THE LOWER MISSISSIPPI RIVER

Bruce Lambert
What is the Mississippi River anyway?
It is a System of Systems...

Remember:
• Magnitude
• Scale
• Complexity
• Simplicity
The Lower Mississippi River
Outline

- Inland Navigation
- Deep Draft Navigation
- “How Does This Thing Work”
- Resiliency
- The Economics of the River
- The Future of the River
Inland Navigation
Inland Waterway Assets

- Memphis
- Vicksburg
- Other Systems
  - Red River
  - Arkansas River
  - GIWW
Trade Patterns- Domestic Waterway Tonnage to/from Louisiana (2010)
Top Commodities Moved on the River (2010)

Northbound

- Unknown and Not Elsewhere Classified Products
- Manufactured Goods
- Food and Food Products
- Primary Metal Products
- Primary Non-Metal Products
- Iron Ore, Iron, and Steel Waste and Scrap
- Sand, Gravel, Shells, Clay, Salt, and Slag
- Chemicals excluding Fertilizers
- Chemical Fertilizers
- Petroleum Products
- Crude Petroleum

Southbound

- Unknown and Not Elsewhere Classified Products
- Manufactured Goods
- Food and Food Products
- Primary Metal Products
- Primary Non-Metal Products
- Iron Ore, Iron, and Steel Waste and Scrap
- Sand, Gravel, Shells, Clay, Salt, and Slag
- Chemicals excluding Fertilizers
- Chemical Fertilizers
- Petroleum Products
- Crude Petroleum
Competing Corridors (FAF, 2010)

- Water: 67%
- Truck: 28%
- Rail: 7%
- Pipeline: 34%
- Rail: 8%
- Truck: 6%

Northbound: 107,396
Southbound: 390,459
Physical Assets

- Baton Rouge
- South Louisiana
- New Orleans
- St. Bernard
- Plaquemines

- Number of Deep draft facilities
- Anchorages
- Fleet areas
Value of International Trade through the Lower River (2003-2011) (vessel value)
Top Trading Partners – Exports (vessel value)
Top Trading Partners – Imports (vessel value)
Depth of Vessels Leaving New Orleans, October 2012 (480 Vessels) (NOBOT)

Draft of Vessels (in feet) Leaving NO

- <10: 0%
- 10-15: 0%
- 15-20: 4%
- 20-25: 14%
- 25-30: 24%
- 30-35: 18%
- 35-40: 29%
- 40-45: 8%
- >45: 3%

Departures by Port Jurisdiction

<table>
<thead>
<tr>
<th>River Mile</th>
<th>No. of Vessel Departures</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4 - 91.0</td>
<td>68</td>
</tr>
<tr>
<td>91.1 - 104.8</td>
<td>122</td>
</tr>
<tr>
<td>104.9 - 209.9</td>
<td>268</td>
</tr>
<tr>
<td>210 - 233.8</td>
<td>21</td>
</tr>
<tr>
<td>IHNC</td>
<td>1</td>
</tr>
</tbody>
</table>
Supply Chains and Logistics?
Mississippi River and Its Relationship to State Exports (2011)

Shading Indicates Ranking based on Share of Export Tonnage

% represents share of Total State exports through the Miss River Corridor
Top Export Commodities, 2011

- Mineral Fuel, Oil Etc.; Bitumin Subst; Mineral Wax: 35%
- Cereals: 20%
- Oil Seeds Etc.: 19%
- Other: 8%
- Organic Chemicals: 5%
- Plastics Etc.: 2%
- Animal Or Vegetable Fats, Oils: 3%
- Prep Animal Feed: 4%
- Iron And Steel: 1%
- Inorganic Chemicals: 2%
- Miscellaneous Chemical Products: 1%
Share of Top Commodities – Exports of US, 2011 (Value)

Miscellaneous Chemical Products
Iron And Steel
Inorg Chem; Prec & Rare-Earth...
Plastics And Articles Thereof
Animal Or Vegetable Fats, Oils...
Food Industry Residues & Waste;
Organic Chemicals
Oil Seeds Etc.; Misc Grain, Seed,
Cereals
Mineral Fuel, Oil Etc.; Bitumin...
TOTAL ALL COMMODITIES

Legend:
- us total
- US maritime
- Gulf Coast
Top Import Commodities, 2011

- Mineral Fuel, Oil: 57%
- Iron And Steel: 9%
- Fertilizers: 6%
- Organic Chemicals: 3%
- Copper: 3%
- Coffee, Tea, Mate & Spices: 3%
- Inorg Chem; Rubber And Articles Thereof: 3%
- Salt; Sulfur; Earth & Stone; Lime & Cement Plaster: 1%
- Other: 9%
- Animal Or Vegetable Fats: 3%
Share of Top Commodities – Imports of US, 2011 (Value)

- Salt; Sulfur; Earth & Stone; Lime & Cement Plaster
- Animal Or Vegetable Fats, Oils Etc. & Waxes
- Coffee, Tea, Mate & Spices
- Copper And Articles Thereof
- Inorg Chem; Prec & Rare-Earth Met & Radioact Compd
- Rubber And Articles Thereof
- Organic Chemicals
- Fertilizers
- Iron And Steel
- Mineral Fuel, Oil Etc.; Bitumin Subst; Mineral Wax
- TOTAL ALL COMMODITIES

Chart showing the distribution of imports for various commodities, with categories such as US total, US maritime, and Gulf Coast.
USDA 2012/2013 forecasts:
production:  2.860 billion bushels
exports:  1.265 billion bushels (44%)

Cost comparison:
30¢/bushel by water
60¢/bushel by rail to other markets
Considerations for waterways in considering routing decisions

- Storage (on-farm, on dock)
- Capacity-Scale
- Inventory Carrying Costs
- Identity preservation
- Availability of barges
- Costs
- When/Whom will you sell your grains
How Does This “Thing” work?
Interharbor Canal
MidStream Transfers
MidStream Transfers
Container Operations
New Orleans Public Belt

- Publically Owned-Operated RR
- 25 miles track
- 97 miles yard/switching
Inland Connectivity-Highways

- I-10
- I-59
- I-49
- I-55
- I-20
- I-40

- Tchoupitoulas Corridor
- Claiborne Avenue
## Vessel and Service Options

<table>
<thead>
<tr>
<th>Vessel Type</th>
<th>Service Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Container</td>
<td>Liner</td>
</tr>
<tr>
<td>Break-bulk</td>
<td>Liner/Tramp</td>
</tr>
<tr>
<td>Bulk- LNG</td>
<td>Tramp</td>
</tr>
<tr>
<td>Bulk-dry bulk</td>
<td>Tramp</td>
</tr>
<tr>
<td>Bulk-chemical</td>
<td>Tramp</td>
</tr>
<tr>
<td>Bulk-liquid</td>
<td>Tramp</td>
</tr>
<tr>
<td>Barges</td>
<td>Tramp/Liner</td>
</tr>
</tbody>
</table>

- Implications on Transportation Planning
  - Vessel Costs
  - Scheduling
  - Fleeting / Fueling
  - Safe Navigation
Warehousing in New Orleans

- Break bulk Cargo
- Reefer Cargo
- London’s Metal Exchange
Containers in Mississippi River

- 2011: 476,413 TEU’s

New Projects
- Napoleon Avenue Intermodal Terminal
  - $16.7 million TIGER grant
- New Orleans Cold Storage

Liner Services
- CMA CGM
- CSAV
- ZIM
- Hamburg Sud
- Hapag-Lloyd
- Mediterranean Shipping Company
- Seaboard Marine
- Maesrk
- Libra

KEY: TEUs = twenty-foot equivalent units. One 20-foot container equals one TEU, and one 40-foot container equals two TEUs.

NOTE: The data in this figure include only loaded containers in U.S. international maritime activity and cover U.S. imports, exports, and transshipments. Therefore, the trade levels will be greater than those reported from U.S. international trade statistics, which exclude transshipments. The data also exclude military shipments.

### Hurricane Response

#### Notification Schedule (Capt. Of Port)
1. Regulation Navigation Areas
2. 24 hours before shutdown mouth of river
3. Preassessment

#### Response
1. Barges moved up past Mile 71
2. Vessels tied to docks, anchorages
3. Tug assists on standby
4. Deep draft vessels past Huey P. Long Bridge

#### Outcome
1. Open to Navigation after 12 Hours after passage of Storm (40 days for light navigation after Katrina)
2. Only 17 loose barges (over 2200 vessels in Katrina)
The Horizon Oil spill (2010) – Snapshot of Ships and Spill
Some Potential Effects of Inland River Closures

- Reliability - Closure Impact Avoidance
- Plant Closure/Idling
  - Jobs/Earnings
  - Lost Output
- Water Supply Disruption
  - Industrial/Hydropower
  - Municipal
- Road Closures
- Recreational Losses
- Environmental Losses

NETS Studies (IWR-USACE)
- Greenup 2003 Closure (52 days)- $42 Million
- Hannibal Locks 2005 Closure (5 days)-$5 Million
- Lock 27 Closures
  - (August 2007)-$3.9 Million
  - (Oct 2005-Feb 2006)- $2.7 Million
- McAlpine (August 2004)-$6.3 million
- 2008 Flooding in Upper Miss?

GLOBAL Insight – Upper Miss 90 Day Closure
- $118.6 million for Waterway freight
- $482.8 million by rail
- $1.50 billion by truck
Dredging in the Mississippi River

- Within the Navigation Channel
  - Crossings
  - Draft Restrictions
  - Navigation Restrictions

- At the Mouth of the River
  - Sediment
  - Coastal Restoration
  - Salt Water Barrier
  - Disposal areas
Differences of River Management from other Public Sector Assets

Institutional
- Corps - Responsible for Condition of Navigation Channels
- USCG – Responsible for Safe Navigation
- Project Planning

Physical
- System redundancy
- Project Scale
- Funding
- User does not determine maintenance needs
How Many People Work in the Maritime Industry?

- Dockworkers
- Transportation
- Agents
- Brokers
- Clerks
- Jones Act

Wages Paid to Workers in Water Transportation, all Louisiana

Millions of Dollars

Louisiana Exports as Share of Total State GDP 1997 - 2011
Exports as Share of Louisiana Metropolitan Statistical Areas GDP, 2010

- Alexandria; LA
- Shreveport; LA
- Monroe; LA
- Lafayette; LA
- Houma; LA
- Baton Rouge; LA
- New Orleans; LA
- Lake Charles; LA

Lake Charles; LA and New Orleans; LA have the highest exports as a share of GDP.
What is the Value of the River?

- Big River Coalition
- GNO-BR Chamber Study
- Louisiana MTS System
- Port Association of Louisiana
- Statewide Transportation Planning
Future of Traffic on the River
Changes ahead

Structural Changes
- Demographic changes in US
- Changes in world markets
- Export focus
- Free Trade Agreements
- Competition in Global Markets

Logistical Changes
- Panama Canal
- New Cargos
- Shifting Trade lanes
What are Natural Markets?
U.S. Dollar Depreciating

(Real Trade-Weighted Dollar Index, 2005=1.0)

Source: IHS Global Insight
U.S. Share of World GDP, 1980-2012

Source: International Monetary Fund, 2012.
LATIN AMERICA AND THE CARIBBEAN: SHARE OF SELECTED PARTNERS IN TOTAL TRADE, 2000-2020\(^A\). (PERCENTAGES)

**Source:** Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the United Nations COMTRADE Database and national sources.

\(^A\) Projections from 2011 to 2020 are based on GDP growth rates for the years 2000-2010 in Asia-Pacific, China, the European Union, Latin America and the Caribbean, the United States and the rest of the world. The growth rate of trade is expected to converge with the economies’ long-term growth rate.
GDP Growth Rates For Various Regions

(Real GDP, percent change)

Source: IHS Global Insight
China and U.S. Gateways, 2011

- California – Southern Tier
- PNW (US and Canada) – Northern Tier
- Gulf Coast Ports through Panama Canal
- South Atlantic Ports through Suez Canal/Panama Canal
- Airport Gateways

- Airports
  - West Coast 33%
  - East Coast 19%
  - Other 4%
- Gulf Coast
  - West Coast 51%
  - East Coast 16%
  - Gulf Coast 11%
- Other 6%

Imports 28%
Exports 31%
The Panama Canal and The Mississippi River

- **Share of Miss. River Traffic that transits the Canal**
  - Imports 15%
  - Exports 41%

- **Share of the Canal that moves to/from Miss River**
  - Share of East Coast Trade 44%
  - Share of Total Panama Canal tonnage 25%

Some Issues?
- Air draft at Crescent City Connection
- Container imbalance
- Ship Rotations
- Transshipment Competition
Changing Hinterlands from the Panama Canal?

- Faster Transit
- Economies of Scale

- Anything else?
  - Bulk
  - Exports
  - Container availability
Conclusion...
The Mississippi River is a System of Systems

A dynamic corridor that shapes the US economy

In any transportation study, magnitude must be considered

The River’s success depends upon:

- Density (Scale, velocity)
- Operations (water, safety)
- Capital (investing, funding)
- Knowledge (tell the story, information)
- Respond (changing markets, modes)
Bruce Lambert
Executive Director
Institute for Trade and Transportation Studies
540-455-9882
bruce@ittsresearch.org

SAVE THE DATE!
2013 JOINT MAFC/ITTS ANNUAL MEETING
LOUISVILLE, KENTUCKY • MARCH 12-14, 2013

HOSTED BY THE KENTUCKY TRANSPORTATION CABINET
MIDAMERICAFREIGHT.ORG/EVENTS/2013AM