Agenda

- US Intermodal System Overview
- UP Intermodal Operations
- The Port Connection
- Industry Challenges
  - Regulatory
  - Chassis
  - Weights
  - Communication
- Emerging Technology
  - Wide Span Gantry at Inland Terminals
  - AGS
  - Scales
All United States Railroad

Intermodal Terminals
Intermodal Comprises 47% of 2013 US Class 1 Rail Volume

Source: AAR CS54 (UP, NS, CSX, BNSF, KCS)
Intermodal Traffic Breakdown

U.S. Rail Intermodal Traffic: 1990-2012
(millions of containers and trailers)

Source: AAR
Union Pacific’s Intermodal Network

Legend
- Intermodal Ramp
- Suspended Operations
- Steel wheel Interchange
- On Dock Locations
- Paper Ramp

2012 Fast Facts – Intermodal
- 34 Ramps – 14 States
- 5.3 mil annual lifts
- 28,835 trains annually
- 11,600 Cars daily
- Ownership:
  - 54,285 Containers
  - 38,233 Chassis
  - 250 RTG’s/Packers
- $1.1 bil Capex New/Expanded Terminals past 10 years!

Port of Long Beach
- Salt Lake City
- Denver
- KC Neft
- Dupo
- Salem
- Marion
- Memphis
- New Orleans
- Avondale
- Cut
- Global 1
- Global 2
- Global 3
- Global 4
- Yard Center
- Canals

Union Pacific’s Intermodal Network

Map showing major cities and intermodal facilities, including
- Seattle
- TacSim
- Albina
- Brooklyn
- Oakland
- Port of Long Beach
- Salt Lake City
- Denver
- KC Neft
- Dupo
- Salem
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Intermodal Franchise 2013 YTD - Actual

Unit Mix

- Domestic: 49%
- International: 47%
- Trailers: 4%

Locations:
- LA Basin
- El Paso
- Chicago
- Dallas
- Houston
Union Pacific Railroad

International Intermodal Market Coverage

- Larger Ships – UP has larger market coverage
- More Destinations = More Options
- UP coverage includes eastern points and destinations north and south of the US borders

 Stout Points:
- Salt Lake City
- Denver
- Kansas City
- St. Louis
- Memphis / Marion
- Council Bluffs
- Chicago / G2-4
- Portland
- Oakland
- Seattle
- Tacoma
- Los Angeles
- Long Beach
- Salt Lake City
- Houston
- Shreveport
- New Orleans / Avondale
- El Paso
- Laredo
- Tucson
- Santa Teresa (2014)
- Dallas
- San Antonio
- Nogales
- Houston
- New Orleans / Avondale

Minimum Scheduled Transit from W.C.:
- 3 Days
- 4 Days
- 5 Days

Interchange Points
International Destinations
Destinations from PNW
Destinations from Oakland
Destinations from LA/LB
Coastal Share Percentage - Total Asian Imports (TEUs)

- California Ports still primary for Asian imports/exports
  - Stable share since 2009
  - Union Pacific well positioned to handle growth and large volumes off the larger vessels
- North East Coast Ports share stable
- Some growth via South Atlantic Ports
- British Columbia Ports have gained some share

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<th>Region</th>
<th>% Share 2012</th>
<th>% Share YTD Sept '13</th>
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<tr>
<td>California</td>
<td>55.3%</td>
<td>55.3%</td>
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<td>No. East</td>
<td>13.0%</td>
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</tr>
<tr>
<td>Canada</td>
<td>3.4%</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

Source: Datamyne
Union Pacific Volumes by Port/Port Region

- UP volume in line with overall import trends

Note: Other Western Ports served by UP have volume less than 50,000 units annually
Growth in Transloading

Estimated Western Rail Carrier IPI moves vs. Domestic moves
% of Total USWC imports

- Slow steady growth of transloading from ISO boxes to domestic 53’ boxes driven by BCO overall supply chain strategies

Source: IANA
The Growth Challenge

- Intermodal volumes expected to continue strong growth

- Investing in:
  - Terminal Infrastructure
  - Line of Road
  - Technology
  - Locomotives
  - People
The Chassis Puzzle

- Changing chassis model in N. America
  - Steamship line
  - Chassis pools
  - Trucker model

- Terminal design dependancies
  - Wheeled
  - Grounded
The Weight Challenge

- Industry wide issue
- Pilot Study
  - 1166 containers
  - 1 in 3 off by 2000# or more
- Importance of accurate weights
  - Ship stowage
  - Train load planning
  - Terminal handling
  - Train performance
The Regulatory Challenge

- PTC
  - Unfunded Federal mandate
- FMCSR
  - 49CFR SS.385, 386, 390
- CARB
  - Facility Operators
- Local Jurisdictions
  - Influences by Cities
Union Pacific Railroad

Emerging Technologies
Intermodal Technology

AGS

Automatic Gate System

- Records information on gate transactions
- Includes images for damage inspections
- Improved security / driver validation
- Tire Inspection Technology
Intermodal Technology

*MIV*

Mobile Inventory Vehicle

- Real time inventory updates
- OCR technology
- GPS mapping
- Image Viewing capable
- Reduced inventory time
- Data analytics for root cause of misplacements
Intermodal Technology

GPS Cranes

GPS Cranes

• Autosteering
  – Improved productivity
  – Improved safety
Intermodal Technology

Crane Scales

- Crane Scale Technology

Output data of LASSTEC system:
- Date and time
- Container sizes
- Each twistlock weight
- Container weight 1, 2 and total
- Eccentricities in x - axis
- Eccentricities in y - axis
- Each twistlock peak load
- Total peak load

Total container weight

Weight on each twistlock

Centre of gravity point of the two containers.
Intermodal Technology

Other Initiatives

- Drag Reduction / Fuel Conservation
  - Aerodynamics
  - Wheel-Rail
- Automated Flip Station
- Movement optimization
- Terminal Automation
Thank You!

BUILDING AMERICA®
Backup Slides
Santa Teresa, NM
Picture of RTG Operations
Santa Teresa Intermodal Terminal
Enhanced Technology

Camera Surveillance
- Enhanced security
- Video recording for playback purposes
- Gate activity monitoring
- Incident investigation
The Weight Challenge

- Weight is a significant part of the cost component
- Ability to double stack is major cost consideration
- Over one half of UP ISO box shipments weigh over 25 tons