Deepwater Riser Selection: What REALLY Drives The Decision?

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SPE International
Feb. 2007
Deepwater Riser Selection
what REALLY drives the decision?

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20th February 2007

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Presentation Overview

- Deepwater riser systems
- Deepwater considerations
- Current contractual conditions
- Critical selection factors
- Current market
- Conclusions

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Deepwater riser systems

- 80/20 Package – 20% subsea value, 80% problem

- Riser technology progressed rapidly 300-2500m in 10yrs
  - Pan industry initiatives eg: DeepStar
  - Contractor JIP’s
  - Project developments e.g. Girassol, Kizomba, Thunder Horse
  - Individual company R&D

- Range of riser types
  - Flexible catenary
  - Steel catenary (SCR)
  - Freestanding bundle hybrid risers
  - Freestanding single line hybrid risers

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GENERAL deepwater considerations

- Develop efficient, safe & reliable riser designs
  - Robust / Fatigue optimized / Thermal requirements
  - Improve performance and reduce criticality

- Offshore construction
  - Faster installation
  - Lower cost installation

- Improve schedule flexibility
  - Availability of installation vessels
  - Pre-installation capability

- Operational flexibility
  - Long term integrity
  - Facilitate future maintenance, upgrades and additions

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Who’s driving the decision?

- **Operator** (with engineering contractor support)
  - Technical preferences
  - Desire to standardize
  - Need to define interface
  - Commercial strategy (general construction, competitive)
  - Maximise procurement flexibility

- **Installation / EPI C contractor**
  - Investment in assets to meet demands (vessels, yards)
  - Leverage IP
  - Leverage engineering
  - May limit technology advances

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Prescriptive vs. Functional

- **Prescriptive (Thunder Horse / Bonga)**
  - Operator engineering / design risk
  - Standardization
  - Increased installation competition
  - Maintains contractor installation risk
  - Get exactly what you want
  - Can put emphasis on OpEx
  - Control operational management

- **Functional (Girassol, Block 18)**
  - Requires EPIC contractor
  - Contractor design/procurement/installation risk
  - May not get what you want
  - Often lumped with flowline package
  - Emphasis on CapEx and first oil date

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Where is the disconnect?

- **Operator** wants to produce at the best price
  - Select solution for most installation contractors
  - Ensure maximum reliability
  - Maintaining ability to influence OpEx

- **Installation Contractor** wants to win job and achieve maximum margin
  - Minimum competition
  - Utilise assets
  - Leverage IP
  - Maximise efficiency

- **Why is the industry in this situation?**

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Maturity

- The market is not mature
  - subsea wellhead market has smaller differentiators
- Riser value small compared with flowlines “prize”
- Big differences in:
  - Environments
  - Global coverage
  - Engineering capability
  - Experience
  - Technology / IP
  - Installation asset capability

COMPLI CATES SELECTI ON PROCESS FOR DEEPWATER RISERS

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Critical selection factors

- Technical challenges
  - Water depth, waves and currents
  - High structural complexity
  - Reservoir pressure and temperatures
  - Vessel motions
  - Corrosive fluids and environment
  - Flow assurance critical

- Operational considerations
  - FPSO disconnect-able turrets
  - Requirement for inspection / maintenance / addition

- Geographical location
  - Different contracting strategies
  - Local market / government drivers

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Critical selection factors

- Risers are high risk items
  - Failure is unacceptable
  - Lost production cost dwarfs riser costs
  - Sledgehammer approach not always feasible

- Operator Constraints
  - New technologies
  - Is it easier to extrapolate existing technology?
  - Resistance to embrace new technology to meet current demands

- Contractual frameworks
  - Engineering contractors cannot manage risk
  - Operator preferences
  - Installation contractors asset abilities

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Key decision drivers?

- Historical perception
- Project risk
- Operator profile and execution preference
- Installation contract strategy / capabilities
- Project schedule and development flexibility

**Market conditions**

- Lots of competing technologies
- **Solution is driven by CAPEX and SCHEDULE**
- Is OPEX and long term integrity missed?

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Conclusions

- **Difficult problem**
  - Best technical solution does not often drive
  - Everyone wants what meets their needs
  - Operators / Inst. Contractors not-aligned

- Need to **improve process** to everyone’s benefit
  - Unlikely we can standardize
  - More flexible contractually (combo prescriptive/functional)
  - Separate riser from flowline where applicable

- Keep a focus on **Operational requirements**
  - Currently impacted by the CapEx/Schedule Focus
  - OpEx higher than planned?
  - Select for inspection, maintenance, monitoring, replacement

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Thank you
Summary

- Decision is NOT straightforward
- **Contract strategy** is complex with differing results
- Riser “product” is not **mature**
- Current market conditions are **CAPEX & schedule biased**
- Commercial & **project execution** drivers are key factors
- Technically best solution not always/often?? selected
- Maintain focus on **long term integrity**

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CapEx & Schedule

- Need to complete this
- Explain here what this means
  - Can I buy it now?!
  - Are there multiple contractors willing to bid?!
  - Is there a vessel available to install it?
  - Selecting riser solutions to maximize procurement flexibility
Summary

- Technically best solution not always selected
- Perceived lowest cost solution is selected, without considering installation risk and costs
- Best option dictated by installation consideration and contract strategy
- Whilst technically complex risers are often swamped by the commercial and technical constraints of flowline and pipeline systems with which they are lumped
- Emphasis on fast track projects results in reliance on extrapolating existing solutions that are considered low risk and “safe”
- Market is hamstrung by a small number of contractors owning large installation vessels
- Alternative fabrication technologies are difficult to implement due to omission of suitable contract strategies

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Solution?

- Want to say something here like:
  - No-one solution meets all these requirements
  - Multiple solutions often feasible
  - Technical differences
  - Cost perception are different
  - Technical innovation hindered by contract/execution strategies

- So why is the decision complex??.........
Current Market

- Lots of varying technologies
- Much different than 3 years ago
- Deepwater industry learning from previous projects
- Risk responsibility variable

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