

U.S. Navy Global Class AGOR Mid-Life Refits Extending the service life another 15 -20 years



AGOR 23 – *Thomas G Thompson*
University of Washington (UW)
Shipyard 6/16 – 12/18 Completed
Service Life Extended to 2036



AGOR 24 – *Roger Revelle* - Current Retirement - 2026
UCSD - Scripps Institution of Oceanography (SIO)
Shipyard 4/19 – 4/20 60% complete with refit
Removals complete - Installation Nearly Complete
Commissioning, Testing Trials starts Jan 2020



AGOR 25 – *Atlantis* - Current Retirement - 2027
Woods Hole Oceanographic Institution (WHOI)
Shipyard 6/20 – 6/21 planned
Evaluating Shipyard Proposals
Shipyard Award planned for Late November 2019

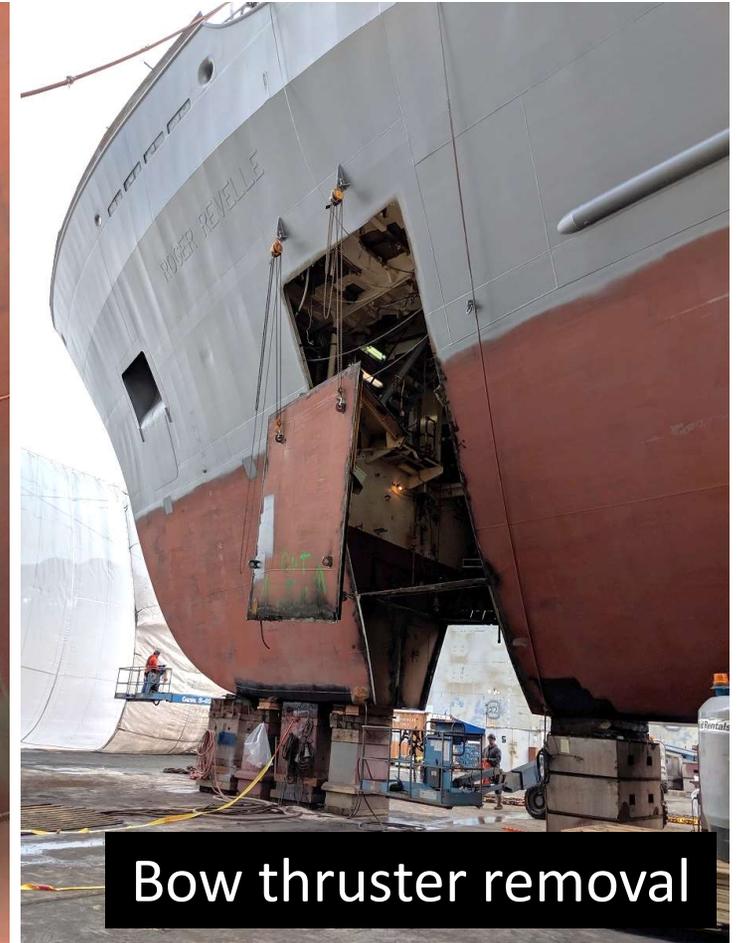
Timeline - Milestones

- ◆ AGOR 23 – *Thompson* (Completed)
 - ✓ Shipyard Contract awarded (Vigor Seattle) 24 Aug 2015
 - ✓ Entered shipyard 16 June 2016
 - ✓ Shipyard Delivery to UW 19 Dec 2017
 - ✓ Shakedown cruises late Dec 2017 & early Jan 2018
 - ✓ NSF Inspection 23-25 Jan 2018
 - ✓ Completed two years of science operations, Warranty Period ended Dec 2018
- ◆ AGOR 24 – *Revelle* (Ongoing)
 - ✓ Shipyard Contract awarded (Vigor Portland) 3 July 2018
 - ✓ Start of shipyard period 15 April 2019
 - ✓ All Removals complete and major new equipment installed on board as of November 2019
 - ✓ Commissioning, testing and trials to start early January 2020
 - ✓ Planned Delivery back to SIO April 2020
 - ✓ Shakedown, Testing and Outfitting thru June 2020, First science cruise – July 2020
- ◆ AGOR 25 – *Atlantis* (Planned)
 - ✓ Shipyard RFP April 2019, Proposals received from multiple shipyards
 - ✓ All Major long lead time equipment ordered as Owner Furnished Equipment – Summer 2019
 - ✓ Planned Shipyard Contract start December 2019
 - ✓ Planned start of shipyard period June 2020
 - ✓ Planned Delivery back to WHOI June 2021
 - ✓ Overhaul of DSV *Alvin* to be coordinated with *Atlantis* out of service period.

ONR AGOR Fleet Renewal

- AGOR Fleet Service Life range from 2032 for *Kilo Moana* to 2046 for *Sally Ride*. Mid-Life Refits extended *Thompson* to 2036 and potentially extend *Revelle* to 2041 and *Atlantis* to 2041.
- *Thompson, Revelle, Atlantis* in mid-life; *Armstrong and Ride* with new construction
 - New Tier 3 Diesel Generators on 5 of 6 AGOR
 - Diesel Electric Propulsion with Integrated Bus and reduced number of online generators resulting in reduced fuel use.
 - New OWS, MSD, and BWTS including funding for BWTS on *Kilo Moana*
- Improved hands free CTD handling systems on *Revelle, Kilo Moana, Armstrong & Ride*
- Upgraded Acoustic Systems:
 - Gondola with EM124, EM712, HDSS (Pinkel Sonar), EK80 on *Revelle*
 - EM124, USBL, EK80 on *Atlantis*
 - New transducer well and plan for new EM124 on *Thompson*;
 - New SBP 29 & EM124 upgrade (SBP uses EM124 receive array) on *Sally Ride*
- ABS assessment of remaining hull service life on *Kilo Moana*

Major Hull Cuts for Equipment Removals



With everything out, thorough inspection
of usually hidden areas made possible



Engine room chaos

Removals are complete



Modern Power Is Also Greener

New diesel generator



New clean EPA Tier III diesels replace old Tier I
Reduce emissions from each engine by two-thirds

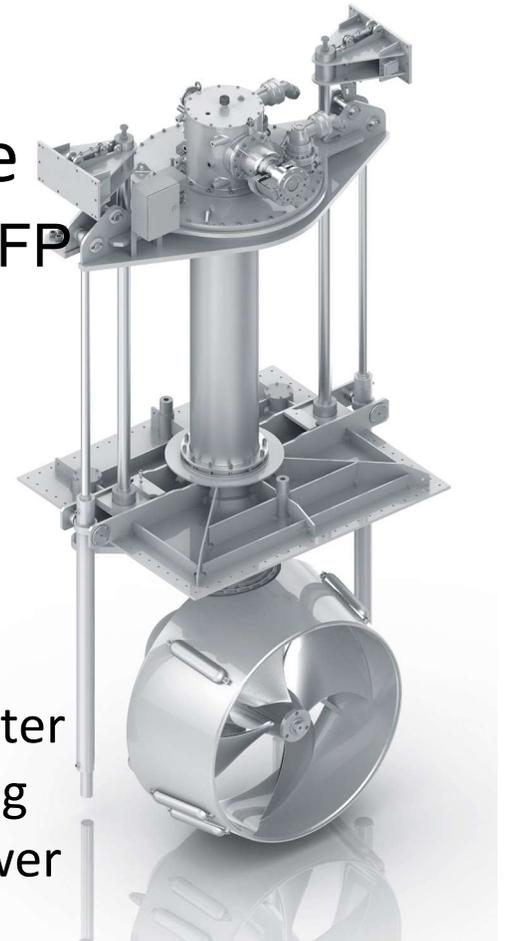
Bow Thruster replacement



New: ZF Marine
Retractable L-Drive
Model AT 5011 RT TT-FP

Retracted:
tunnel thruster for
maneuvering in port

Extended:
360 degree azimuth thruster
Better dynamic positioning
less prop noise, more power



Ballast Water Treatment System: Green



USCG type-approved Optimarin Ballast Water Treatment System along with all new Ballast Water Piping and Manifold

Gondola = Better Sonar Performance

Gondola coming in for landing



HDSS installation



Questions?

