

2 SOEST Support Facilities

2.1 UH Marine Center



The University of Hawaii Marine Center (UHMC) occupies a 16-acre parcel of land with 700' of purpose-built piers ("Snug Harbor"). The land was donated to the State by the federal government for the express purpose of establishing a marine facility to support research and education at UH. Since February 1973 the UHMC has operated under a 65-year gratis lease with the State.

The port facility currently provides space for our two large research vessels, the R/V *Kilo Moana* and the R/V *Ka'imikai O Kanaloa* (KOK), as well as several smaller craft that support near shore and coastal research. UHMC operates primarily on funding from federal grants and research cruise charges, with daily rates for use of the two larger vessels that include most of the shore-side facility costs. Rates are established annually by SOEST in consultation with the National Science Foundation (NSF), the Office of Naval Research (ONR), and National Oceanic and Atmospheric Administration (NOAA).

Over the past decade, in an effort to accommodate growing demand for UHMC services, SOEST has erected temporary structures, repaired older temporary facilities, and purchased 20-foot and 40-foot long portable metal storage containers to serve as offices, labs, and overflow equipment storage. Temporary structures including tents and conjoined trailers have been assembled on site, and the Core Storage building had been renovated for use in part by the Hawaii Ocean Time-series (HOT) program, the Hawaii Undersea Research Laboratory (HURL) and the Center for Microbial Oceanography: Research and Education (C-MORE) labs. Significant improvements were made to conform with post-9/11/01 regulations related to site security and perimeter fencing, and both communications and power supply have been improved over the years.

Space within UHMC is allocated for collections of marine scientific samples and data, as well as for electronic instrumentation development, testing and maintenance. The Center provides staging space for seagoing equipment, including manned submersibles (Pisces IV and V) and towed sub-surface electronic mapping systems; as well as many buoys and fish aggregating devices (FADs). From this base facility, graduate students, faculty and researchers can range the entire Pacific Basin to conduct oceanographic and biogeochemical research.

UHMC operations include 40 permanent employees on the two research vessels and ashore, as well as 60 temporary employees, mostly relief crew for the vessels. All of the staff of the ships

and the marine center are employed through the Research Corporation of the University of Hawaii (RCUH); none are direct UH employees.

The annual operating budget for the Marine Center was \$17.3M in 2011, the most recent full year of operation. The budget includes the operating costs of the two large vessels, as well as the facility costs. Most costs are recovered through usage charges for the two ships, with shore-side facility costs allocated to the two ships based on usage.

The UHMC shore-side facilities were mostly constructed in the 1970s and 80s with state and federal funding. The site has not been fully developed to the original 1970s plan—several planned buildings and pier improvements were not constructed and no other permanent buildings or piers have been constructed at UHMC in the past quarter century due to the uncertain status of UHMC's long-term location.

Several unsuccessful efforts have been made in the past three decades to relocate the UHMC within Honolulu Harbor. The most recent effort has been successful, with the UHMC scheduled to move to newly renovated facilities at Piers 34-35, and to consolidate small boats activities and other storage facilities to a site presently occupied by the University on Sand Island in mid-2014.

2.2 Research Vessels

R/V Kilo Moana is owned by the US Navy, and was purpose-built for operation as a research vessel by SOEST. This SWATH (Small Waterplane Area Twin Hull) vessel was delivered to UH in mid-2002, and it has been operating since July of that year as an Ocean Class vessel (the first so designated) in the UNOLS (University-National Oceanographic Laboratory System) academic research fleet.

In its first ten full years of operation, 2003 through 2012, *Kilo Moana* completed 2530 operating days in support of research throughout the Pacific Basin, from the Bering

R/V Ka'imikai O Kanaloa

- Built: 1979 (modified 1993)
- Length: 223'
- Beam: 38'
- Draft: 13' 6"
- Range: 15,000 NM
- Gross Tonnage: 259
- Endurance: 50 days
- Complement: 13 crew, 19 scientific personnel

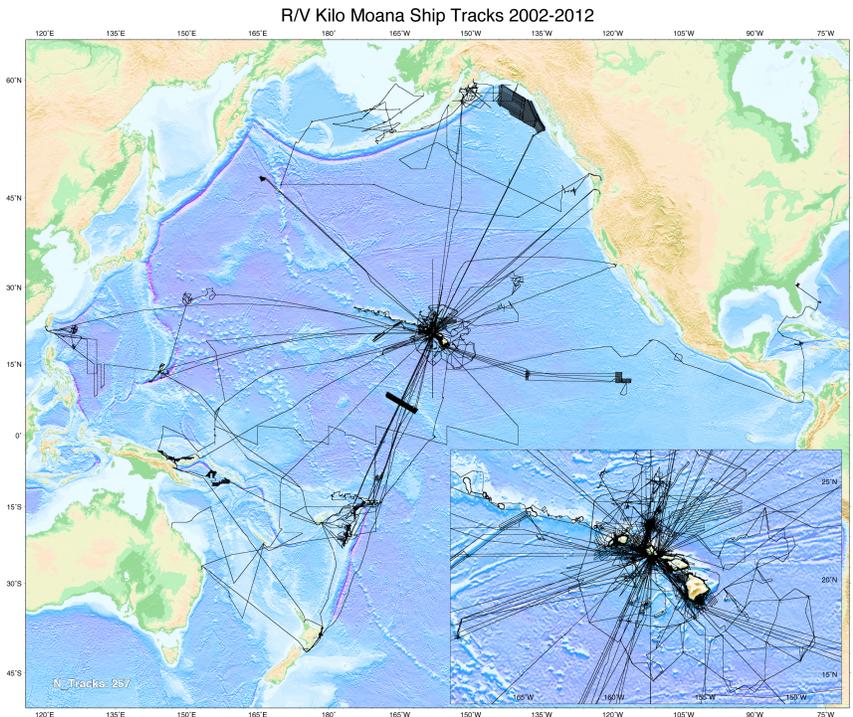


R/V Kilo Moana

- Built: 2002
- Length: 186'
- Beam: 88'
- Draft: 25' (max), 23' (min)
- Range: 10,000 NM
- Gross Tonnage: 1407
- Endurance: 50 days
- Complement: 20 crew, 29 scientific personnel



Sea to New Zealand, and the Mariana Trench to California. Usage over that period includes 221 State-funded days, most of which are part of a commitment for cost-sharing (\$750,000 annually) that is included in our Charter Party agreement with the Office of Naval Research.



R/V Ka'imikai O Kanaloa (KOK) was acquired by the University of Hawaii and converted for submersible operations in 1993. Formerly a seismic research vessel, the KOK is now the primary support ship for the [Pisces IV and V](#) submersibles within SOEST's [Hawaii Undersea Research Laboratory's \(HURL\)](#). The *Ka'imikai-o-Kanaloa*, which means "Heavenly Searcher of the Sea" in the Hawaiian language, has been continually updated and

refurbished to keep the vessel in state-of-the-art readiness. In 2008, there was a major mid-life refit involving four months in the shipyard. Extensive metal work on the hull was carried out, replacement of both propeller shafts, improvement of the engineering space, and thorough inspection of all systems following revised ABS guidelines.

2.3 Ocean Technology Group

The University of Hawaii has been involved in oceanographic research since the mid-1960's. A Shipboard Technical Assistance Group was formed in the early 1980's to facilitate seagoing data acquisition capabilities aboard UH research vessels. In 2006, this group was re-organized into the SOEST Ocean Technology Group (OTG) to reflect the technical support provided to scientists from both sea and land based platforms. OTG technicians currently support oceanographic research on the Kilo Moana (KM) and Ka'imikai-O-Kanaloa (KOK), which includes pre-cruise service (loading, instrument set-up), shipboard service (instrument operation, calibration, management, data acquisition), and post-cruise service (data QC, data archiving, equipment off-load)



When not at sea, OTG is responsible for maintaining equipment, calibrating sensors, and implementing improvements suggested by scientists (consistent with budget oversight). They monitor developments in data acquisition equipment and recommend instruments to be included in proposals to replace outdated or substandard gear with new systems or software that better match the science community's evolving needs. Technicians regularly participate in training courses in order to learn new and appropriate technologies that can be used to better support science operations. OTG technicians also provide technical assistance, scientific diving support and serve as small boat operators for faculty and staff at the University of Hawaii. All shared-use equipment maintenance and staffing costs are included in the basic technical services day rate for each vessel.

2.4 Engineering Support Facility

The SOEST Engineering Support Facility is a group of full-time electrical and mechanical engineers, technicians, and machinists available to support development, fabrication, repair, and augmentation of scientific instruments within the School. ESF personnel have decades of experience in instrument repair and maintenance, custom modification and enhancement to scientific equipment, microcontroller-based system design and integration, assembly and testing of printed circuits, and fabrication of custom-designed instruments and machines. Jobs through ESF are billed on a recharge-basis with funds going to support ESF personnel, design systems, facilities, and machines.

2.5 Publications Facility

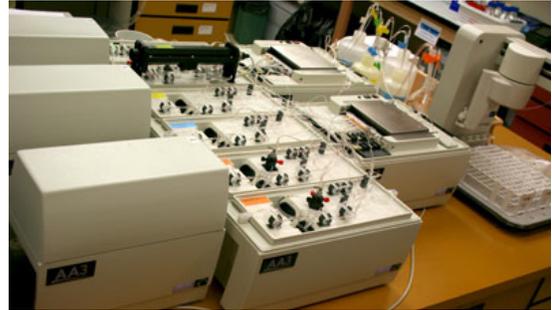
The SOEST Publications Facility provides a variety of design, editing, printing, and publication services for staff and faculty within the School. Distributed amongst multiple buildings within the School, the Publications facilities allow faculty, staff, and students to entrain professional assistance with poster generation, website design, publication preparation and review, and large-format graphics design and printing

2.6 Research Computing Facility

The SOEST Research Computing Facility (RCF) provides specialized computing capability for SOEST researchers and staff. As the central computer and network support center for the School, RCF maintains and upgrades network infrastructure, ensures network security, supports users and machines (desktop, mobile, clusters, servers) utilizing the SOEST network, and manages SOEST email, web server, and data transport services.

2.7 Analytical Facilities

Analytical and laboratory facilities within SOEST are numerous, highly advanced, and provide services that range the full spectrum of fields in which SOEST staff and faculty conduct teaching, research, and technology development. While all specialized facilities are described in the following unit contributions to this report, a summary of resources, facilities, and laboratories can be found at



http://www.soest.hawaii.edu/soest_web/soest.resources.htm and
http://www.soest.hawaii.edu/soest_web/soest.labs.htm#labs