Established 1990
Aberdeen, Canterbury & New York, planning to open in Singapore

Activities & service lines
- Market research & analysis
- Commercial due-diligence
- Business strategy & advisory
- Published market studies

Industry sector coverage
- Oil & Gas
- Power
- Renewable Energy

400 clients in 60 countries
- >600 projects completed for:
  - government agencies
  - energy majors and their suppliers
  - investment banks & PE firms
  - the leading independent provider of commercial DD to OFS investors
Macro Factors

Subsea Oil & Gas

The Post-recession World
Energy – two linked concerns; one driver

Population growth

Energy supplies

Global warming
Energy demand outpaces population growth

Consider oil, the fuel of transportation:

- Electric cars will help efficiency (eventually)
- But how long to change the world car fleet (>20 years?)
- Meantime China and India’s growing populations will ‘motorise’
- And cause a huge growth in oil demand and prices
- Can the global economy handle this?
Market drivers – long-term demand growth

- China will be the key driver of global oil demand growth; half of total
- Korea: oil consumption grew 8.8% p.a., 1970–1994
- If oil supply limited, China growth will tend to reduce US, EU, Japan consumption

Source: EIA 2010 AEO, Douglas-Westwood analysis
And growth is returning

• Demand for oil in 2010 to be underpinned by rising demand from emerging markets, with half of all growth coming from Asia

• China's demand for oil jumped by an "astonishing" 28% in January compared with Jan 09 (IEA)

• Chinese car sales and production both exceeded 12 million between January and November
China invests in future energy supplies

- **Russia**: $300 bn. 300kbd
- **UK**: Windpower bid
- **Canada**: $1.7bn Oil sands
- **USA**: $2.2 bn Windpower
- **Venezuela**: $8 bn
- **Brazil**: $10 bn. 160kbd
- **Nigeria**: 1/6th O&G reserves
- **Australia**: 20 year LNG
  - $5.2 bn Coal
- January 2010: S Korea to buy 10 oil companies ‘energy security a priority’

Data: Major investments in 2009. Douglas-Westwood
Global oil supplies cannot continue to grow

- Global fields reserves declining at 6.7% p.a. IEA
- Total revise global peak revised down by 4 Mbpd to 89 Mbpd 16 Feb '09
- Need to find and get into production one NEW Saudi Arabia every THREE years!

LIQUIDS GAP
CNG, LNG, FT-GTL, biomass, other replacement strategies. Reduce through energy efficiency and energy conservation?
• IEA estimate average annual decline for oil fields at 6.7%
• With no investment, offshore supply falls from 27.9 to 19.7 Mbpd by 2014
• 1.8 Mbpd lost to natural decline in 2010
• Industry needs to find 3.8 Mbpd in 2010 to increase I output by 1.9 Mbpd.
• By 2011 replacement barrels will outnumber incremental barrels
### Have 8 out of 10 oil majors have passed peak production?

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Data: Petroleum Review, May 2009

- Peak oil is a reality, not just for the majority of the producing countries but perhaps for the majority of the top producers
- **Offshore** is one of the few remaining places where the oil majors can increase production
Challenges – shift in reserve ownership

- NOCs to control 55% of 2010 non-US spend
- And 80% of the world’s remaining reserves
- Note PetroChina market cap now larger than Exxon!
- So what is the long-term role of the major international oil companies?

Source: Barclays: Outlook 1 Feb 2010
Natural gas production to soar

- Production currently dominated by E Europe & Russia
- Middle East, Latin America, Africa & Asia to see significant growth
- Deepwater gas and LNG to be of growing importance
- And ‘unconventional gas’ – US shale gas, coal bed methane, etc
- But local supply issues e.g. in Europe

Source: Energyfiles
FLNG – $23 bn spend by 2016

• Liquefaction – $18 bn spend
• Australia to account for 23% of global spend

• Woodside has raised the prospect of FLNG for its Greater Sunrise project
• LNG project to explore for gas in Southeast Asia by the second half of 2013
• Inpex (Japan) considering FLNG at its $19.6 billion Abadi field in Indonesia
• GDF Suez and Australia’s Santos set up a joint venture to develop a floating LNG project off northwest Australia
Growing Importance of offshore production – oil

- Offshore oil currently 33% of global output: 35% by 2020.
- Deepwater – 3% of production in 2002, 6% in 2007, 10% by 2012.
- After 2015, deepwater is the only sector to continue to grow.
• Offshore gas currently accounts for 31% of global output
• 41% by 2020
• Peak offshore gas not expected ‘till around 2026 – thanks to deepwater developments
Global Capex falls in 09/10 but Opex sees long term growth

Most regions to see overall growth

But W Europe to decline
Floating production recovery expected

- Material decrease in orders in 2009; but market has now bottomed.
- Impact of project delays – $14 billion of projects slipped.
- Increasing share of market to leased FPSOs. Consolidation likely.
- Market still well below pre-recession levels.
- Long term >200 prospects exist and growth will return.
Deepwater Capex to reach new highs

- Deepwater production to grow 99% (shallow water 20%)
- Future deepwater investment:
  - $137 billion over the next five years
  - Asia/Australasia 5-year spend grows from $10 bn to 15 bn

Offshore ops & maint spend to see good growth

- >7,000 fixed & >200 floating platforms.
- Spend to exceed $330 billion over the next five years.
- Plus demand for major modifications.

Douglas-Westwood
• Cost Inflation has tracked oil prices closely over the past 10 years.
• Costs cooled somewhat in 2009 but remain high.
• As oil prices eventually rise another flurry of activity may well trigger a similar cost inflation scenario.
• Major challenge to manage costs over the next five years
NOCs to control 55% of 2010 non-US spend

Subsea Oil & Gas

Note PetroChina market cap now larger than Exxon!

The Post-recession World

So what is the long-term role of the major international oil companies?
Subsea technology is vital to offshore production:
- Unlocking deepwater reserves
- Improving economics of marginal fields in shallow waters
- Capital costs associated with deepwater developments are high and require favourable economics
Global subsea production to reach 17 million b/d by 2025

- Africa to overtake Western Europe & North America by 2010.
- Latin America also set for rapid growth in the Santos and Campos basins
- Asia in contrast driven by continued subsea development of natural gas
- Growth in subsea production enabled by technology advances.
Subsea market is turning the corner

• Subsea orders were hard
• But players revenues reasonably stable due to backlog
• Trend suggests 2010 will recover to ‘normal’ levels
• FMC was subsea market leader 2009 by order value
Brazil – Petrobras outlines its ‘shopping list’

By 2018, 58 new drilling rigs:
• 23 being delivered by 2011
• 9 in 2012
• 28 built in Brazil 2013 to 2018

By 2020:
• 49 VLCCs,
• 135 supply & service vessels,
• 45 production platforms
• 7 wellhead platforms
• 140 manifolds
• 629 compressors
• 229 subsea wellheads
• 417 subsea trees

Tupi Discovery
Source: CGG Veritas
• There are currently over 180,000km of subsea pipelines, 3,500 active subsea wells
• $2.1 billion was spent in 2008, growing to $3.1 billion by 2013
• DWL estimate that an additional 18 full time Dive Support Vessels will be required to meet demand expectation over the next five years
Improving subsea well productivity

- Productivity of platform wells average 25% more than subsea wells
- Main causes include ease of access to platform wells for workover
- At a $50 oil price this represented a potential prize of $50 billion in 2008
Subsea well intervention – light intervention

• Dedicated intervention vessels providing amore cost efficient means of optimising production:
  • Dayrates $200,000 to $250,000
  • Savings are also made on faster mobilisation

• However, sector is still in its infancy and technology breakthroughs still required to maximise potential:
  • Limited by range of work that can be performed
  • Limited by water depth
  • Notoriously conservative industry
• 2009 operations revenues down 7%
• Fared better than many other sectors. Oceaneering added 30 ROVs, retired 9
• Recovery seen from 2010 to new record highs
• 550 new work class ROV’s to 2014
• Expenditure up 89% from 2008 to 2014, reaching to $3.2 billion
• ‘Most likely’ total 1,144 unit sales, value $2.3 bn
• Many small AUV sales large upside potential
• But high costs of the large units dominates spend
Regional subsea market to see strong growth

Asia Pacific Subsea Market (US$ 000)

- Market to grow from $9 bn to $13bn
- Major growth in pipeline activity
Marine renewables 15% of UK GW installed by 2030?

Hydro
Biomass 4%
Offshore Wave & Tidal 1%
y 1%

Others 6%
Gas 40%
Onshore Wind
Offshore Wind 14%

Coal 9%
Nuclear 12%
Wind 13%

Macro Factors
Source: Douglas-Westwood
UK powergen capacity installed 2010-30

But present policies will not deliver a major UK marine renewables industry
Source: Douglas-Westwood

The Post-recession World
Subsea Oil & Gas

The Post-recession World
Some major threats to subsea market

• Lack of communication:
  • Perceived lack of information sharing in the subsea industry
• Lack of standardisation:
  • Adds complexity and costs to subsea operations
• High technology costs:
  • Breakthroughs in processing technology may optimise productivity of subsea assets but costs are not currently considered practical for most developments
• Oil price?:
  • The big question. Operators often claim that favourable oil prices are key to commissioning deepwater projects
  • A lack of investment now could lead to future oil supply pressures
Oil & gas – the post-recession world

• IOC’s under increasing pressure for new discoveries and production
• But recession has ended ‘price is no object’ environment
• Oil supply will be insufficient to meet future need
• Natural gas has to take up some of the load
• Both innovation and cost will be critical drivers in the years ahead
• If we find the oil, can we afford to lift it?
• Challenging times ahead, but the global economy will absorb all oil volumes that can be produced at affordable prices
Thank you

This presentation can be downloaded from www.douglas-westwood.com