A New Prototype for LNG Development

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1. Project overview
2. New prototype for LNG development
3. Challenges for Mitsubishi Corporation
4. Key to success
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First LNG project for Mitsubishi as the operator

45% ownership of Mitsubishi Corporation in DSLNG is the largest project participation in Mitsubishi’s global LNG portfolio.
**DSLNG Plant** located in Luwuk, Central Sulawesi Province, Indonesia, producing and supplying 2mtpa of LNG with only 1 train, 1 tank and 1 jetty.
**Joint venture and contractual framework**

**DSLNG’s core competency deriving from a full contribution by various first class stakeholders.**

<table>
<thead>
<tr>
<th><strong>Ultimate shareholder</strong></th>
<th>Mitsubishi Corporation 44.9%, Pertamina 29.0%, KOGAS 15.0%, Medco 11.1%</th>
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<tr>
<th><strong>Upstream</strong></th>
<th>Senoro Gas Field</th>
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<tbody>
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<td>Pertamina 50.0%, Medco 30.0%, Mitsubishi Corporation 10.2%, KOGAS 9.8%</td>
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<tr>
<th><strong>Matindok Field</strong></th>
<th>Pertamina 100.0%</th>
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<td>Pertamina 100.0%</td>
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<th><strong>Donggi Gas Field</strong></th>
<th>Pertamina 100.0%</th>
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<tr>
<th><strong>Midstream</strong></th>
<th>EPC contract</th>
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<td>JGC</td>
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<th><strong>Maintenance Contract Service Agreement</strong></th>
<th>GE</th>
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<tr>
<th><strong>Downstream (SPA)</strong></th>
<th>JERA</th>
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<tr>
<td></td>
<td>1.0mtpa</td>
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<th><strong>KOGAS</strong></th>
<th>0.7mtpa</th>
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<th><strong>Kyushu Electric</strong></th>
<th>0.3mtpa</th>
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<th><strong>Shipping (TCA)</strong></th>
<th>LNG Maleo</th>
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<td>MOL, NYK, K-LINE</td>
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<tr>
<th><strong>Hyundai Utopia</strong></th>
<th>Hyundai LNG Shipping</th>
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<th><strong>Finance</strong></th>
<th>Project Finance</th>
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<td>JBIC, Korea Eximbank, etc</td>
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</table>
Founding of PT.DSLNG in 2007 accelerated the development of the project after 14 years of long interim period since the start of Senoro-Toili PSC in 1997.
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New prototype for LNG project

Conventional LNG project
- Large scale gas field/production
- High development/EPC cost
- Long term commitment by the buyers

New prototype
- Monetization of small scale gas reserve
- Less development/EPC cost
- Shorter term/small volume commitment by the buyers

Challenges
- Single train operation
- Diminishing economy of scale
- Absence of IOC

Proprietary & confidential
Proactive approach for single train operation (1)

Full CAPEX control and improvement of operational efficiency, overcoming various challenges in the single train operation.

CAPEX control
- EPC lump-sum turnkey contract
- Adaptation of GE Frame 5D for both GTC/GTG to reduce procurement cost for spare parts

Achievement
- **EPC within planned budget**
- **Minimum change order**

Operational efficiency
- Installation of recovery heater to minimize flare loss from scrub column
- Optimization of “Holding” and “Loading” mode operation
- Preventive maintenance
- Collaborative approach for a “smooth start-up”

- **Plant availability of 93%**
- **Thermal Efficiency of 97%**
- **15% increase of LNG production (nameplate capacity of 2.0mtpa vs 2.3mtpa in 2016)**
Proactive approach for single train operation (2)

One of the shortest working number of days spent from gas-in to 1st cargo in LNG history.

Close communication with involving parties (i.e. upstream, EPC contractor) and full preparation since the early developing stage.
Project partner alignment

Strong alignment and collaborating effort made by all the shareholders, each leveraging its own strengths to maximize the output.

Over 30 years of experience in LNG marketing, operation and strong ties with Government of Indonesia

Expertise in domestic upstream business and corporate task (i.e. HR)

Long standing experience in LNG market and expertise in project financing

Technical support/construction management and financing expertise. Also a off-taker.
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Front end role in the project management as an operator requires a further level of commitment and responsibility for Mitsubishi Corporation.

**Operator**
- The largest shareholder of the project
- Responsible for project management
- Full access of information
- Approx. 30-40 manpower involved

**Non-Operator**
- Limited influence on important decision making process
- Limited access for project intelligence (i.e. periodical report)
- Limited opportunity to contribute in the operation
- Approx. 5-10 manpower involved
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A key to success

“Contribution to Indonesia”
- Respect for property and natural resources of Indonesia
- Local community contribution

“Establishing corporate culture”
- “Safety always first” motto
- Respect for diversity

Relationship management with all stakeholders”
- Close and reliable communication
- Win-win relationships
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Achievement thus far...

“Safety always first” motto
Zero Day-Away-From-Work-Case (DAFWC) and fatality in 2016

Proactive approach
Smooth and efficient operation

Max production
2.3mtpa in 2016, above its name capacity of 2.0mtpa

Capex reduction
EPC within budget; minimum change order

CSR
Investment Award in 2016 for contribution to local economic growth

Success of DSLNG project indicates that development of marginal scale resources with small LNG plant can be considered as a new prototype for LNG development.
Thank you!
Terima kasih!
감사합니다!
ありがとうございます！