



soest



Chair's Message

Welcome to the Spring 2004 issue of *Hana O Ke Kai*. We are about to conclude a successful semester and arrive at a juncture to ponder the future direction of the department. Professor Hans-Jürgen Krock, after 24 years of service to the department, has announced his retirement as of January 1, 2005. Professor Krock, who is instrumental in a number of

ORE classes, has agreed to assist us through the transition with a one-year, part-time appointment. The academic program and research in the department constantly evolve around the needs of our constituencies and the available resources. This is a difficult balancing act. We consolidated courses as faculty members left and have developed new courses and research projects as fac-

ulty members joined the department. We will soon begin the recruitment process with a target to fill the position by July 1, 2005. I welcome your participation in this important process. Your suggestions and opinions will help define the future of this department.



Kwok Fai Cheung

Editor's Corner

By the time you read this issue of *Hana O Ke Kai*, the possibility of a faculty strike would have been already eliminated. The new contract between



UHPA and the Regents of the UH has been recently ratified by the UH faculty with

about 60% participation in the process, a number that is quite low. However, about 80% of the faculty who voted was for the ratification. The new contract provides about 35% salary increase over a six-year period; most of the raises (20%) are in the last two years (2007–2009). With this increase, the UH faculty salaries will move up to the 50th percentile in the U.S.

provided that nobody receives a salary increase elsewhere; obviously something which is impossible. Therefore, even with this substantial increase, it is estimated by some accounts that the UH faculty salaries will remain in the low 30th percentile of all university faculty salaries in the U.S. at the end of the contract period in 2009.

R. Cengiz Ertekin

Inside this issue:	
WHERE AM I?	2
CURRENTS	2
FACULTY PROFILE	3
STUDENTS' VOICE	3
COMPANY PROFILE	4 and 5
ALUMNI NEWS	4
PROJECT NEWS	5
MEETINGS CALENDAR	5
GRADUATE ENROLLMENT ...	6
OMAE 2004	7
ORE ENRICHMENT FUND GIFT FORM	7
SOME RECENT PUBLICATIONS	8
HURL EXPEDITION	8

Did you know that you can receive ORE newsletters electronically?

Visit <http://www.ore.hawaii.edu/>

and click the "Newsletters" link.

- Editor—Cengiz Ertekin
- Contributors—Joan Burrelli, Kwok Fai Cheung, Frans Gerritsen, Dan Greeson, Eric Hahn, Edith Katada, Vasco Nunes, Geno Pawlak, Jonah Kai Pawlak, Amal Phadke, Lalita Phadke, Bob Rocheleau

Send subscription inquiries, address changes, news, and article contributions to: HanaOKai@ore.hawaii.edu or mail them to the ORE Department c/o Editor, Hana O Ke Kai.

Where Am I?

After nearly 25 years with the Department of Ocean Engineering, Levina, my wife, or Fien, as friends know her, and I decided that the time had come to make a change in our lives. We decided to land in Hilton Head Island, one of the sea islands along the coasts of Georgia and South Carolina, which has a beautiful low country environment, a balmy climate (most of the time) and a rich history. The first sea battle of the Civil War between the south and the north was fought just off the coast of Hilton Head Island.

Very importantly, we could walk or bicycle the beach every day.

Summers are hot and humid in these parts of the world (much more so than in Hawaii), but fortunately we had the opportunity to retreat to our apartment in Holland during the hot months and enjoy the company of family and friends.

There is one thing we missed in our lives, which was the proximity of family. In Hawaii our kids grew up and went to school, and one of our sons, Jacob, lived there with his family and practiced medicine with the Kaiser Foundation. We often took care of their two little boys, going to the zoo or to the beach looking for crabs between the rocks. However our son and his family

found greener meadows in Camden, Maine whereto they moved.

We would never have believed that when he suggested to us to move to Maine as well, we would actually do it. But surely we did. He found a nice place for us with a view on Penobscot Bay and that made the decision easier.

We actually enjoy the crisp weather in this part of the world and found a connection in memory of the change of seasons with our younger days in Holland. However, when the northerly winds were blasting arctic air over the country we were wondering if we should do what many others do: becoming snowbirds.

And then everything pointed back to Hawaii; we have such good memories and so many friends there.

It was so good to be back in the department in last March. It was leaner but stronger than when I was there. But more importantly I enjoyed working with old and new colleagues. I was so pleased that Edith was still there to chat and talk with. Dr Cheung and I had the opportunity to work on a paper that

took form during his visit to Holland a few years ago.



We worked together during that time and made a field trip to the Wadden Sea Islands, which was very rewarding. I was pleased that Dr. Zhu was interested in helping with the numerical calculations. It was also good

to see that Geno is continuing the studies on coastal reefs, to which I tried to contribute in earlier years. I enjoyed talking to Hans about his experiences and applaud Cengiz for his excellent job in doing the newsletter.

I was pleased to see so many students and faculty at my seminars in the department. Thank you all for coming and for stimulating discussions.

We plan to come to Hawaii more often. I hope to see you all again. Keep well and thank you again for making our stay in the islands a memorable one.

Frans Gerritsen
Professor Emeritus

Franger99@aol.com

Currents



- ◆ Our next generation of ocean engineers is arriving in Manoa - Jonah Kai Paw-

lak was born on Jan. 30th, weighing in at a hefty 10 lbs. 4oz.

- ◆ Prof. H. Ronald Riggs, who is a cooperating faculty member in ORE, has become the Chair of the Civil and Environmental Engineering department at UHM.
- ◆ It is with great sadness that we report the passing away of our friend Mina Kim, Dr. Jang Whan Kim's wife, in Houston at a very young age. She is also survived by her three children. She was an angel. Dr. Kim was a researcher in ORE and left in 2001 to work for American Bureau of Shipping in Houston.

- ◆ Dr. Gerard Nihous, who has been an affiliate faculty member in ORE, has recently joined HNEI after working for PICHTR in Honolulu for many years. His office is in the POST building.
- ◆ Prof. Hans-Jürgen Krock has announced his retirement effective January 1, 2005. He will remain on the ORE faculty at 40% during 2005.
- ◆ Dr. Minja Liu joined the department as a post-doctoral fellow in April. He received his PhD from Fudan University, China, in 2003. His research focus is hydrodynamics and he is working with Prof. Kwok Fai Cheung on the ENDEAVOR project.

Faculty Profile

Welcome Dr. Dan Greeson, Chief Engineer of the Hawaii Undersea Research Laboratory, the other new faculty member to formally join the department last summer after serving as cooperating graduate faculty in our department for several years.

He received his BS in Naval Science and Mathematics from the United States Naval Academy in Annapolis, Maryland in 1964. Following graduation, Dr. Greeson was personally interviewed by Admiral Hyman G. Rickover and selected for the Navy Nuclear Propulsion Program and duty in the Nuclear Submarine Force. During his 28 year career in the Navy, Dr. Greeson served on several submarines, including the world's only nuclear powered deep submersible, Submarine NR-1, where he qualified as a Deep Submersible Vehicle Operator. In addition, he sequentially commanded four nuclear powered submarines, including the Trident missile submarine USS Michigan (SSBN-727). Dr. Greeson earned a

Master in Engineering degree in Ocean Engineering from Texas A&M University, College Station, Texas in 1976. He retired from the Navy with a rank of Captain in 1992.

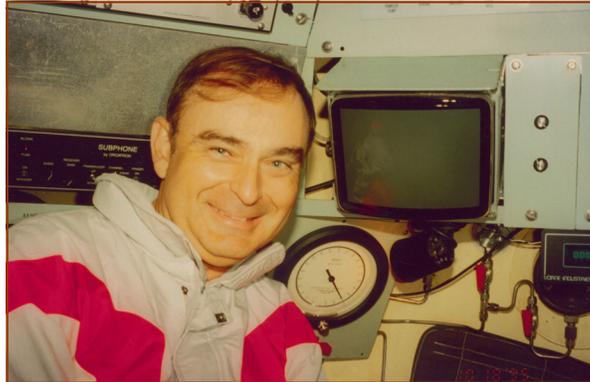
Dr. Greeson earned a Ph.D. in Ocean Engineering from this Department in 1997, and was invited to join the Hawaii Undersea Research Laboratory (HURL) as Chief Engineer. In addition to his academic degrees, Dr. Greeson holds U.S. Coast Guard merchant marine licenses as a Chief Engineer (Unlimited) and Master 1600 GT (Oceans).

HURL is NOAA's National Undersea Research Center for Hawaii and the West-

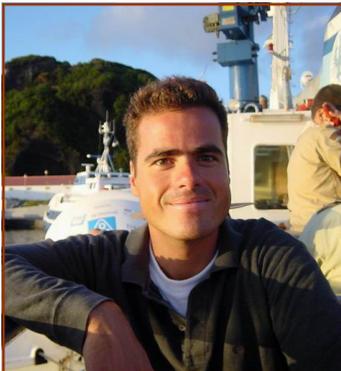
ern Pacific. The laboratory operates two deep diving research submarines capable of taking a pilot and two scientists or engineers to 2000m. HURL also operates a remotely operated vehicle (ROV). The laboratory designed and is principal user of the 225-foot research vessel Kaimikai o Kanaloa.

Dr. Greeson's area of research concerns principally deep diving research submersibles and remotely operated vehicles. During the fall semester, he is generally at sea with the HURL

Operations Group assisting with diving operations. He teaches ORE 612, Dynamics of Ocean Structures during the spring semester. Dr. Greeson can be reached at 808-842-5799 or by email at greeson@hawaii.edu.



Students' Voice



Another semester of hard work has almost come to an end and summer is approaching. The ORE601 summer class – Ocean Engineering Laboratory – will take place and Prof. Hans-Jürgen Krock will once again guide students on field work techniques. Also this summer, Prof. Stephen Monismith and some of his graduate students

from Stanford University will visit us for some joint field and research work. The visit is being coordinated by Prof. Geno Pawlak, and if all goes according to plan, they will bring an underwater remotely operated vehicle equipped with a side scan sonar to help us with data acquisition. This sonar will hopefully be deployed off Kewalo basin in order to observe in greater detail the coral reef roughness of this area of O'ahu.

A new wave flume will be assembled in our lab in POST building. This flume will provide the opportunity for a detailed research on the hydrodynamics of hydrofoils, which is of spe-

cial interest to our PhD student Kumar Rajagopalan. Also being assembled in the ORE lab are the Nd:YAG laser and a high speed camera for particle image velocimetry measurements for looking at fluid particle motion. Under the supervision of Prof. Pawlak, Pedro Hrdy, a visiting student from Spain, will be using this device with the purpose of looking at safer ways to store liquid hydrogen. This potential alternative energy form is attracting the attention of governments worldwide, such as Iceland, India, China and also the US, since fossil fuel prices are increasing at a very rapid rate. In addition, fossil fuels are the sources of political conflicts and environmental pollution on our planet.

And finally, last March the 14th, the ORE department got together once again for another pleasant spring party. This time we met at Prof. Ertekin's house in Hawaii Kai, and if you did not have a chance to look at the photos, email Rick Carter (r-carter@msn.com) or Jinghai Yang (jinghai@oe.soest.hawaii.edu).

Aloha,

Vasco Nunes
Student Representative
vasco@hawaii.edu

Alumni News

- ◆ **Eric Hahn (MS '03)** - Eric is currently finishing his Dive Officer qualification at the Naval Diving and Salvage Training Center. This course of instruction is necessary to perform as a Navy Diving Officer. Instruction includes diving physics and medicine, underwater tools, diving system certification (including MK 21 and MK 20 rigs), scuba, and surface supplied air & mixed gas diving operations as well as chamber operations. By the end of training he will be qualified for diving operations to 300 ft.

After completion of training in May, he will report to his next duty assignment at the Naval Facilities Engineering Command (NAVFAC). Specifically, he will be assigned to the Ocean Construction Department in Washington D.C., where he will manage various Navy projects around the world involving seafloor engineering & site characterization, mooring systems, underwater inspection, specialized docks & piers, and offshore structures.
Eml: hahnusn@msn.com



- ◆ Congratulations to **Amal Phadke (PhD '01)** who recently got married in Houston! Above are Amal and his wife Lalita in Austin, Texas, during a recent trip.

Company Profile

Sea Engineering, Inc. was incorporated in Hawaii in 1973, and provides ocean and coastal engineering, marine environmental, and marine construction and diving services to clients in Hawaii, California, and throughout the Pacific Basin. The four founders (Bob Rocheleau—President, Scott Sullivan—Vice-President, Fred Casciano—no longer with Sea Engineering, Kala Kukea—deceased) were all graduates of the Department of Ocean Engineering at the University of Hawaii. The company at first specialized in coastal engineering, but branched out into commercial diving and marine construction in 1987. Our 7-person office in Santa Cruz opened in 2002 and specializes in coastal engineering and marine environmental studies. The Hawaii engineering office is based on the Makai Pier at Makapuu and the diving/marine construction division is based at Pier 21, Honolulu Harbor. The Hawaii based engineering staff totals eight people and five of those are graduates (Bob Rocheleau, Scott Sullivan, Eiji Nakazaki, Jim Barry, David Smith) of the Ocean Engineering Department at UH. The company has grown

steadily over the 30-year period and now employs forty people.

Much of our coastal engineering work requires numerical analysis and modeling. We have a variety of models to aid in the design and assessment of coastal facilities, including: 3-dimensional circulation models, outfall discharge plume models, storm wind and wave models, coastal structure design models; and probabilistic models for aerial photographic analysis. Marine surveying capabilities include bathymetric, sub-bottom profiling and side scan sonar capabilities. We are equipped to dive using SCUBA



35-ton Core-Loc concrete armor unit that will be used in the new Kaunalapau Harbor Breakwater designed by Sea Engineering (Photo courtesy of Sea Engineering).

or surface supplied dive gear, and can therefore utilize the method best suited for the job at hand. Not all of our diving has been in the clear blue waters of the Pacific, and our divers have been in some very unusual places. We are presently working on the internal repair of the Ala Moana Force Main on Sand Island, and the work involves 600-foot

penetration dives into a 76-inch diameter pipeline. We have found the combination of engineering expertise and practical construction experience to be very help-

ful in completing projects in the marine environment.

We have maintained close ties with the University of Hawaii, and have combined for research projects with the Department of Ocean and Resources Engineering and with other departments within SOEST. We are currently funding one graduate assistantship in the ORE Department.

Our professional interests have always been centered on the ocean, and we are fortunate to be involved in several very interesting projects. Two are described below.

The Ford Island and Iroquois Point areas in Pearl Harbor are being redeveloped for Navy housing. The Iroquois Point Naval Housing area has historically experienced chronic, severe erosion, and we have been contracted to design and permit a 3,200-foot long beach restoration project with stabilization structures. The work includes hydrographic surveys, investigation of offshore and onshore sand sources, engineering design analysis including determination of oceanographic parameters, numerical modeling of beach response, evaluation of alternatives, detailed design of a selected beach and stabilization plan, and preparation of the environmental evaluations to support federal and state permit applications. One of the first steps was the design and construction of emergency protection to temporarily protect threatened houses.

(Continues on page 5)



Company Profile (Continued from p. 4)

We have been working for the last few years with Ocean Power Technologies, Inc., a New Jersey based company that developed a Wave Energy Conversion (WEC) buoy. A prototype system is being installed in 100 feet of water off the Marine Corps Base in Kaneohe. Sea Engineering has been involved for the past few years in several phases of the project, and



Sea Engineering diver injecting epoxy during installation of rock bolts around the perimeter of the 110-ton WEC anchor base (Photo courtesy of Sea Engineering, Inc.)

we are now responsible for the installation of the buoy, 110-ton anchor, and 3,500-foot long electrical cable that will connect the buoy to the Marine Corps Base electrical grid. The anchor base and the electrical cable were installed last September during a period of favorable weather conditions. The 60-foot high, 15-foot diameter

buoy is in the final phase of fabrication at Pacific Shipyards International, and will be installed during the first weather window after completion. When in place, the top of the buoy will be just below the water surface, and the only visible component will be the navigation mast containing lights and a radar reflector. This first buoy will generate 20KW of electrical power.

Robert Y. Rocheleau (MS '73)
bohr@seaengineering.com

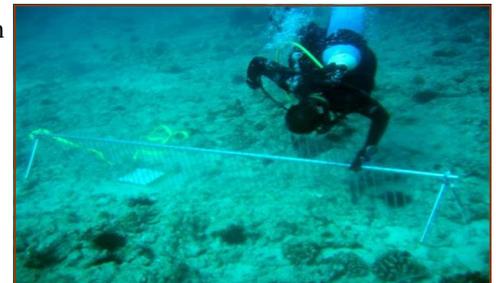
Project News

New Grant/Contract: Cheung, K.F. (PI). Tsunami Forecast and Inundation Map for Hawaii. National Tsunami Hazard Mitigation Program in collaboration with NOAA Pacific Marine Environmental Laboratory via Hawaii State Civil Defense (January 1, 2004 – January 1, 2005).

Continuing Project: Real-time Near-shore Reef Observatory (PI. G. Pawlak). A cabled nearshore observatory is presently under development to be deployed on the south shore of Oahu. The immediate goal of the observatory is support ONR funded research into the effects of bottom roughness in wave dissipation and boundary layer processes. The cabled array, providing underwater power and fiber-optic Ethernet connections to the nearshore

environment is planned to be in operation in summer of 2004 and will be located in the existing Ocean Engineering Test Range off of Kakaako Waterfront Park. The observatory is designed to be compatible with similar observatories nationwide, so that researchers can easily connect instrument packages and make use of power/data connections. Researchers from Stanford University and the Naval Postgraduate School will be working with ORE in July to carry out a series of field observations that will make use of real-time data accessed from the observatory.

In addition to providing support for field research, the observatory will provide real-time observations of the physical and biogeochemical character in the nearshore coral reef environment. Prof.



ORE student Vasco Nunes deploys the 'Vascometer' profiler to measure reef roughness on the south shore of Oahu. The measurements are being carried out in support of an ONR funded research. (Photo courtesy of G. Pawlak).

Pawlak is also participating in a Sea-Grant funded project, in collaboration with Prof. Eric DeCarlo of Oceanography to obtain real-time water quality observations of the nearshore environment.

Meetings Calendar

2004

- ◆ May 23-28, **ISOPE 2004**, Toulon, FRANCE. www.isopec.org
- ◆ June 20-25, **OMAE 2004**, ASME, Vancouver, CANADA. www.omaec.org
- ◆ July 8-12, **ONR Symposium on Naval Hydrodynamics**, St. John's, Newfoundland, CANADA, <http://www.housing.mun.ca/snh/>
- ◆ August 16-20, **AGU 2004 Western Pacific Geophysics Meeting**, Honolulu, Hawaii.
- ◆ September 29-October 1, **SNAME Maritime Technology Conference and Exposition**, Washington, D.C., USA, www.sname.org
- ◆ November 9-12, **MTS Oceans 2004/Techno-Ocean 2004**, Kobe, Japan www.oceans-technooceans2004.com
- ◆ December 13-17, **AGU Fall Meeting**, San Francisco, CA



Graduate Enrollment Increases in Science and Engineering Fields, Especially in Engineering and Computer Sciences

In fall 2001, approximately 429,500 students were enrolled in science and engineering (S&E) programs at the graduate level, a 4 percent increase from the fall 2000 number of approximately 414,700.

Despite the increases, the number of science and engineering graduate students in 2001 was still below the 1993 peak of approximately 435,700. Full-time enrollment increased 4 percent, while part-time enrollment increased 2 percent, from 2000 to 2001. About 70 percent of science and engineering graduate students are enrolled full time.

Enrollment by Citizenship

An increase of students with temporary visas accounts for much of the recent increase in graduate science and engineering enrollment. Enrollment of students with temporary visas increased 9 percent from approximately 121,800 in 2000 to approximately 133,300 in 2001.

Increases for such students were greatest in engineering (up 11 percent) and computer sciences (up 16 percent) (figure 1). The number of computer sciences graduate students with temporary visas rose 133 percent between 1994 and 2001. Students with temporary visas now make up almost half of graduate students in computer sciences and in engineering.

The number of U.S. citizens and permanent residents enrolled in graduate science and engineering programs increased 1 percent from 2000 to 2001,

reversing a decline that began in 1994. Among U.S. citizens and permanent residents, the number of white, non-Hispanic graduate S&E students was about the same in 2001 as it was in 2000, signaling a possible halt in the decline in white enrollment.

Between 1993 and 2001, enrollment of white graduate students in science and engineering programs dropped 20 percent. Minority enrollment in graduate S&E programs increased from 2000 to 2001, continuing steady increases in most years throughout the period from 1993 to 2001.

Enrollment of black and Hispanic graduate students rose 4 percent and enrollment of American Indian/Alaskan Native graduate students rose 5 percent from 2000 to 2001. The number of U.S. citizen and permanent resident Asians/Pacific Islanders enrolled in graduate S&E programs increased 5 percent in that time period.

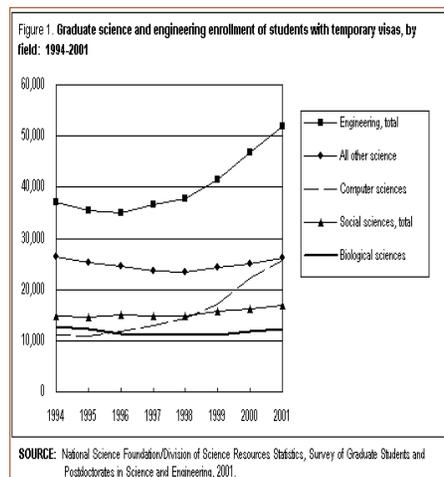


Figure 1 Source Data: [Excel file](#)

Enrollment by Field

Graduate enrollment rose in most science fields in 2001, although the numbers of students remained lower than in the early

1990s. The greatest gain in enrollment (10 percent) was in computer sciences. The only major field experiencing declines in enrollment was earth, atmospheric, and ocean sciences (down 1 percent).

Engineering enrollment rose 5 percent in 2001, the third increase in as many years. Graduate enrollment in all engineering fields rose, with the exception of chemical engineering. The engineering fields with the greatest gains were biomedical engineering (up 11 percent), metallurgical/materials engineering (up 8 percent), and electrical engineering (up 7 percent).

Data presented in this InfoBrief are from the fall 2001 Survey of Graduate Students and Postdoctorates in Science and Engineering. Data were collected from approximately 12,000 departments at approximately 600 institutions of higher education in the United States and outlying areas. The departmental response rate was 99 percent; however, 14 percent of the responding departments required partial imputation of missing data. More detailed data are available in the forthcoming report, [Graduate Students and Postdoctorates in Science and Engineering: Fall 2001](#).

Ed.- Condensed from the original InfoBrief article (NSF-03-315/April 2003) by: Joan S. Burrelli of [National Science Foundation Division of Science Resources Statistics](#) 4201 Wilson Boulevard, Suite 965 Arlington, VA 22230.

23RD INTERNATIONAL CONFERENCE ON Offshore Mechanics and Arctic Engineering

June 20 - 25 2004 • Hyatt Regency Hotel • Vancouver • Canada

www.asmeconferences.org/omae04/

Stay on the cutting edge of the offshore industry. OMAE 2004 has assembled a strong, timely program including:

- ◆ Keynote address by Prof. Nick Newman, “Progress in the Computation of Wave Loads on Offshore Structures”
- ◆ Keynote address by John C. Bruce, “Offshore Structures for Harsh Environments”
- ◆ Specialty mini symposium honoring Prof. T-Y. Wu’s scientific contributions for his 80th birthday!
- ◆ Specialty mini symposium honoring Prof. Michael Isaacson’s significant accomplishments in the field of wave hydrodynamics, coastal and near shore engineering and offshore engineering
- ◆ Specialty symposium on Engineering the British Columbia Offshore Development – Challenges and Opportunities
- Specialty symposium on LNG (Liquefied Natural Gas)
- Pre Conference short courses – “Pipeline Design & Construction Rationalization” and “Fatigue and Fracture Assessment of Ships and Offshore Structures”
- Ocean Engineering Symposium with over 60 papers
- ◆ Over 400 papers in all symposia

Your Gift to the ORE Enrichment Fund

THE ORE ENRICHMENT FUND
(The University of Hawaii
Foundation
Account # 123-7310-4)

Yes, I'll support

My gift is:

- \$10,000 \$5,000 \$3,000
 \$1,000 \$500 \$300
 \$100 \$50 \$_____

My check is enclosed payable to:

The University of Hawaii Foundation

A matching gift program is offered through my (or my spouse's) employer,
_____ (form enclosed)

The gift is in memory/honor of _____

Name(s): _____

Address: _____

E-mail: _____

Please do not include my name in the ORE Enrichment Fund Donor Report
(I would like to be an anonymous donor).

Please mail your check and this form to: c/o ORE Enrichment Fund Administrator, Department of Ocean and Resources Engineering, University of Hawaii at Manoa, 2540 Dole Street, Holmes Hall 402, Honolulu, HI 96822, USA
Eml: admin@ore.hawaii.edu, **Tel:** +1 (808) 956-7572, **Fax:** +1 (808) 956-3498

* Your gift is tax-deductible to the extent allowed by law (please consult your tax advisor)



DEPARTMENT OF OCEAN AND RESOURCES ENGINEERING

School of Ocean and Earth Science and Technology
University of Hawaii at Manoa
2540 Dole Street, Holmes Hall 402
Honolulu, Hawaii 96822-2303, USA
Tel: +1 (808) 956-7572
Fax: +1 (808) 956-3498
Eml: admin@ore.hawaii.edu
URL: <http://www.ore.hawaii.edu>

To obtain copies of previous issues of *Hana O Ke Kai*, please visit the above URL and then click the "Newsletter" link.



Engineering the Oceans since 1966!

We need your help!
Please give a gift to the
ORE Enrichment Fund if you have
not done so this year.
Thank you...



Some Recent Publications (To receive copies, please contact the faculty member)

- ◆ Mansour, A.E. and Ertekin, R.C. (2003), Editors, "Proceedings of the 15th International Offshore Structures Congress," ISSC 2003, San Diego, 11-15th August, Volumes 1 and 2, Elsevier, Amsterdam, 1360 pp.
 - ◆ Smith, D.A. and Cheung, K.F. (2004). Initiation of motion of calcareous sand. *Journal of Hydraulic Engineering*, 130(5), pp. 467-472.
 - ◆ Xia, D., Ertekin, R.C. and Kim, J.W. (2004), "Nonlinear Hydroelastic Response of a Two-Dimensional Mat-
- type VLFS by the Green-Naghdi Theory," *Proc. 23rd Int. Conf. on Offshore Mechanics and Arctic Engineering*, OMAE '04, ASME, Ocean Engineering Symposium, June 20-25, Vancouver, Canada, CD-ROM, OMAE04-51484, 10pp.

HURL Expedition

During the fall of 2003, the Hawaii Undersea Research Laboratory (HURL) completed a two-month long cruise in the Northwest Hawaiian Islands. Supported by the University of Hawaii research vessel Ka'imikai-o-



Pisces V submersible during the HURL Expedition (Photo courtesy of Dan Greeson).

Kanaloa, Pisces IV and V submersible and remote operated vehicle (ROV) dives were conducted the entire length of the archipelago in support of scientific research. A total of four scientific teams were embarked for the cruise, comprised of scientists from the Hawaii Undersea Research Laboratory, the University of

Hawaii at Manoa, NOAA Fisheries, and Woods Hole Oceanographic Institution. The major objectives of this expedition were to visit unexplored seamounts, investigate the habitats of the Hawaiian monk seal, conduct research on deep sea corals, and locate and map certain species of these corals known as "precious corals." Dr. John Wiltshire of this Department is the Acting Director of HURL. I participated in the cruise as Chief Engineer of HURL, and as an ROV Pilot.

Bernard D Greeson
greeson@hawaii.edu