New Generation of Barging –
Self Propelled Barges/Shallow Draft Barges

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Orchard Maritime Services
About Orchard Maritime Services

• Subsidiary of Louis Dreyfus Armateurs (LDA), a leading French shipowner

• Present in Indonesia for over 20 years, operating complex logistics solutions on behalf of major Indonesian mining companies and power plants

• A specialized, ‘one-stop’, end-to-end logistics solutions provider
What We Do

BARGING + TRANSSHIPMENT + PORT OPERATIONS

INTEGRATED LOGISTICS PACKAGE

Production Shipping Transshipment Barging Port Operations Final User
How We Work

• Designing customized logistics solutions for individual projects

• Offering consultancy services

• Using an ‘in-house’ technical team to assess suitability of vessels for each project

• Building and operating the vessels (based on reputable and trusted relationships with respected shipyards)

• Continuous feedback and follow-up to improve existing processes and reduce costs

CONSULTING
What is the best strategy to implement?

DESIGNING VESSELS
‘In-house’ design of logistics assets

OPERATE
Fleet management & Day to day operations
Challenges in the Indonesian Coal Logistics Landscape

**GEOGRAPHICAL:**
- Many shallow-draft rivers that restrict use of Handymax/Panamax vessels

**INFRASTRUCTURAL:**
- Fragmented; dominated by T&Bs
- Limited deep-sea ports (heavily reliant on offshore transshipment)
- Severe port congestion

**OPERATIONAL:**
- Weather: riskier for smaller vessels, during year-end
- Slower sailing speed & long transit times for T&Bs
OMS’ Solution: 13k dwt Self-Propelled Barge (SPB)

- Draft 5.7m fully-loaded
- 13,000DWT
- Length Overall limited to 127m
- Beam 26m
- Service speed: up to 11 knots
- 2 x 1,600kW engines
- Improved hydrodynamics (able to reach 7 knots at 85% of engine output, using one engine only)
- Forward wheelhouse
- Optional bow thrusters
- Good maneuverability
- KR Class (‘Deck-Cargo Ship’)
Benefits of direct supply vs. multiple handling using OMS’ SPBs

- **Barge Loading (Upstream in River)**
  - Slow speed of T&Bs
  - Larger fleet size required to handle total tonnage

- **Barging**

- **Transshipment**
  - Risk of lost cargo during transshipment
  - Congestion and prolonged waiting
  - Huge upfront investment

- **Transport using HMX/PMX**
  - Volatility of the spot freight market

- **Unloading Terminal (Power Plant Stockpile)**

OMS 13k dwt Self-Propelled Barges

June 2014
In this example, the breakeven distance between 1 SPB and a barge towed by a tug is **221 NM**.
**SPB vs. Tug + Barge:**
Comparison through an example project, 1mtpa, 10 Years

- Since SPB sail faster, the number of vessels that are necessary to transport the amount of cargo may be lower.

- In this example (1mtpa, 10 Years), a second set of barge+tug is necessary from 165NM. Consequently the breakeven point is actually at 165NM not at 221NM as previously stated (when the number of vessel was not considered).
SPB vs T&B vs Handymax vs Panamax (1mtpa, 10 years)

- **Tugs + Barges**: 165 NM
  - Single Handling from Shallow Port to Deep Sea Port, then back to Shallow Port.

- **SPB**: 600 NM
  - Single Handling from Shallow Port to Deep Sea Port, then back to Shallow Port.

- **Handymax (geared)**: 600 NM
  - Barging from Shallow Port to Deep Sea Port, then Transshipment, then Transport back to Shallow Port.

- **Panamax (gearless)**: 900 NM
  - Barging from Shallow Port to Deep Sea Port, then Transshipment, then Transport back to Shallow Port.
Geographical coverage of SPBs vs HMX

SPB

River

"D"

Port

600 NM

Handymax (geared)

River

Barging

Transshipment "D" – 150 NM

Port
Geographical coverage of SPBs vs PMX

SPB

Port

"D"

River

900 NM

Panamax

Port

River

Barging

Transshipment "D" – 150 NM

Geographical coverage of SPBs vs PMX
Review of initial operations using SPBs

• In 2012, OMS undertook a feasibility study to replace its T&B sets with SPBs

• Decision was made (with agreement of customer) to double annual tonnage, and replace 6 T&Bs with 3 SPBs

• OMS’ latest generation of SPBs were introduced into the Indonesian operations in H2 2013
## Benefits of OMS’ SPBs:

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<th>Reduction in Fleet Size compared to T&amp;B</th>
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<tr>
<td>1</td>
<td>• More efficient than T&amp;Bs</td>
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<td>• Easier fleet management</td>
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<th>Safety to Crew &amp; Cargo</th>
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<td>• SPBs have better seaworthiness in rougher seas</td>
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<td>• Able to withstand harsher weather conditions</td>
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<th>Convenience in Handling</th>
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<td>• Given the right project specifications, SPBs may fulfill the task of T&amp;Bs, transshippers, and HMX/PMX vessels</td>
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<th>Optimization of Propulsion</th>
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<td>• Higher speed adaptability, depending on commercial needs</td>
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<td>• Good maneuverability (able to cope with river bends and potentially allow self-berthing/deberthing)</td>
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<th>Higher Fuel Storage Capacity &amp; Better Fuel Consumption</th>
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<td>• Can travel further without the need for bunkering</td>
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<td>• Ability to travel faster (~ 7 knots) using 1 engine @ 1360kW (85%), vs T&amp;B that can only achieve 5 knots, using 2 engines at an output of 1,500 kW</td>
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<th>Suitability of Deployment in Indonesia (and Asia)</th>
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<td>6</td>
<td>• Suitability of moving coal from minesites located in East Kalimantan, to various power plants located across Indonesia, as well as Philippines/Malaysia</td>
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Conclusions:

- SPB are more cost-effective than Tugs and Barges for distances >165 NM (for 1mtpa); this is before considering the inferior seaworthiness of Tugs and Barges, which impacts reliability of supply.

- SPB can deliver cost savings in terms of double handling; the cost savings are the most apparent in River to Port and River to River routes.

- SPB can deliver more cost-effectively to ports with draft constraints not accessible to Panamax and Handymax vessels.
THANK YOU