



Alaska Department of Transportation & Public Facilities Day Boat ACF

Senate Transportation Committee

April 15, 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

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



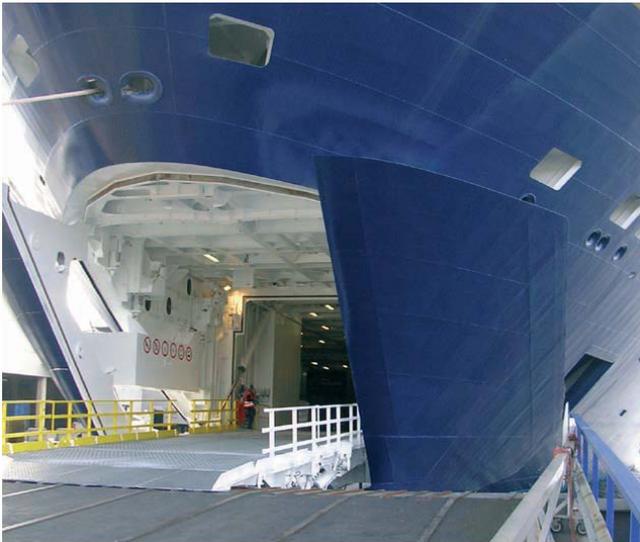
Day Boat ACF

- 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
 - Seakeeping considerations
 - Current 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
 - Model testing to confirm calculated results



Day Boat ACF – Design Development

Model Testing:

In Water Testing of Computer Optimized Hull, Conducted Oct. 2013 at Force Technology in Lyngby, Denmark

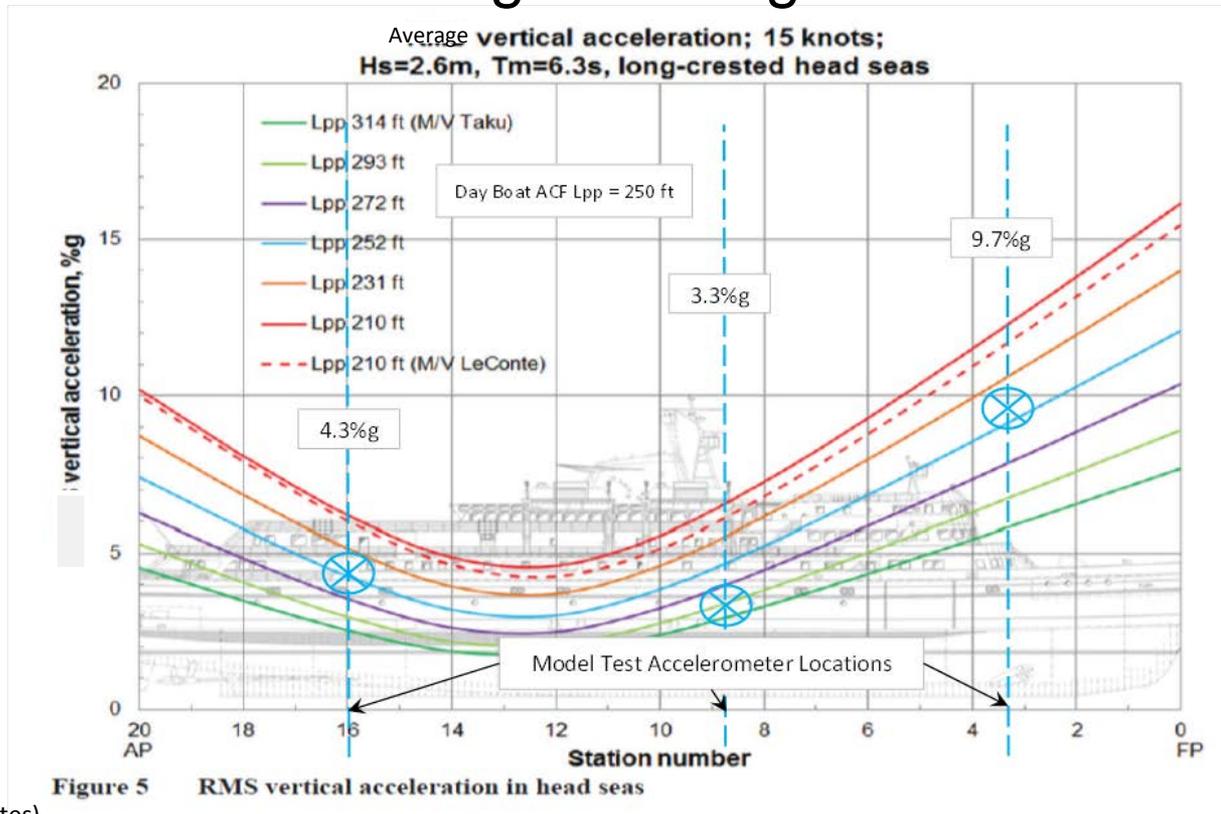
- Bare Hull Resistance
- Appended Resistance
- Seakeeping
- Maneuvering





Day Boat ACF - Design Development

MSI vs. Vessel Length & Longitudinal location



(courtesy: The Glosten Associates)



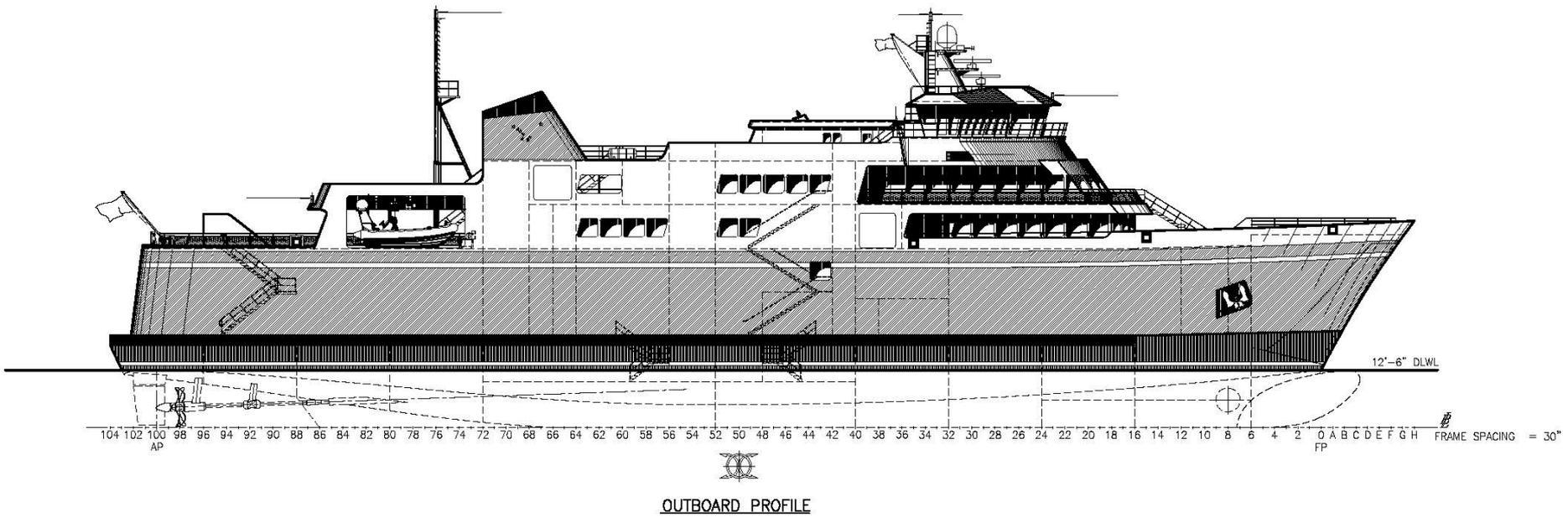
Day Boat ACF – Design Development

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'



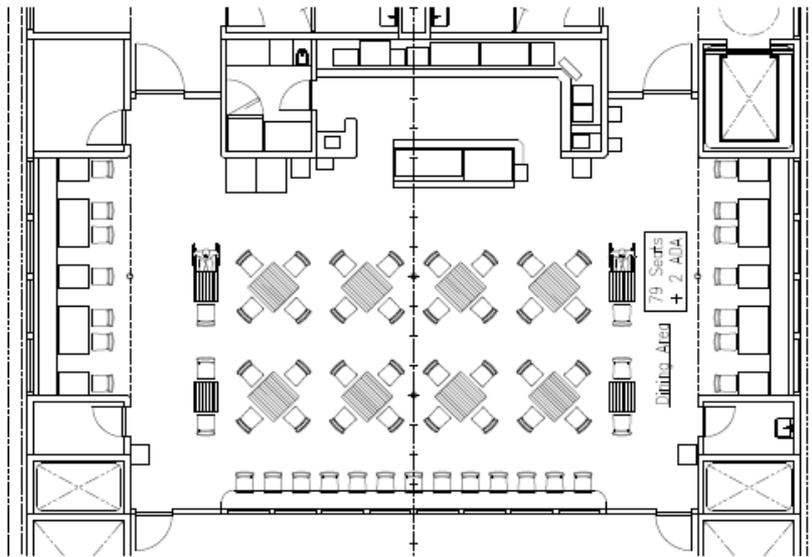
Day Boat ACF



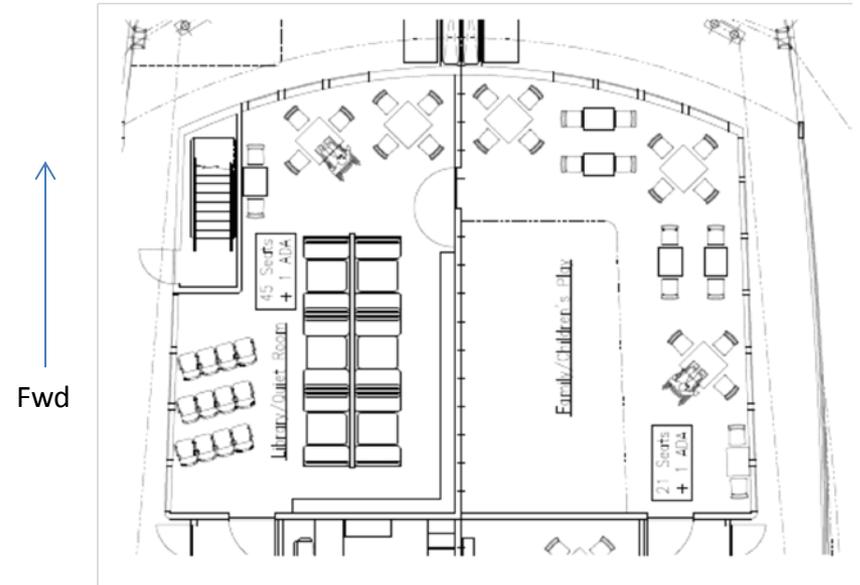


Day Boat ACF

- Proposed Space Arrangements
 - Passenger Deck



Food Service and Dining

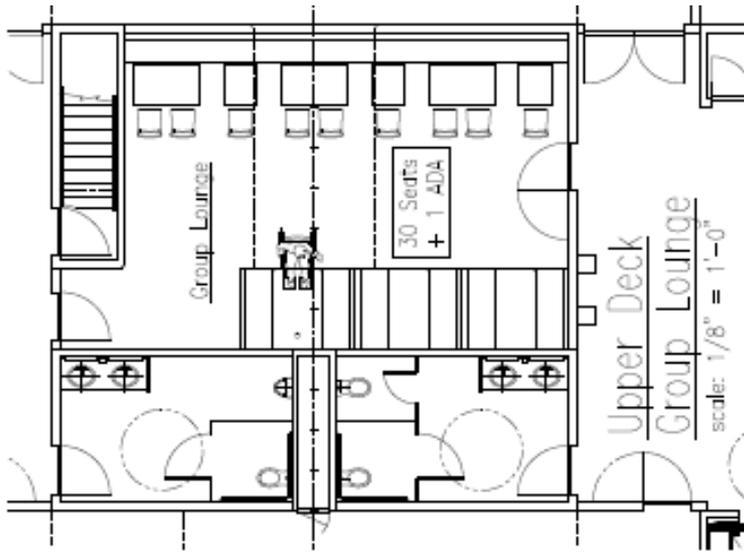


Library and Family Area



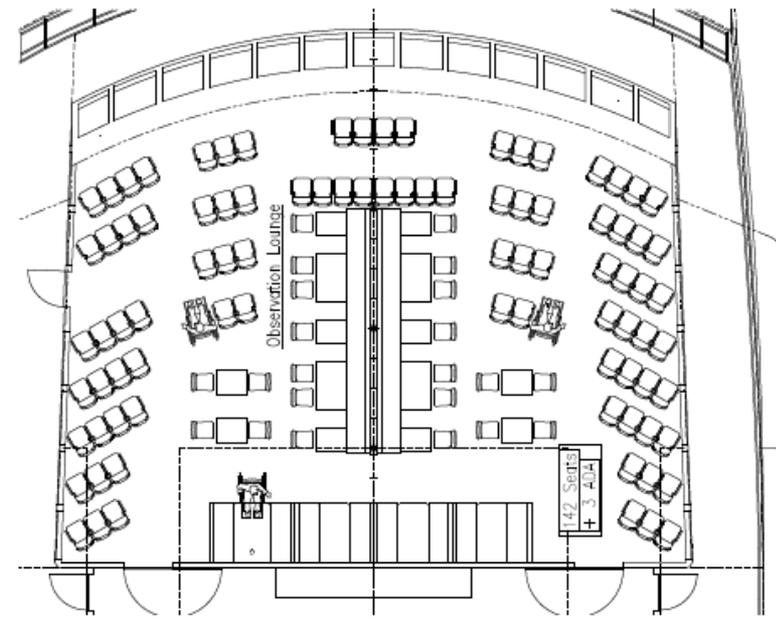
Day Boat ACF

- Proposed Space Arrangements
 - Upper Deck



Group Lounge

Fwd ↑



Forward Observation Lounge



New Day Boat ACF's

Day Boat ACF Schedule	Dates
Contract Design Plans	February 2014
Specifications for Contract	April 2014
Negotiate Guaranteed Maximum Price or Advertise	May 2014
Award Shipyard Contract	June-July 2014
Delivery of 1 st Vessel Target Date	Mid 2016
Delivery of 2 nd Vessel Target Date	May 2017



Alaska Department of Transportation & Public Facilities Tustumena Replacement

Senate Transportation Committee

April 15, 2014



VESSEL SPECIFICATIONS

M/V TUSTUMENA REPLACEMENT

<u>Specifications</u>	<u>Existing</u>	<u>Replacement</u>
▪ Length Overall	296'-0"	325'-0"
▪ Beam (Main Deck)	59'-0"	68'-0"
▪ Depth (Molded)	21'-9"	23'-0"
▪ Draft (Full Load)	14'-4-1/2"	15'-0"
▪ Passenger Capacity	174	250 (Berths for 108)
▪ Staterooms (4 Berth)	8	10
▪ Staterooms (2 Berth)	17	15
▪ Roomettes (2 Berth)	-	17
▪ Staterooms (ADA – 2 Berth)	1	2
▪ Crew Capacity	38	42 (Estimate)



VESSEL SPECIFICATIONS M/V TUSTUMENA REPLACEMENT

<u>Specifications (cont.)</u>	<u>Existing</u>	<u>Replacement</u>
■ Vehicle Capacity (lane feet)	720'	1,135'
■ Vehicle Quantity	36	52
■ Van Quantity	12 (20')	12 (40')
■ Vehicle Loading Ability		Stern and Side (Port & Starboard)
■ Cruise Speed	13.8 knots	15 knots
■ Operation – Oceans, not on international voyage; Exposed Waters		
■ Manning Level – Minimum Manning Regulatory Requirement – Manned Engine Room		
■ ADA Compliant – Americans with Disabilities Act (ADA) with Passenger Elevator		



Tustumena Replacement Additional Design Features

- No Bar; Cafeteria with horseshoe shaped galley
- Forward observation lounge above cabin deck
- Forward Starboard door for floating ramp terminals
- Offset casing with mezzanine deck to utilize non-van deck height
- Liquefied Natural Gas (LNG) Analysis continuing. Need to work with United States Coast Guard (USCG) regarding fuel tank issues



DELIVERABLES FOR FINAL DESIGN

- Reconnaissance Report - develop and refine the operating characteristics of the vessel. The Reconnaissance Report includes a rough cost estimate and recommendation to proceed with a particular vessel type.
- Environmental Analysis - prepare the required Federal Highway Administration (FHWA) environmental document based on the project scope as defined in the Reconnaissance Report.
- Design Study Report (DSR) - develop and refine various alternatives to accomplish the project. Each proposed solution will be analyzed to determine how well it satisfies the project purpose. The DSR will conclude with a recommendation to proceed with a particular vessel design under the preferred procurement method.



DELIVERABLES FOR FINAL DESIGN

- Plans, Specifications & Estimates (PS&E) – Major Components
 - Regulatory Research
 - General Arrangement and Profiles
 - Intact and Damage Stability
 - Structural Plans/Elevations
 - Structural Sections
 - Superstructure
 - Speed and Power Calculations
 - Major Equipment List
 - Weight Estimate
 - Cost Estimate



PROJECT MILESTONES

Tustumena Replacement Project 70062

AMHS Ketchikan Alaska

Awarded Consultant Professional Services Agreement (PSA)
The Glosten and Associates Team, Seattle WA

November 2013

AMHS Terminal Sight Visits (Project Team and Southeast Region
Terminal Design Section)

December 2013

Reconnaissance Report

February 2014

Public Participation (Homer, Kodiak, Dutch Harbor, etc.)

April-May 2014

Environmental Document

June 2014

Design Study Report

September 2014

Final Design Completion

June 2015

