

# SWATH

SMALL WATERPLANE AREA TWIN HULL

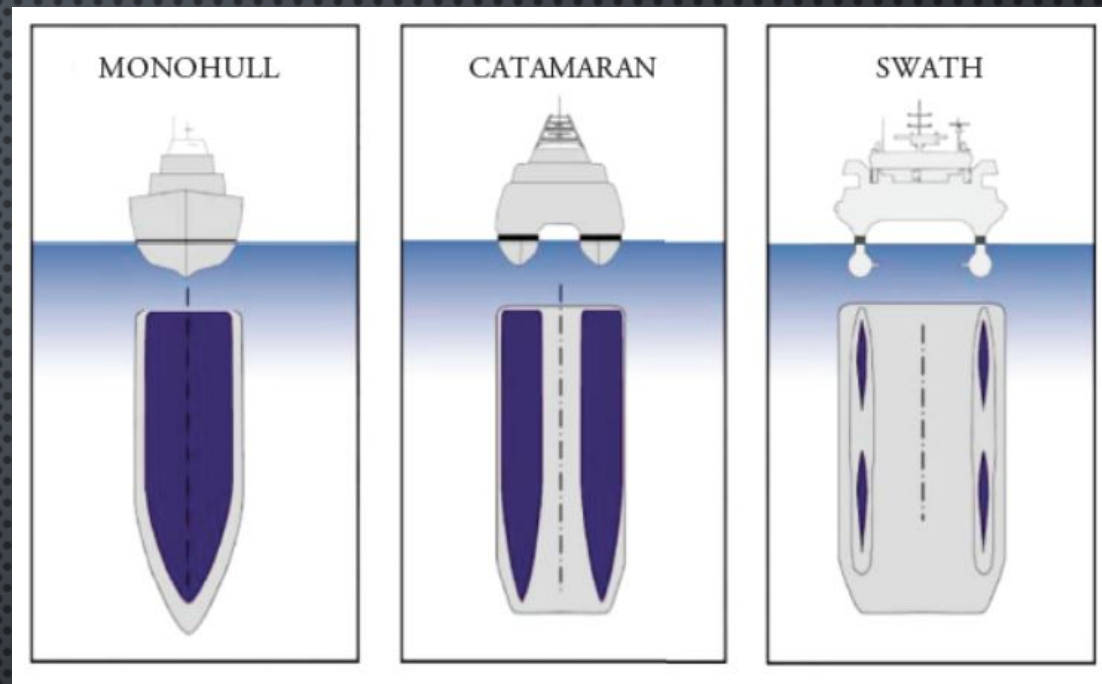
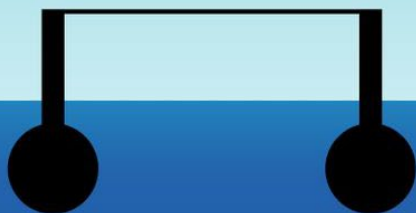
NOAA R4001



Catamaran



SWATH



THE SMALL WATERPLANE AREA TWIN HULL (SWATH) IS A TWIN-HULL SHIP DESIGN THAT MINIMIZES HULL VOLUME IN THE SURFACE AREA OF THE SEA. BY MINIMIZING HULL VOLUME IN THE SEA'S SURFACE, WHERE WAVE ENERGY IS LOCATED, THE VESSEL BECOMES VERY STABLE, EVEN IN HIGH SEAS AND AT HIGH SPEEDS.



Measurement conducted using 6 foot waves



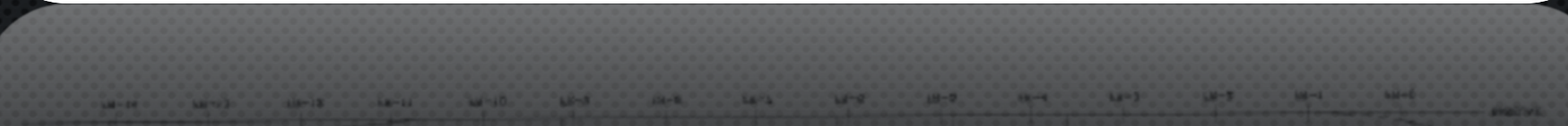
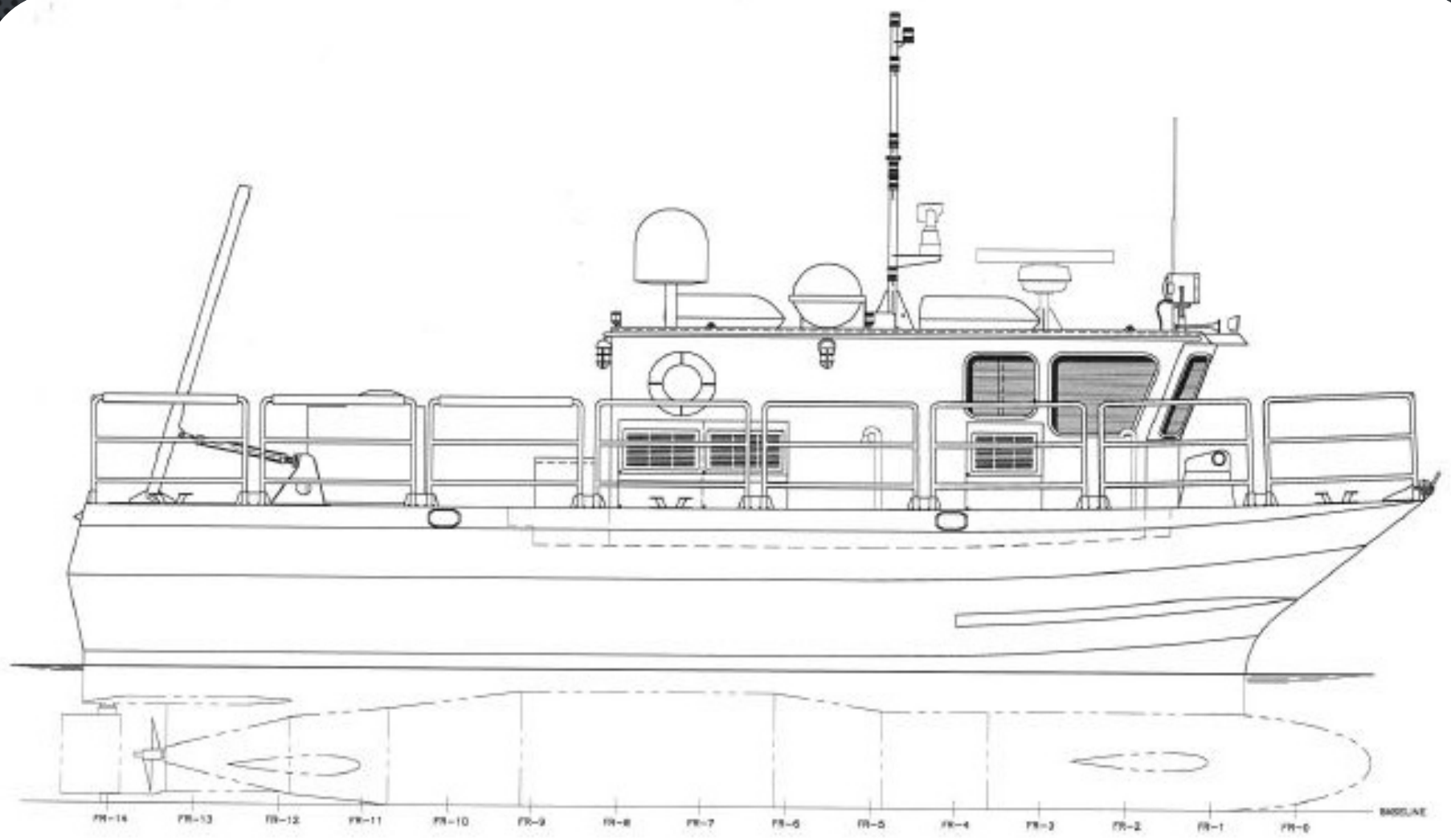
THE BULK OF THE DISPLACEMENT NECESSARY TO KEEP THE SHIP AFLOAT IS LOCATED BENEATH THE WAVES, WHERE IT IS LESS AFFECTED BY WAVE ACTION, AS WAVE EXCITATION DROPS EXPONENTIALLY WITH DEPTH.





NAVAL OCEANOGRAPHY MINE WARFARE



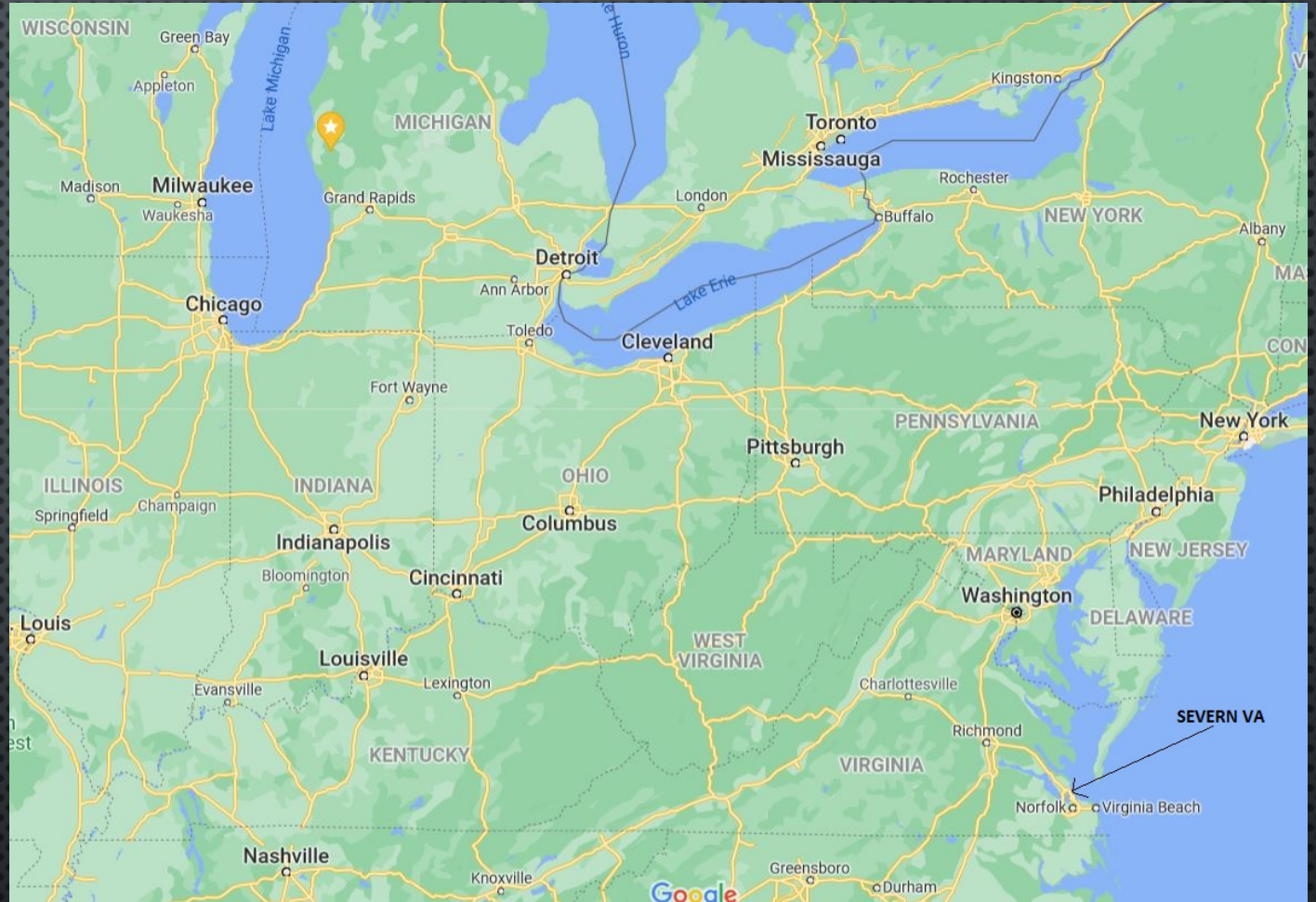






- Manufacture Date: June 2005
- Length Overall: 44 ft.
- Beam: 18 ft.
- Draft: 4.5 ft.
- Weight: 24.0 Long Tons Full, 21.4 Long Tons Light
- Cruising Speed: 18 kts
- Survey Speed: 7 kts
- Range: 750 Nautical Miles (7 kts)
- Endurance: 107 Hours
- Power: 2 Caterpillar C-9 Marine Diesel (503 BHP )
- 2: Northern Lights 20 kW Generators
- A Frame: 1500 lb Rated
- Side Davit
- Built to High Navy Standards, Exceeds NOAA and CG Requirements





Arrive at vessel in Severn VA on September 8<sup>th</sup> 2021

Erie Canal closes October 13<sup>th</sup> 2021

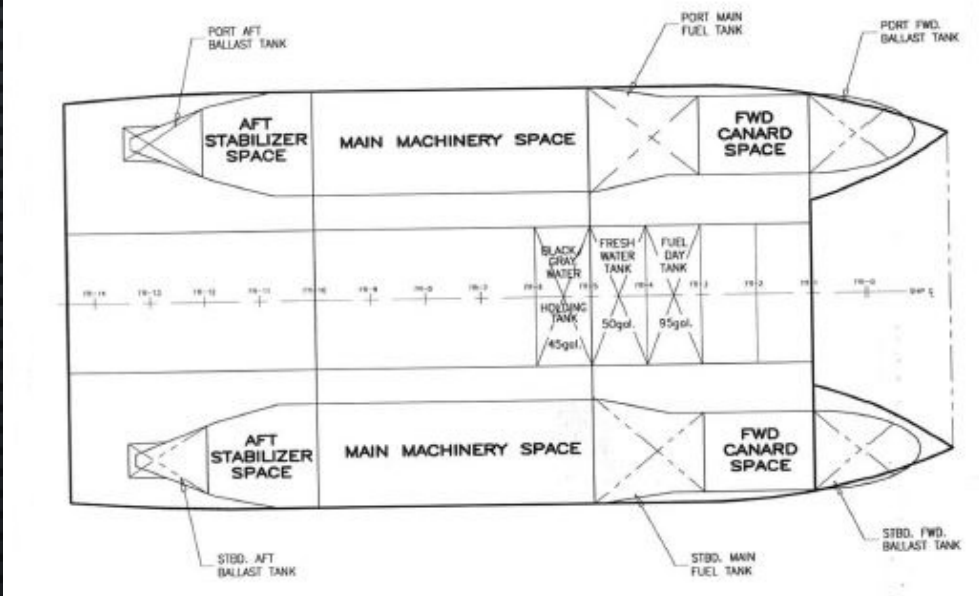
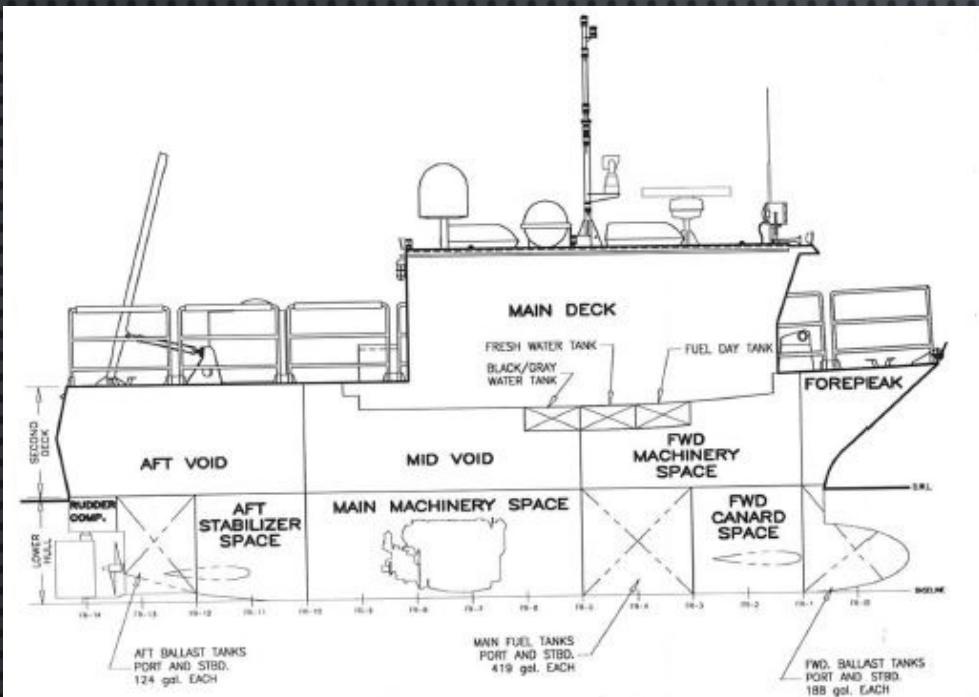




- Familiarization w/ vessel systems
- Perform preventative maintenance
- System checks and repairs
- Installation of new navigation suite
- Installation of life saving gear to meet carriage requirements
- Perform NOAA Small Boat Annual Inspection







## Below Waterline Items

- Raw water intakes
- Fathometer
- Stabilization fins
- Wheels and rudders

## Machinery Spaces

- DC starting power
- Fuel, Oil, filters
- Pumps and valves
- DC power distribution
- AC power distribution





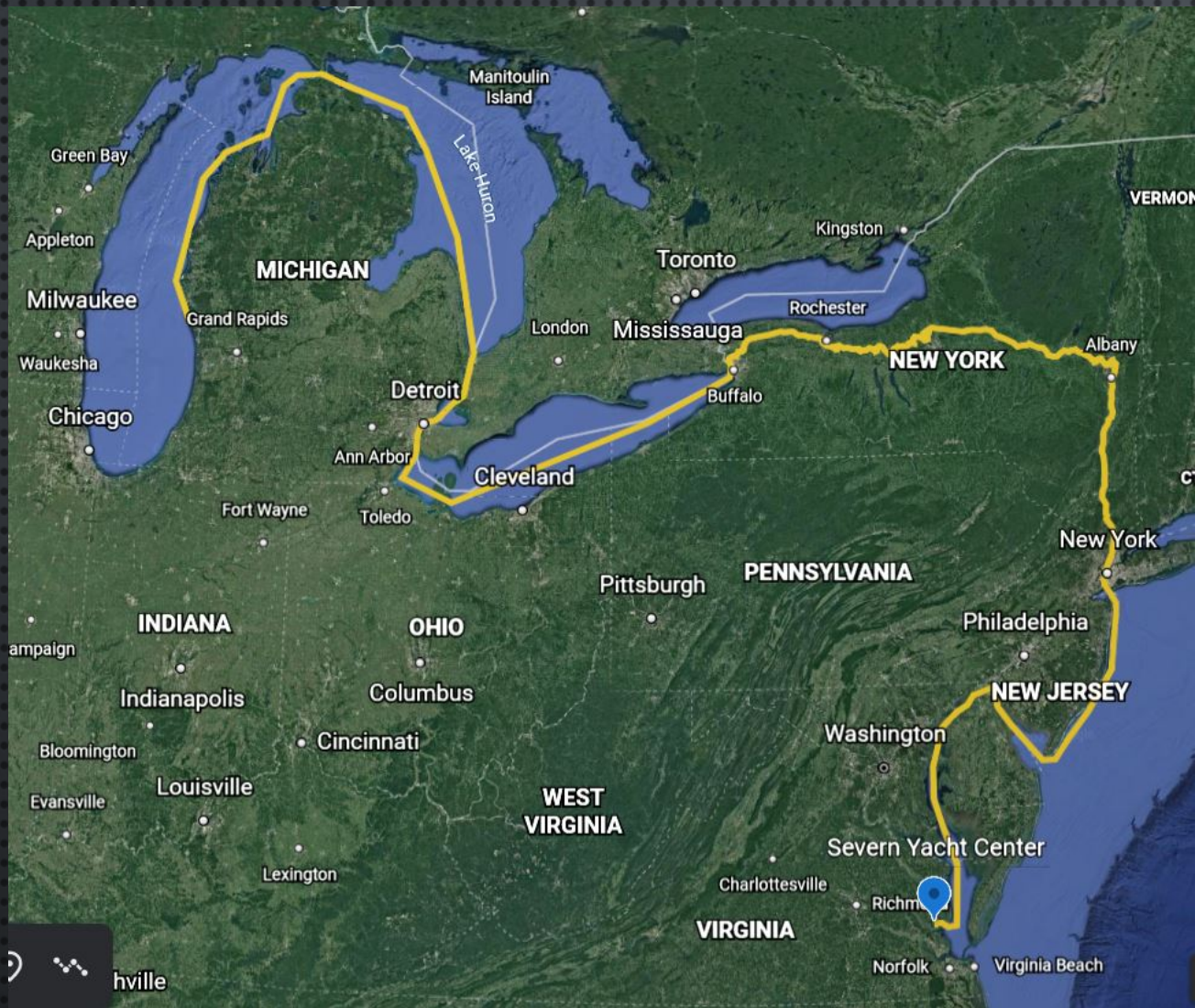




## IN WATER SYSTEM CHECKS AND SEA TRIALS

- Main engines
- Marine Transmissions
- Helm controls
- Generators
- Motion control and steering system
- Hydraulics
- Ballast system
- Fuel oil system
- 12v and 24v DC systems
- 120v and 240v AC systems
- Potable and sanitary system





- Sep 28<sup>th</sup> 2021 Depart Severn VA
- 1,500 Nautical miles to Muskegon MI
- Sep 29<sup>th</sup> 2021 discover sand bar in Cape May NJ...





- Cruising speed 15 to 17 knots depending on sea state
- Fuel burn ~30 GPH at cruising speed
- Very smooth ride in choppy conditions











Arrive at the Erie Canal east entrance Oct. 3<sup>rd</sup> 2021



## Hydraulic system failure while in Erie Canal

- Significant loss of hydraulic fluid into lower bilge
- Discover source of leak in FWD port actuator space
- Valve off FWD actuators
- Continue trip without automatic vessel stabilization







- Arrive in Muskegon MI Oct 22<sup>nd</sup> 2021
- 45 day total effort
- Vessel hauled out by crane at Torresen Marine Nov. 2<sup>nd</sup> 2021