Innovation in the Offshore Oil and Gas Industry

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- Who am I?
- Where I’ve been?
- Personal Contributions towards Innovation
- Current Offshore Innovations
- What to watch in the future
- Summary – Q&A
Who am I?

- Senior Project Director – McDermott Int’l
  - Project Director – BG Group
  - Deputy Project Director – Kosmos Energy
  - Project Manager – Murphy E &P International
  - Project Manager – Devon/Ocean Energy
  - Deepwater Development Manager – Unocal
  - Project Manger – Mariner Energy
  - Technical Manager – Shell
- BSME University of Illinois – Urbana/Champaign
- Active in ASME Volunteer Leadership
Where I’ve Lived & Worked

- Norway 2011-14
- Ventura, CA 1981-82
- Bakersfield, CA 1982-87
- New Orleans, LA 1987-98
- Houston, TX 1998-2011, 2014
Innovation vs. Invention

• Innovation – “a process that brings together various novel ideas in a way that they have an impact on society”

• Invention – “a unique or novel device, method, composition or process, that achieves a completely unique function or result may be a radical breakthrough”

Innovation may happen during a project cycle, invention probably will not.

*Source: Wikipedia*
Personal Contributions towards Innovation

Azurite FDPSO
Republic of Congo
Compact Drilling Rig onboard an FPSO allows stable drilling and completion operations.

Flexible risers in pliant wave configuration allows FDPSO movement.

Active Mooring Lines allow direct vertical access to wells and crane access to subsea infrastructure.

Primary drill center below FDPSO.
FDPSO Rig Installation
FDPSO Sail from Singapore to Republic of Congo
Current Offshore Innovations

• Modular Offshore Drilling Facility (MORF)
WJM MORF™
Modular Offshore Rig Facility
WJM MORF™

Breakthrough Modular Design Erases High Installation Costs

- 3,000hp modular offshore rig facility.
- Used for drilling and production.
- Two main modules: The Drilling Equipment Structure (DES) and the Drilling Support Module (DSM), which is equipped with Two (2) Offshore Pedestal Cranes rated for 75 Tons SWL c/w 120 foot Lattice Booms. The DES has the capacity to move approximately 15 wells arranged in a 3 x 5 matrix and is capable of drilling wells up to 25,000 feet.
- Accommodates 100 rig personnel.
- Helipad sits on top of the housing unit.
- FIRST OF ITS KIND in size and a first for the Gulf of Mexico.
Potential Future Industry Innovation

- Use of 3D printing in offshore structural fabrication
- Expanded use of 3D printing in subsea component manufacturing
- Use of non-metallic materials in hydrocarbon processing
- Expansion of high temperature, high pressure components
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Summary
Innovation - Summary

• Innovation is acceptable in a project phase – may cause re-work due to new application
• Innovation is necessary as commodity price is under pressure and capital and operating costs must be reduced
• The Oil & Gas Industry is slow to accept invention and innovation compared other industries
• Great ideas are always welcome, investment may be difficult
Questions?