



Great Lakes Maritime Research Institute

*A University of Wisconsin - Superior and
University of Minnesota Duluth Consortium*



A Review of Great Lakes Shipbuilding and Repair Capability: Past, Present and Future

PI: David J Singer, Assistant Research Scientist, NAME
University of Michigan

Goal: To develop a database of ship repair and shipbuilding capabilities in the Great Lakes by identifying the location, layout, and capabilities of past, present and potential facilities. Additionally technical-socio-economic impacts of a viable ship repair and shipbuilding are presented.

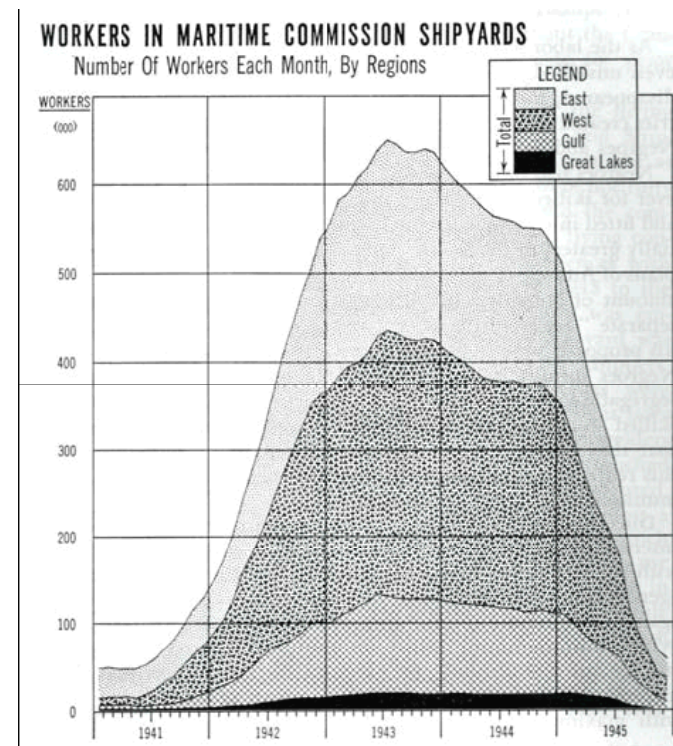
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Great Lakes Shipbuilding
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Great Lakes Shipbuilding History

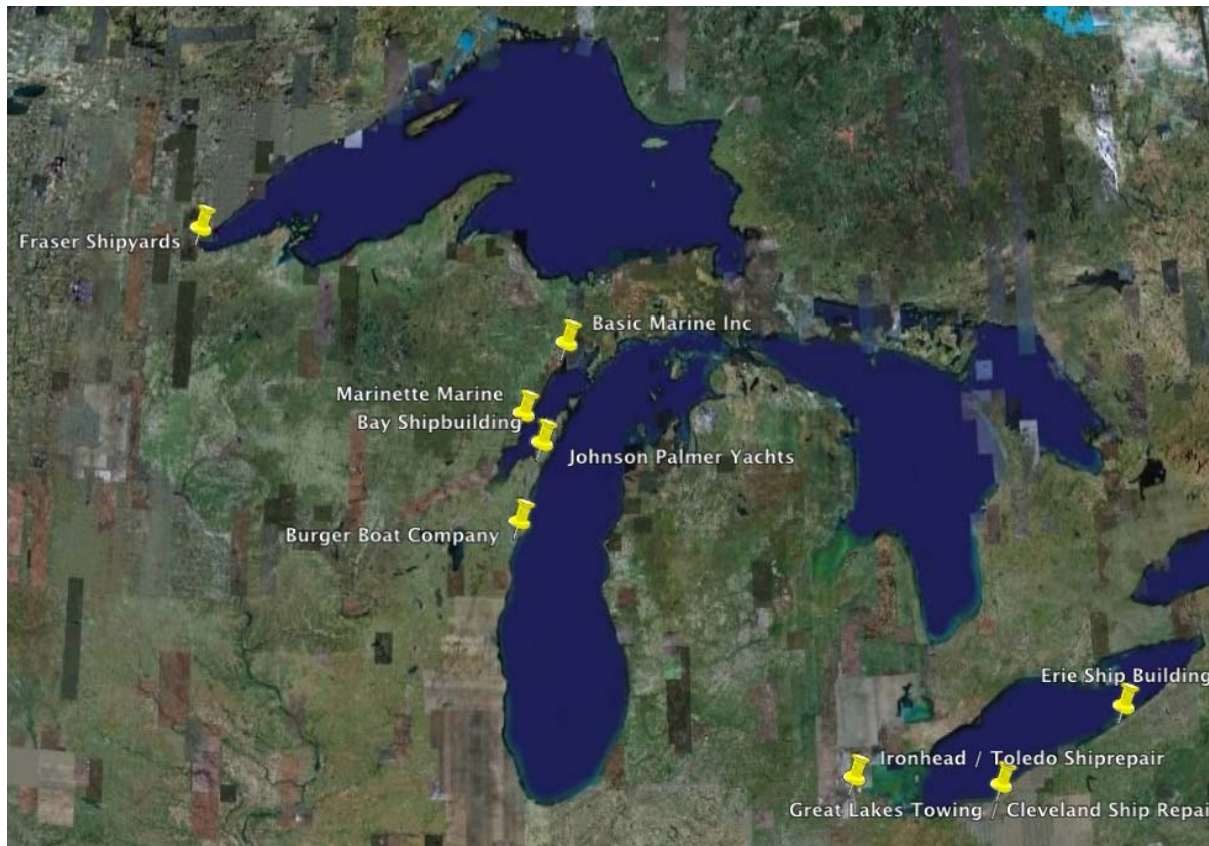
- 17th century
 - First sailing vessels on Lake Ontario
 - Controlled by British Navy
- 1800's
 - Schooners became predominate ship both merchant and military
 - Replaced by steamers end of century
- World War II
 - 313 combatant and 14 auxiliary ships made
- Post War
 - By late 1960 most GL shipyards closed



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Active US Yards Repair, Shipbuilding, and Luxury



Detail facility information presented in final report



Factors on GL Shipbuilding

- Saint Lawrence Seaway
- Labor Considerations
- Facility and Environmental Considerations
- Cost of Production Considerations
- Return on Capital



Saint Lawrence Seaways

- Max vessel size
 - 225.5 m length
 - 23.7 m width
 - 8.08 m draft
 - 35.5 m above WL
- Seaway closing
 - Winter closure December to March
- Size limitations, winter closure, and Canadian / US policy impact feasibility of international cargo short sea shipping



Facilities

- Weather
 - Due to weather associated with GL region, covered protected building facilities required
 - Flux core welding vs. MIG
 - Weld quality
 - Robotics use
- Facilities funding
 - US Navy helps military shipyards improve (NSRP)
 - Gulf coast yards and the big 6 have benefited
 - No GL yards are members of NSRP
 - Plus-ups funds
 - Gulf coast has benefited
 - Local Funding
 - Local funding occurs but success is questionable
 - Private investors
 - Mainly luxury market or expansion of current businesses

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Cost of Production

- National shipbuilding trends
 - Producer Price Index
 - Ship and Boat Building 18.87% change between 2001 and 2006
 - Ship Building and Repairing 21.27% change between 2001 and 2006
 - Military
 - Annual growth rate of over 10% from 1950 - 2000



Return on Capital

- Shipbuilding is easy entry market if:
 - Low complexity products produced
 - Low labor rate
 - Protected market drives cost
- Shipbuilding not easy entry market if:
 - Capital equipment is needed to apply advance manufacturing methods
 - High skill employees needed for complex product types
- Question: If one were to invest 50 million dollars in a business would shipbuilding be it?



Market Opportunities

- Short Sea Shipping
 - International Cargo
 - Studies have concluded that SSS is not feasible due to winter navigation, cost compared to rail, government restrictions, and marginal financial return
 - Studies have not looked at protected market ships and routes
 - Jones act or Canadian vessels
 - Non-standard unique ship type
 - Studies assume cargo would find alternate route in winter
 - Studies have not suggested that SSS be abandoned instead
 - Focus on border and traffic congestion
 - Intercostals opportunities between Atlantic Canadian or US coast and the GL region
 - Domestic Cargo
 - Possible if assumptions are realized

Transportation	Start	End	Speed	Distance	Duration
Ship	London	Cleveland	16 knots*	3544 nautical mi	9d 6h
Ship & Rail	London Newark	Newark Cleveland	20 knots Unknown	3224 nautical mi Unknown	6d 17h 7d 22h



SSS impact on Shipbuilding

- Given current capacities long term work volume must increase to justify an increased Shipbuilding base
- SSS could provide opportunities for GL shipbuilding if funded and structured correctly
- Increase repair opportunities which provides revenue to level demand
- Could create new GL ship type for protected market
- Could create new shipping market
- Positive environmental impact



Markets Opportunities

- Traditional Great Lakes
 - Lakers are being repaired not replaced
 - Energy cost increase
- General Commercial
 - GL Shipyards are not competitive internationally or nationally in most cases except for Manitowoc Group shipyards
 - Jones Act supported coastal short sea shipping provides opportunity
 - Title XI funding
- Military
 - Current activities are the Coast Guard Deepwater Project and the 300 Ship Navy
 - Currently underway with a large portion of work going to Gulf Coast yards
 - Manitowoc Group currently builds for the Coast Guard and Navy LCS project
- OPA 90
 - Currently backlog for double hull oil barges



Austal: A Possible Model for Great Lakes

- Austal designs and constructs high speed, complex commercial and defense aluminum vessels
- Austal is a high skilled engineering company that builds vessels **not** a shipbuilder who supports itself through in-house engineering
- Advanced materials such as composites, thin steel and aluminum are the future but require high skilled, highly technical engineers
- Advanced materials also require advance manufacturing skills, technology, and equipment

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Great Lakes Austal Model

- Design an advanced vessel for SSS container / general cargo that is uniquely suited for the GL
- Vessel should be part of total GL supply chain potential
- Create an engineering and manufacturing base to support the production, design, development of such a product



Great Lakes Shipbuilding and Repair Opportunities Conclusion

- Repair
 - Increased demand for repair and conversion
 - Labor force suited for this type of work
- General Commercial
 - Not viable for sustained industry unless a new market is created
- Jones Act (traditional)
 - Short term possibility
 - Late market entry
- Military
 - Low probability for large Navy contracts (LCS issues)
 - Coast Guard currently doing work on GL
 - Not viable for industry growth
- OPA90
 - High volume of work
 - Good short term opportunity
 - Does not increase GL competitiveness
- Austal Model
 - High risk
 - High potential
 - Other heavy industrial base provides good resources
 - Long term viability
 - Large government funding needed



Questions

