Dry Bulk Transshipment

Section 2.
Development Process & Key Technologies
Transshipment: Environmental Approvals

- Key Development Step
- Regulatory Compliance
- Flag State Approvals

Objective: Protection of Marine Environment
Transshipment: *Metocean Study*

Collect data & assess metocean conditions at transshipment site
To enable design of safe & efficient transshipment operations

Wind, Waves, Currents, Sea Levels, Ice, Visibility, Tropical Cyclones, Thermal Fronts

Hazards, Vulnerabilities, Optimization, Risk, Decision Support
Transshipment: Vessel Motion Study

Perform quantitative analysis to assess relative vessel motions
Determine vessel motion threshold limits at transshipment site
Transshipment: Impact of Operating Conditions

Different operating conditions require different transshipment solutions.

Operating conditions determine equipment requirements.

Transshipment Engineered for the Operating Conditions.
Transshipper: **Self-Unloader Systems**

*Cargo Hopper – Cargo Gates – Cargo Elevator – Cargo Boom*

- Gravity Reclaim
- Robust System
- Proven Technology
- Reliable Operations
- Safe & Environmental
Shuttle Transfer Vessel: Articulated Tug Barge (ATB)

Self-unloading System or Gearless *Pin Connector System* – Improves Sea Keeping

Permits Efficient ‘Drop & Swap’ Barge Logistics

Shuttle ATB for Export or Import Cargo