What defines a project?
Unconventional Reserves to Underpin LNG:
Australian CSG – LNG Case Study

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Overview

- What constitutes a project?
- Case study: Australia CSG-LNG reserves maturation process
- Reserves framework
  - Australia: PRMS (1P/2P/3P)
  - US: SEC (Proved, Probable, Possible)
- Analysis is from public data & assumed type curves
“Project”

- PRMS:
  - “Each project applied to a specific reservoir development generates a unique production and cash flow schedule. The time integration of these schedule taken to the project’s technical, economic or contractual limit defines the estimated recoverable resources and associated future net cash flow projections for each project. A project may be defined at various levels and stages of maturity; it may include one or many wells and associated production and processing facilities.”

  - “Project represents the link between the petroleum accumulation and the decision-making process. A project may, for example, constitute the development of a single reservoir or field, or an incremental development for a producing field, or the integrated development of several fields and associated facilities with common ownership.”

[Ref 1]
Queensland CSG-LNG Projects

- Three approved:
  - APLNG (2 x 4.5mtpa)
  - GLNG (2 x 3.9mtpa)
  - QCLNG (2 x 4.3mtpa)
- One under review:
  - Arrow LNG (2 x 4mtpa)
- CSG from Surat and Bowen Basins
- All upstream CSG to LNG

[Ref 2]
Reserves with Time- Dec 2013

Total 2P = 10,294 Bcf
Volume within 20 year contract = 9,463 Bcf
Reserves maturation

Probabilistic maturation

Deterministic maturation

[Ref 1]
1P/2P/3P: YE13 Reserves vs LNG Demand

1P (YE2013) equivalent to 2P (YE2007)
US & Australian LNG Reserve Challenges

<table>
<thead>
<tr>
<th>US Evaluation</th>
<th>Australian Evaluation</th>
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<tr>
<td>1P SEC</td>
<td>2P PRMS</td>
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<tr>
<td>Mix of small and large operators</td>
<td>Large operators</td>
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<td>Upstream: Many companies (operators and non-operators)</td>
<td>Upstream: Single company (JV)</td>
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<td>Upstream, pipeline, LNG different operators</td>
<td>Upstream, pipeline, LNG same operator</td>
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<td>Scattered acreage</td>
<td>Large blocks of continuous acreage</td>
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- Project definition for US LNG?
  - Would the size of the operator impact assessment?
  - How to quantify non-operator positions?
  - For LNG operator: how to quantify customers now and for next 20 years
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References


[2]: The State of Queensland (Department of Natural Resources and Mines), 2012, Queensland’s Petroleum: Exploration and development potential 2010-2011, online at www.mines.industry.qld.gov.au


Further reading

