Ballast Mechanics

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Lake Carriers’ Association

Founded 1880; one of the oldest trade associations in the nation

14 members with 56 vessels working exclusively on the Lakes carrying 100-120 millions tons per year

All U.S-Flag Jones Act-qualified
  - American built, owned, and crewed

Great Lakes and St. Lawrence Seaway
  - Primarily upper 4 Great Lakes
**Canadian-flag vessels** sail on the Great Lakes and Seaway; some go beyond Anticosti Island to the East Coast and Arctic (yellow)

“Salties” are ocean-going vessels entering the Great Lakes from Europe, Asia, etc. Normally fly “flags of convenience” to avoid laws and taxes (red)

**U.S.-flag lakers** primarily sail the upper four Great Lakes (Superior, Michigan, Huron, and Erie); seldom do they go beyond the Welland and never past Anticosti Island (green)
THE EFFICIENCY OF GREAT LAKES SHIPPING
Units Needed to Carry 70,000 Tons of Cargo.

1,800,000 tons carrying capacity 70,000 tons.

700 Trailers each carrying 100 tons each.

2,800 Trailers each carrying 25 tons each.

Empire State Building
1250 ft.

M/V Paul Tregurtha
1013.5 ft.
SELF-UNLOADING LAKERS
BALLASTING

1. At source port, unloading cargo, filling with ballast water (ballasting).

2. Voyage empty of cargo, full of ballast water.

3. At destination port, loading cargo, discharging ballast water (deballasting).
**Ballast Water Treatment**

- On-board ballast water treatment system
- Discharge ballast water to shoreside treatment facility
- Intake potable water for ballast
- NOBOB (no ballast on board)
- Best management practices
BASIC TREATMENT PROCESS
U.S.-flag 1,000’ Laker

16.4 million gallons of ballast water
Enough to submerge a hockey rink under 129 feet of water

2015-build Saltie

5.1 million gallons of water
40 feet of water
U.S.-flag 1,000’ Laker

2015-build Saltie

79,200 GPM pump rate, the equivalent of 198 fire trucks pumping at 400 GPM

6,076 GPM

15 fire trucks
BALLAST TANKS
BALLAST WATER TREATMENT

By the numbers:

- 56 – U.S.-flag Lakers on the Great Lakes
- 80 – Additional Canadian-flag Salty-Lakers
- 55,138 – Cargo-carrying vessels worldwide
- 0 – USCG Type Approved ballast water treatment systems
SHORE-SIDE TREATMENT

By the numbers:

- **Ballast water as wastewater:**
  - $166,948.95 – cost to process 1,000’ vessel (2016)
  - $262,817.50 – cost in 2022

- **Ballast water as potable water:**
  - $70,032.86 – cost in 2016
  - $79,442.46 – cost in 2020

- 50 – trips per year per 1,000’ vessel
- 13 – number of 1,000’ vessels on the Great Lakes
PORT INLAND, MICHIGAN
MN WASTE AND POTABLE WATERS

Wastewater treatment:
- Certified wastewater treatment professional

Potable water:
- 0.038 mg/l Cl₂ limit

VS.
MPCA VGP Study Plan

- Sample ports for intake and discharge
- Seasonal sampling events
- Samples at ports and on vessels tied together
- Two years of data
- Decades more required for risk/release assessment
- Partners
QUESTIONS?