

Oil Sands Products Forum

April 16, 2013

Three Types of Barges Capable of Transporting Crude Oil in PNW
Upper Columbia River – Inland Barge Operations
Lower Columbia River , Oceans and Puget Sound

**Upper Columbia River
Capacity: 40KB-50KB
Inland Class
Limit to 14 Draft**



Tidewater Barge Lines

Push Mode/Double Hull/Vapor Recovery Systems

Currently not moving crude oil.

Primary trade is moving CPP Up River from Portland, OR/Vancouver WA to Tri Cities tank farms.

Lower Columbia River, Oceans, and Puget Sound

Capacity: 40KB -120KB

Oceans Class

Towline Barges



Sause Bros. Inc
Push or Tow Mode/Double Hull/Vapor Recovery
Systems/ Vapor Absorption Systems/ Inert Vapor
Systems
Currently Transporting Crude Oil/Lightering Ops
California and Puget Sound ex Vancouver, BC

Lower Columbia River, Oceans, and Puget Sound

Capacity: 80KB -180KB

Oceans Class

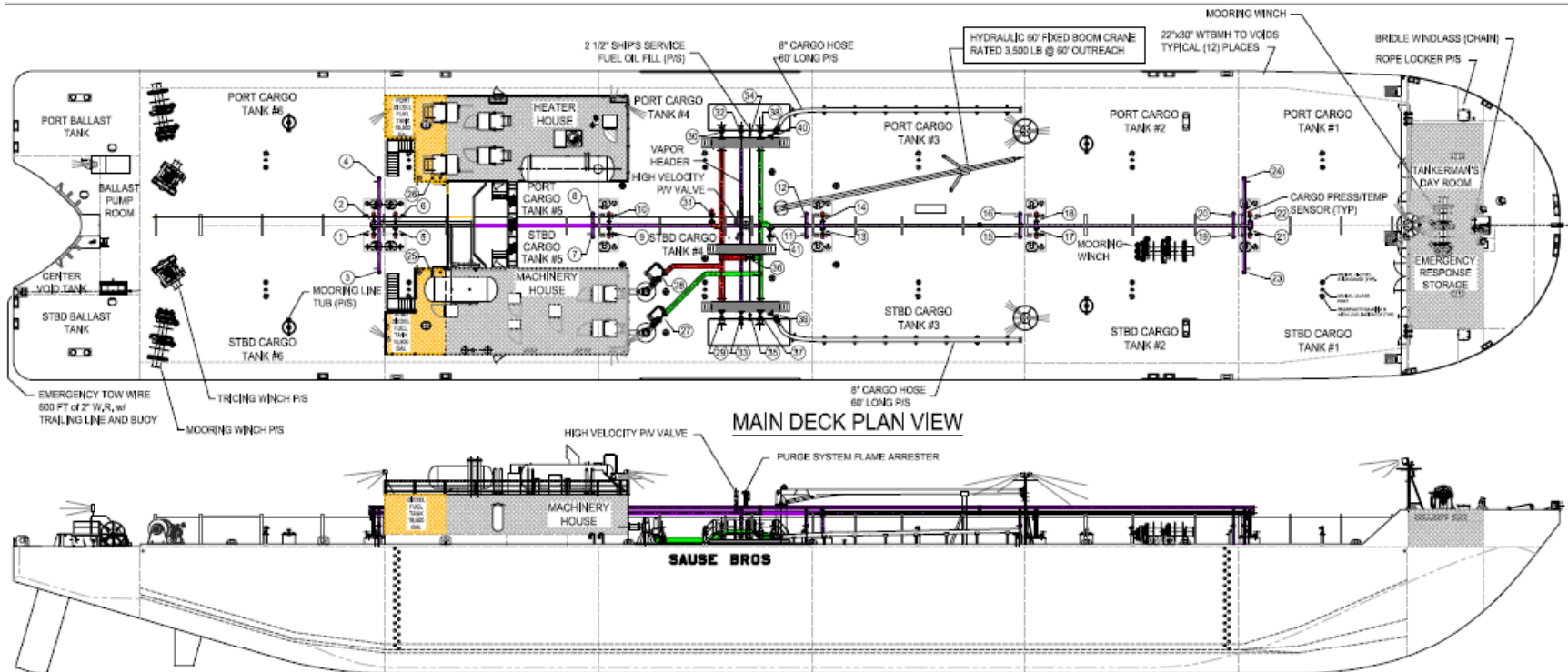
ATB (Articulated Tug Barge)



Crowley Maritime
Push Mode/Double Hull/Vapor Recovery Systems/Inert
Vapor Systems
Currently Transporting Crude Oil/Lighting Ops
California, Lower Columbia River and Puget Sound



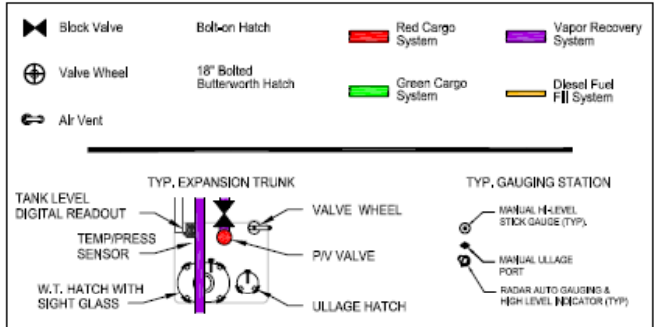
Sause Bros. TB Drakes Bay



MAIN DECK PLAN VIEW

OUTBOARD PROFILE

LEGEND



PARTICULARS

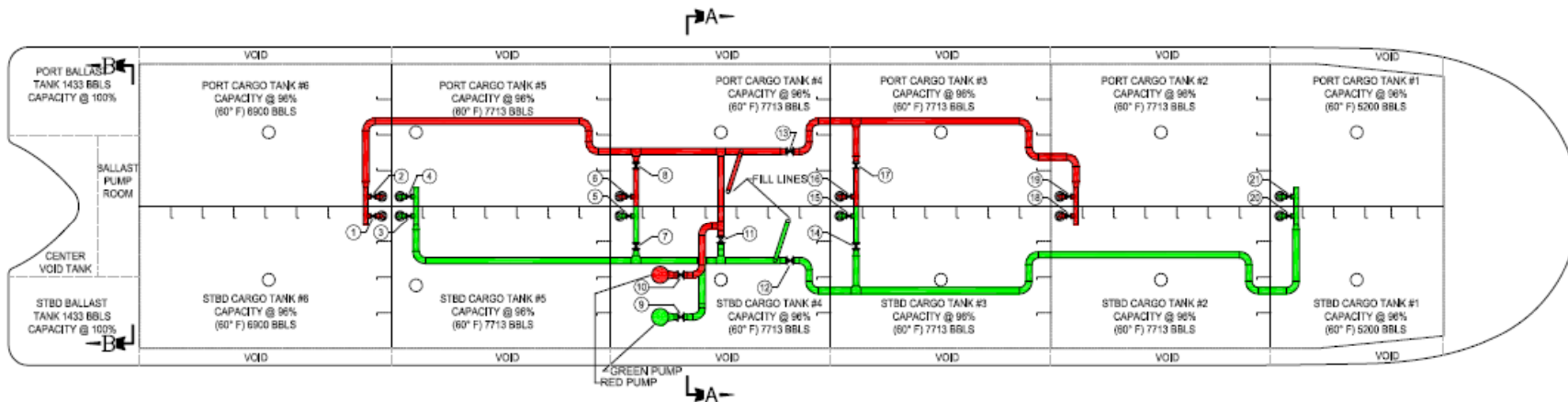
LENGTH OVERALL - MLD	380'-0"
LENGTH FOR REGULATIONS	356'-10"
BREADTH - MLD	76'-0"
DEPTH - MLD	31'-4"
TANK VOLUME 100%	90,459 BBLS
TANK VOLUME 96%	86,962 BBLS
DWT @ SLL	EST- 13,819 LT
DISPL. @ SLL	EST- 16,937 LT
DRAFT @ SLL	EST- 25'-6"

MAIN DECK VALVES

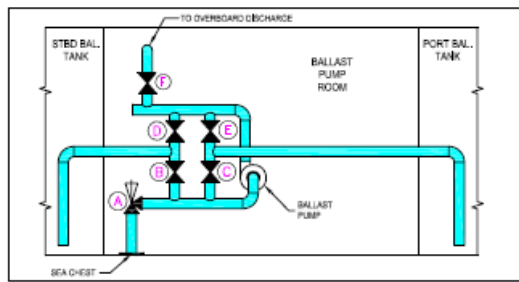
- | | |
|------------------------------------|--------------------------------------|
| 1. TANK 6 STBD VAPOR SYSTEM VALVE | 22. TANK 1 PORT VAPOR SYSTEM VALVE |
| 2. TANK 6 PORT VAPOR SYSTEM VALVE | 23. TANK 1 STBD PURGE SYSTEM VALVE |
| 3. TANK 6 STBD PURGE SYSTEM VALVE | 24. TANK 1 PORT PURGE SYSTEM VALVE |
| 4. TANK 6 PORT PURGE SYSTEM VALVE | 25. DIESEL FUEL STBD TANK VALVE |
| 5. TANK 5 STBD VAPOR SYSTEM VALVE | 26. DIESEL FUEL PORT TANK VALVE |
| 6. TANK 5 PORT VAPOR SYSTEM VALVE | 27. GREEN SYSTEM PUMP DISCH. VALVE |
| 7. TANK 5 STBD PURGE SYSTEM VALVE | 28. RED SYSTEM PUMP DISCH. VALVE |
| 8. TANK 5 PORT PURGE SYSTEM VALVE | 29. RED SYSTEM STBD HOSE VALVE |
| 9. TANK 4 STBD VAPOR SYSTEM VALVE | 30. RED SYSTEM PORT DISCH. VALVE |
| 10. TANK 4 PORT VAPOR SYSTEM VALVE | 31. RED SYSTEM FILL VALVE |
| 11. TANK 4 STBD PURGE SYSTEM VALVE | 32. VAPOR SYSTEM PORT DISCH. VALVE |
| 12. TANK 4 PORT PURGE SYSTEM VALVE | 33. VAPOR SYSTEM STBD DISCH. VALVE |
| 13. TANK 3 STBD VAPOR SYSTEM VALVE | 34. DIESEL FUEL FILL LINE PORT VALVE |
| 14. TANK 3 PORT VAPOR SYSTEM VALVE | 35. DIESEL FUEL FILL LINE STBE VALVE |
| 15. TANK 3 STBD PURGE SYSTEM VALVE | 36. GREEN / RED SYSTEM BLOCK VALVE |
| 16. TANK 3 PORT PURGE SYSTEM VALVE | 37. GREEN SYSTEM STBD DISCH. VALVE |
| 17. TANK 2 STBD VAPOR SYSTEM VALVE | 38. GREEN SYSTEM PORT DISCH. VALVE |
| 18. TANK 2 PORT VAPOR SYSTEM VALVE | 39. GREEN SYSTEM STBD HOSE VALVE |
| 19. TANK 2 STBD PURGE SYSTEM VALVE | 40. GREEN SYSTEM PORT HOSE VALVE |
| 20. TANK 2 PORT PURGE SYSTEM VALVE | 41. GREEN SYSTEM FILL VALVE |
| 21. TANK 1 STBD VAPOR SYSTEM VALVE | |

NOT TO SCALE
 DRAWN BY: RD
 DRAWING DATE: 02/14/08
 REVISED: 0
 REVISION DATE: 02/19/08

Oil Barge "Drakes Bay" Deck Arrangement



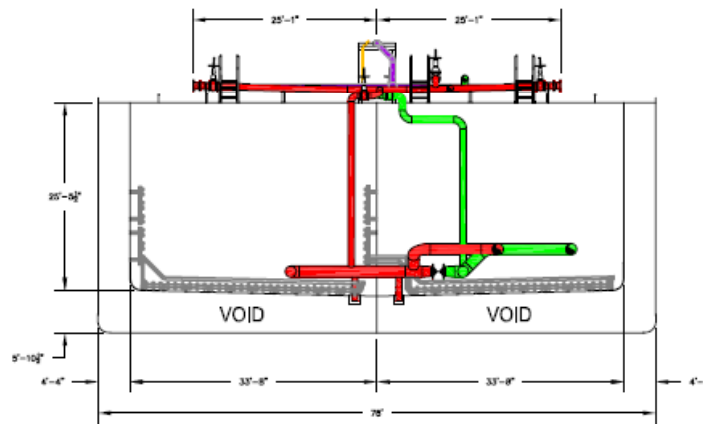
CARGO TANKS PLAN VIEW



BALLAST PIPING DIAGRAM SECTION B-B (LOOKING AFT)

BALLAST PUMP ROOM VALVES

- A. Sea Chest Suction Valve
- B. Stbd Gravitly Fill/Suction Valve
- C. Port Gravitly Fill/Suction Valve
- D. Stbd Fill Valve
- E. Port Fill Valve
- F. Overboard Discharge Valve



HULL TRANSVERSE SECTION A-A (LOOKING FORWARD)

BELOW DECK VALVES

1. TANK 6 STBD SUCTION VALVE
2. TANK 6 PORT SUCTION VALVE
3. TANK 5 STBD SUCTION VALVE
4. TANK 5 PORT SUCTION VALVE
5. TANK 4 STBD SUCTION VALVE
6. TANK 4 PORT SUCTION VALVE
7. GREEN / RED SYSTEM CROSSOVER VALVE
8. RED / GREEN SYSTEM CROSSOVER VALVE
9. GREEN PUMP SUCTION VALVE
10. RED PUMP SUCTION VALVE
11. GREEN / RED SYSTEM CROSSOVER VALVE
12. GREEN SYSTEM LINE BLOCK VALVE
13. RED SYSTEM LINE BLOCK VALVE
14. GREEN / RED SYSTEM CROSSOVER VALVE
15. TANK 3 STBD SUCTION VALVE
16. TANK 3 PORT SUCTION VALVE
17. RED / GREEN SYSTEM CROSSOVER VALVE
18. TANK 2 STBD SUCTION VALVE
19. TANK 2 PORT SUCTION VALVE
20. TANK 1 STBD SUCTION VALVE
21. TANK 1 PORT SUCTION VALVE

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 DRAWING DATE: 02-17-06
 REVISION: 1
 REVISION DATE: 02-17-06

Oil Barge "Drakes Bay" Below Deck Piping Diagram

Questions, Observations, or
Comments ??