Floater Product Line
Why a Spar
29 September, 2004
Why a Spar?

WHY A Spar?

➢ Mature Concept
➢ On Time Delivery
➢ Safest Platform
➢ Best Riser Support Platform
➢ Make Operator More Profit
TECHNIP SPARS TO DATE
Truss Spar

Dry Transport

Wet Tow

Upending
Truss Spar

- **Proven Design**
- **Proven Hull Delivery History On-Time and On-Cost**
- **Large Payload Capacity**
- **Dry or Wet Tree Solution**
WHY A Spar?

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Delay Expensive

• For 6 month delay in first oil

180 days at $6 M/day = $1080 M

10% Interest on CAPEX = $90 M

On Time Spar Deliveries

Make You Money
### Spar at MTS Workshop

<table>
<thead>
<tr>
<th></th>
<th>Start Steel Cutting</th>
<th>Sail Away</th>
<th>Fabrication Time</th>
<th>Tonnage</th>
<th>Tons / Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gunnison</td>
<td>12-01</td>
<td>5-03</td>
<td>17 months</td>
<td>13,000 tons</td>
<td>760</td>
</tr>
<tr>
<td>Mad Dog</td>
<td>8-02</td>
<td>12-03</td>
<td>16 months</td>
<td>22,000 tons</td>
<td>1375</td>
</tr>
<tr>
<td>Holstein</td>
<td>4-02</td>
<td>9-03</td>
<td>17 months</td>
<td>24,000 tons</td>
<td>1410</td>
</tr>
</tbody>
</table>
Spar Delivery Reliability

Spar Fabrication at TOF

Project: MAD DOG, HOLSTEIN, GUNNISON, HORN MOUNTAIN, BOOMVANG, NANSEN, DIANA, GENESIS, NEPTUNE

Fabrication - Months

Contract, Actual, Contract at GOM, Actual at GOM
WHY A Spar?

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WHY IS A SPAR SAFER?

➢ Unconditionally Stable
  ✓ Failsafe ballast system: intact stability is not endangered by variable ballasting errors
  ✓ Simple ballast system: Licensed marine crew not required on board

➢ Mooring Line Failure not Catastrophic
  ✓ Redundancy: spread mooring is designed for one line missing
  ✓ Spar continues to float
  ✓ Down flooding difficult
WHY A Spar?

- Mature Concept
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Wave Frequency SCR Hang-off Response

- **Lateral**
- **Vertical**

**Std Dev Motion - ft**

- **Cell**
- **Truss**
- **TLP**
- **Semi**

Spar at MTS Workshop
RISER SYSTEM ADVANTAGES

- Low Motions at keel
  - Lower riser stresses
  - Allows less expensive riser

- Risers are protected from surface wave and current action

- Lateral mooring system allows running risers in high currents

- All types of risers and hang-off systems
Porches and Piping at Keel
Fixtures at Keel for Future Flexibles
WHY A Spar?

- Mature Concept
- On Time Delivery
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Finn’s Theorems

1. All Platforms Cost the Same
   $20 M delta in the noise level

2. Design Competition a Flawed Approach
   Winner often low balls estimates to win
   Cost increases often much greater than delta

Spar Saves in Other Areas

Risers, Completion, Drilling, Workover
## Typical Field Development Costs

**GOM Deepwater**  
300 MB  
150 KBD  
20 Wells

<table>
<thead>
<tr>
<th>Subsea Case</th>
<th>Millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation by Pipeline</td>
<td>$100</td>
</tr>
<tr>
<td>Drilling by MODU</td>
<td>$1000</td>
</tr>
<tr>
<td>SURF</td>
<td>$300</td>
</tr>
<tr>
<td>Topsides</td>
<td>$250</td>
</tr>
<tr>
<td>Platform</td>
<td>$150</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1800</strong></td>
</tr>
</tbody>
</table>

*Spar at MTS Workshop*
Is This a Profitable Venture?

300 MB at $40/B = $12 B
150 KBP at $40/B $6 M/day
300 days = CAPEX ($1.8 B)

YES!!
Spar Can Reduce Drilling Costs

- Completing Wells from Spar Saves
  - Less expensive completion rig
  - Workover costs also reduced

- Drilling wells from Spar Saves
  - Less expensive than MODU
  - More drilling uptime
  - Spar Mooring good for 100 hurricane
Offset Drilling with MODU / Spar Completion

Applications

- Kerr McGee Neptune (1000 HP WO)
- BP Horn Mountain (DP Rig) (1500 HP WO)
- Kerr McGee Boomvang (1000 HP WO)
- Kerr McGee Nansen (1000 HP WO)
- Kerr McGee Gunnison (1500 HP WO)
Drilling and Completing from Spar

- Chevron Genesis (3000 HP Drill)
- ExxonMobil Diana (3000 HP Drill)
- BP Holstein
- BP/UNOCAL Mad Dog
### MODU vs. Spar Drilling Comparison

#### Drill From Spar to Reduce Costs

<table>
<thead>
<tr>
<th></th>
<th>Subsea</th>
<th>Complete</th>
<th>Drill &amp; Comp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>$100</td>
<td>$100</td>
<td>$100</td>
</tr>
<tr>
<td>Drilling</td>
<td>$600</td>
<td>$600</td>
<td>$240</td>
</tr>
<tr>
<td>Complete</td>
<td>$400</td>
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<td>$160</td>
</tr>
<tr>
<td>SURF</td>
<td>$300</td>
<td>$100</td>
<td>$100</td>
</tr>
<tr>
<td>Topsides</td>
<td>$250</td>
<td>$250</td>
<td>$250</td>
</tr>
<tr>
<td>Platform</td>
<td>$150</td>
<td>$180</td>
<td>$220</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1800</strong></td>
<td><strong>$1400</strong></td>
<td><strong>$1070</strong></td>
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</tbody>
</table>
## Two Drill Centers Comparison

### Drill From 2 Spars

GOM Deepwater 300 MB 75 KBD 10 Wells each

<table>
<thead>
<tr>
<th></th>
<th>One Spar</th>
<th>Spar 1</th>
<th>Spar 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>$100</td>
<td>$100</td>
<td>$10 M</td>
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<tr>
<td>Drilling</td>
<td>$240</td>
<td>$150</td>
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<tr>
<td>Complete</td>
<td>$160</td>
<td>$80</td>
<td>$80</td>
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<tr>
<td>Risers</td>
<td>$100</td>
<td>$50</td>
<td>$50</td>
</tr>
<tr>
<td>Topsides</td>
<td>$250</td>
<td>$140</td>
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<tr>
<td>Platform</td>
<td>$220</td>
<td>$120</td>
<td>$120</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$1070</strong></td>
<td><strong>$640</strong></td>
<td><strong>$550</strong></td>
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</tbody>
</table>

Spar at MTS Workshop
Conclusions

- Drilling From Spar Saves Money
- Completing from Spar Also Saves
- Two Smaller Spars Very Attractive
  - Better Reservoir Coverage
  - Efficiencies in Building 2
  - Staged Development Lowers Reservoir Risk
WHY A Cell Spar?

- **Cost Effective Small Field Platform**
  - Low Cost Automated Fabrication
  - Quick Delivery
  - Low cost Installation

- **Same Good Motion Characteristics**
  - SCRs
  - TTRs
  - Flexibles
Cell Spar Tube Fabrication, Outfitting & Assembly
Cell Spar Tube Assembly – November 14th to December 14th
Red Hawk Cell Spar Installation
Red Hawk Cell Spar Installation

Contract Award to Delivery in 22 months
Conclusions

- **Cell Spar Has Good Motion Characteristics**
  - SCRs
  - TTRs

- **A Low Cost Hull**
  - Less steel
  - Fast fabrication – automated process

- **Suited for Marginal Fields**
  - Smaller deck loads
  - Deep water
  - High currents