AAPA Training Session
An Intermodal Perspective

Theodore Prince
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Introduction

• Overview of the shipping industry
  – Dates back to the Phoenicians (or before)
  – Uniform processes
    • Sales
    • Vessel operations
    • Bills of lading
    • Container management
    • Customer service
What is Relatively Recent – and Uniquely American?

- Line-supplied chassis
- Rail [on-dock] intermodal
Industry Challenges

• Macro
  – Volume growth
  – Carrier profitability
  – Sufficient infrastructure

• Micro
  – Chassis scope
    • Management
    • Ownership
    • Operation
  – Chassis goal
    • Improved efficiencies
    • Reduced costs
    • Added stakeholder value
Industry Challenges

• Drivers of industry growth
  – US economy relies on a sophisticated intermodal system to support global trade
  – Intermodal system represents $billions of investment
    • Vessels and locomotives
    • Ports and marine terminals
    • Railroad networks and terminals
    • Containers, rail cars and chassis
    • Warehouses
    • Tractors
Industry Challenges

• Intermodal Chassis
  – Container provides linehaul economies
  – Intermodal [truck] transfer requires wheels
  – Chassis + Container = Trailer
  – Chassis excess
    • Too few = inability to effect intermodal transfer
    • Too many = storage, rehandling and damage
    • Either way: cargo does not move and terminal space is wasted
Industry Challenges

- More vessels and containers deployed
- More vessels
- More terminal space needed – but less available
- More chassis needed to handle volume growth
- Trade and economic growth

Economy

Vessel

Terminal

Chassis
Industry Challenges

There are an estimated 820,000 chassis in the United States.
Industry Challenges

Source of international chassis

- Ocean Carrier, 70%
- Leasing Company, 10%
- Other, 20%
- Truckers, 8%
- Railroads, 8%
- Terminals, 3%
- Others, 1%
Pool Benefits

- Chassis are a major cost burden

- Cost of Capital
- Asset Administration
- Maintenance and Repair
- Inspection and licensing
- Insurance and liability
- Daily “right-sizing”
Pool Benefits

Cost Savings
- Reduced evacuations (gate moves/storage)
- Enhanced equipment utilization
- Group purchasing (e.g., tires and insurance)

Operational Improvement
- Improved terminal space availability
- Faster terminal turn time for trucks
- Improved train unloading

Societal Benefits
- Reduced environmental impact
- Uniform equipment quality
- Enhanced and roadability compliance
Pool Benefits

The National Marine Container Transportation System: A Call to Action

We must improve the productivity, efficiency and throughput of all American blue-water ports. There are several business-practice issues that must be addressed mostly by the private sector, they include: Developing regional or national chassis pools

The Marine Transportation System National Advisory Council (MTSNAC) Intermodal Recommendations to DOT Secretary

There is a need to move from problem definition to problem resolution. (Of ten recommendations) #8: Improve the management of chassis.
Common **Chassis Pools** can help trucking companies save fuel and reduce greenhouse gas emissions by minimizing unnecessary truck movements and idling associated with switching chassis.

Drayage trucks using pooled chassis could save up to 0.8 gallons per trip, reducing Nitrogen Oxide and Particulate Matter emissions.
Pool Benefits

• Past “pool” experience was less than satisfactory
  – Neutral pools
    • Separate profit centers
    • Run by non-carriers
    • Sized for profitability – not peak availability
    • High costs made carriers resist participating
  – By 2005, railroads were considering mandatory neutral pools
    • Chassis were consuming too much space
    • Matching chassis and containers was complicated and prone to error
    • Chassis maintenance was not uniform
    • Trucker turntime was increasing
  – Unified approach by OCEMA redirected effort to CCM concept
Pool Benefits for Lines

<table>
<thead>
<tr>
<th></th>
<th>Capital Cost @ $2.20 per-day</th>
<th>Operating Cost @ $1.50 per-day</th>
<th>Chassis Cost of $3.50 per-day</th>
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<tbody>
<tr>
<td><strong>Total</strong></td>
<td>$4.70 per-day</td>
<td></td>
<td>$3.50 per-day</td>
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National Annual Potential (500,000 Chassis)

<table>
<thead>
<tr>
<th>Percentage Savings</th>
<th>$136 million</th>
<th>$170 million</th>
<th>$204 million</th>
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<tbody>
<tr>
<td>20%</td>
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<td>25%</td>
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<td>30%</td>
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</table>
Pool Benefits for Terminals

40 Chassis per-acre × $400,000 per-acre = Capital Investment Saved

National Annual Potential (500,000 Chassis)

- 20% Savings: $1.0 billion
- 25% Savings: $1.25 billion
- 30% Savings: $1.5 billion
Pool Benefits

• Additional cost of “neutral pools”
  – $450 million in increased rentals
    • 250,000 chassis @ $5/day
  – $750 million in increased flips/storage
    • 250,000 chassis x 50 flips @ $60
  – Neutral pools only deliver benefit when a monopoly license is granted
  – Untold benefit from avoidance of permanent loss of control to leasing companies
Pool Benefits

• The case for the co-op (vs. neutral) pool model
  – Administrative and financial
    • Multiple sources of chassis supply (lines, lessors)
    • Lower cost than neutral pool chassis
    • Accommodates existing asset ownership and/or leases
    • Accommodates asset and non-asset users
    • Protects asset investment
  – Operational
    • Common inventory management across multiple facilities
    • Enhanced utilization across metro area
    • Common M&R standards/multiple metro facilities
    • Allows users to better meet individual service philosophies
OCEMA Members

APL  ACL  COSCO  CS  CMA CGM  CROWLEY  CSAV  EVERGREEN  HAMBURG-SÜD  HMM  HANJIN SHIPPING  Hapag-Lloyd  K Line  MAERSK  MSC  Mitsui O.S.K. Lines  NYK  OOCL  YM  ZIM
CCM Overview

- Elements of a successful pool

- Integration of existing assets
- Operational controls
- Cooperation of terminal operators
- Sufficient IT resources
On-Dock Rail

• The other intermodal story
  – Does intuition = fact?
Operational Issues

- Operational location: off-dock
  - Standard rail intermodal facility
  - Gate access to/from public roads
  - Private entrance possible
Operational Issues

• Operational location: on-dock
  – Intermodal terminal operated by – and part of marine terminal
  – Internal movements within terminal
Operational Issues

• Operational location: near-dock
  – Adjacent to marine terminal
  – Access controlled through private gate
On-Dock Rail

• How Did We Get Here?
  – Canada
    • Early water-rail integration
  – PSW
    • Covering up a bad investment
  – PNW
    • Port paranoia
On-Dock Rail

- No need for terminal expansion
- Hook & haul!

Line
- Vertical integration
- “Perceived advantage”

Terminal
- No gate!
- More land!
- More revenue!
- More labor!
On-Dock Obstacles

$/Lift
- Waterfront labor expense and work rules
- All on-dock loads handled twice
- Dual wharfage

Time
- Extended car cycle times
- Serial trains – as opposed to parallel units
- Limited windows to switch

Density
- Not enough loads-per car
- Disaggregated destinations
- Lack of desired train length
Best Practice Benchmarking

- Labor Cost per Gate Move
- Labor Cost per Rail Yard Lift
- Gate Moves per Man Hour
- Rail Yard Lifts per Man Hour

Marine vs Rail
## Operational Benchmarking

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Rail Intermodal</th>
<th>On-Dock Rail</th>
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<tbody>
<tr>
<td>Dynamic train planning</td>
<td>✔</td>
<td>Ø</td>
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<tr>
<td>Direct loading to car</td>
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<td>Yard air</td>
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<td>Storage yards</td>
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<td>Switching capability</td>
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<td>Proprietary short lines</td>
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On-Dock Rail Conflict

Land for on-dock rail (and support)

Land needed for marine operations
Alignment Required

Rail

Line

Terminal