

Update for UNOLS Council

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March 2020

## AGOR 23 Class Service Life Extension Program

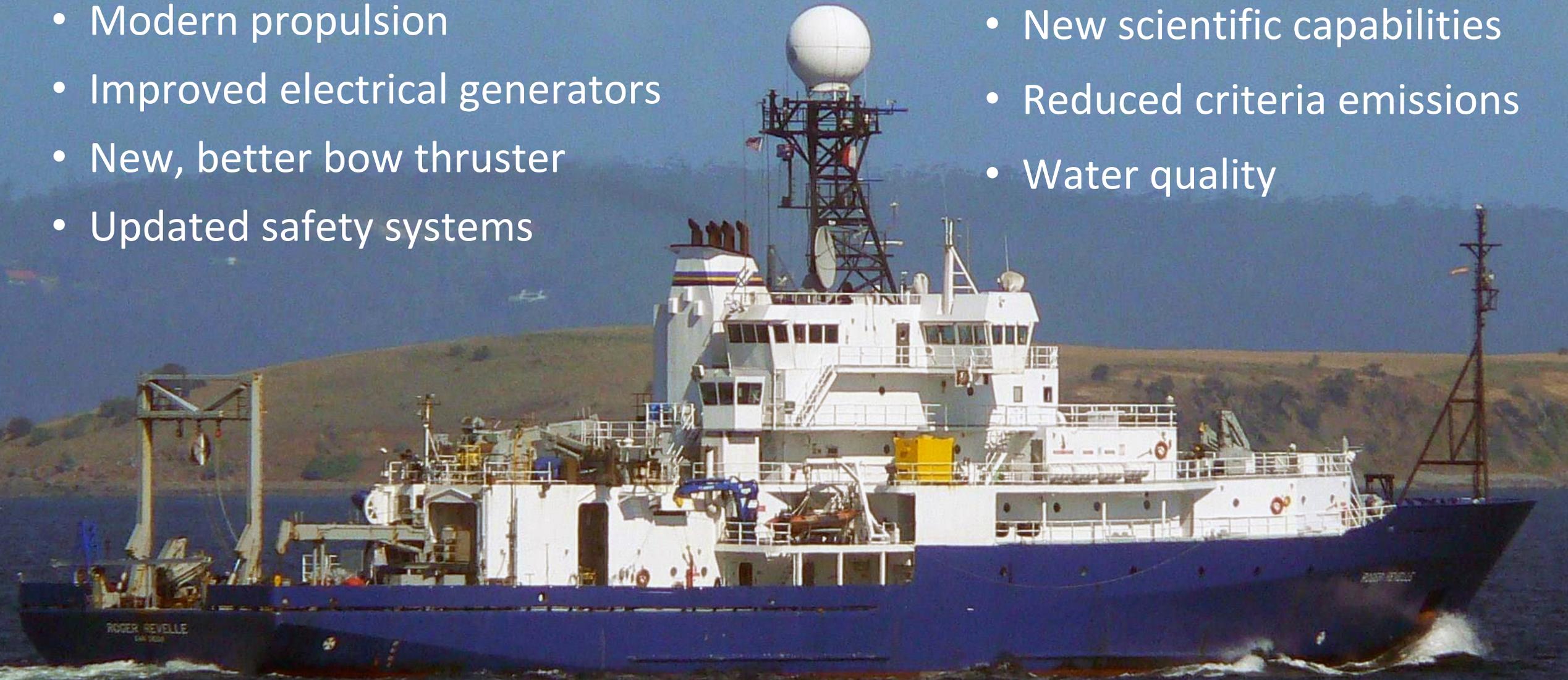
The Global Class ships *Thompson G. Thompson* (1992), *Roger Revelle* (1996), and *Atlantis* (1997) had a 30 year design life

- ONR is focused **primarily on life extension** of the basic ship (hull, mechanical, electrical) – extending the 30 year service life to 45 years
- Ensuring reliability, maintainability and regulatory compliance are key parts of the primary goal
- Science upgrades, making ships green are **secondary goals**

# Good Intentions: *Roger Revelle* Midlife Refit



- Modern propulsion
- Improved electrical generators
- New, better bow thruster
- Updated safety systems
- New scientific capabilities
- Reduced criteria emissions
- Water quality



R/V *Roger Revelle*, Hobart 2015

# Schedule: R/V *Roger Revelle* Midlife



## One

Work Package	
S-01	RR Shipyard Contract Technical Spec
WP-1	Repower
WP-2	Bow Thruster Replacement
WP-5	Z-Drive Inspection and Maintenance
WP-6	Ballast System Piping
WP-7	Ballast Treatment System Installation
WP-8	Firemain System Piping Replacement
WP-9	Potable Water System Modifications
WP-10A	A/C Spaces General
WP-10B	A/C Controls Upgrades
WP-10C	AHU-5 Zone Redesign
WP-10D	Bow Thruster Room A/C
WP-10E	AHU-2 Makeup Air Upgrades
WP-11A	HVAC Makeup Air Upgrades
WP-11B	Generator Room Supply Fan Noise Mitigation

WP-12	Chiller Replacement
WP-13	Sewage System and Drain Replacement
WP-14	Ship Stores Refrigeration Equipment Replace
WP-15	Science Refrigeration System Modifications
WP-16	Uncontaminated Seawater System Modifications
WP-17	PA System
WP-18	Telephone System
WP-23	Ship Service Transformer Upgrades
WP-28	Exterior Ballast and Fuel Tank Vent Modifications
WP-30	Oily Water Separator (OWS) Replacement
WP-32	Crane Replacement
WP-33	Anchor and Chain Maintenance
WP-34	Overhead Lighting Upgrades
WP-35	Steel Replacement
WP-36	Drydocking
WP-37	General Maintenance
WP-38	Multibeam Gondola

# MILESTONES



March 17- April 10 Dock Trial

April 13- April 24 Sea Trial

April 29 **Vessel Delivery**

# Diesel and Generator Rotation Mismatch



Caterpillar diesel engine and Siemens generator each manufactured to run counterclockwise, but no agreement on orientation

This required replacement of generator internal fan

~ Two week schedule delay



# #3 Generator Rotor Shaft Damage



#3 generator coupling  
very hard to remove

Generator shaft found  
damaged after coupling  
removed

Not repairable,  
manufacture replacement  
6 months



Nasty  
gouge

# DIESEL PIPING ISSUE



During install of Auxiliary Sea Water Pump Inlet & Outlet Piping on 3516C generator sets, Vigor questioned drawings orientation of connections to Peterson CATERPILLAR Inc.

Peterson confirmed that the orientation in their supplied drawings were correct. During commissioning of the engines, Peterson's onsite representatives questioned the orientation and Vigor contacted Peterson again.

Once again, Vigor was assured orientation on drawings was correct.

Just prior to engine start up, Vigor received notification that drawings were incorrect.

**Result: several day delay to diesel testing to correct**

# Regulatory Oversight



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We recognize value added by US Coast Guard and classification society oversight

Their activities after arrival at shipyard add uncertainty to cost and schedule.



*ABS and USCG inspect welds*

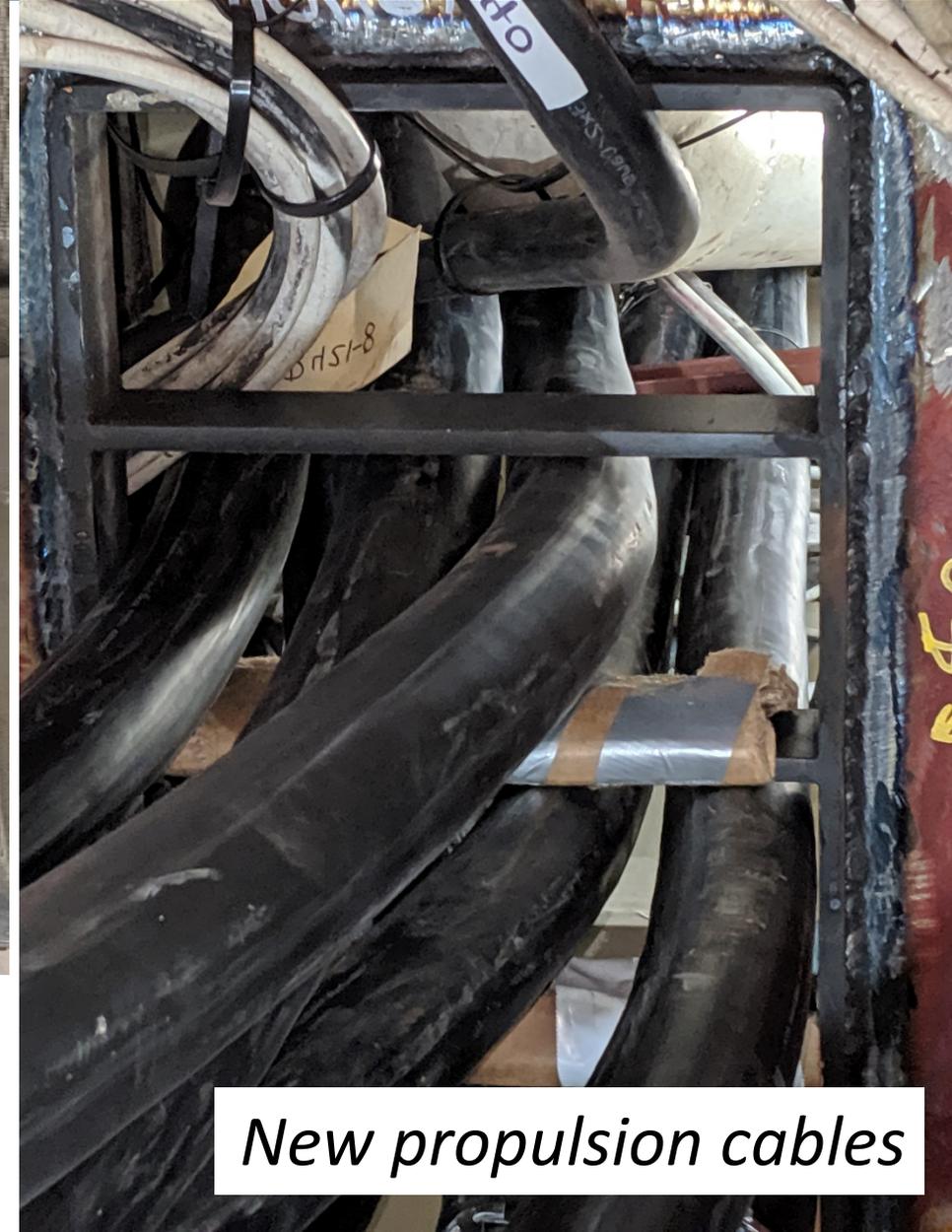
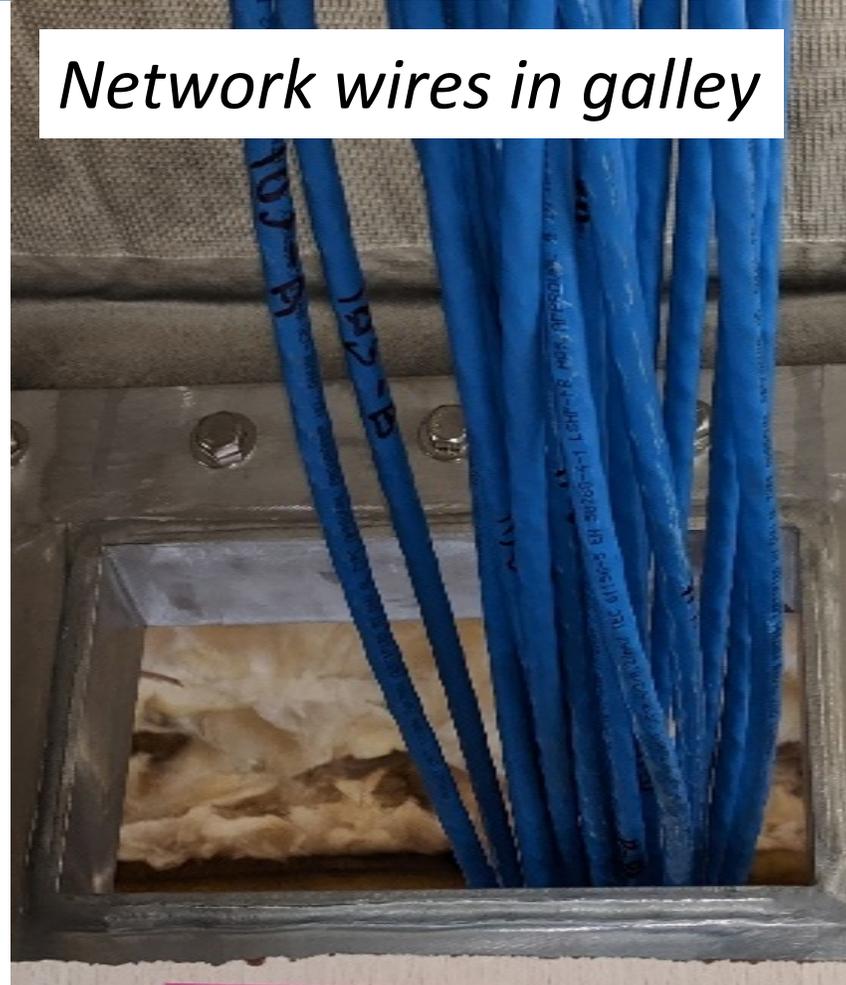
# Multi-Cable Transits / Major Attention



Fire barriers must never be defeated by penetrations.

USCG review every visit.

Final transits will be fully blocked with conforming material



# Reasons for Hope



- Strong federal partners
- Highly detailed work specification resulted in shipyard hitting the decks running
- Engineering completed prior to production work
- Scripps and Vigor formed beneficial relationship
- Additional 15-20 years ship life

# Modern Power Is Also Greener



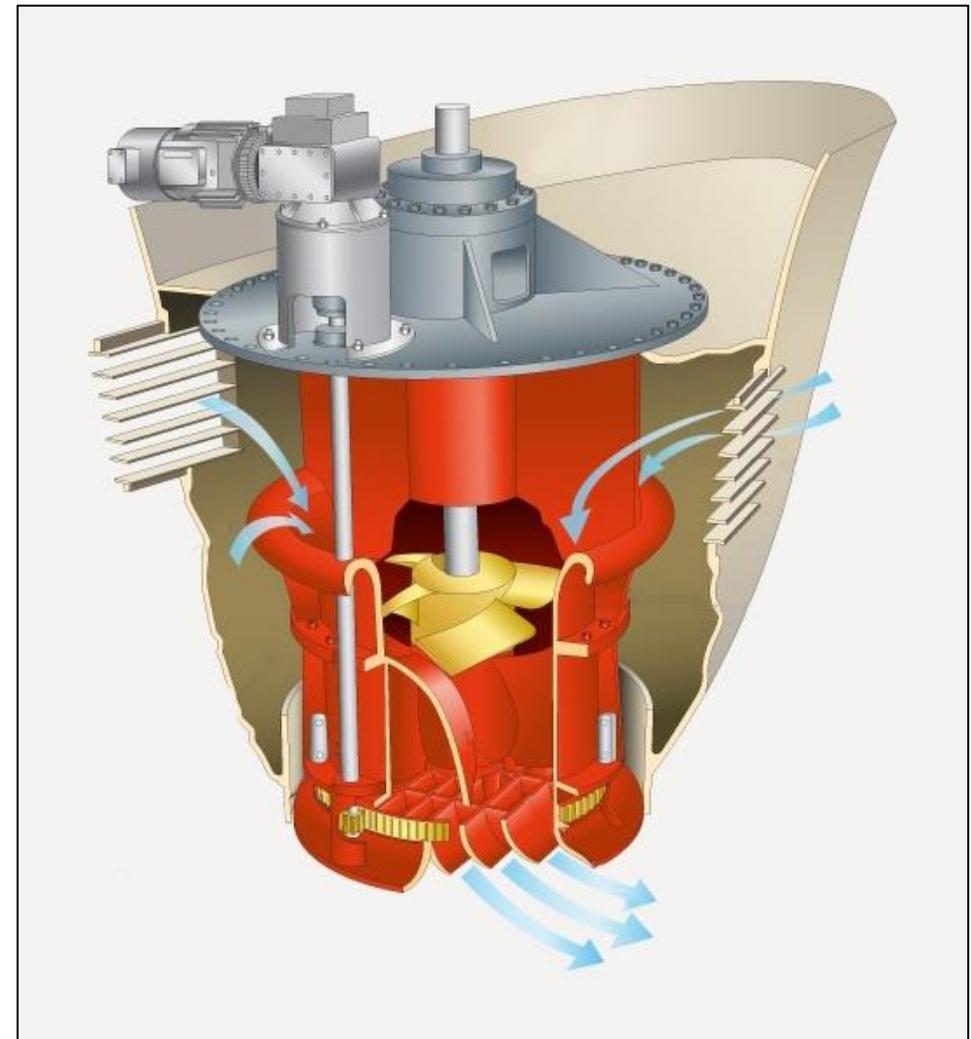
*New diesel generator*



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

# Bow Thruster

Original equipment: Tees White Gill Model 50T3S



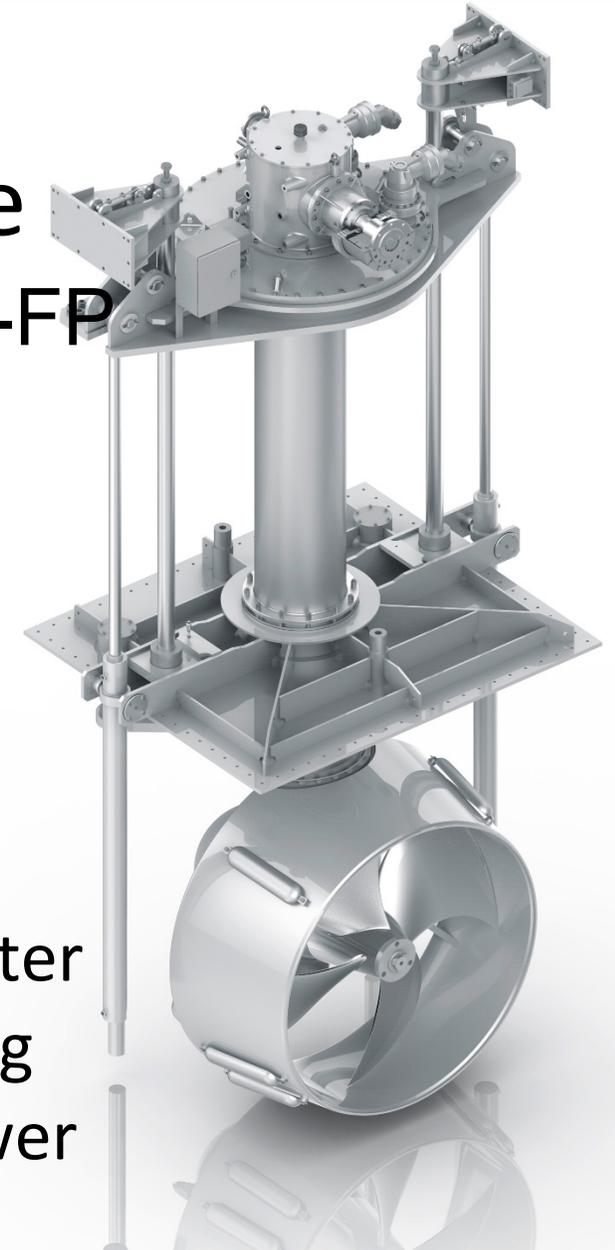
# Bow Thruster



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



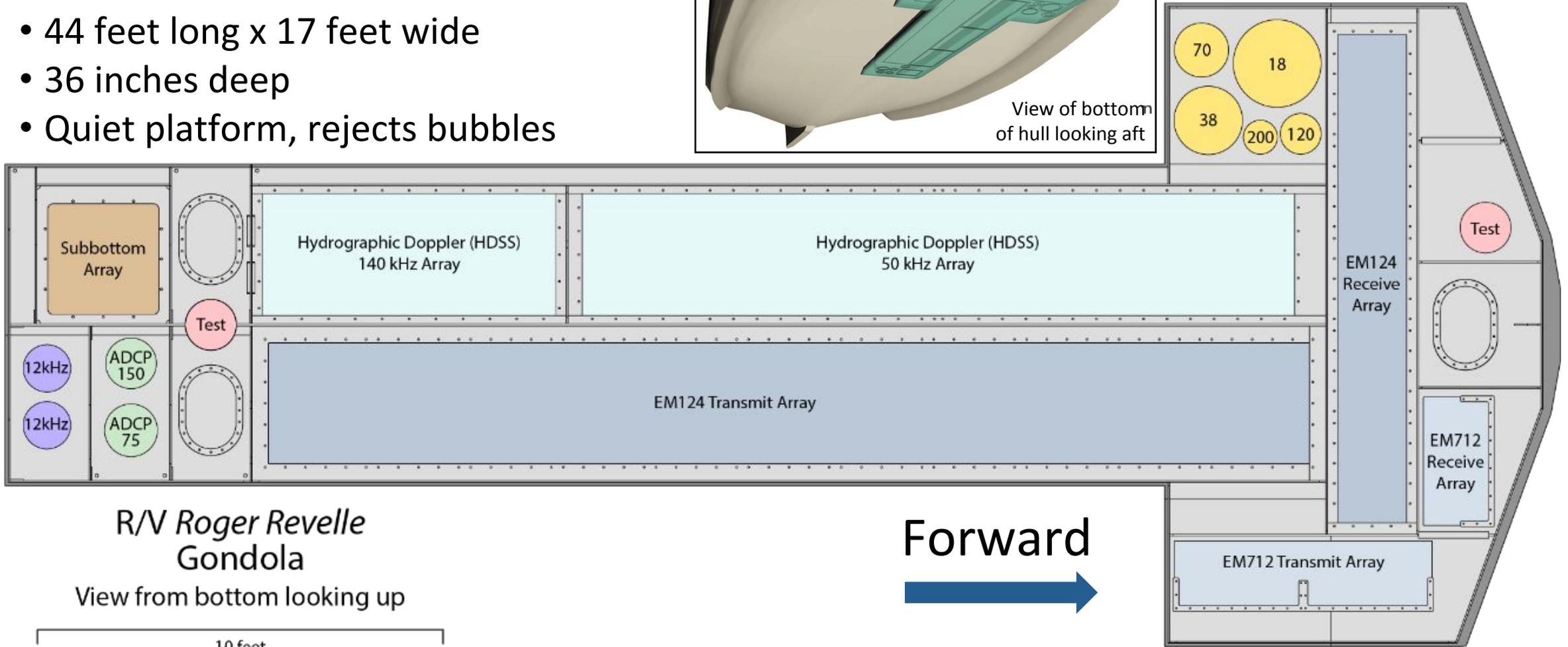
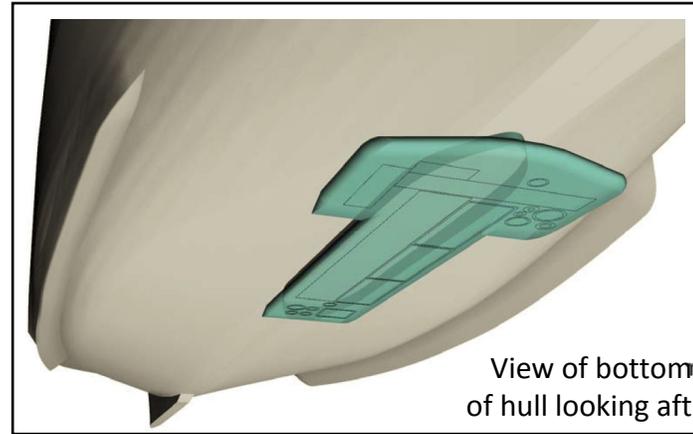
# Ballast Water Treatment System: Green



# Gondola = Better Sonar Performance

Gondola home for new EM124, EM712, EK80 and HDSS sonars

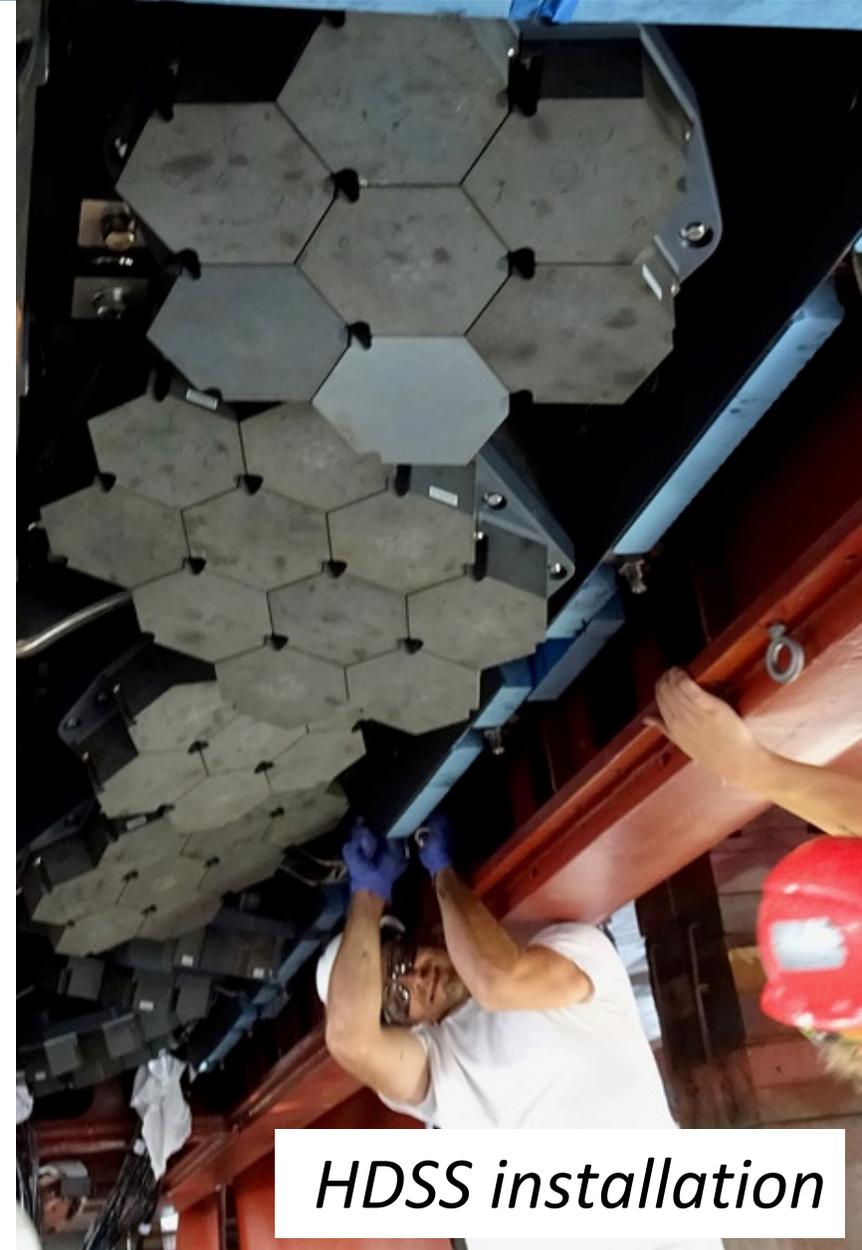
- 44 feet long x 17 feet wide
- 36 inches deep
- Quiet platform, rejects bubbles



# Gondola = Better Sonar Performance



*Gondola coming in for landing*



*HDSS installation*

# Questions?

