new developments mobilize less than 50 MBoe, most below 20.
- Small reservoirs, complex fluids, long tie-backs, difficult environment,
- UK deep offshore
- UKCS: 40% future production is subsea.

Exploiting - Infrastructure & Hubs: Extensive infrastructure exists
- Maximise usage of available capacity
- Ageing and Congestion issues on hubs
- Increasingly complex and costly tie-backs
- The environmental challenge.
EXPLOITING THE POTENTIAL: UK CONTEXT

**Potential?:** UKCS is a mature production area

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- UKCS: 40% future production is subsea.
- Total E&P UK: From 20% subsea production today to 50% in 2013 onwards.

**Exploiting - Infrastructure & Hubs:** Extensive infrastructure exists

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**Example: TEP UK portfolio**

- First subsea well PN1 tied-back to Alwyn: 1988
EXPLOITING THE POTENTIAL: TECHNOLOGY

Numerous Technological Challenges

- New architectural concepts
- Extended tie-backs for paraffinic and non-paraffinic fluids
- Subsea boosting and compression
- Subsea processing, decanter wells
- Umbilicals
EXPLOITING THE POTENTIAL: TECHNOLOGY

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Technology Transfer: Worldwide Market
- Worldwide examples (Total)
  - **Long distance tie-backs**: Canyon Express — GOM: 100 km: Start-up September 2002
- in the North Sea also
  - **HP/HT Subsea Christmas Tree**: Kristin, Rhum, Kessog (15 000 psi, 185 DegC. Installed Autumn 2008).
  - **Subsea HP/HT HIPPS SIL3**: Rhum, Kristin, Jura (May 2008)
  - **Subsea processing and boosting**: Tordis
CONCLUSIONS

Supply Chain Joint Effort
- Joint effort between operators & contractors/suppliers → Bridge the gap
- Oil and Gas Prices vs Costs vs Size of discoveries.
- Short Term Target: Applying "best-in-class" technology as made available.
- Reliability and Long Term operability of subsea systems, Standardization.

Hosts Platforms and Infrastructure:
- Safety and Environment.
- Tie-backs to hosts: Detailed integration Studies.

Mid to Long term Target: Prepare in advance 10 – 20 years (R & D)
- Integration of Reservoir management and Subsea R&D / Technology
- Maximise late recovery of subsea developments
- CO2 capture, transportation, injection: Role for Subsea?
- Bridges between Operators / Suppliers / Academy (NSRI)

Integrated Plannings – Integrated Teams Beyond Companies individual perimeters
Operator/Contractor Rapport – The Key to Creating Mutual Success

Eric Kiltie
Project Manager UK Engineering Coordinator
Petro-Canada UK
Operator Contractor Rapport
The Key to Creating Mutual Success
Subsea 09 ï AECC 11/02/09
Triton development area – Guillemot West

Guillemot West and North West

Fulmar Gas Line (FGL) to St Fergus

Riser Base

DC1

DC2

1

3km

15km

12km

20km

DCB

DCA

Bittern

FPSO (Triton)
Triton development area – Guillemot West Western Extension
Triton development area – Clapham

- Clapham
- Western Extension
- FPSO (Triton)
- Guillemet West and North West

Fulmar Gas Line (FGL) to St Fergus
Triton development area – Saxon
Clapham Manifold Installation
Pict Umbilical Cross-haul
Pict Manifold
Flexible Over-boarding
Pict Pipelay
Survey support
Triton FPSO
Working in Partnership has Never Been More Important

Mel Fitzgerald
CEO, Subsea 7
Subsea UK Annual Conference

February 11th
Aberdeen Exhibition and Conference Centre

Mel Fitzgerald
Chief Executive Officer
Subsea 7
Subsea 7 Financial performance 2004 ï 2008 (USDm)

Average Net Income 8%

*2008 unaudited
Subsea 7 Cash Flow - 1 January 2006 to 31 December 2008

We have reinvested more cash than we have generated from operations.
Industry cost escalation was becoming unsustainable

60-80% growth

40% increase in staff costs.

30% increase in vessel related costs.

100% increase in some 3rd party costs, commodities and equipment.
Softer market has been driving cost down

January 2009 spot steel $300 / t (from $1300 / t in June 2008).

Vessel fuel and charter rates down — may go further.

Some realism has come back into wage demands.

These reductions are not immediate.
Costs were increasing buté é . now coming back

The high costs were driven by the global market demand for energy and scarce resources.

Higher oil prices encouraged faster development which put even more pressures on scarce resources.

Yes margins have increased but realistic margins are required to sustain investment.

Focus on efficiency has helped Subsea 7 to drive better performance.

A willingness to look for and embrace new business models has helped Subsea 7 create shared value for clients and suppliers eg Venture Production plc, Block 31 and Merwede / Huisman.

The industry has the opportunity to get back to more sustainable cost levels.

Operators and the supply chain must work at this together; look at creating shared value, not put pressure on skilled, scarce resources and drive profit from the supply chain.
The Venture Production / Subsea 7 Partnership

Subsea 7 was selected by Venture Production in 2005 to be their partner of choice for the supply of subsea services in the North Sea.

Venture were actively seeking a new type of contracting arrangement.

Partnership now executing over $100m of work each year for Venture.

Venture has saved over $300m to date; from a variety of areas such as bringing in engineering expertise earlier and by having access to vessels when they need them.

Partnership becoming attractive as a model by other operators.

![Graph showing Overall UKCS Development Costs from 2004 to 2007 for Venture Production.](Source: UK Oil & Gas and Venture Production)
BP - Block 31, Offshore Angola

This programme for BP Angola includes up to four (4) developments.

The first of these - PSVM î  has an awarded value of $460m.

ÂBP placed considerable emphasis on selecting a contractor that they believed would work in partnership to deliver the Programme.

ÂBP’s innovative contracting model offers enhanced commercial opportunities for both parties through a day rate contract and KPI driven margin targets.

ÂThe KPI model recognises both hard and soft deliverables eg performing work in a safe and timely manner.
Working with the supply chain — Merwede and Huisman

A novel contracting model ensures that all parties, including the pipelay equipment supplier, are rewarded for the value created.

**Supplier benefits:**
- Smooth (planned) process
- Helps manage their risk
- Leads to shorter building period
- Helps control cost levels

**Subsea 7 benefits:**
- Integrated planning process
- Lower design / build costs
- Reduced management costs
- Optimised technical solution
- Improved risk management

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Low operational costs
Repeat business

On budget
On time delivery
Key messages to take away

Cost growth is not sustainable.

Work together / focus on efficiency to take unnecessary costs out.

Contractors should not be asked to take on unmanageable risk.

The supply chain needs to remain profitable to survive.

We can not afford to lose the skill sets that we have developed in recent years.

Innovative contracting model can create value between operators and contractors - and contractors and their supply chain.

It's all about creating and recognising shared value.
Or do you really want to go back to the old ways?

Drive down contractors margins?

Create adversarial relations?

Have contractors take on unmanageable risks?

Have no ongoing investment in the assets and equipment required for a sustainable future?

See graduate programmes disappear?

See no investment in skills development?

See contractors go to the wall / merge?
subsea partner of choice
Lower Oil Prices and the Subsea Sector

Colin Welsh
CEO, Simmons & Company International
Low Oil Prices And The Financial Crisis: Impact On The Subsea Sector

SIMMONS & COMPANY INTERNATIONAL

11 February 2009