Update on R/V Roger Revelle
Mid Life Refit

Bruce Appelgate, Zoltan Keley, and Lee Ellett, RVTEC 2019
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
Schedule: R/V Roger Revelle Midlife

APR 2019
Schedule: R/V Roger Revelle Midlife

One Year
(366 days)

APR 2019

APR 2020
### Schedule: R/V Roger Revelle Midlife

#### One Year

(366 days)

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Equipment Removals

- Engine room hull cut
- Bow thruster removal
Dude, where’s my ship?

Engine room chaos
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
Fire barriers must never be defeated by penetrations.

USCG review every visit.

Final transits will be fully blocked with conforming material.
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

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

Model AT 5011 RT TT-FP

New: ZF Marine

Retractable L-Drive

Retracted: tunnel thruster for maneuvering in port

Extended: 360 degree azimuth thruster

Better dynamic positioning, less prop noise, more power
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

Diagram of Gondola with labels for various sonar arrays and components.
Gondola = Better Sonar Performance

Gondola coming in for landing

HDSS installation
Transducer Installations

12 kHz

EK80 Transducers

EM124 & EM712
Transceiver Room
Shipboard Network Replacement
Refurbishment of Lab Spaces