



# Alaska Department of Transportation & Public Facilities Day Boat ACF

House Transportation Committee

February 4, 2014



# Day Boat ACF

- Vessel Mission Requirements
  - Payload – 53 vehicles and 300 passengers
  - Speed – 15.5 knot schedule speed
  - 16 knot service speed @ 85% Maximum Power
  - Single ended, with drive through loading/unloading (Bow and Stern Doors)
  - Rapid load/unload of passengers/vehicles
  - Highly maneuverable



# Day Boat ACF – Design Study

- Proposed Routes
  - 1<sup>st</sup> Priority – Lynn Canal
  - 2<sup>nd</sup> Priority – Short Existing AMHS Routes
  - 3<sup>rd</sup> Priority – Juneau Access Routes, if required
- Operational Constraints
  - Terminal configuration
  - Vehicle loading
  - Walk on passenger loading
  - Overnight mooring





# Day Boat ACF

- Major Design Decisions
  - Closed Aft Deck vs Open
    - Pros:
      - ◆ Increased weather protection, potential lower maintenance
    - Cons
      - ◆ Slightly increased cost – materials, ventilation
- Conclusion
  - Car deck will be completely enclosed



# Day Boat ACF – Design Study

- Major Design Decisions
  - Bow Loading, Side Opening Doors





GRAND MANAN ADVENTURE





GRAND MAN

















# Day Boat ACF

- Major Design Decisions
  - Seakeeping considerations
    - Length greater than 235 Ft LECONTE
    - Eliminate forward guard sponsons
    - Optimize bow shape – reduce spray
    - Shelter important equipment from ice accumulation
    - Current Concept Design is 280 Ft length overall



# Day Boat ACF

- Major Design Decisions
  - Seakeeping analysis
    - Wind, Wave & Seakeeping Studies (Glosten)
      - ◆ Used historical wind speeds, directions & wave heights
      - ◆ Used series of hulls – LECONTE to TAKU size
      - ◆ Calculated Motion Sickness Indices (MSI) using wave data



# Day Boat ACF – Design Development

## Model Testing

- Model Test Program
  - Hull Optimization
  - Model Construction
  - Bare Hull Resistance
  - Appended Resistance
  - Seakeeping
  - Maneuvering
- Conducted October 2013 at Force Technology in Lyngby, Denmark

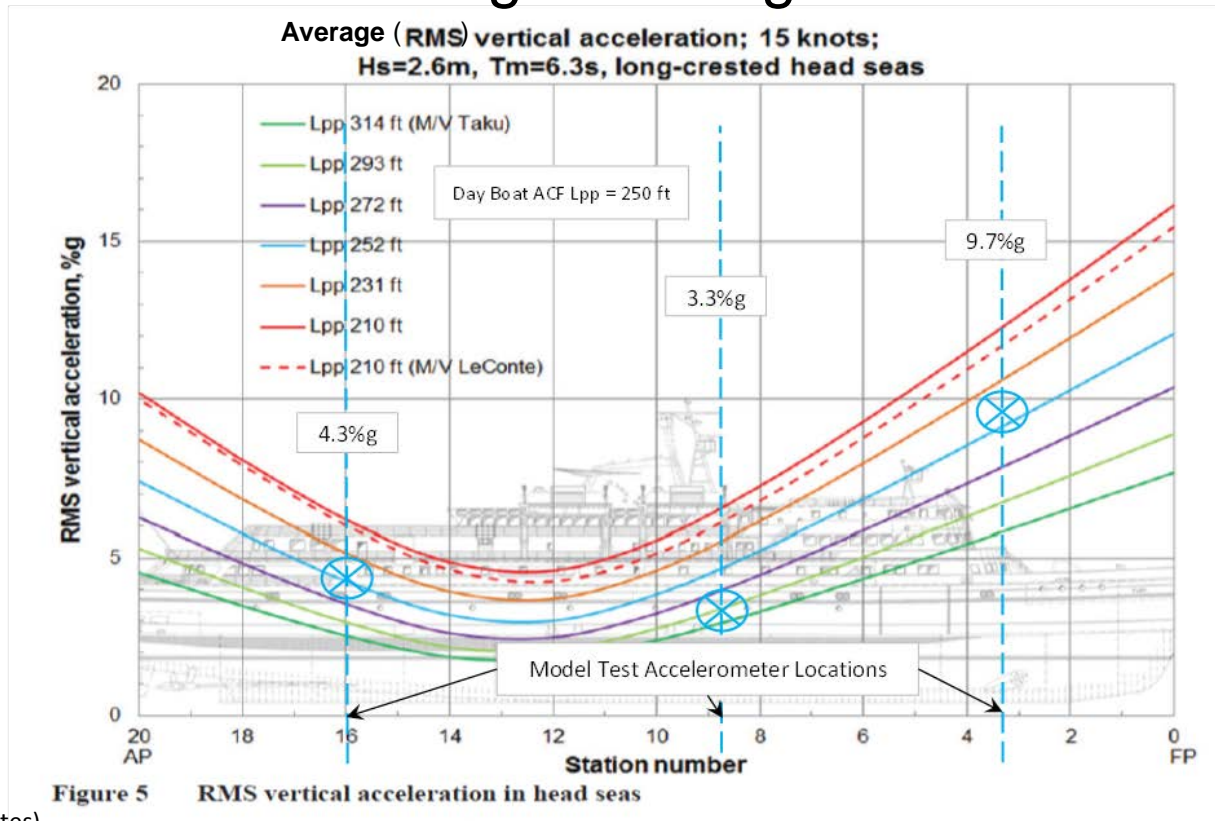






# Day Boat ACF - Design Development

## MSI vs. Vessel Length & Longitudinal location



(courtesy: The Glosten Associates)



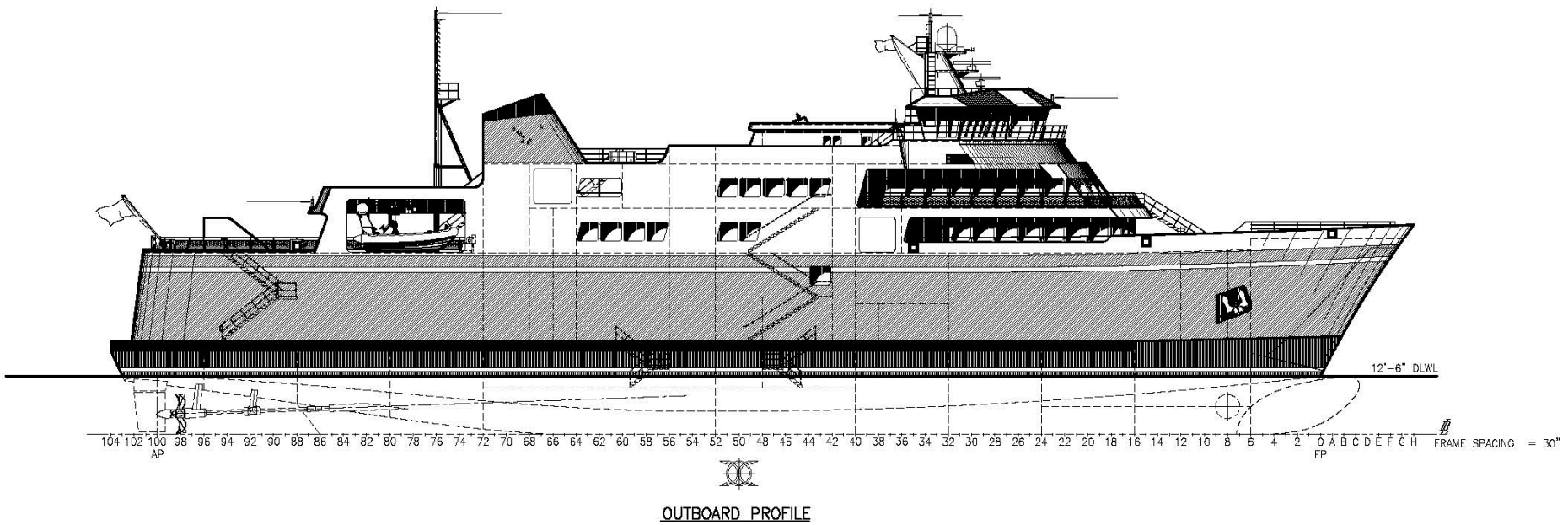
# Day Boat ACF – Design Development

Principal Design Element	Day Boat ACF	M/V Leconte
Length Overall	280'	235'
Beam Over Guards	67'	57'
Draft	12' – 6"	13' – 11"
Passenger Capacity	300 (326 seats)	247 (230 seats)
Vehicle Capacity	53 ASV	34 ASV
Propulsion Horsepower	6,000	4,300
Speed	16.0 Kts	14.5 Kts

Note: Tustumena overall length is 296'



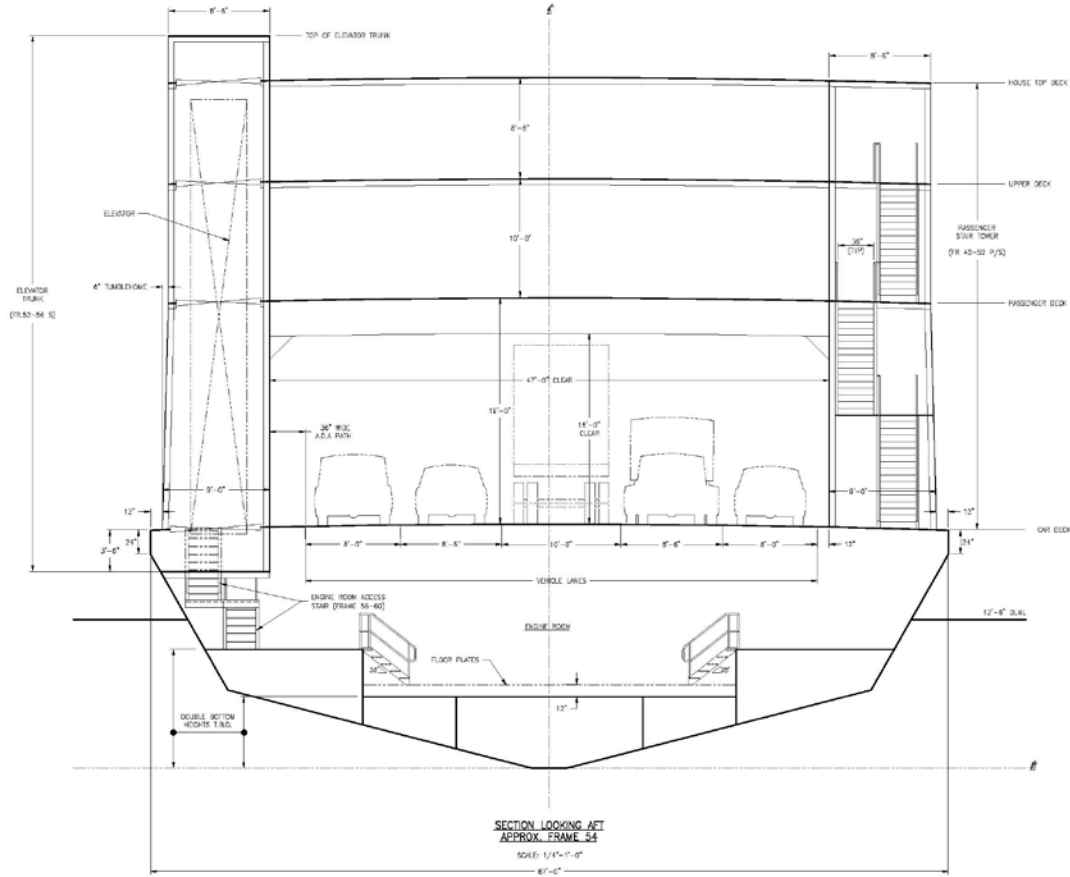
# Day Boat ACF







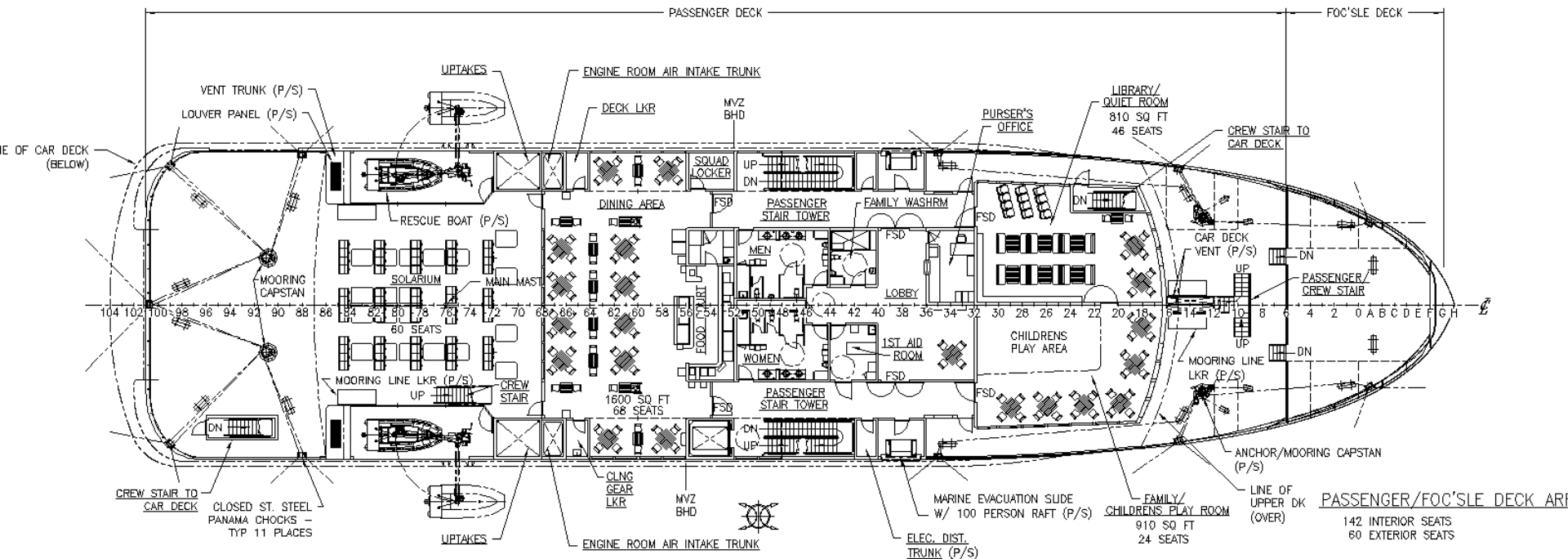
# Day Boat ACF





# Day Boat ACF - Design Development

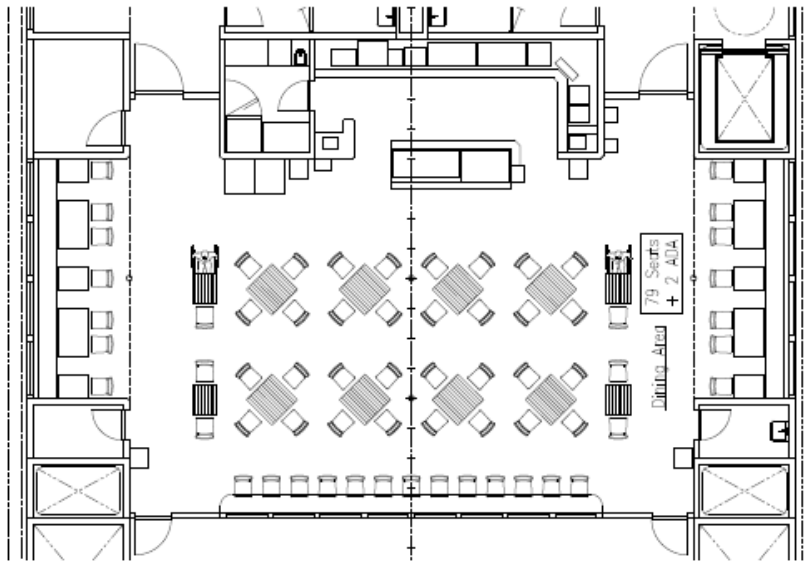
- Passenger Deck Arrangement



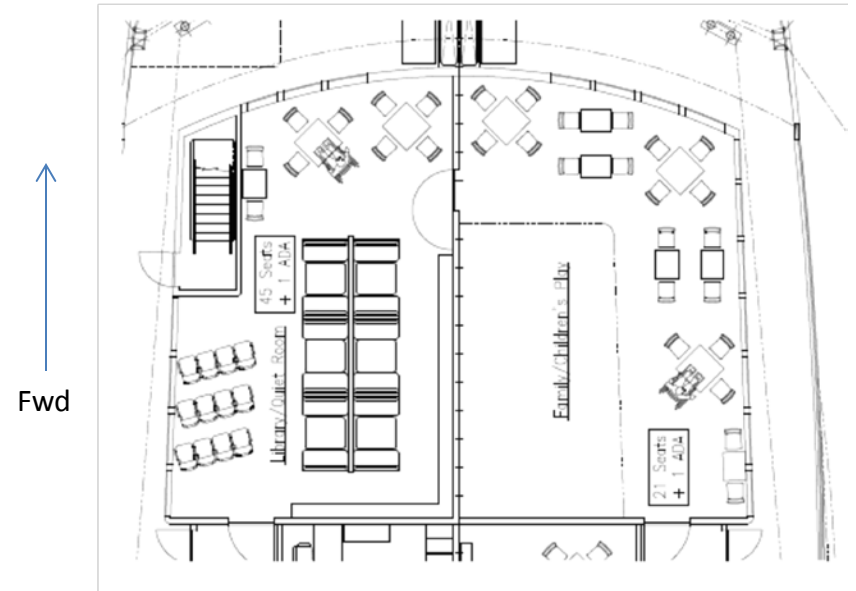


# Day Boat ACF

- Proposed Space Arrangements
  - Passenger Deck



Food Service and Dining



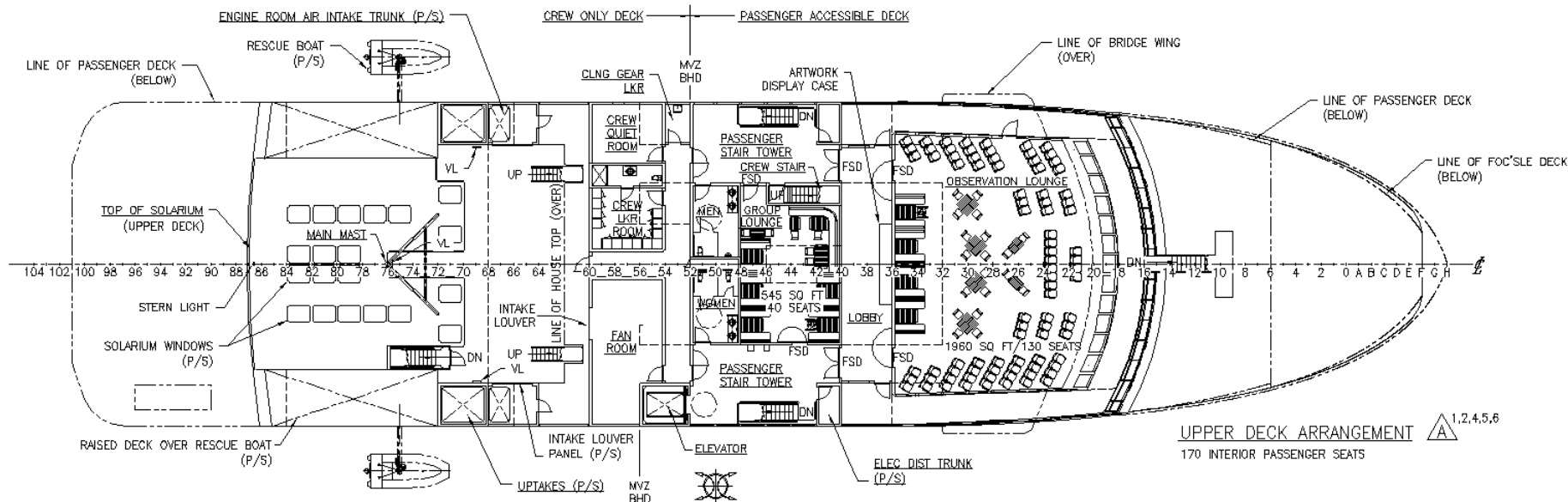
Library and Family Area





# Day Boat ACF - Design Development

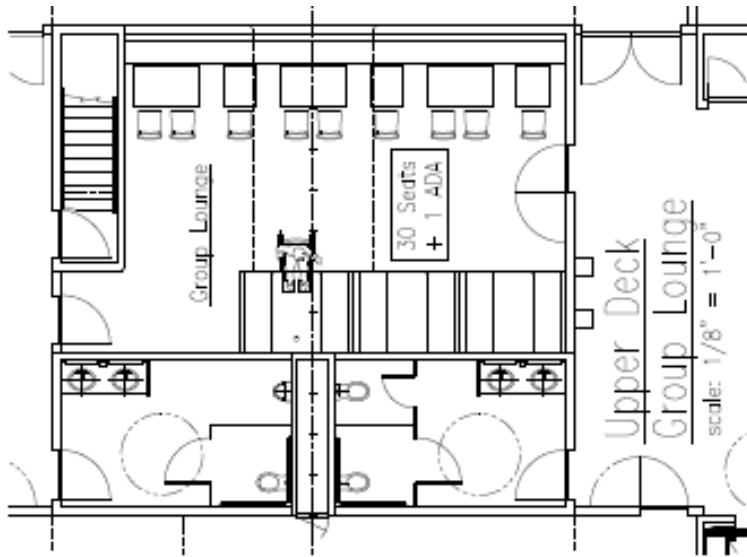
- Upper Deck Arrangement



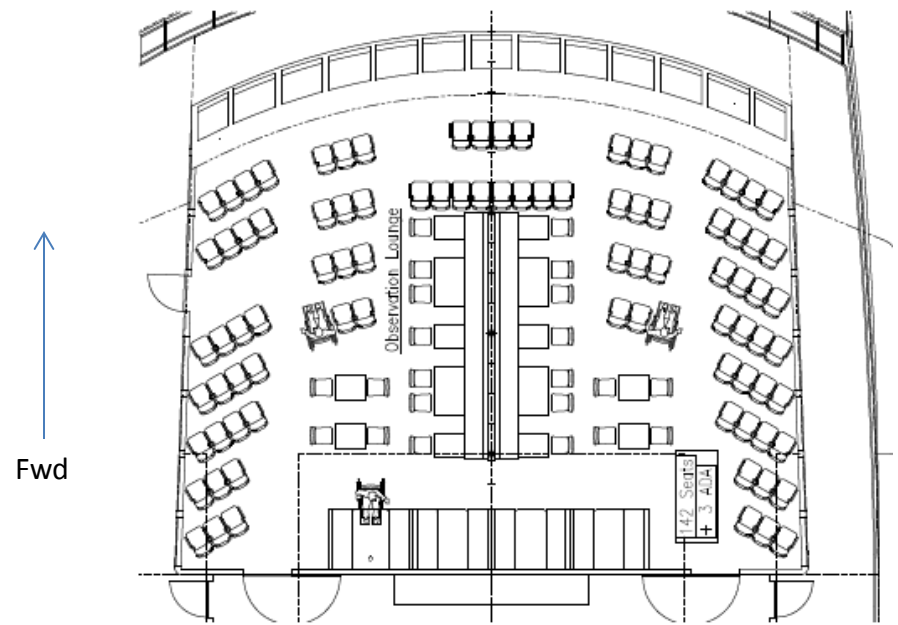


# Day Boat ACF

- Proposed Space Arrangements
  - Upper Deck



Group Lounge



Forward Observation Lounge



# Day Boat ACF

- Remaining Schedule
  - Final Contract Design – February 2014
  - Final Estimates: Vigor & Elliott Bay– March 2014
  - Negotiate Guaranteed Maximum Price or Advertise – April 2014
  - Award Shipyard Contract – June 2014
  - Delivery of Vessels:
    - 1<sup>st</sup> Vessel Target Date Mid 2016
    - 2<sup>nd</sup> Vessel Target Date May 2017