

UNOLS

FLEET

IMPROVEMENT

COMMITTEE

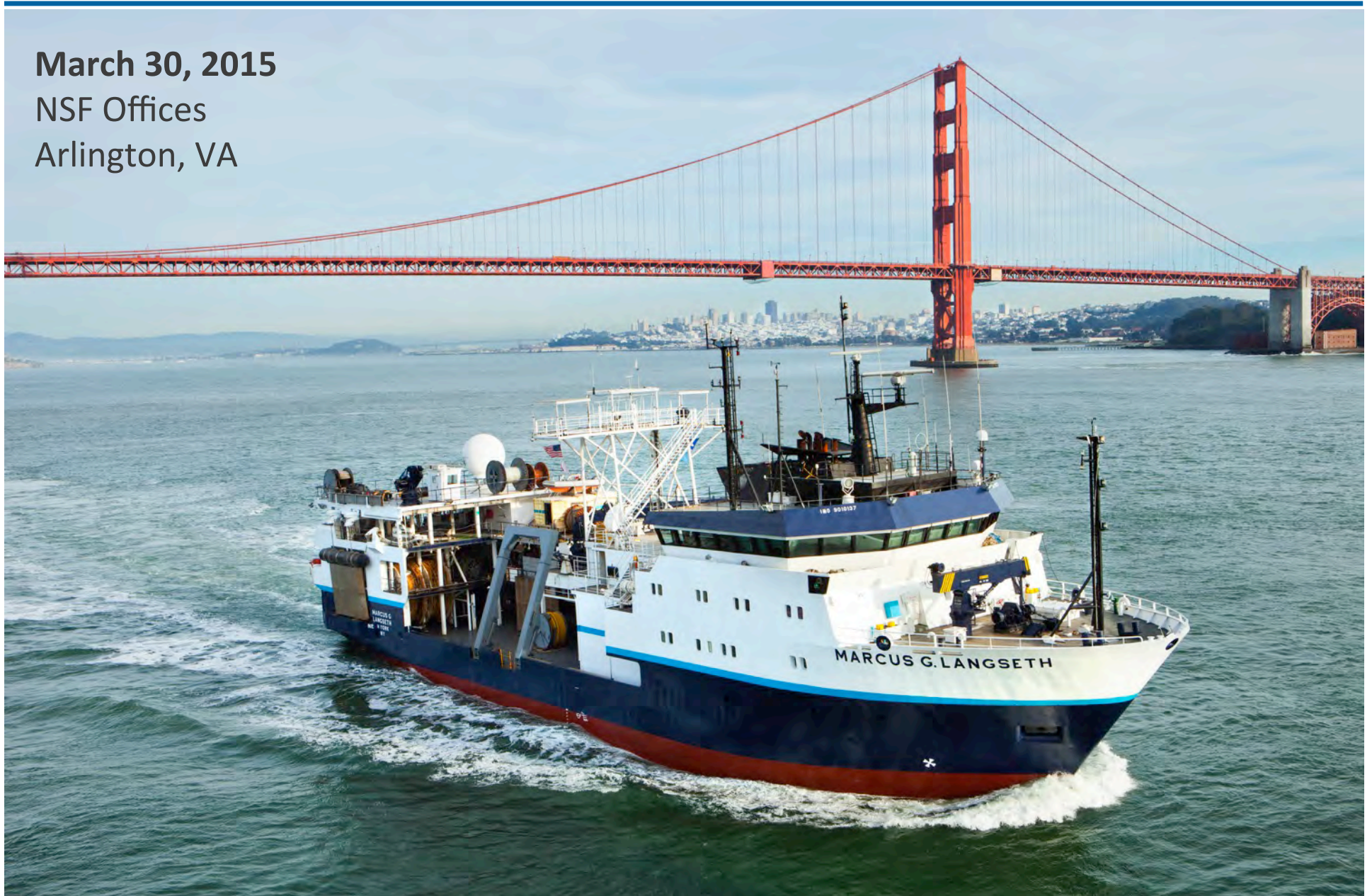
*LDEO Response to “Sea Change Report” Questions on
Langseth Operations and Alternatives*

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

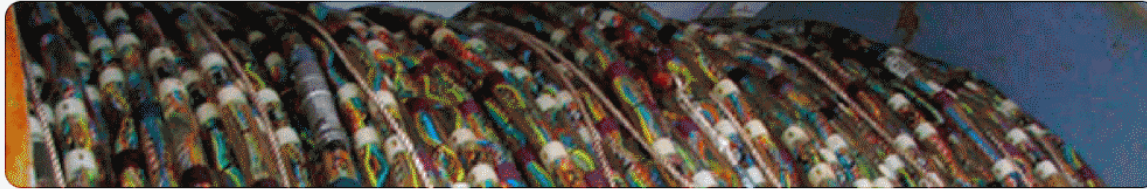
March 30, 2015

NSF Offices

Arlington, VA

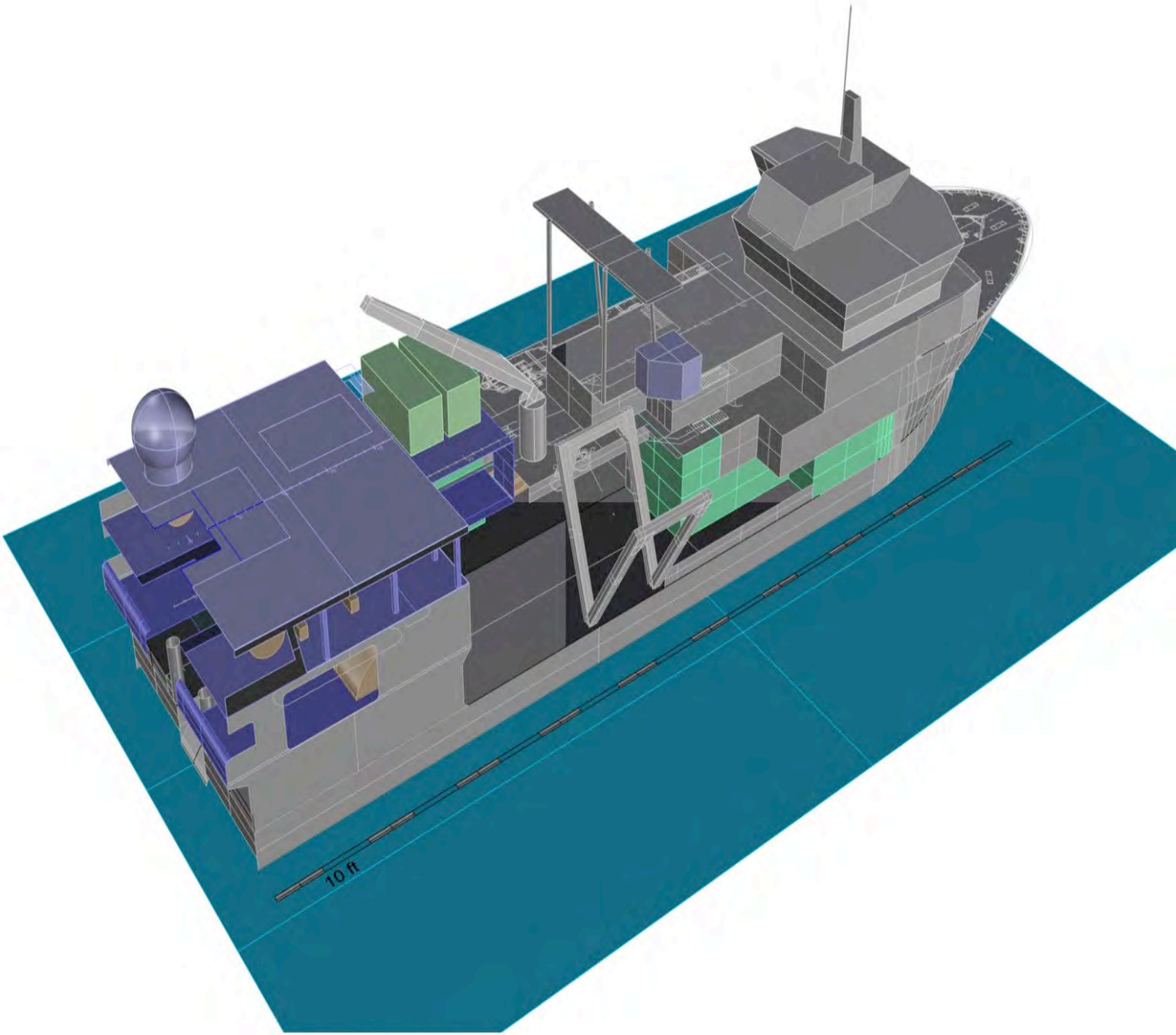


The new Sercel streamer and its impact on future science

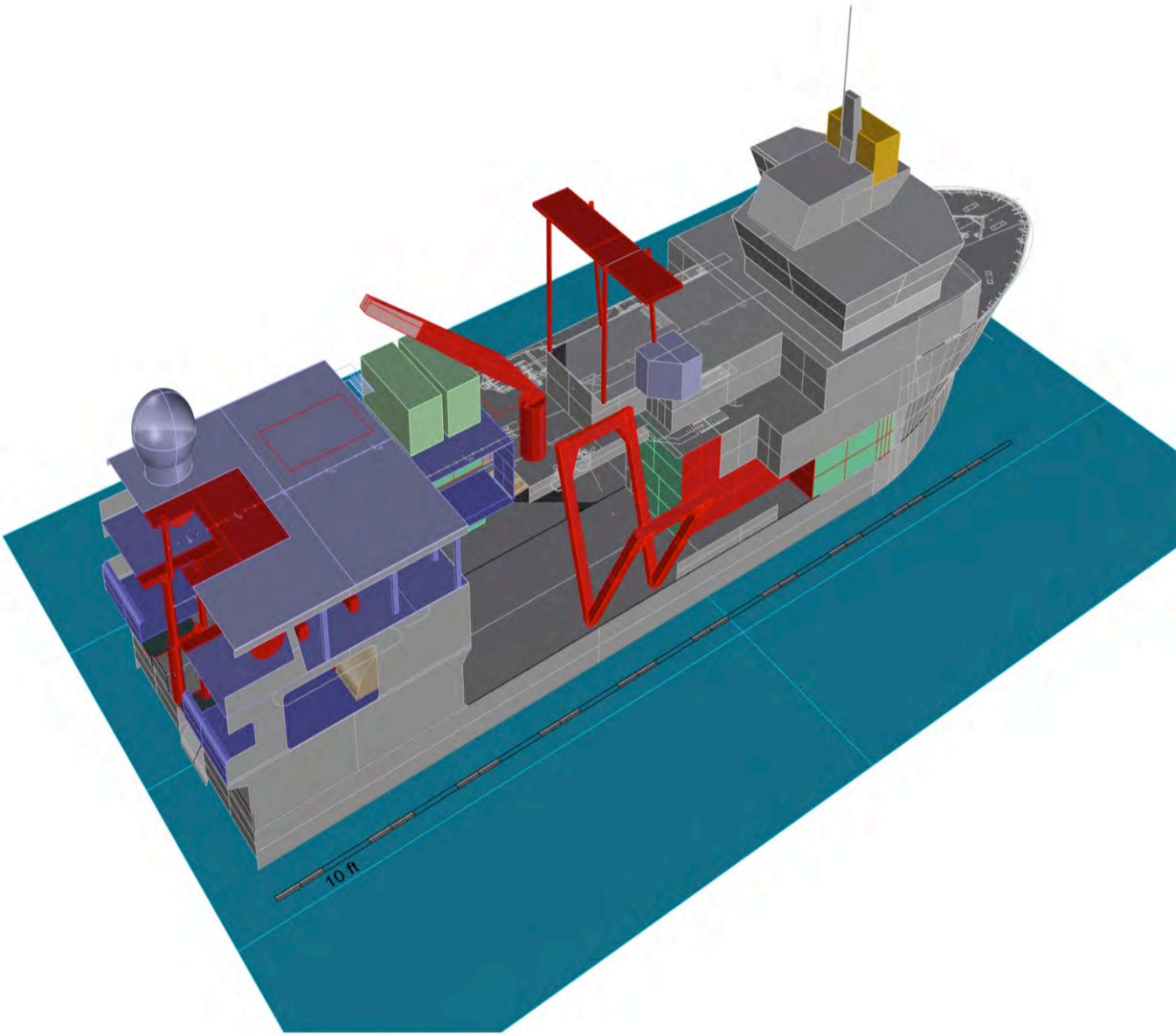


- A larger variety of streamer configurations with greater source-receiver offset:
 - Longer offsets (up to 15 km for 2D) for deeper penetration and more opportunities with data processing for improved imaging quality at all depths.
 - Longer offsets for reliable velocities (1:1 for reliable velocities from reflections; possible analysis of refracted arrivals)
 - Longer streamers for 3D (up to 12 km with 2 x 12 km) for limited deep 3D imaging
- Reliability: Less down time, currently manufactured and supported, streamers repairable and upgradable, compatible with updated computer interfaces.
- Larger dynamic range during recording
- Shorter sample rates for recording higher frequencies and improving resolution
- Shorter deployment times
- Less drag and less fuel to operate

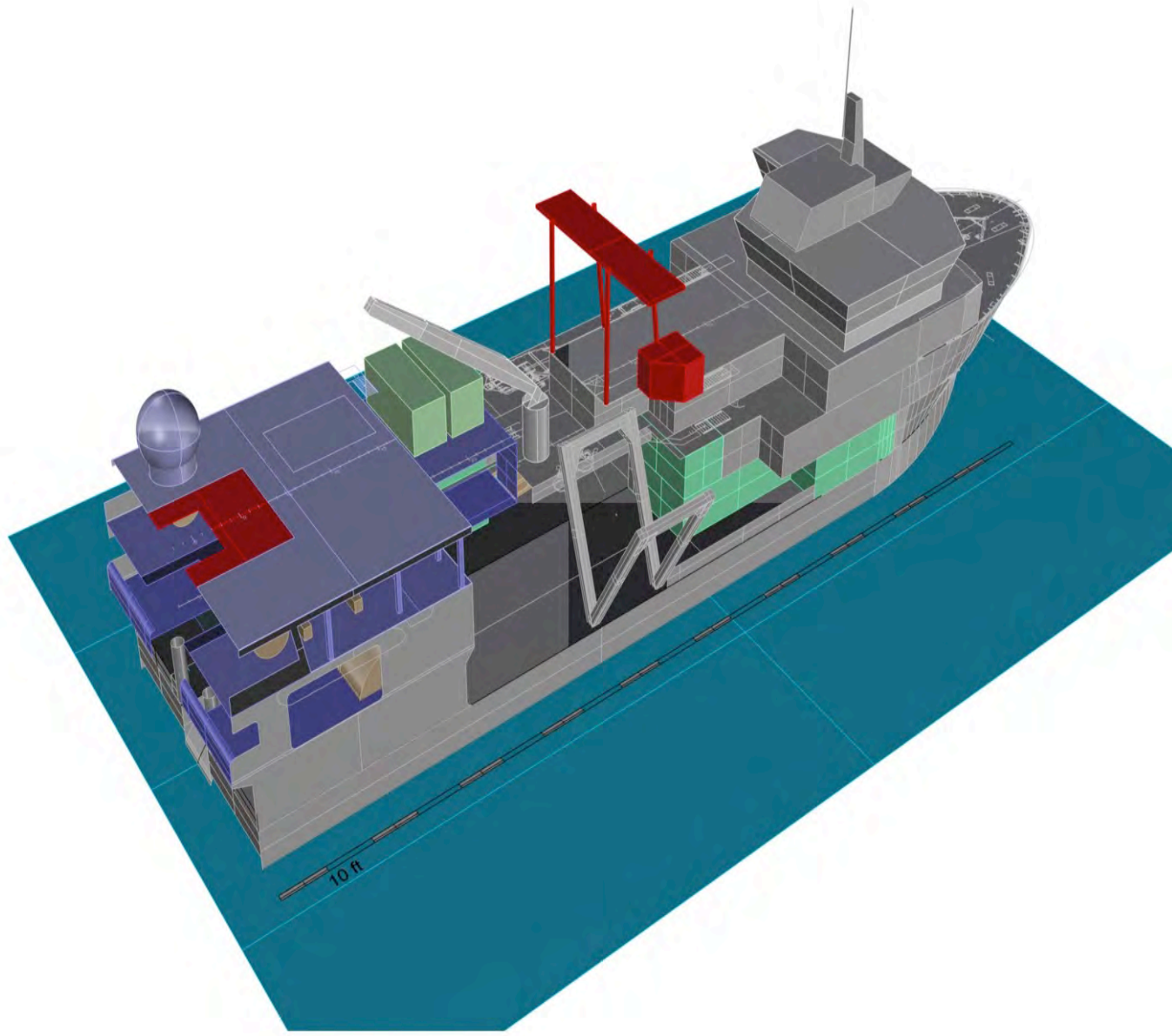
Current Configuration



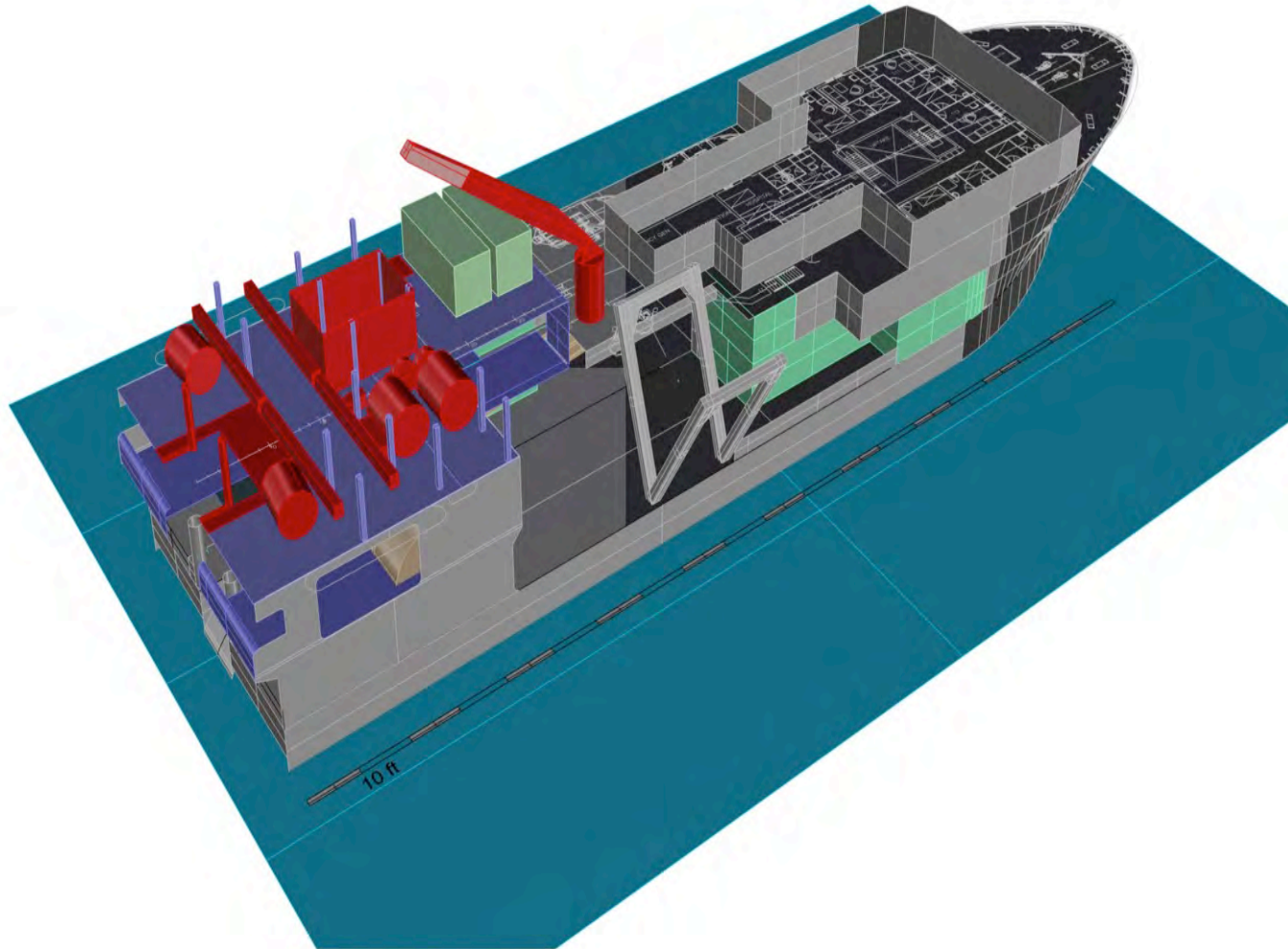
Removed Items



OBS / Bridge Deck Removals

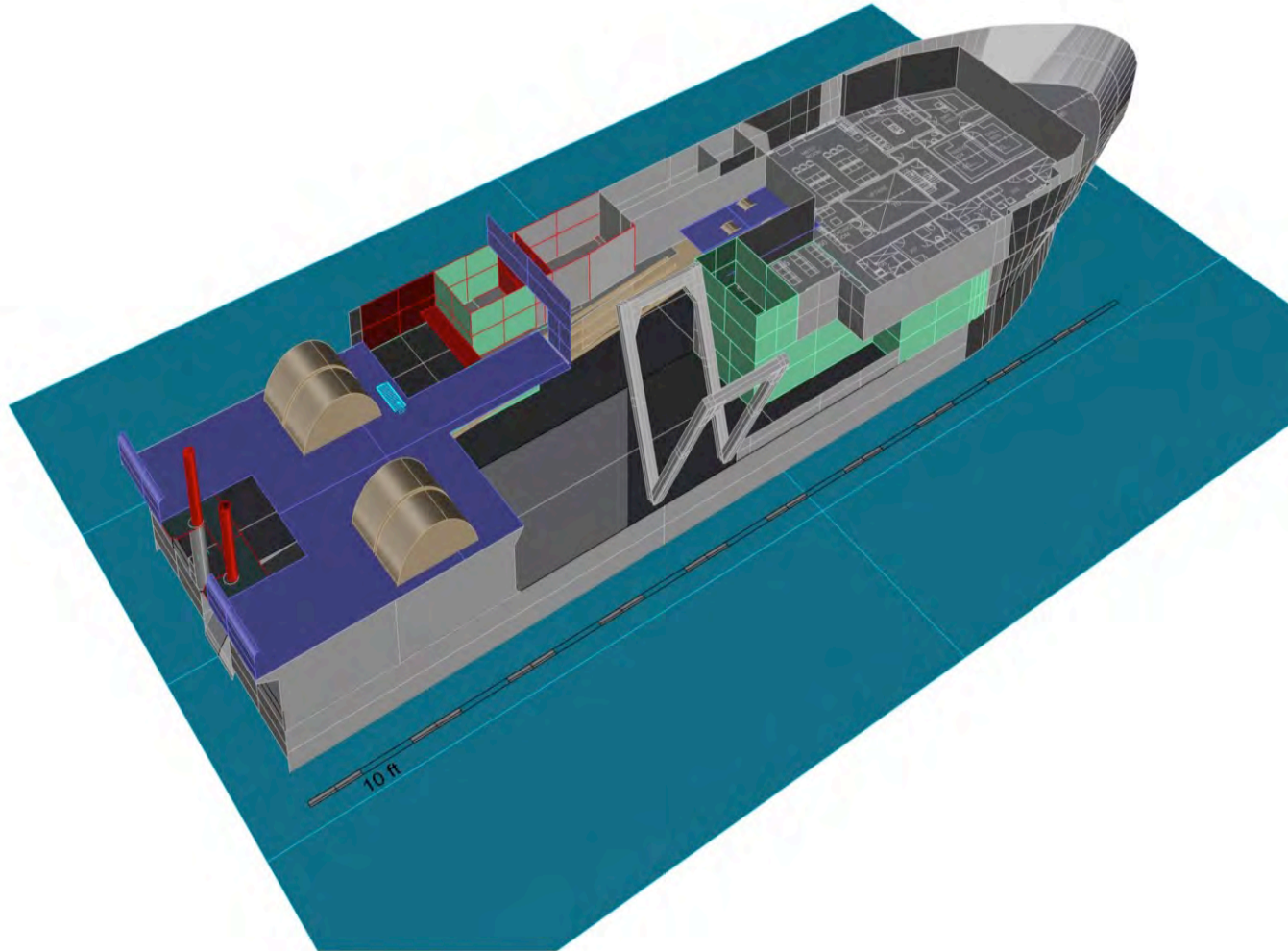


Paravane / B-Deck Removals

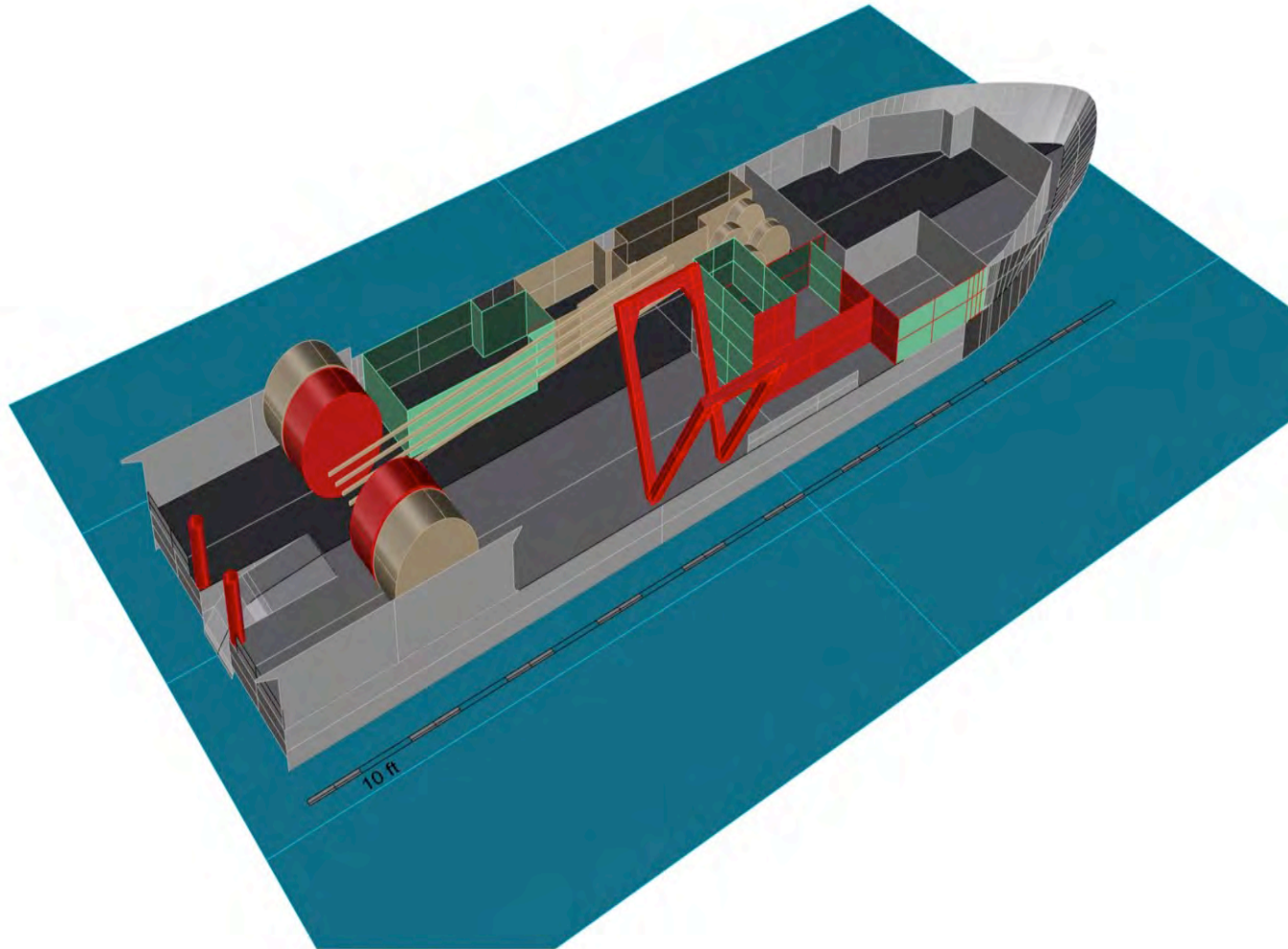


Streamer / A-Deck

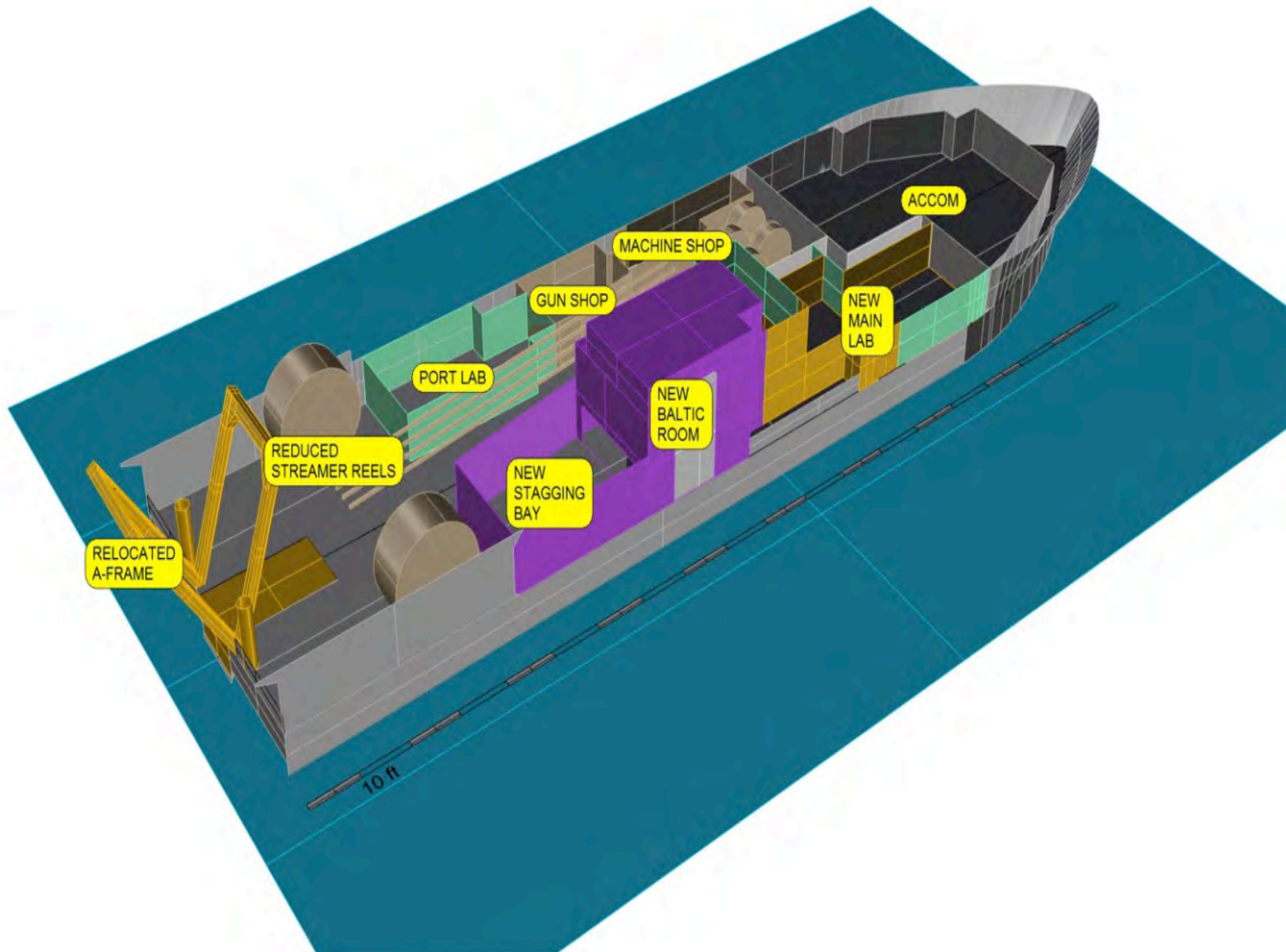
Removals



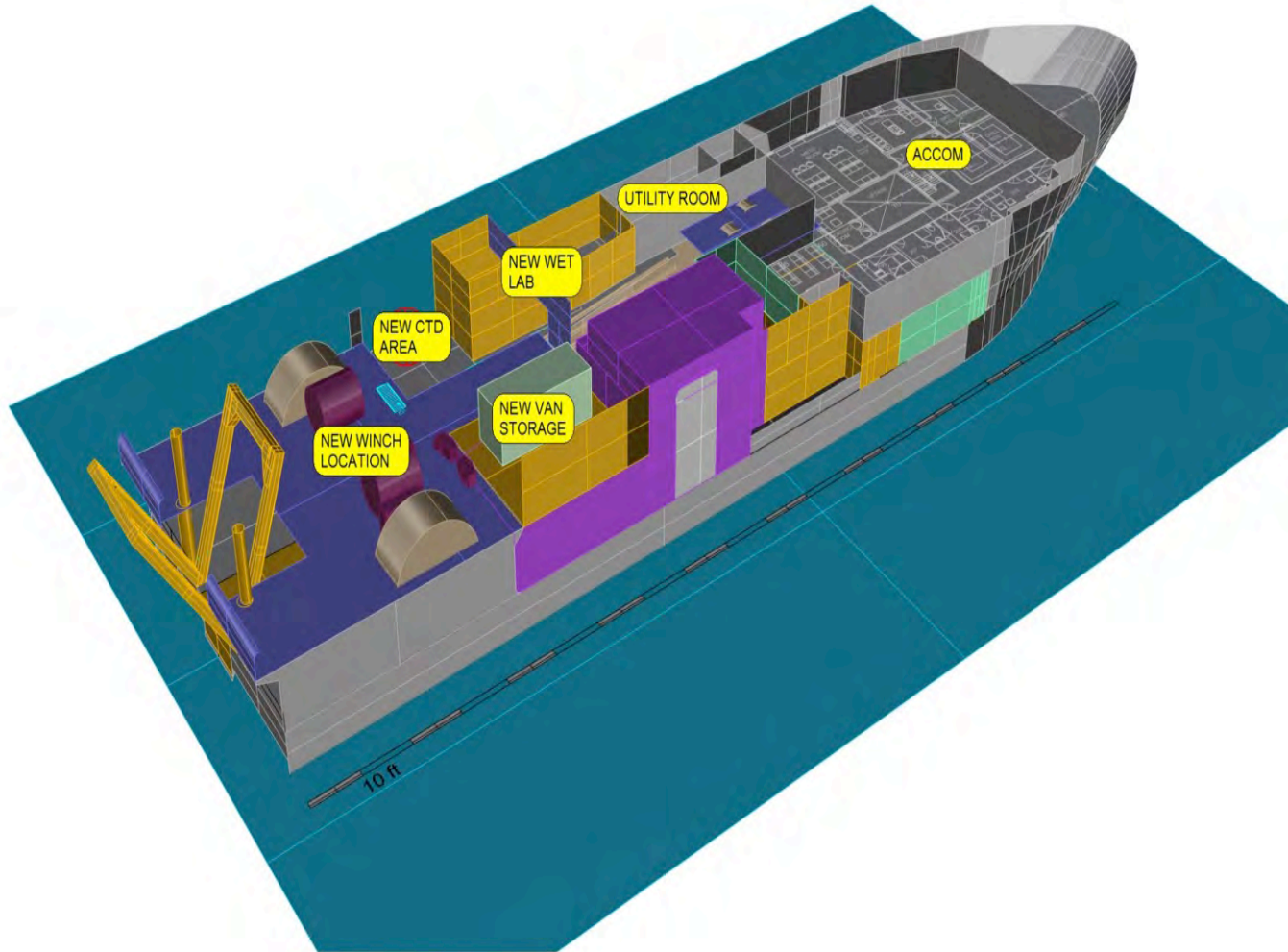
Main Deck Removals



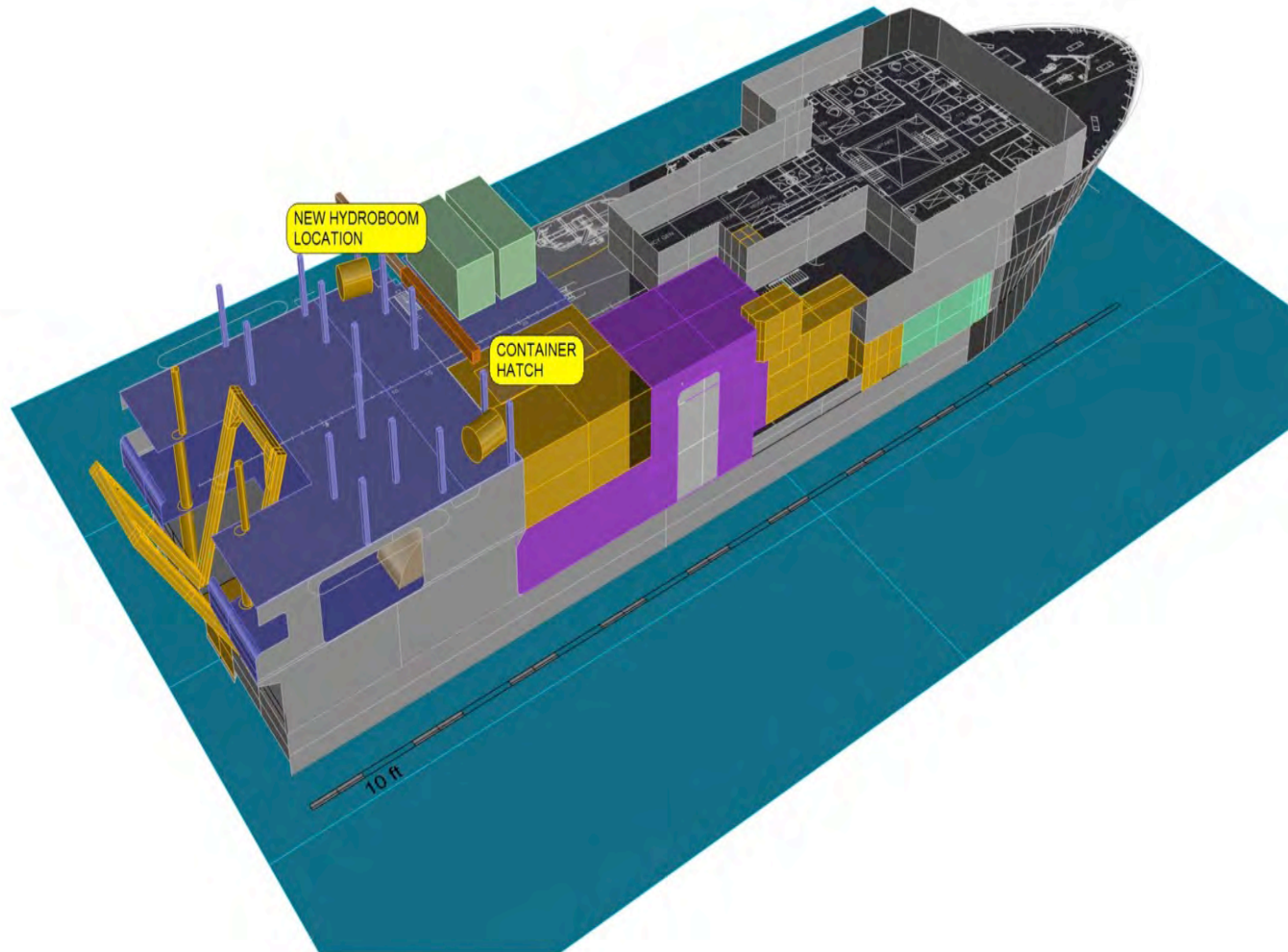
Main Deck Additions



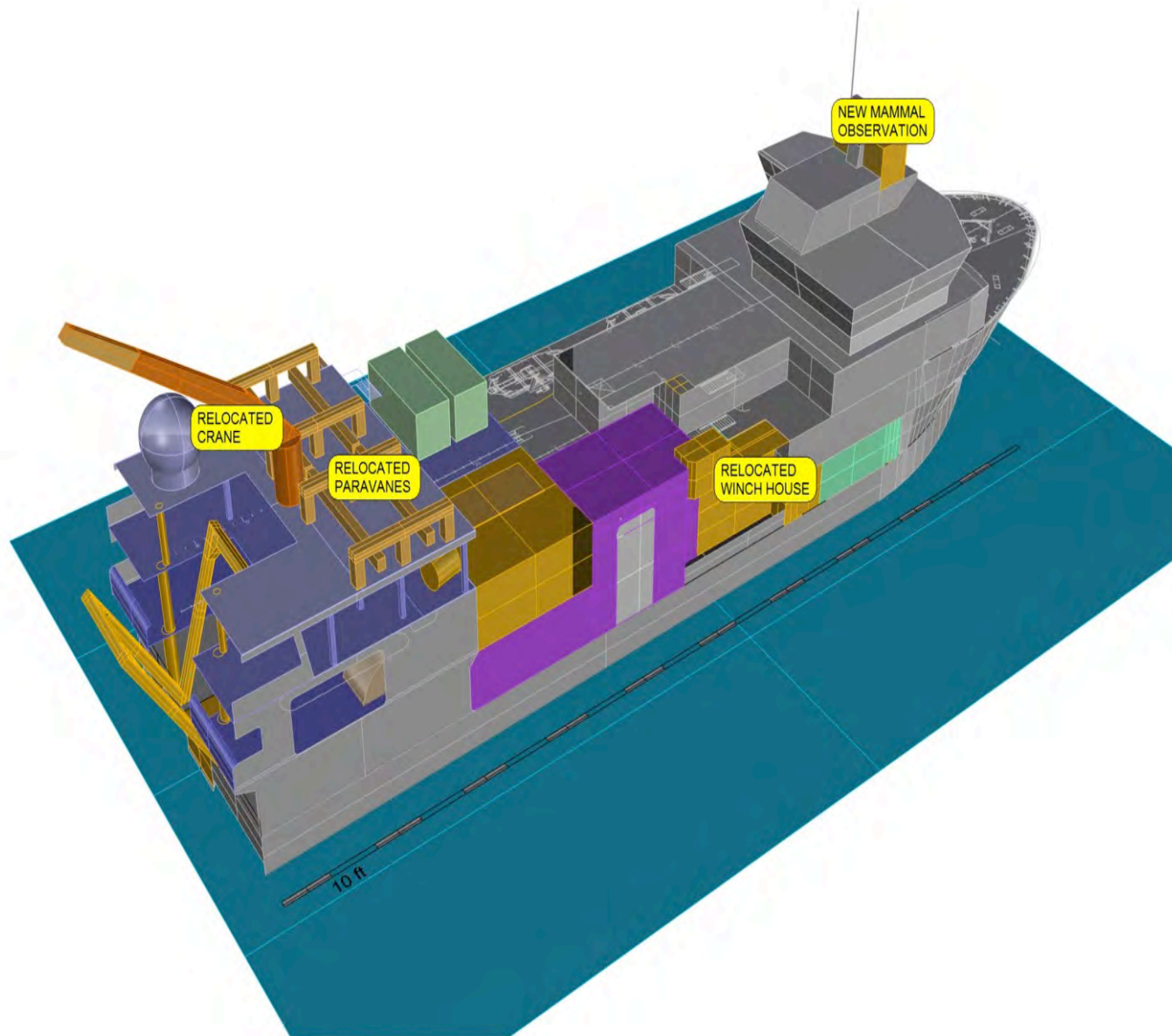
Streamer/A Deck Additions



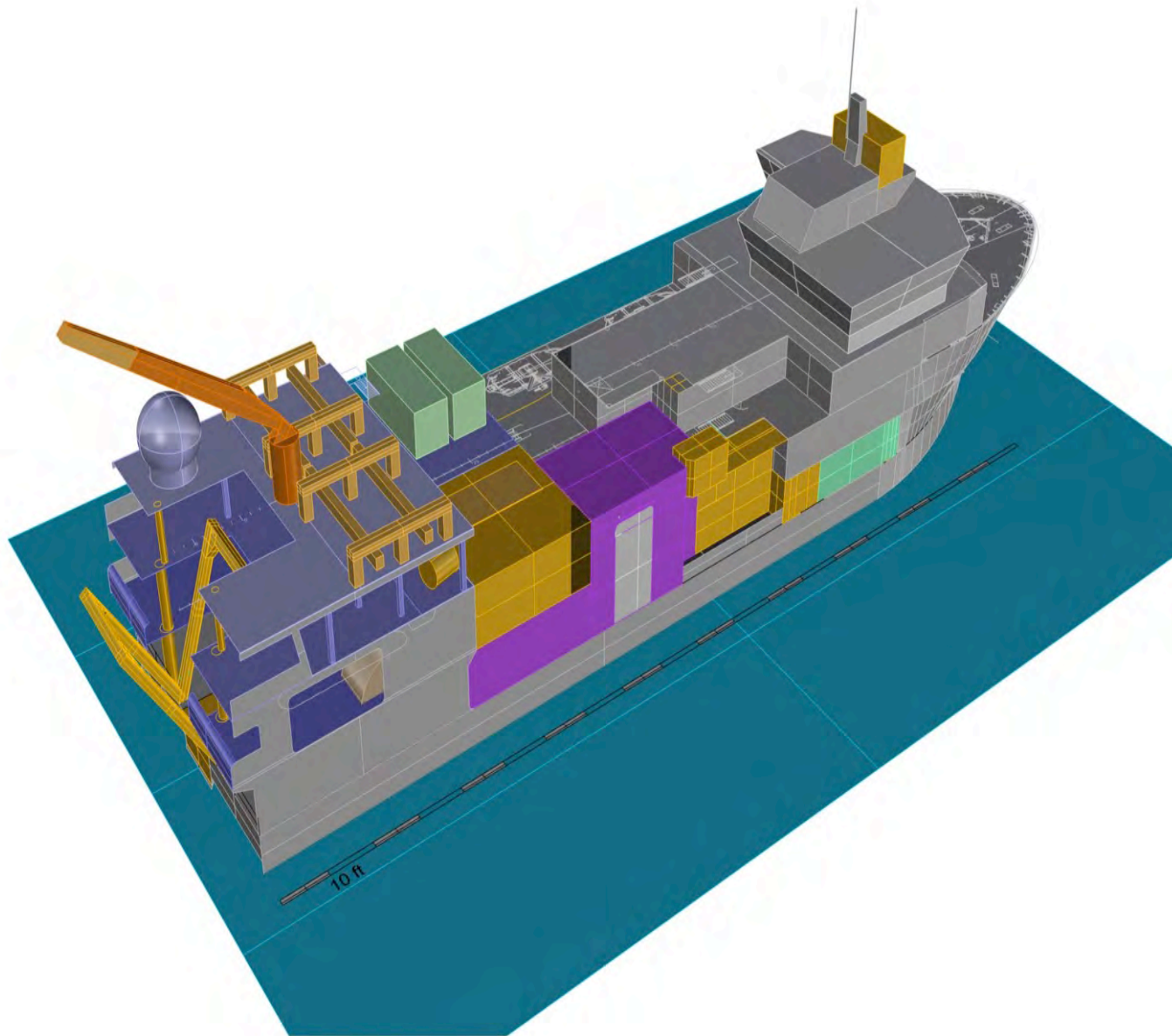
Paravane/B Deck Additions



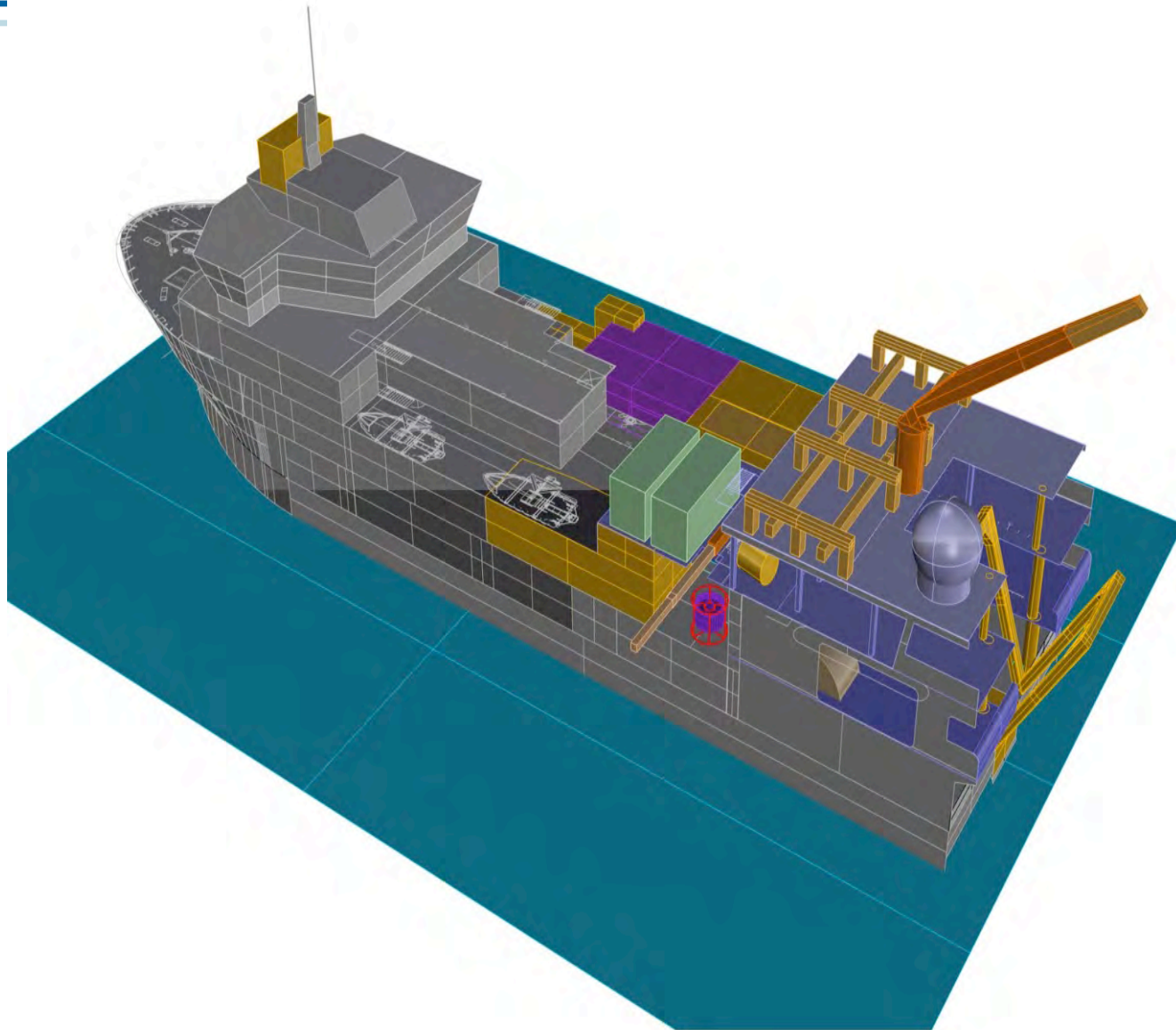
OBS/Bridge Deck Additions



Reconfigured Stbd Side



Reconfigured Port Side



Overall, I believe most of the community wants to see Langseth managed and upgraded to preserve its central MG&G missions (including purchasing the Sercel streamer), but do not want to see the seismic capabilities of the Langseth compromised or the resources expended to make the Langseth more suitable for general purpose oceanographic operations.

UNOLS Fleet Improvement Plan: 2015

Report of the UNOLS Fleet Improvement Committee



Published: Month, Day, Year – Version 1

... As a result, extensive fleet modernization and “right-sizing” has occurred in recent years, and fleet infrastructure continues to evolve to stay well matched to research priorities and budgets of supporting US Federal agencies.

In the next decade the most important renewal events for the academic research fleet will be mid-life refits and enhancements to extend the service lives of three global class ships and the construction of two new regional class ships. Under this plan the academic fleet in 2025 will provide 15 ships of diverse capabilities and may possibly be further expanded by additions in the coastal/local class. This rebuilt capability and capacity will diminish again in the following decade, however, unless current fleet renewal plans are extended.

Therefore, the major forward-looking recommendations of the 2015 Fleet Improvement Plan are for the UNOLS community to:

Determine a course for building future global vessels capable of supporting large (>30) interdisciplinary or discipline-focused science parties.

An activities timeline is needed that will lead to the federal acquisition of new general-purpose global class research ships during the decades of the 2030s and 2040s. FIC will start the process with a redefinition of global class Science Mission Requirements (SMRs). An assessment of the demand for, operational costs of, and unique missions of present global vessels including the new ice-capable R/V Sikuliaq compared to the new ocean class R/Vs Neil Armstrong and Sally Ride will also be conducted to help develop the SMRs of a future global class.

Support developing plans to renew and utilize the capability of coastal/local class vessels as components of the UNOLS Fleet.

Efforts to raise state and private funds are critical to support the construction of these vessels, but new federally-funded near-shore science programs and partnerships that provide stable utilization are also needed so these assets may enhance understanding of processes in areas vulnerable to sea-level rise and environmental change such as the Great Lakes, US estuaries and inner shelf regions. Furthermore, new coastal/local vessels are practical platforms for green-vessel designs such as the use of hybrid propulsion systems. The best avenue to test cutting-edge technologies for science missions at sea is through the coastal/local class of vessels.

Support the acquisition of new ice-breaking capabilities for science community access to the high latitudes.

UNOLS should assist efforts led largely by the Coast Guard to replace aging icebreakers for operations and science programs in the Arctic and Antarctic. Research at high latitudes is critical to predicting ocean conditions globally, and shared technical resources and joint operations between the academic research fleet and US icebreakers are essential for adequate high-latitude sampling and supply missions.