Mega Ships
And the Effects on the Cargo Industry
MV OOCL Hong Kong
Introduction

The ever increasing amount of global trade has driven both shippers and transportation providers alike to seek areas of efficiency. The manufacturing of container mega-ships has been sought after for the potential cost savings for various parties.

These savings come at an unrealized cost. Supply chain risks and the infrastructure investments needed to support these enormous vessels inversely correlate to the cost savings that cargo owners seek, limiting the benefits, both in efficiency and financially.
Case Study: Sinking of MSC Oscar

- Considered a Total Loss
  - Carrying 12,500 TEU at time of the incident.
  - Average value reported per container: $50,000
  - Total cargo value: $625 million (minimum)

### Average TEU Value Estimates

<table>
<thead>
<tr>
<th>Source</th>
<th>Average Value</th>
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</thead>
<tbody>
<tr>
<td>Matthew O'Sullivan – IUMI 2006</td>
<td>$80,000 - $210,000</td>
</tr>
<tr>
<td>Munich Re: Estimate</td>
<td>$80,000 - $100,000</td>
</tr>
<tr>
<td>XL Re Studies</td>
<td>$35,000 - $120,000</td>
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<tr>
<td>Hyundai Fortune (Multiple sources)</td>
<td>$204,000 - $300,000</td>
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<tr>
<td>MSC Carla (AIMU RI Committee Survey)</td>
<td>$74,000</td>
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<tr>
<td>APL China (AIMU RI Committee Survey)</td>
<td>$211,000</td>
</tr>
<tr>
<td>Guy Carpenter: Japan – LA</td>
<td>$90,000</td>
</tr>
<tr>
<td>Guy Carpenter: LA – Japan</td>
<td>$30,000</td>
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<tr>
<td>AIMU Reinsurance Committee</td>
<td>$95,000</td>
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Shipping 101

- Dry Cargo Vessels
  - Bulk Carriers
  - Containerships
  - General Cargo
  - Roll-on / Roll-off (Ro-Ro)
Shipping 101

• Liquid Cargo Vessels
  • Chemical / Product Carriers
  • Crude Carriers
  • Liquefied Gas Carriers
    • Liquefied Natural Gas (LNG)
    • Liquefied Petroleum Gas (LPG)
    • Floating Liquified Natural Gas (FLNG)
Shipping 101

• Specialized Vessels
  • Heavy Lift / Project Cargo Vessels
  • Ice Breakers
  • Livestock Vessels
  • Passenger Vessels / Cruise Ships
  • Research Vessels
Shipping 101

- Tugs & Assist Vessels
  - Tugboat
  - Offshore Supply Vessel (OSV)
  - Integrated Tug-Barge (ITB)
  - Articulated Tug-Barge (ATB)
Considerations of Carriage

- Motion and Dynamics
  - Acceleration Forces
  - Cargo Properties
  - Weather Factors
- Conveyances
  - Break-bulk Stowage
  - Container Types
  - Project Cargo(es)
  - Temperature Sensitivity
Early Beginnings

- **1955**: Malcolm McLean, a local NC trucking company owner uses $7M loan in to purchase Pan-Atlantic Steamship Company, which was later renamed to SeaLand Industries.
- **1956**: The first container ship was a converted World War II era T-2 tanker named the SS Ideal-X
  - Capacity: 58 newly designed containers
  - Maiden Voyage on the 26th of April 1956 from Port Newark, New Jersey, heading for Houston.
- **1957**: SS Gateway City, the first vessel designed and rebuilt specifically to carry containers, sets sail from Port Newark
  - Capacity: 226 containers carried both above and below deck
- **1966**: SS Fairland becomes the first containership to complete an international voyage, sailing from the US to the Netherlands with 236 containers on-board.
- **1968**: Container ship capacity increases to carry around 1,000 TEUs
SS Ideal-X

1956 - SS IDEAL X
World's first container ship

- 192 cars
- Under 2 football pitches: 160 m
- Weight of cargo: 16,480 DWT
- Half way round the world

2015 - MSC OSCAR
World's largest container ship

- 38,448 cars
- Over 4 football pitches: 395.4 m
- Tonnage: 197,362 DWT (weight of cargo)
- All the way round the world
Bigger and Better??

- Container ships
- Bulkers
- Passenger & Cruise
- Tankers
- Ro/Ro-ships
- General cargo

Ship size growth (dwt; 100=index)

The Good

• Operational Efficiency
  • 90% reduction in Shipping Costs
  • 99% cost reduction in loading cargo

• Staggering Global Development and Expansion
  • There are now more than 6,000 container vessels currently in service
  • 90% of every purchased item has been shipped inside a container
The Not So Good...

- Only 20 ports in the world can accommodate 19K TEU vessels !!!
  - Large capital investment by already lagging Ports
  - Port Resource Management
  - Carrier Alliances Dependence
  - Cargo Owner Price pressure
  - Lack Communication and Collaboration amongst Stakeholders
Vessel Draft

FIGURE 1: Comparative Size of Large Container Ships 1990–2015
Source: MSC Available at: https://www.msc.com/getattachment/9ba3c19f-3c3b-4d9b-9970-a8754b3565
HHLA Available at: https://people.hhlra.de/sections/eng/ch3en/tmc3en/containership_draft_size.html

- 1990 - Panamax size
- 2015 - Latest generation mega container ships

LENGTH
275 metres
400 metres

BEAM
32.2 metres
59.0 metres

DRAFT
12.5 metres
16.3 metres

CAPACITY
4,338 TEU
19,224 TEU

14,000–18,000+ TEUs
10,000 TEUs
8,000 TEUs

14K TEU Ships: 193'
*TEU = 20’ equivalent unit (one 20’ container)

*14,000 TEU ship draft: 14'
16,000 TEU ship draft: 16'

Pilotage navigation guidelines:
10% of draft below keel.
Trade Lanes and Ports
Accumulation Risk

- Tianjin in 2015.
  - Cost the industry $2.7bn

- Port infrastructure to increase in size and capability in an effort to handle megaships.

- Warehousing & container traffic need to be considered.
Stakeholders

- Longshoremen
- Shipping Lines
- Port Authorities
- Stakeholders
- Shippers
- Logistics Firms
- Vessel Crews
Calculating Risk Factors
Risk Considerations

- Unintended consolidation/accumulation aboard Mega Ships
- Port Accumulation due increased peak period and steeper volumes
- Narrowing Trade routes and fewer Port calls
- Human Error Casualty factor
- Obstructed Salvage and Recovery
- Increased touch points at Ports due to off-site storage

- What is the average value per container?
- How many containers?
- How many insureds?
- Max policy limits?
- What about multiple vessels?
- Third Party Logistics?
Challenging Casualties
What’s Next – and How??

- Educate Shippers
  - Emphasize Contract Wording with all Carriers and Stakeholders to control accumulation and consolidation
  - Review Motor Carrier selection criteria and standard work processes that reflect increased usage
  - Define processes and standards of care in a Service Level agreement with Penalty Clauses
  - Review Contingency planning for NAT-Cat
## Presenters

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<th>Contact Information</th>
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