Welcome to the Fall 2003 issue of Hana O Ke Kai. There have been a number of developments in the Department of Ocean and Resources Engineering over the last few months. Drs. Dan Greeson and John Wiltshire of the Hawaii Undersea Research Laboratory formally joined the faculty of Ocean and Resources Engineering in Fall 2003. Their expertise in deep-sea exploration and oceanographic engineering will expand our academic and research programs in these multi-disciplinary fields. The Fall 2003 semester also welcomed 10 new graduate students, the highest number in recent ORE history. The Graduate Council Review of the Ocean and Resources Engineering program concluded that ORE is a strong program and suggested expansion of the program, both in the number of faculty and the availability of facilities, to better address societal needs. Likewise, the Accreditation Board for Engineering and Technology (ABET) completed the program review with equally encouraging statements. Once ABET finalizes its report, I will share their findings with you. The response to the ORE Enrichment Fund has been strong and I would like to thank you for the contributions to this program. Finally, it is with much sadness to note the passing of Prof. Manley St. Denis in October 2003. Prof. St. Denis made tremendous contributions to the Department, students, and the profession. He will be greatly missed (See the article on Manley in this issue).

Kwok Fai Cheung

Chair’s Message

This issue of Hana O Ke Kai is a sad one, reporting the loss of our friend and teacher Prof. Manley St. Denis at the age of 93 in Honolulu. We will miss him dearly. Please see the article on Manley on page 2. On another sad note, this week is the 25th anniversary of the disappearance of the motor vessel Holoholo while it was conducting UH-sponsored marine research in Hawaiian waters. Among the 10 lost at sea, was one of our own—Assistant Professor Gary Niemeyer who was 31 years old at the time. Please see the article on Holoholo and the Memorial Garden dedicated to three UH scientists and engineers who disappeared twenty five years ago. There will a formal memorial program on Friday, January 23, 2004 in the courtyard between the HIG-POST-MSB buildings.

A quick look at the contents of this issue of Hana O Ke Kai shows how much the students, alumni and the friends care about this department. And for that, Mahalo Nui Noa to all of you.

R. Cengiz Ertekin

Editor’s Corner

Send subscription inquiries, address changes, news, and article contributions to: HanaOKai@oe.soest.hawaii.edu or mail them to the ORE Department
MANLEY ST. DENIS, Professor Emeritus, Naval Architect, Ocean Engineer, Classicist, Artist, and Friend

Manley St. Denis, an internationally renowned naval architect and ocean engineer who made significant contributions to ship design for the US Navy and to the establishment of the Department of Ocean Engineering at the University of Hawaii, died October 28 in Honolulu. He was 93.

Prof. St. Denis has been a long time SNAME member of the Hawaii Section, and recipient of Davidson Medal in 1980 and the Best Spring Paper Award in 1983. He is the co-author of the landmark paper "On the Motions of Ships in Confused Waters", Trans. of SNAME, Vol. 61, pp. 280-357 (1953) with Prof. Pierson who passed away earlier this year. Ironically, ten days before, on October 18, 2003, SNAME had celebrated the 50th anniversary of the paper “On the Motions of Ships in Confused Seas” during the International Luncheon presided by the SNAME President Bruce S. Rosenblatt at the World Maritime Technology Conference in San Francisco.

St. Denis was born in 1910 in Trieste, then part of Austria. His adult life was spent in the United States where his formal education and his professional career intermixed over a period of 70 years. In 1932, St. Denis earned a BS degree from MIT, followed by a MS in 1940 from Hawaii and a Doctorate in Engineering in 1956 from the Catholic University of America. During this period of time, he held professional positions at the New York Shipbuilding Corporation, at the Naval Shipyard at Pearl Harbor, at the Bureau of Ships in Washington DC, at the David Taylor Model Basin, at the Institute of Defense Analyses, at the Center for Naval Analyses and at the National Engineering Science Company.

In 1968, Manley St. Denis returned to Hawaii to join the faculty of the newly established Department of Ocean Engineering at the University of Hawaii. In 1977, he retired. As Professor Emeritus, St Denis continued to serve the Department of Ocean Engineering until shortly before his death. He is fondly remembered by his fellow faculty members and his numerous students for his keen insights and his wealth of experience which he delivered in a number of languages.

Not content with his technical contributions, Manley St. Denis earned a MA degree from the Classics Department at the University of Hawaii at the age of 80. Following this, he continued his education by pursuing a bachelor's degree in art.

Manley St. Denis is survived by his wife, Savina, two daughters, Hedy and Shari and a brother, Fulvio. Memorial service was held on Thursday, November 6, 2003 at the Diamond Head Memorial Park Chapel in Honolulu.

Hans Krock

Students’ Voice

Since our last newsletter, many things changed in our ORE department. To start with, this semester saw an almost 50% increase in our student population. Anyone that works daily in our facilities can feel the place teeming with students and the waves coming from all directions! Ideas and questions are being discussed at every corner and we surely are growing bigger for the place. The majority comes from the US but we also have representatives from China, Germany, Japan, Portugal, Spain and India.

At the same time, we sailed through an ABET evaluation, where no questions were left unanswered. The ORE 601 summer class appeared to be quite impressive according to our evaluator and I wonder how many more universities have a chance to perform such kind of field work in such a profitable environment.

Student activities continue to sprawl. Oceanit Consultants, represented by ORE alumnus Dr. Warren Bucher, have been assisting the ORE 783 Capstone Design team where students have been dealing with some real life engineering problems. The 2003 SOEST Open House did not go by without the ORE representation. And once again our wave flume was a favorite among the visitors. Some of the ORE students also participated in the R/V Kilo Moana research cruise where lava sampling and mapping surveys were conducted offshore of the Hawaiian Islands.

Last, but not least, and although many of us never had a chance to meet Professor Emeritus Manley St. Denis, we take this opportunity to send him and his family a warm aloha as well as word of appreciation for what he had contributed to this department and for his fruitful work.

Vasco Nunes
Student Representative
vasco@hawaii.edu
Welcome Dr. John Wiltshire, Acting Director of the Hawaii Undersea Research Laboratory, one of two new faculty members to formally join the department this summer after serving as co-operating graduate faculty for several years.

He received his BS in Applied Geology from Carleton University in Ottawa, Canada in 1976. Dr. Wiltshire worked in the oil and mining industries for several years in the 1970's. He received a Ph.D. in Oceanography from the University of Hawaii in 1983. Dr. Wiltshire became the State of Hawaii’s Ocean Resources Manager managing the State's Ocean Resources Office. In 1986, he was invited back to the University of Hawaii to join the Hawaii Undersea Research Laboratory (HURL). HURL is NOAA’s National Undersea Research Center for Hawaii and the Western Pacific.

The laboratory operates two of the world's nine deep diving research submersibles capable of taking a pilot and two scientists or engineers to 2000m. HURL also operates a remotely operated vehicle (ROV). The Laboratory designed and is the principal user of the 225 foot research vessel Kaimikai o Kanaloa.

In addition to submersibles and ROVs, Dr. Wiltshire’s area of research concerns marine mineral resources, their development and environmental issues particularly mine tailings management. Dr. Wiltshire teaches ORE 678 Marine Mineral Resources Engineering, a new course ORE 330 Mineral and Energy Resources of the Sea and gives guest lectures in ORE 202, 601 and 603.

He can be reached at 808-956-6042 or by email at johnw@soest.hawaii.edu.

Faculty Profile

UH Student Chapter of MTS

Aloha all MTS members and non-members! I would like to welcome all new and returning members to the 2003 - 2004 season. Because of the relatively large influx of new students (10) and the generosity of the Hawaii Marine Technology Society (in the form of donations), our student chapter membership has greatly increased from last year. With Danny Merritt (right) and Ikaika Kincaid (left) as the vice-president and president, respectively, this year, the Hawaii student MTS chapter is looking forward to meeting and interacting with as many local businesses as possible. Some of the events on the Hawaii student MTS chapter calendar is an annual visit to the NOAA Central Pacific Hurricane Center and Forecast Office, located on the University of Hawaii of Manoa Campus (TBA). A tour of the Tyco Dependable, which is an intercontinental cable laying ship stationed here in Hawaii (TBA). Also in October, several MTS student members spent a week working and living on the University of Hawaii research vessel the Kilo Moana, while it was out doing drills to the North and East of Oahu. The Hawaii student MTS chapter is excited and anxious to make new acquaintances and revive the old friendships generated through the Marine Technology Society this up-coming year. From all of us at the Hawaii student MTS chapter, Happy Holidays. Aloha.

Ikaika Kincaid
(Photo courtesy of Danny Merritt)

UH Student Chapter of SNAME

The Student Chapter of SNAME at the University of Hawaii has new officers for 2003-2004. Jinghai Yang and Krishnakumar Rajagopalan are serving as President and Vice President, respectively. With the help of the ORE Enrichment Fund of the department, several new students became members at the beginning of this semester. Right now, some of the members are helping the student chapter of ASCE with the design and construction of the annual concrete canoe. The ASCE members will participate in the regional concrete canoe races in the spring semester. Other activities will be organized and announced in the future. For more information, see the webpage at http://oe.eng.hawaii.edu/sname/. Please join the SNAME Student Chapter at UH by becoming a member if you have not done so. The membership will be a rewarding one. Aloha.

Jinghai Yang
(Photo courtesy of Richard Carter)
Holoholo Accident

Three UH researchers and seven other people disappeared when the 94-foot motor vessel Holoholo had not returned from an oceanographic research mission off the coast of Keahole Point on the Big Island. The mission started from Snug Harbor on Saturday, December 9, 1978. Two days later, on December 11, Monday, Holoholo was to pickup three more researchers at Kawaihae Harbor on the Big Island but failed to show up. The following day, Coast Guard launched an air search to locate Holoholo. The search continued for days and Navy planes joined the search, covering 5,600 square miles, but finding nothing.

The three UH researchers on board were Gary Carl Niemeyer, who was Assistant Professor of Ocean Engineering, Robert Richard Harvey, who was an Assistant Professor of Oceanography, and Michael Hansen Allen, who was Niemeyer’s graduate student. They were going to take measurements of currents and temperature around the area to determine the feasibility of an Ocean Thermal Energy Conversion (OTEC) project that was federally funded.

Prof. Niemeyer had a B.S. degree in Electrical Engineering from Stanford University and a PhD in Oceanography from the University of Hawaii which he had obtained only a year before in 1977.

After 25 years, the mystery surrounding their disappearance continues. But their loss was never forgotten by his colleagues. The Holoholo Memorial Garden will be dedicated to these outstanding young researchers on January 23, 2004 in the HIG-POST-MSB courtyard. All are invited to attend the ceremony.

R. Cengiz Ertekin

Company Profile

Oceanit, established in 1985, is a progressive Hawaii-based engineering, science, and research company. Oceanit’s staff of nearly 100 occupies offices and laboratories throughout Hawaii and parts of the mainland. Oceanit's main office is located in downtown Honolulu with branch offices on Kauai and Maui and numerous operational project sites throughout the State of Hawaii and the Pacific.

In general, Oceanit focuses on the following four areas of business: Biotechnology (Biotech), Information Technology (IT), Environmental and Industrial Technology (EIT), and Solutions, including engineering, scientific and technical consulting services. See www.oceanit.com.

Oceanit’s Biotech business includes research and development of toxicology, bio-sensors for toxin testing and diagnostic investigations, as well as development of patient treatment technology.

IT business includes Internet-based monitoring of various environmental parameters such as fugitive dust, sewer conditions, vadose zone conditions, atmospheric and space conditions, etc. In addition, various other conditions and parameters are monitored in pseudo-real time. Other IT business activities include the development and integration of information robust sensors, as well as the development of computer peripherals and software.

EIT business focuses on the development of technologies specifically for industrial or environmental applications. Emphasis is on technology that enables industry to perform more cost effectively, rapidly and intelligently. Examples include the development of an atmospheric laser/LIDAR system, desalination technology, trace contaminant chemistry monitoring hardware, etc.

Oceanit’s Solutions business area specializes in the following services:

- Civil Engineering

Did you know that you can receive ORE newsletters electronically?
Visit http://oe.soest.hawaii.edu/ and click the “Newsletters” link.

Oceanit’s students work at Oceanit:

- Patrick K. Sullivan, MS (’81), Ph.D. (’85), P.E., President
- Warren E. Bucher, Ph.D. (’88), P.E., Senior Engineer
- Dayananda Vithanage, Ph.D. (’87), P.E., Engineering Director
- Christopher Goody, MS (’96), Coastal/Project Engineer

Warren Bucher
Ed.—Please send your company’s profile HanaOKai@oe.soest.hawaii.edu
Surveys of Coral Reef Roughness (funded by the Office of Naval Research and UH Sea Grant). Accurate characterization of wave dynamics over coral reefs depends on appropriate parameterizations for bed roughness. Typical roughness parameterizations may fail over the extreme roughness presented by a coral bed and associated fossil reefs. An ORE project led by Prof. Geno Pawlak aims to examine the boundary processes associated with wave flow over highly rough bathymetry. An important aspect in resolving the boundary flow is an accurate measurement of the roughness field itself. While a coral reef is commonly accepted as a rough boundary, detailed measures of the roughness are lacking. As part of Prof. Pawlak’s project, ORE graduate student, Vasco Nunes is carrying out roughness surveys at selected Oahu sites using in situ measurements via SCUBA. In addition, Vasco is instrumenting a small boat with an echosounder, an acoustic current profiler and GPS to carry out observations of roughness over larger scales. The results of this work will be improved modeling of waves over rough boundaries such as coral reefs. Reef roughness also has important implications for coral ecosystem dynamics.

Wave-Driven Porewater-Seawater Exchange in Sandy Coastal Sediments, National Science Foundation, G. Pawlak, co-PI with F. Sansone (PI, UH Oceanography), M. Merrifield (co-PI, UH Oceanography). (3/2004 - 2/2007). The broad aim of this project is to quantify the wave-induced exchange in sandy sediments. This is motivated by the need to understand chemical exchanges between sediments and the water column. The project is led by Professor Frank Sansone, a geochemist in the Oceanography department at UH. Professor Geno Pawlak from ORE will carry out field observations with the goal of examining the physical dispersion processes within a sandy bed driven by wave flow. The observations will involve instrumenting a sandy bed with a dye injection system and an array of fiber-optic fluorometers to observe the dispersal of the dye. Also participating in the project is UH Oceanography professor, Mark Merrifield and Dr. Ian Webster, a research scientist at CSIRO, Australia.

Meetings Calendar

2004

♦ January 26-30, AGU Ocean Sciences Meeting, Portland, Oregon www.agu.org/meetings/os04/

♦ February 3-5, Fatigue and Fracture Analysis of Ship Structures, Houston, Texas www.fleetech.com


♦ July 8-12, ONR Symposium on Naval Hydrodynamics, St. John’s, Newfoundland, CANADA, http://www.housing.mun.ca/shot/frh/.

♦ September 29-October 1, SNAME Maritime Technology Conference and Exposition, Washington, D.C., USA, www.sname.org

On October 10-11, 2003, nearly 3000 elementary through high school students attended the SOEST Open House at UH Mānoa’s School of Ocean and Earth Science and Technology. This was SOEST’s 7th successful biennial event. The theme this year was Science for a Sustainable Future. SOEST includes academic departments of Oceanography, Geology and Geophysics, Meteorology, and Ocean and Resources Engineering.

The Ocean and Resources Engineering Department of SOEST, provided hands-on events for students to experience ocean phenomena as well as observe ocean engineering posters. These activities occurred in the environmental fluid dynamics laboratory and by the wave flume located near the HIGP building. Some of the highlights were the surfing dinosaur, electric light produced by wave energy and the ping pong ball that defies gravity… Professor Geno Pawlak once again did a terrific job of organizing ORE’s portion of the SOEST event. Many ORE graduate students gladly volunteered for this important event. It was a memorable time, enjoyed by all. Thanks to all who helped.

Richard Carter

Field Trip to Pacific Shipyards (NAVATEK)

Navatek Ltd. has launched a large-scale, U.S. Navy technology demonstrator craft incorporating the company’s proprietary, underwater “lifting body” technology. The Office of Naval Research, Arlington, VA., is funding the $18 million project, begun in 2000. The 160-foot, 30+ knot craft, called HYSWAC, has a full-load displacement of 340 LT. Sea trials of the new craft are expected to begin later this summer in waters off Hawaii.

The HYSWAC is designed to confirm on a large scale the three major benefits of underwater lifting bodies verified on an earlier, small-scale 65-foot, 50 LT Navatek lifting body demonstrator craft called MIDFOIL, as well as through extensive computational fluid dynamics (CFD) studies. These identified benefits include superior ride in all seas, all headings and all speeds (including zero/loiter to maximum speed); higher transport efficiency at all speeds; and extended range/payload.

A field trip was organized on September the 24th to Pacific Shipyards, Inc. of Navatek, Ltd in Kalihi for the members of the ORE department as part of the ORE 792 seminar series in the fall semester. During the same trip, the wave power device (above) constructed at the same shipyard for the Office of Naval Research was also observed. The wave power device, the first of its kind in Hawaii, will be deployed (in Kaneohe Bay) in the coming months.

Greg Wong

(Photos courtesy of Richard Carter)
On behalf of the Ocean and Resources Engineering department, I would like to thank all donors listed below for their continuous support of our programs and their generosity. Mahalo Nui Noa.

R.C. Ertekin

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