Global Offshore Oil and Gas Outlook

John Ferentinos – Infield Systems

Gas/Electric Partnership 2013
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• Opportunity identification |

[Logos of various companies]
Agenda

I. Macro Market
   • Oil – Gas Prices
   • Key Industry Trends

II. Offshore Gas Frontiers
   • Shale Gas Impact
   • East Africa
   • Arctic

III. Offshore Capex
   • Platforms
   • Subsea
Oil Price 2012

Brent will likely be traded within a relative narrow range between $100 - $120/bbl

A Tight Trading Range for Brent

- **$90/bbl floor:**
  Would spur supply responses from oil producing countries (i.e. Saudi Arabia)
  Riyadh’s 2013 budget: US$219bn (+19%), requires c.$70 oil price minimum

- **$120/bbl ceiling:**
  High prices already driving exploration and development of new resources (tight oil, oil sands, biofuels, ultra-deepwater, harsh environments)
  Substantial drag on global economic growth

Sources: Infield, EIA
Gas Price Forecast

- Price shocks in the wake of Fukushima etc.

2012:
- Global gas consumption grew by 2%
- Non–OECD consumption grew 2.8%
- OECD consumption grew by 1%
- Non-OECD will account for 76% of global gas demand growth to 2030

Sources: Infield Systems, BP
Offshore Production Gains Ground...

- Onshore production has levelled-out
- More E&P activity is taking place in deeper waters, remote locations & harsh climates.
- 30% of the world’s oil production comes from offshore areas

Sources: Infield Systems, BP
Marginal Fields...

Fields On-Stream Year by Reserve Size and Water Depth

Fields by Reserve Size & Production Rate

Smaller Fields with higher production rates

Source: Infield Systems
Further – Remote – Harsher

- Installation location of production platforms - 10km in 1970
  Present: Husky’s SeaRose FPSO, Canada – 350km from shore
- Chasing viability of marginal fields enables longer tiebacks
- Lack of existing offshore infrastructure or onshore refining capacity in new frontiers

**Increasing Tieback Length**

![Graph showing increasing tieback length over time with data points for specific locations like Gorgon LNG Phase 1, Albatross, Tamar, MC Mensa, Saurus, Egypt, 2000: 10Kms, 2012: 13Kms.]

Sources: Infield Systems
Shale Gas Reserves

6,600tcf in 33 countries.

Latin America 1,900tcf, China 1,275tcf, US 482tcf, Canada 388tcf, South Africa 485tcf

Sources: Infield Systems, EIA
Effects of Shale Gas

- US could become a net exporter of NG over the next decade
- US currently supplied from Canada and Mexico & LNG shipments from Africa
- US exports might put pressure on Australian LNG and CBM (Coal Bed Methane) projects - Shtokman

**US Gas Production (TCF/year) (EIA)**

Sources: Infield Systems, EIA, BP
Effects of Shale Gas on US GoM

Dramatic effect on US shallow water investment

Shallow Platform Installations vs. E&A Wells

- Continued expectation of low platform installation numbers in the US

- Drillers, service providers and construction operators continue to report low utilisation and have had to switch focus

- However, opportunities do lie in the deeper waters of the GoM
  - Tiber, Lucius, Hadrian...

Sources: Infield Systems, EIA, Reuters, BOEMRE
US GoM Drilling Trends

Shallow water gas market depressed, deep water drilling activity robust

US GoM Permit Approvals (new wells only)

Source: BOEMRE
East Africa – New LNG Frontier

According to the UGS over 250 Tcf of natural gas may lie off East Africa

Source: USGS
Arctic Resources

412Bboe of Undiscovered Resources - 84% of it is thought to be Offshore

Sources: Infield Systems, USGS
Offshore Arctic Resources

There are 174 discovered fields in the offshore Arctic - 137 Bboe

- The offshore Arctic is primarily a natural gas play
- 85% is natural gas against 13% are oil
- Discovered resources are 83% Russian (high Arctic and Sakhalin Island):
- Large number of super-giant fields

Source: Infield Systems
Offshore Arctic – Stop or Go?

Offshore Arctic faces an extremely uncertain future

- Two speed Arctic
  - Oil better than gas
  - Sub-Arctic/ice-free areas better than high-Arctic
  - Onshore better than offshore

- Unconventional and deepwater resources will continue to hold back Arctic

- Long lead times: a decade until new production

Global Capex

• A 800$bn Industry until 2018
• Subsea investment is growing faster – 14% GAGR

Sources: Infield Systems, EIA, BP
Offshore Capex 2012-2018

A migration to deeper waters albeit with conventional demand remaining buoyant

- **Global**: US$706bn
- **North America**: US$66bn (56% Shallow, 21% Deep, 23% Ultra Deep)
- **Latin America**: US$107bn (58% Shallow, 27% Deep, 15% Ultra Deep)
- **Europe**: US$135bn (11% Shallow, 84% Deep)
- **Africa**: US$120bn (21% Shallow, 35% Deep, 44% Ultra Deep)
- **Asia**: US$146bn (89% Shallow)
- **M.E**: US$74bn (86% Shallow)
- **Australasia**: US$54bn (84% Shallow, 16% Deep)

NOTE: Global infrastructure spend by region includes subsea, pipeline, platform, control line and SPM installations. Capex in this analysis include EPIC but excludes drilling.
Operational Platforms in 2012

Operational Fixed: 10,700
Operational Floaters: 395

Installations Fixed: 185
Installations Floating: 28

Sources: Infield Systems
Operational Platforms in 2018

Operational Fixed: 9,060
Operational Floaters: 540

Installations Fixed: 280
Installations Floating: 60

Energy Engines

Cernambi North 98 MW 4 units
Lula Alto P66 96 MW 4 units
Guanabara FSRU 49 MW 2 units

Energy Engines

Egina FPSO 126 MW 5 units
CLOV FPSO 109 MW 5 units
Ichthys Floaters 250 MW 10 units
Sunrise FLNG 135 MW 5 units
Prelude FLNG 120 MW 3 units

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Subsea Market

Subsea Tree Installations are increasing...

Ultra-deep Rig Fleet is increasing...

Sources: Infield Systems
Current oil price is sufficient to support the vast majority of developments

- Shallow water reserves clustered between $10-30/bbl
- Conventional fields easily viable in all price scenarios
- Deepwater fields: $36 - $80/bbl across regions and operator types.

Source: Infield Systems
Questions?