Rising capital costs – Are we there yet?

IAEE Houston Chapter
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Candida Scott, CERA Director
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What’s Happening?
Latest News

Hurricane Fears Slow Down GOM Drilling
Jack-up rigs are seeing a reduction in costs due to the turn down

Korean shipyards receive Orders of $2.5 bil.
Investments in Korea exceed $2.5 bil. for all types of vessels

End of 2006 Slowdown in Drilling
Companies are now slowing their drilling down in the last months of 2006 due to increased spending on rigs earlier in the year

Drop in Gas Prices Slows Projects
The reduction in gas prices means that some of the projects planned no longer met the economic returns required

Larger Oil Companies Focusing on Deepwater
The demand for large Independents and mid-size independents for drilling of deepwater projects has increased demand on the higher class of drill rigs and ships. These projects require considerable investment levels and challenging technology.

23 Jack-Ups to Middle East
The slow down in Jack up drilling this summer has lead to 23 rigs being relocated to the Middle east to exploit higher drilling day rates

Upstream Costs Keep Pace with Oil Price Increases
Increased costs for new oil and gas developments have risen to such an extent that the increase in prices is not showing the initial expected increase in project Investment values initially anticipated.
The Problem as We See It

• Project construction costs have *escalated dramatically* above long-term averages

• It is *uncertain* to what extent this trend will *continue*, moderate, or enter a period of heightened volatility

• Due to the number of variables (e.g., labor, steel, etc) and the perspectives (e.g., regional, by project type, etc) associated with this issue it is often *difficult to discuss from a strategic, integrated point of view*
Input Markets Tracked and Forecast

• Rigs
• Yards and fabrication
• Offshore installation
• Vessels
• Land rigs

• Engineering and project management
• Steel
• Equipment
• Bulk materials
• Labor
The Steel Market

Steel market includes structural beams and sections, cast steel shapes, plate steel and pressed forms, and tubulars, along with ancillary components such as walkways, railings, and ladders.

Market Driver

- Fuel
- Labor
- Iron Ore
- Market Activity
- Exotic Metals

Source: Cambridge Energy Research Associates.
The Offshore Rigs Market

Offshore rigs market includes Drillship, 5th Generation Semisub, 4th Generation Semisub, 3rd Generation Semisub, 2nd Generation Semisub and Jack-up Rigs

Market Drivers:
- Offshore Rigs Costs
- Rig Availability
- Market Activity
- Crew
- Fuel

Source: Cambridge Energy Research Associates.
CCAFF Total Portfolio Index

Source: Cambridge Energy Research Associates.

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Model Development and Data Processing

OFFSHORE-7
200 M Water
300 MMbl Reserves

Cost Engineering
Model Developed in QUE$TOR

Model Processed Through Historical
And Future Cost Data Bases

<table>
<thead>
<tr>
<th>Q2 2000</th>
<th>Q2 2001</th>
<th>Q2 2002</th>
<th>Q2 2006</th>
</tr>
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<tbody>
<tr>
<td>100</td>
<td>111</td>
<td>123</td>
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<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>251</td>
<td>175</td>
<td>110</td>
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</table>

Source: Cambridge Energy Research Associates.

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IHS-CERA Project Capital Cost Index

Source: Cambridge Energy Research Associates.
## Summary of CCAF Indices

<table>
<thead>
<tr>
<th></th>
<th>Q1 2006</th>
<th>Q3 2006</th>
<th>Increase Q3 ‘05 – Q1 ’06</th>
<th>Increase Q1 ‘06 – Q3 ’06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Portfolio</td>
<td>148.0</td>
<td>167.4</td>
<td>17.4%</td>
<td>13.1%</td>
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<tr>
<td>All Offshore</td>
<td>155.0</td>
<td>175.6</td>
<td>20.7%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Deep Water</td>
<td>160.9</td>
<td>185.1</td>
<td>20.2%</td>
<td>15.0%</td>
</tr>
<tr>
<td>All Land</td>
<td>129.7</td>
<td>146.9</td>
<td>8.4%</td>
<td>13.3%</td>
</tr>
</tbody>
</table>

Source: Cambridge Energy Research Associates.
Building the Future
CERA Long-term Energy Scenarios

About the CERA Global Energy Scenarios

• Supported by 73 corporations and governments
• Over $3 mil. investment
• 10,000+ man-hours of research
• Integrated view on oil, gas, power, and carbon
• 25-year horizon
• 7 separate regions studied
• 400+ pages of data, analysis, and narrative

Scenario Story Lines

ASIAN PHOENIX. Center of economic and political gravity shifts to Asia. Strong growth in China and India puts them on a path to eventually challenge the United States for global economic pre-eminence.

BREAK POINT. Oil supply difficulties limit production growth. Oil prices reach $120 per barrel. Fear of “peak oil” encourages moves to enhance energy efficiency and accelerate growth of alternative fuels.

GLOBAL FISSURES. Widespread political backlash against free trade and globalization, combined with global trade and political disputes lower economic growth and weaken energy prices. Little to no effort to limit carbon emissions.
Offshore Rigs Market

Cost Index (2000=100)

Source: Cambridge Energy Research Associates.
Steel Market

Cost Index (2000=100)

Source: Cambridge Energy Research Associates.
**Scenarios of Future Costs Process**

**CERA—Dawn of a New Age Scenarios**
- **ASIAN PHOENIX**
- **GLOBAL FISSURES**
- **BREAK POINT**

**Preliminary Analysis and Workshop Process**

**Intermediate Results Worksheet**

<table>
<thead>
<tr>
<th>Steel 2009</th>
<th>Rigs 2009</th>
<th>Workers 2009</th>
<th>ETC 2009</th>
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<tbody>
<tr>
<td>+10%</td>
<td>+150%</td>
<td>+30%</td>
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<tr>
<td>-50%</td>
<td>+70%</td>
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<td>—</td>
</tr>
<tr>
<td>+30%</td>
<td>-10%</td>
<td>+30%</td>
<td>—</td>
</tr>
</tbody>
</table>

**Results Converted into Individual QUESTOR Cost Databases**
- A.P. 2009
- B.P. 2009
- G. F. 2009

Source: Cambridge Energy Research Associates.
### Model Development and Data Processing

**Project Definition**

**Cost Engineering Model Developed in QUE$TOR**

OFFSHORE–7
200 M Water
300 MMbl Reserves

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Source: Cambridge Energy Research Associates.
Conclusions and Observations

• Economics of scarcity dominate 2 out of 3 scenarios
  — Break Point driven by scarcity of oilfield specific services and materials
  — Asian Phoenix driven by scarcity of general commodities and equipment

• Ageing western expertise an issue in all 3 scenarios
  — Drives cost increases in Asian Phoenix and Break Point
  — Moderates decline in Global Fissures

• Mega and large projects dominate 3-year period
  — Project sanction in 2005–06 push requirements in 2007–09
  — Global Fissures helps support higher than historical cost
Near-term 2007 Outlook

• Oil price stability above $50 per barrel will maintain demand
• Supply will continue to be market constrained until additional capacity in 2008/09
  — Steel costs will be fairly stable
  — Constraint in personnel will effect several markets
• There will be no relief to costs rises during 2007!
If you have any questions about this presentation or CERA in general, please feel free to contact

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