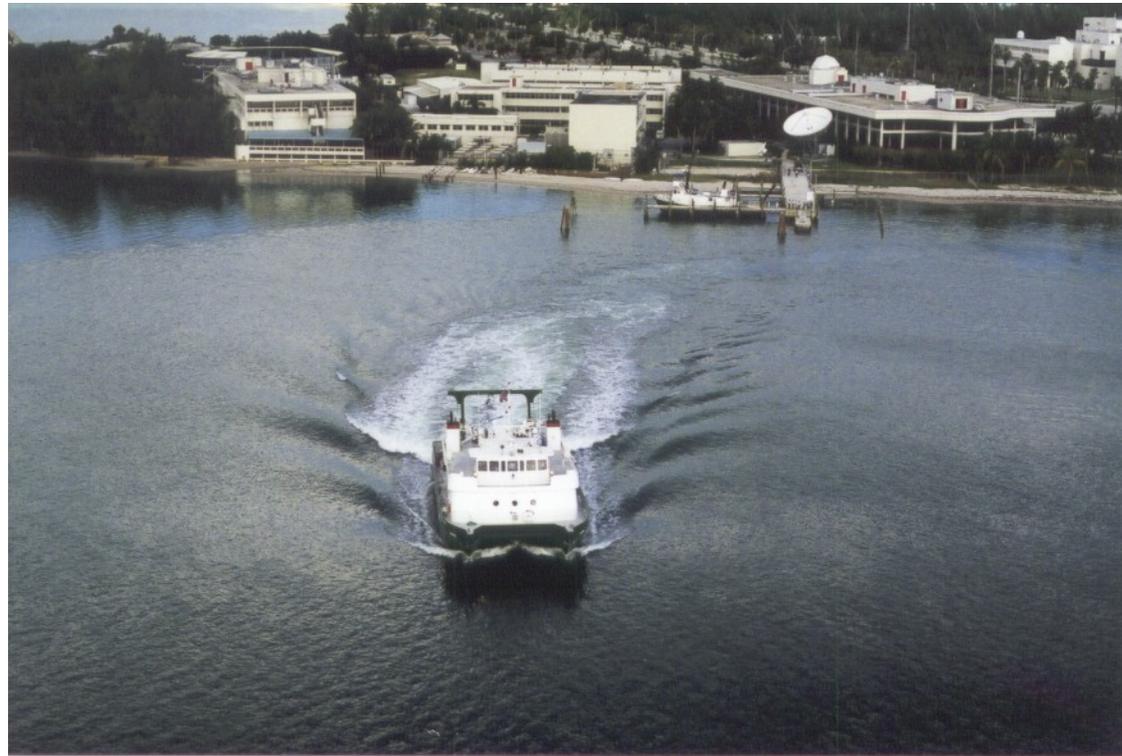


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# R/V F.G. Walton Smith Refit

01 September 2019

# Overview

- R/V F.G. Walton Smith is approaching 19 years of service
- Propulsion Engines and Ship Service Generators are maintenance intensive and do not meet EPA emissions regulations
- The ship's Bow Thrusters are undersized for station keeping and close maneuvering in moderate wind and/or currents
- The ship no longer has a functioning Dynamic Positioning System
- The Ship's Service Generators have difficulty holding a stable load given the growth of electrical demands over 19 years.



# Upgrades and Modifications - Propulsion

- Recapitalize the propulsion system and ship service generators into a diesel electric parallel hybrid system.
  - Improved Reliability and Redundancy
  - Improved Fuel Economy
  - Lower Emissions
  - Lower Noise
- Upgrade existing Bow Thrusters with units having increased thrust
  - Enhanced station keeping
  - Enhanced maneuverability



# Upgrades and Modifications – Operations

- Recapitalize the existing hydraulic winches with electric winches.
  - Improved Reliability
  - Lower Maintenance
  - Lower Noise and Vibration
  - Improved Safety with Automatic Heave Compensation
- Improve Station Keeping and Maneuvering
  - Dynamic Positioning System enables sampling and casting in place

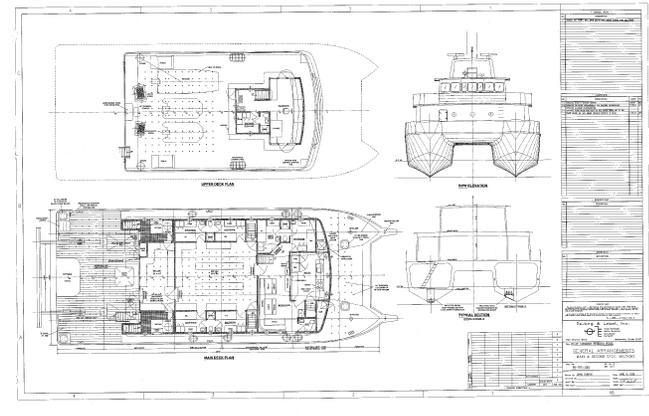


# Project Overview

- Project to be conducted in four phases
  - Spreads funding requirements over multiple fiscal years
  - Insures proper planning done in advance including purchase of long lead-time materials
  - Enables R/V F.G. Walton Smith to conduct operations as much as possible

# Phase One

- Planning and Engineering
  - Planning
    - Assign Project Manager/Integrator who will oversee each aspect of the project
    - Creation of Work Specification
    - Source Selection of Shipyard for Refit
  - Engineering
    - Detailed Design and Drawings
    - Equipment and Machinery Selection
    - Electrical Wiring Diagrams
- Procurement of Long Lead-Time Materials



## Phase Two

- Dry-Dock Availability at Contractor Facility
  - Hull and Structural Modifications
  - Propulsion Removal and Installation
  - Bow Thruster Recapitalization
  - Sea Suction and Discharge Modifications



## Phase Three

- Dock-Side Availability at Contractor Facility
  - Finish Propulsion Installation
  - Electrical Modifications
  - Control System Modifications
    - Includes Dynamic Positioning System
  - Winch Renewal



## Phase Four- Dockside Work At RSMAS



## Phase Four

- Dock-Side Availability at RSMAS
  - Additional Electrical and/or Piping Modifications
  - Galley Equipment Recapitalization
  - Habitability Upgrades
  - Grooming new systems as needed after partial season of operations



# Cost Estimates by Phase

Phase	Description	Start Date	End Date	Fiscal Year	Estimated Cost
1	Design	Oct 2020	Apr 2021	2021	\$ 795,000
2	Drydock (Contractor Facility)	Oct 2021	Jan 2022	2022	\$ 1,583,000
3	Dockside (Contractor Facility)	Feb 2022	Jul 2022	2022	\$ 1,841,000
4	RSMAS Pier-side	Jan 2023	Mar 2023	2023	\$ 457,000
	Total	---	---	---	\$ 4,676,000

## Cost Estimate by Fiscal Year

Fiscal Year	Estimated Cost
2021	\$ 795,000
2022	\$ 3,424,000
2023	\$ 457,000
Total:	\$ 4,676,000