

2006 RVTEC MEETING – MATE UPDATE

MATE Technical Internship Program

The Marine Advanced Technology Education (MATE) Center's technical internship program offers college and university students hands-on experiences in marine science and technology, and provides internship hosts with valuable, hard-working students and the opportunity to evaluate the students' potential as future employees. Since the program began in 1999, MATE has placed 162 students in at-sea and shore-based internship positions. Eighty-seven of those students have sailed on board UNOLS vessels.

In 2006, the MATE Center placed 25 student interns on research vessels, in laboratories, and with industry. Eighteen MATE interns were placed on UNOLS vessels for 1-8 weeks. The MATE interns worked with the marine technicians and scientists aboard the *Blue Heron*, *Point Sur*, *Wecoma*, *New Horizon*, *Revelle*, *US Coast Guard Healy*, *Atlantis* and *Seaward Johnson* to assist twelve scientific cruises.

Seven MATE interns worked in research laboratories, on drills rigs, and on shore. One student worked on a joint NOAA/British Petroleum project called Scientific and Environmental ROV Partnership using Existing industrial Technology (SERPENT). The intern spent six weeks traveling offshore by helicopter to BP drill rigs where she worked with Oceanering ROV teams to conduct surveys for planktonic organisms.

Six of our interns worked in shore-based positions ranging from aquarists and marine science educators at the Pennington Marine Science Center on Catalina Island to marine chemists and GIS technicians at the Department of Energy's Pacific Northwest National Laboratories Marine Research Operations facility in Sequim, Washington.

Ninety-six percent of MATE interns who sailed on UNOLS vessels said that the research cruises were the highlight of their year and felt they had gained hands-on experiences that will be invaluable to their future education and career decisions. Eighty-six percent of the UNOLS interns indicated they had an increased confidence in working on technical problems as a result of their internships. One student said, "...my MATE summer internship was an excellent experience! The opportunity to see and learn firsthand about applied physical oceanography, the R/V *Revelle* and *FLIP* [Floating Instrument Platform] was immensely valuable." Another said, "The trip to Duluth, the valuable experience I have gained, and the friends I have made along the journey made all the hard work and efforts it has taken me to see this process through. My efforts and the day to day experiences of working aboard a research vessel with the many types of devices necessary for research have given me a fresh insight as to why the marine technician is a vital component."

One hundred percent of the internship hosts (UNOLS and non-UNOLS) who have completed surveys also felt that the students had gained experiences during their internships that increased their employability; 98% said they would be willing to mentor another intern. In addition, 75% of the previous employers who hosted interns said they

would hire the intern as an entry-level employee. Tim Pennington, a biological oceanographer at the Monterey Bay Aquarium Research Institute (MBARI) and the chief scientist for three of the UNOLS cruises, appreciated his intern's hard work so much that he invited two of his MATE interns back to assist him on other cruises. Mark Stewart of Scripps Institution of Oceanography said of his MATE intern, "*Drew's [the MATE intern] enthusiasm, initiative and fundamental capabilities and personality make him immediately employable. Sign me up to host another intern!*"

MATE has NSF funding to place 15 students on UNOLS/IODP research vessels in 2007. This funding covers the student's travel and a stipend. Intern hosts need only to provide the intern with a bunk, food, and a mentor. For more information about the program, including how you can get involved as an intern host, visit www.marinetech.org/careers/internships.php or contact Lani Clough at lclough@marinetech.org or (831) 646-4011.

MATE International ROV Competition for Students

The MATE Center and the Marine Technology Society's (MTS) ROV Committee partnered with the National Office for Integrated and Sustained Ocean Observations ("Ocean.US") and the Ocean Research Interactive Observatory Networks (ORION) program to organize the 5th annual international MATE ROV competition. Forty teams representing middle schools, high schools, home schools, community colleges, and universities participated in the event, which took place June 23 – 25, 2006 at NASA Johnson Space Center's Neutral Buoyancy Lab (NBL) in Houston, Texas.

Working with Ocean.US and the ORION program, the MATE Center created a mission scenario that challenged students to tasks associated with the operational aspects of ocean observing systems. For example, one task had teams piloting their ROVs to install an electronics package into a protective frame and then "plug in" a power and communications cable coming from shore – similar to what MBARI ROV pilots will do for the Monterey Accelerated Research System (MARS).

In addition to the underwater missions, the teams were required to submit technical reports and create poster displays. The teams also participated in engineering evaluation interviews where they presented their vehicle and its systems to a panel of judges who represented research, academia, industry, and the military.

Regional ROV Contest Network

In 2006 the MATE Center and its education and industry partners coordinated a network of 14 regional contests. The regional events took place in the following areas, with the top winners of each regional moving on to the international competition:

- ? Monterey Bay
- ? Texas
- ? Southern California Fly-Off
- ? New England
- ? Hawaii Underwater Robot Challenge
- ? Florida

- ? Great Lakes
- ? Big Island
- ? Northern California
- ? Pacific Northwest
- ? Southeast
- ? Mid-Atlantic
- ? Newfoundland & Labrador
- ? Hong Kong

Who Won?

For the second year in a row, the Eastern Edge Robotics team from Memorial University of St. John's, Newfoundland, Canada took first place in the *Explorer* class. Eastern Edge Robotics finished its underwater mission in record time and was one of only two teams to complete all of the tasks. That top mission score, coupled with the third highest score in the engineering evaluation, propelled them to a repeat championship. The team also took home the Judges' Choice award.

The *Ranger* class competition was close, but in the end the Marine Academy of Technology and Environmental Science (MATES) team and its ROV *Aquafox* from Toms River, NJ won first place overall. The team's rendition of Jimi Hendrix's "Foxy Lady," sung during its engineering evaluation presentation, made a lasting impression upon the judges (and helped to distinguish between MATES and MATE!). With their bright-green felt pointed ears, long bushy tails, and "foxy spirit" cheers, the MATES' students also won the *Ranger* "Team Spirit" award.

Other awards included "Biggest Bang for the Buck," presented to teams that spent the least amount of money on a vehicle that performed well. That honor went to *Explorer* and *Ranger* class teams Palm Beach Lakes High School from West Palm Beach, FL and Six Rivers Charter School from Arcata, CA, respectively. For the second year in a row, *Explorer* class team Long Beach City College (LBCC) from Long Beach, CA won the coveted "Sharkpedo" award for design innovation, or "thinking out of the box." First-time competitors Haltom High School from Fort Worth, TX took home the *Ranger* class' Sharkpedo award. For the complete list of winners and award prizes, visit www.mpcfakulty.net/jill_zande/2006_rov_competition_winners.htm.

Ocean Career Expo

The 2006 competition included the first-ever Ocean Career Expo, organized by the MATE Center and its Center for Ocean Sciences Education Excellence (COSEE) CA partners. The Ocean Career Expo was designed to connect employers looking for skilled employees with students looking for jobs in the marine industry.

Competition sponsors such as Oceaneering International, Schilling Robotics, Deep Marine Technology, Acergy, OceanWorks, and Shell Exploration and Production showcased their companies and career opportunities. Students had the opportunity to speak with representatives of these organizations to learn more about current job

openings, while the representatives had the opportunity to informally interview students for those positions.

The Center and COSEE CA plan to hold the Ocean Career Expo each year as a regularly scheduled part of the international event. Organizations seeking skilled employees (or interns) are welcome to participate.

Nereus – the Wise Old Man of the Sea is Now an HROV

Woods Hole Oceanographic Institution (WHOI) and the National Science Foundation (NSF) provided 2006 ROV competition teams with the exclusive opportunity to choose a name for the new hybrid ROV (HROV). *Nereus*, the righteous and all-wise “old man of the sea” of Greek mythology, was chosen by WHOI engineers and technicians from the more than 20 entries submitted. The students from Monterey High School’s ROV “Team Shackleton” chose the name because like the HROV, the god *Nereus* was capable of changing forms.

The students from Team Shackleton learned more about *Nereus* and its capabilities in September when they visited Woods Hole courtesy of WHOI and NSF. In addition to presenting information about *Nereus*, WHOI engineers and technicians provided the students with tours of WHOI facilities, including an inside (literally!) view of an *Alvin* mock-up. Students also had the opportunity to try their hands at operating one of the manipulator arms that will be placed on *Nereus* when it’s being used as an ROV. The team’s prize for winning the contest also included support from the Marine Technology Society-New took place in Boston, Massachusetts September 18-21.

Celebrating the International Polar Year

In celebration of the International Polar Year (IPY), the 2007 MATE competition will focus on polar science and technology. The goal is to expand students’ knowledge and understanding of our planet’s polar regions and the impact they have on the global climate. MATE is working with members of the IPY committee to create a competition mission scenario that highlights the work being done in Polar Regions and reflects the challenges scientists, technologists, and engineers face in these environments.

The 2007 international competition will be held June 22 – 24 at the Marine Institute (MI) of Memorial University and the Institute for Ocean Technology (IOT), both located in St. John’s, Newfoundland and Labrador, Canada. MI and IOT facilities include an ICE tank, engineering basin (waves and wind), and flume tank (the largest in the world).

Using these state-of-the-art facilities, the MATE Center looks forward to providing students with a challenge they’ll remember in a place they’ll never forget! For more information about the 2007 event, including how you can become involved as a competition sponsor or team mentor, visit

www.marinetech.org/rov_competition/index.php or contact Jill Zande at jzande@marinetech.org or (831) 646-3082.