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## SIDEBAR | Research Vessel *Sikuliaq*

By Margo Edwards and Daniel Oliver

During the summer of 2012, the new research vessel (R/V) *Sikuliaq*, a 261-foot-long (~ 80 m) ship capable of working in and around first-year sea ice in polar regions, will be launched. The vessel is scheduled to commence science operations in early 2014 after extensive testing and field trials in the later half of 2013. *Sikuliaq*, pronounced [see-KOO-lee-auk], is an Iñupiat name meaning “young sea ice,” an indication of the important role the ship is meant to play in helping scientists understand and monitor changes in ice-covered waters. R/V *Sikuliaq* represents a unique addition to the US academic fleet, having an ice-strengthened hull designed to break through first-year ice up to 2.5-feet (.76 m) thick at speeds of a few knots. Although the ship was designed to facilitate studies of environmental change in the Arctic and subarctic, its size and general scientific capabilities make it well suited to conduct research throughout the global ocean.

R/V *Sikuliaq*'s propulsion is diesel-electric, providing propulsion and ship's service power from the same generator plant for improved efficiency. The marine propulsion unit is a Z-drive built by Wärtsilä that can rotate 360°, allowing thrust and thus vessel direction to change rapidly for excellent dynamic positioning performance. The Z-drives for R/V *Sikuliaq* are configured as tractor drives, with the propellers located on the forward end of the pods, resulting in better icebreaking performance. The Z-drives are ice classified to the same performance level as the ship's hull.

Additional capabilities to support multidisciplinary research in harsh polar environments include electrically heated deck plating to reduce ice formation, a covered and heated equipment staging and deployment area (Baltic room), a specially designed A-frame and deck cranes to safely deploy over-the-side gear in heavy seas and ice, active heave-compensated hydrographic winches, and ice-hardened multibeam transducer windows. Other state-of-the-art scientific capabilities include a low underwater radiated noise signature for fisheries and acoustic work, a permanent foremast for meteorological and other scientific sensors, and a



retractable center-board to enhance acoustic system performance. The suite of scientific winches aboard R/V *Sikuliaq* can work to full ocean depth and support coring operations. High-resolution acoustic systems include an acoustic Doppler current profiler plus Kongsberg Maritime's EM 302 multibeam (30 kHz, 1° x 1°) and EM 710 multibeam (70–100 kHz, 1° x 1°) mapping systems. The ship's interior includes large multipurpose, wet, electronics, and analytical laboratories plus climate-controlled chambers and an aft control station, all linked to each other and science/crew quarters via an accessible local area network. The ship also boasts the academic fleet's first Americans with Disabilities Act (ADA) compliant stateroom. R/V *Sikuliaq* is designed to accommodate up to 26 scientists and marine technicians along with a crew of 20 for deployments that can last as long as 45 days.

R/V *Sikuliaq* is owned by the National Science Foundation and will be operated by the University of Alaska Fairbanks through the University-National Oceanographic Laboratory System. It was designed by Glosten Associates and is currently being fabricated at the Marinette Marine Corporation's shipyard in Wisconsin. Detailed specifications and additional information for R/V *Sikuliaq* can be found at <http://www.sfos.uaf.edu/arrv>.

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**Margo Edwards** ([margo@soest.hawaii.edu](mailto:margo@soest.hawaii.edu)) is a senior research scientist, Hawaii Institute of Geophysics and Planetology, University of Hawaii, Honolulu, HI, USA. **Daniel Oliver** is Director, Seward Marine Center, University of Alaska Fairbanks, Seward, AK, USA.