
# UNOLS RVOC May 2023

# R/V *FALKOR (too)*

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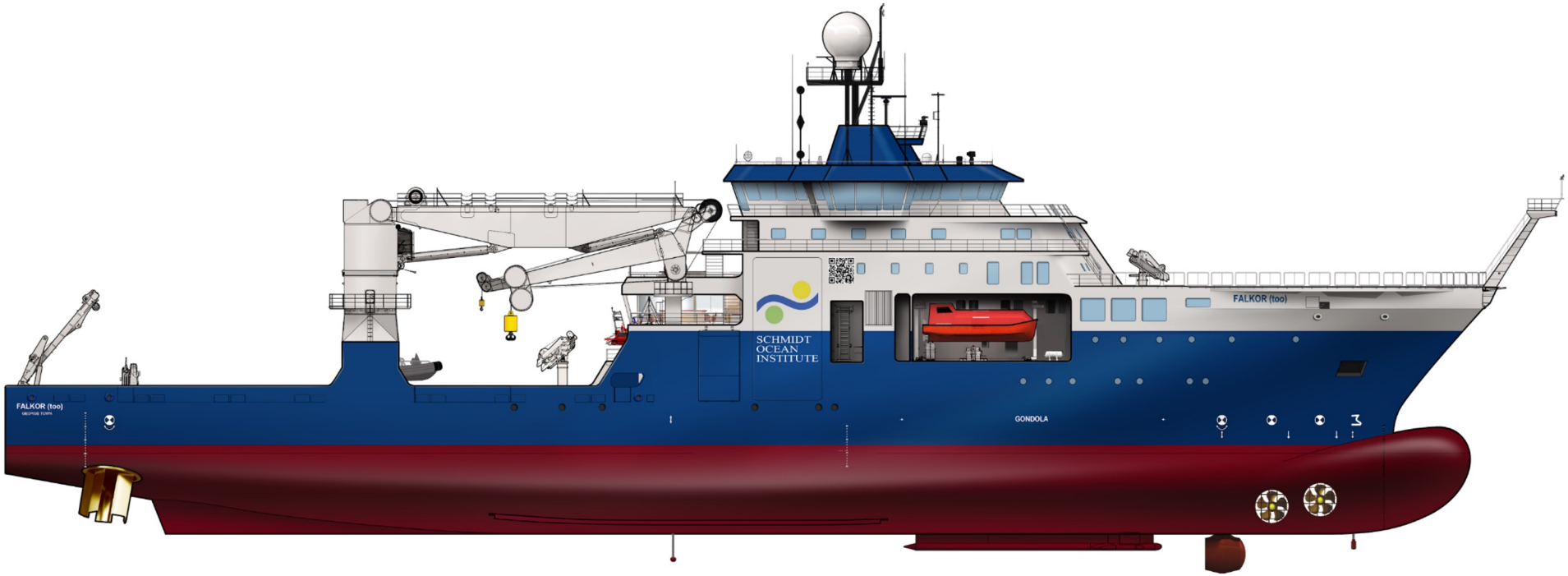


## Formerly MV *POLAR QUEEN*

# Specifications

| | |
|---|---|
| **LOA** | 363’ |
| **Beam** | 65’ |
| **Gross Tons** | 7,257 |
| **Labs** | 8 “rooms” for science |
| **Cranes** | 9 up to 150 tons AHC |
| **Moon Pools** | 2 (Hangar 17’ x 17’) (Aft Deck 23’ x 23’) |
| **Open Deck** | 9,600 ft2 |
| **Fuel Capacity** | 453,000 gallons |
| **Engines** | 10.8 mW (6 MAN 9 cylinder @ 1,800 kW each) |
| **Thrusters** | 5 (Bow - 2 tunnel, 1 drop keel) (Stern - 2 cycloidal pitch props) |
| **Science Sonars** | a lot |
| **Class & Flag** | DNV - DP2, ICE-C Cayman Islands |
| **Crew** | 28 + 8 ROV Technicians - 60 days on/off |
| **Scientists** | 40 (2024+) |
| **ROV** | 4,500 meters |

# SCIENCE ON R/V *FALKOR (too)*

- Eight Labs
- >5x Lab Space
- 75% increase in Met & Marine Underway Sensors
- 2x Sound Velocity Sensors
- +2 MTs

| Falkor | Square Meters | Falkor (too) | Square Meters |
|---|---|---|---|
| Dry Lab | 25 | Seawater Lab | 25 |
| Wet Lab | 30 | Main Lab | 105 |
| Lower Wet Lab | 5 | Wet Lab | 25 |
| | | Hydro Lab | 30 |
| | | Dirty Wet Lab | 10 |
| | | Computer and Electronics Lab | 60 |
| | | Cold Lab | 20 |
| | | Robotics Lab | 30 |
| **Total** | **60** | **Total** | **305** |

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# R/V FALKOR (too)

## Gondola and Sonar Configuration

### Seafloor Mapping

Multibeam technology sends hundreds of individual beams in a fan shape below the ship to paint a 3D image of the seafloor.

- **Shallow Water Multibeam:** 1m - 600m
- **Medium Water Multibeam:** 3m - 3,600m
- **Deep Water Multibeam:** 5m - 11,000m

### Listening

Hydrophones act as our ears underwater, listening to nearby sounds, whether they be from ships, sonars, or marine life.

- **Hydrophones:** 24 - 500 kHz

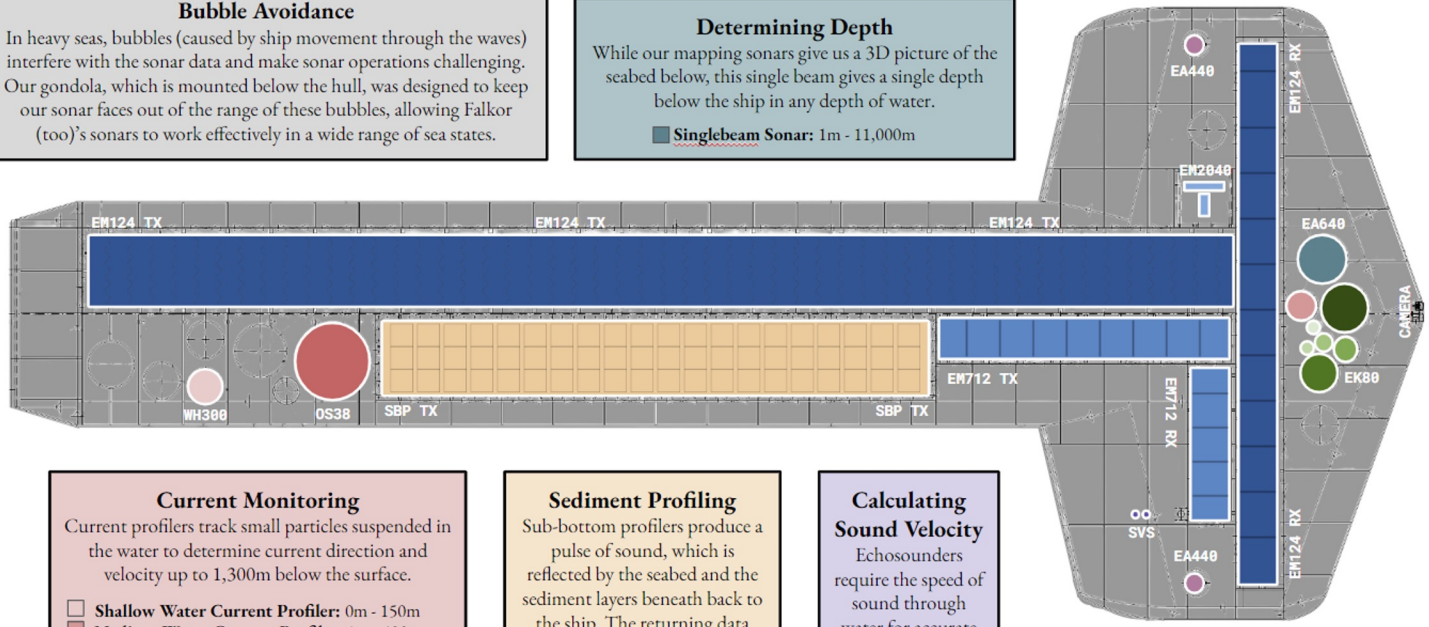
### Bubble Avoidance

In heavy seas, bubbles (caused by ship movement through the waves) interfere with the sonar data and make sonar operations challenging. Our gondola, which is mounted below the hull, was designed to keep our sonar faces out of the range of these bubbles, allowing Falkor (too)'s sonars to work effectively in a wide range of sea states.

### Determining Depth

While our mapping sonars give us a 3D picture of the seabed below, this single beam gives a single depth below the ship in any depth of water.

- **Singlebeam Sonar:** 1m - 11,000m




### Current Monitoring

Current profilers track small particles suspended in the water to determine current direction and velocity up to 1,300m below the surface.

- **Shallow Water Current Profiler:** 0m - 150m
- **Medium Water Current Profiler:** 1m - 400m
- **Deep Water Current Profiler:** 1m - 1,300m

### Sediment Profiling

Sub-bottom profilers produce a pulse of sound, which is reflected by the seabed and the sediment layers beneath back to the ship. The returning data reveals layers of sediment up to 200m below the seabed.

- **SBP 29:** 1m - 11,000m & up to 200m of sediment penetration.

### Calculating Sound Velocity

Echosounders require the speed of sound through water for accurate depth and distance calculations. Falkor (too)'s SVS offer real time sound velocity at the sonar faces.

### Fish-Finding

Our suite of midwater sonars help us identify biomass, both large and small, in the water around us.

**Sonars:** 16, 38, 70, 120, 200 & 333kHz


5M


ARMON


CROWLEY


BDG3


FALKOR (too)
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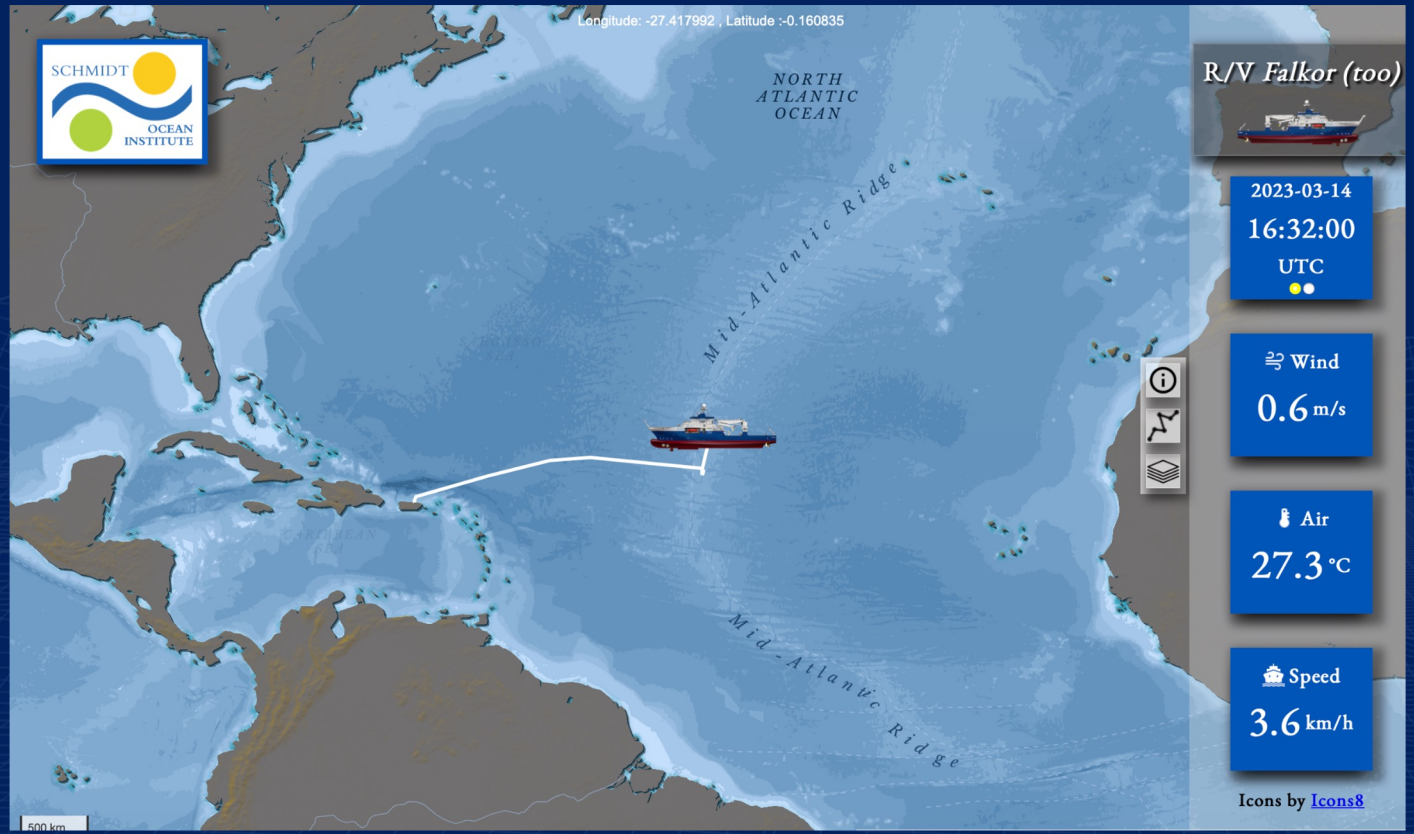
GONDOLA


SUBASTIAN


Sometimes the
House of Change
will have its little jokes,
and then the rooms are
suddenly reversed,
the floor on top
and the ceiling
at the bottom,
that sort of thing.
But it's only being bumpti
and it stops when I give it
a piece of my mi
All in all, it's a well-behaved
house and I feel very
comfortable in it.
We have good laughs
together.

# IN SEARCH OF HYDROTHERMAL LOST CITIES

## *1st Shakedown Cruise* - 40 days with 24 scientists





One Ocean
Seven Continents
One Decade
Seven Topics
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032


# Thank you