



Making Waves

Welcome from the President...

- Welcome New 13SEAs Members!
- 13SEAs Lunch Dec 6
- Congrats to award winners!

The MIT Department of Ocean Engineering has a long-standing relationship with the Navy. In this issue of Making Waves, we chose to focus on that relationship and to spotlight alumni who have made their careers with the Navy. These alumni

range from Course 13 undergraduates who were NROTC students while at MIT, to Admirals, to current professors in the department. We hope you enjoy reading about the different career paths that these alumni have

taken. In addition, we hope that this edition of Making Waves will show you what students in the department have been up to during the fall semester.

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Discover Ocean Engineering 2002

Discover Ocean Engineering (DOE) is a freshmen pre-orientation program, created by Dr. Thomas Consi that has been running since 1998. Thirty freshmen come to MIT before orientation starts to learn about Ocean Engineering by building a simple Remotely Operated Vehicle (ROV) called a sea perch. The sea perches are simple to construct and require only cursory knowledge of electronics and mechanics. The freshmen spend two days building their vehicles, and then test them in the Alumni Pool to make sure everything is waterproof and working well. After attaching cameras to the vehicles, the group boards a boat and cruises into Boston Harbor where they test their vehicles in the high seas. The students drive the ROVs, which they've baited with raw squid, and use the video cameras to look for crabs and fish.

OE sophomore Maggie Loftus writes, "This year I was a mentor for the program and got to see how everything came together for those couple of days. Since I had been in the program the year before, I was excited to see all the inner workings of what the mentors do. Getting to be the person helping the freshmen make these vehicles also helped my understanding of what it was



that I had done the year before. You can see that when everyone is making their vehicles, they don't fully understand what they are doing, but they get really involved in making it work and want to know how it works."

In addition to building the sea perches, the students visit the New England Aquarium, tour MIT's Ocean Engineering labs, and explore Boston. Many of the freshmen say that the reason they wanted to be a part of DOE was because they actually got to make something instead of just learning about Ocean Engineering. According to Maggie, "the most gratifying thing about being a mentor for DOE is that so many of the freshmen asked me about taking OE classes and have decided to major in OE."

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Oceans 2002...Casinos, Crawdads, and Southern Hospitality

Oceans 2002 was held from October 29-31st in Biloxi, Mississippi. Oceans, deemed the "Conference for Ocean Engineers," is co-sponsored by the professional societies, MTS and IEEE/OES. The conference includes sessions on acoustics, AUVs, ships, exploration, and sensors. Each year, the Office of Naval Research sponsors a student poster competition at the conference. Students are invited to present their current research and are fully funded to attend the conference. Steven Fantone '05 presented his UROP research on his poster, "The Autonomous Underwater Vehicle



Steve Fantone poses with his poster. (Photo: D. Mortimer)

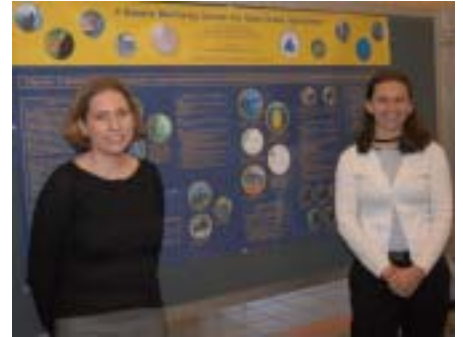
"Pipsqueak" and graduate students Katy Croff and Anna Michel presented their 13.998 group project,

"A Remote Monitoring System for Open Ocean Aquaculture." Croff and Michel received 2nd place in the competition. Michel received a generous scholarship from the New England section of MTS to attend the conference.

Graduate students Te-Chih Liu and Joe Edwards gave talks on their work in Prof. Schmidt's lab, entitled "AUV-Based Seabottom Target Detection and Tracking" (Liu) and "Real-time classification of buried targets with teams of unmanned vehicles" (Edwards). Rob Damus, BS '99, MS '01, presented the work of Sea Grant on Design of an Inspection Class AUV.

13SEAs officers, Michel and Croff, also had the opportunity to attend meetings with other students and officers of MTS and IEEE/OES to help develop new ways for the societies to help students with their research and career goals.

We hope more OE students will submit an abstract for the next poster competition to be held in September 2003 in San Diego! For more details



Anna Michel and Katy Croff with their 2nd place poster! (Photo: D. Mortimer)

on next year's conference, check out www.oceans2003.com.



History of the 13A Program

In August 1897, the US Navy Chief Naval Constructor, Commodore Hichborn, requested that MIT develop a three-year course of study for the professional training of naval constructors that would culminate in a Master of Science degree.

After graduating in 1877 from the Naval Academy in Copenhagen and serving in the Danish Royal Navy, then Lieutenant William Hovgaard was sent to the Royal Naval College in Greenwich, England, to study warship construction. In 1901, as a Commander in the Danish Navy, he came to the US to continue his study of the submarine and was approached by the Secretary of the Navy, John D. Long, to take charge

of the new course for naval constructors at MIT. He remained head of the XIII-A program until his retirement in 1933. The course was more intensive than the regular Course XIII program, emphasized warship design and included courses in marine engines and marine steam turbines and electrical engineering. Hovgaard pointed out that the course pre-supposed a general knowledge of warships and seamanship, of life on board ship, of service in the navy, and of the installation and use of artillery and torpedoes.

After a hundred years, the program still works to uphold the standards set by its predecessors by providing an academic background for individuals who will later occupy

positions of influence and actively participate in the concept formulation, acquisition, design, construction, modernization, maintenance, and industrial support of large-scale ship system programs. Currently, the program supports two active-duty officer faculty members and 21 USN officer students. The course of study has evolved to include a two-year program, which leads to a Master of Science degree in Naval Architecture and Marine Engineering, and a three-year program, which leads to the degree of Naval Engineer. All officers write are still required to develop a thesis on research that supports the needs of the Navy or the Coast Guard.

SNAME sails into Boston

The 110th Annual Meeting of the Society of Naval Architects and Marine Engineers (SNAME) was held at the Westin Copley Place from September 25th to 27th. 13SEAs was represented by over 20 members at the event which drew a crowd of over 420 professionals and approximately 130 students.

13SEAs was directly involved in the planning and preparation of the Student Program for the meeting. Anna Michel (G) and John Hootman (G) designed and planned the Student Congress Design Competition, which could

not have happened without the help of Katy Croff (G), George Katsoufis (G), Karl McLetchie (G), and Erik Oller (G).

The success of the event has started a commitment to continue the event in years to come. Kate Baker '04, Claudio Cairoli (G), Jason Dahl (G), Meg Hendry-Brogan '03, John Hootman, Erik Oller, Katie Wasserman '04, and Addie Yandell '05 also volunteered as Assistant Moderators for the Ship Production Symposium Technical Sessions.



Kate Baker wins a palm pilot.

SNAME's Student Steering Committee (SSC) sponsors most of these activities. The SSC represents over 13 domestic and international student SNAME Sections and is charged with promoting student membership and advocating the active roles that students can play in the Society. John Hootman was elected to the office of Vice Chair of the SSC and his primary responsibilities for the



The Challenge

coming year are to improve student activities at next year's Annual Meeting and to represent all students via the SSC to SNAME's Education Committee. 13SEAs' new student representative is Meg Hendry-Brogan, who will now represent the interests of 13SEAs' SNAME members to the SSC.

John Hootman and his Webb Institute thesis team received the Undergraduate Paper Honor Prize for their paper, "A Discussion of the Trimaran Hullform and the Correlation of High-Speed Trimaran and Slender Monohull Experimental and Computational Seakeeping Predictions." Melissa Harnedd received the Undergraduate Paper Award for her paper, "Velocity Measurements of a Cavitating Tip Vortex on a 3-D Hydrofoil Using Particle Imaging Velocimetry."

This meeting was Kate Baker's first major Society meeting and she won a Palm Pilot at the SPS Closing Panel and Student Exchange through a raffle. She feels that "the meeting was a great way to make industry connections and to see the real world of ocean engineering." The week was capped off with a successful MIT Alumni Reception that drew more than 50 alums and current students. This event was coordinated by Professor Henry Marcus and provided a great networking opportunity.

Ship Models & Giant Beavers



Senior Meg enjoys the reception.

On September 26th, 13SEAs hosted a reception for students attending the SNAME annual meeting. The reception was held in MIT's Hart Nautical Gallery. Over 150 students from all around the country and from as far away as Norway and Brazil attended the reception. Schools in attendance

included the Webb Institute, the University of New Orleans, the US Naval Academy, US Merchant Marine Academy, MIT, the Maine Maritime Academy, the University of Michigan, Virginia Tech, the Memorial University of Newfoundland, the University of California at Berkeley, and Texas A&M University. The food, drinks, and presence of the MIT Beaver gave students a welcome break from the formal atmosphere of the SNAME conference. 13SEAs would like to thank SNAME, Webb Institute, University of New Orleans, University of Michigan, and Virginia



Dee and Mary having a good time.

Tech for co-sponsoring the event with us. Many thanks to David Burke for supervising the event, and to Kurt Hasselbalch for the use of the Hart Nautical Gallery.

Check out all the conference photos at <http://web.mit.edu/13SEAs/www/events/sname/index.htm>!

OE Student Awards

13SEAs, Best Example of Teamwork by an Organization - MIT Student leaders Recognition Reception

Angus Kai McDonald, Robert Bruce Wallace Prize

Stephen Geiger, MIT Presidential Fellowship

Jessica Donnelly, MIT Presidential Fellowship

Daniel Sura, SNAME Undergrad Award

Melissa Harness, SNAME Graduate Award, SNAME Undergraduate Honor Prize for Student Paper

Anna Michel, SNAME Graduate 1st Prize for Student Paper, NE Section Meeting, 3rd Place Oceans 2001 Student Poster Competition, NDSEG Fellowship

Jae Auh, SNAME Graduate 2nd Prize for Student Paper, NE Section Meeting

John Hootman, SNAME Graduate Honor Prize for Student Paper,

Kwang Lee, SNAME Scholarship

Sacha Wichers, SNAME Scholarship

Xiaoxia Dong, Shyn Duog Shiah Memorial Fellowship

Johanna Mathieu, MTS ROV Scholarship

Karl McLetchie, MTS ROV Scholarship

Jason Dahl, ABS & SNAME Scholarships

Richard Connell, ABS Scholarship

Meghan Hendry-Brogan, Keil Award

Jennifer Watson, Lincoln Lab Fellowship

Iason Chatzakis, Fulbright Scholarship

George Dikos, Fulbright Scholarship, Onasses Fellowship, Eugenides Fellowship

Julie Chalfant, NDSEG Fellowship

Justin Harper, NDSEG Fellowship

Benjamin Connell, NDSEG Fellowship

Parker Larson, NDSEG Fellowship

Steven Licht, NDSEG Fellowship

Mark Rapo, NDSEG Fellowship

Saul Rosser, NDSEG Fellowship

Join MIT's International Shipping Club

Have you ever wondered if there is more to life than problem sets? Where does your hard work pay off in the end?

At the ISC, members meet to discuss business related items with respect to ocean commerce, ship, and marine management. Speakers are invited to talk about topics chosen by students and professors alike. Last year speakers were invited to discuss the current state of affairs and

developments in business and technology, as they related to industrial marine paints and coatings, Liquefied Natural Gas tanker, bulk cargo, and container ship management.

Meetings provide a forum for discussion of business opportunities and strategies between professionals in the community, students, faculty, and alumni.

Contact George Katsoufis gpk@mit.edu for more information.

Pizza! Pizza!

This semester, 13SEAs was pleased to host a variety of speakers for the lunch seminar series. Our first luncheon of the year was a pizza party during which the new 13SEAs officers were introduced, the professional societies memberships were explained, and new students had the chance to meet the old ones! Sam Raymond, the founder of Benthos Corporation and an MIT alum, hosted the September luncheon with his talk, "Shrunken Heads." Sam talked about the glass spheres that Benthos has developed for oceanographic work. In addition, he brought Styrofoam heads that he shrunk in a pressure vessel, simulating the effect of the pressure of the deep sea. In October, we welcomed Matt Turns from Chevron-Texaco. At this luncheon, kindly sponsored by Chevron-Texaco, we learned about what it means to be an Ocean Engineer in the offshore world. November brought us Bill Kirkwood,



Sam Raymond and his shrunken heads.

the Associate Director of Engineering at MBARI, who presented his latest AUV work. This talk showed the next generation of AUVs being developed at MBARI called Dorado. The second talk of November was the first 13SEAs talk given by a woman Ocean Engineer! Marinna Martini of USGS at Woods Hole presented a talk on engineering risk and failures and how to handle them.

Undergrads, Want to Build an ROV?

Undergrads, have you ever dreamed of building your very own ROV that can explore the Titanic? Have you ever dreamed of going head to head with other Ocean Engineers and future Ocean Engineers to discover who can build the best ROV? Well here's your chance...the 2nd Annual MATE ROV competition will be held at MIT in June. High school and college teams from around the

country will convene at MIT for the national finals. The objective: to build an ROV to complete a task while exploring a model Titanic. Last year, 2nd place went to the Cambridge Rindge and Latin School where Nate Houle, OE '02, volunteered as a mentor. This year, MIT is forming two of its own ROV teams. All undergraduate students who are interested are urged to

contact Junior Katie Wasserman ktwass@mit.edu to find out how to join the team! Good luck, Beavers!

The MIT team is currently looking for corporate sponsors to assist the team in buying materials. If your company would like to help out, please contact Katie Wasserman at ktwass@mit.edu.

Welcome Sharon Beermann-Curtin from the Office of Naval Research!

Sharon Beermann-Curtin is a visiting guest from the Office of Naval Research. Sharon shared with us her thoughts on the MIT student experience: life, learning, and the latest technology.

When did you arrive at MIT?

Just in time for the 2002 fall semester!

Besides the beautiful Boston weather, why are you visiting MIT?

My husband is a 2003 Sloan Fellow at the Sloan School of Management. Therefore, we moved to Boston. At ONR, I am responsible for the National Naval Responsibility for Naval Engineering but my background is Electrical Engineering. Working with the 13-A program was a perfect opportunity to learn about Naval Architecture! So you could sum up my mission at MIT to be very similar to the students: TO LEARN!!!

What are your responsibilities at ONR?

I work in the Hull, Mechanical and Electrical S&T division. I currently manage two new programs; 1) The National Naval Responsibility for Naval Engineering (NNR-NE); and 2) The Electric Ship R&D Consortium. I am responsible to ensure that both of the programs are meeting their objectives and provide future benefit to the Navy.

What's your educational background/training?

I am an electrical engineer. I began my career at the McDonnell Douglas Electronic Systems Company and became a government employee in 1988 at the Naval Undersea Warfare Center working on acoustic torpedo tracking systems. I went to ONR in 1994 where I spent time in the Ocean Acoustics Program and then in the Undersea Weapons Program. From 1999-2001, I worked at PEO-Aircraft Carriers to help transition technology to the ship.



How do you juggle job responsibilities, three kids, and MIT classes?

A wise CDR once said to me, "They are always going to give you more to do than you have time for, I just do the important stuff" (Amy 2000). That said, everyone is probably time-short! I never watch TV, and I don't always get to everything!

Is there a culture difference between MIT and ONR, any similarities?

ONR is a government organization that funds and manages scientific research, while MIT is an academic organization that educates and performs scientific research. So the cultures are different, but perhaps not so far apart as it would appear between MIT Faculty and ONR Program Officers. The MIT Faculty spend a lot of time on the courses, with the students, and on research. ONR employees are encouraged to spend up to 20% of their time performing research, but the majority of time is spent managing research. The MIT professors spend a lot of time interacting with the students, while the ONR Program Officers spend their time interacting with the professors! But the common denominator is the research. Research is very important to both and both organizations have a culture that gets excited about being part of the latest technology.



Students attend 2nd Annual Ocean Technology Workshop...

During the week of September 23-25 the 3rd MOTN, Ocean Technology Workshop was held in Plymouth, MA. Thanks to MTS New England's kind financial support, 13SEAs members, Adrienne Yandell and Cosimo Malesci, were able to attend this conference. Thank you MTS! The conference kicked off with a Golf Scramble on Monday, September 23rd. The next two days were filled with product demonstrations both on land and on sea. The featured products included: current measurement devices, underwater imaging systems, side scan sonar, sub-bottom profilers, data

acquisition systems, echo sounders, acoustic releases, electronic charting software and real time environmental monitoring systems. There was also a very interesting technical speaker series on Tuesday, September 24th including talks by MIT's Don Eickstedt and MIT alum, Jim Newman.

Looking for an Internship?

The Mate center is the source of student internship opportunities, including positions with the University-National Oceanographic Laboratory System (UNOLS) fleet of research vessels and shore-based facilities and positions with marine-related employers. Check out www.marinetech.org/careers/index.html.

An interview with Rear Admiral Millard S. Firebaugh, USN (Ret.)

Rear Admiral Millard S. Firebaugh, USN (Ret.) graduated from MIT in 1961 and received a commission as an engineering duty officer in the Navy from MIT's contract NROTC program. He returned to MIT, graduating in 1966 with an SM in electrical engineering and a Naval Engineer degree and then received a Sc.D. in Ocean Engineering in 1972. Firebaugh served in the Navy until 1995 and is currently the Vice President-Advanced Development and Chief Engineer for Electric Boat Corporation. He holds the ASNE Gold Medal and the US Navy Distinguished Service Medal. Aside from his professional interests, Firebaugh enjoys a full and active life. He participates in public service, sports such as golf, canoeing, and skiing, and enjoys walking tours abroad.

full credit subject freshman year and senior year and a weekly drill afternoon all four years, one Summer cruise and a couple of Spring vacations. In Course 13A and later in Course 13 working on my ScD, the Navy was paying me to be a full time graduate student. So, school was Navy.



Having said that the typical 13A subject load is very demanding.

Do you have any words of wisdom for current MIT students?

Work hard because you are going to make your living off of what you know. Strive to not only master your engineering skills but to understand the context in which you are applying your technical knowledge. A great naval officer, Admiral Kinnaird McKee told me that the most important qualities one could bring to one's profession are Integrity, Knowledge, Awareness and Stamina.

What did you gain from your experience in the Navy?

The Navy is a lot more than a job or a profession. It is a way of life and has many of the characteristics of a religion. In that sense for most of my years from 1961 to 1995 everything I gained in my life derived from the Navy or my family, and even in my post-Navy experience working for Electric Boat in the submarine business that is still true.

Who do you look to for inspiration?

Wife, son and daughter and their spouses, friends and colleagues, my Mother, memories of my Father, and several mentors from the Navy.

What would you say has been your biggest achievement?

My 35+ year marriage and my 2 children. Professionally...the SEAWOLF Class submarines.

Picture courtesy of:

http://web.mit.edu/ocean/wwwdev/careers/career_profiles/fireb.shtml.

Congratulations...

to **Dave Beal**, a graduate student in the Towtank for being chosen as the best presenter in the VFRL and Towtank Group Meeting seminar series!

Also, congratulations to **Kelli Hendrickson** for being chosen the student who consistently asked the best questions!

Alumni Telethon a Success!

Many thanks to the student and staff volunteers who participated in the OE Alumni Telethon! The telethon raised \$10,217 that will go to the department and to MIT. Melissa Harness was the top caller earning \$2,585! Many thanks to all the Alumni who graciously gave to the telethon!

What sparked your interest in Ocean Engineering/Naval Architecture?

When I lived in St. Louis, I was deeply involved in Boy Scouts, Eagle Scout and so forth. When I moved to Baltimore I decided that on the shores of the Chesapeake I would become a Sea Scout. Sea Scout organizations get some occasional attention from the Navy. So, when I matriculated at MIT I was asked if I wanted to join an ROTC program. My Father and my uncle were both WWII veterans, my Father was in the Army and my uncle in the Army Air Corps, so there was never a question in my mind as to wanting to do my part and serve for at least a short time. The Sea Scout/Navy association caused me to choose the Navy. As an MIT undergrad I was in Course 8, because I thought that would give me the most flexibility in seeking a career in the budding space program. The Navy was to be but a 2-year stint to fulfill what I interpreted to be my obligation to my country. As the 2 years in the Navy was drawing to a close I was asked by the Navy to go back to MIT in Course 13A, and the rest is as they say, history.

What was your research while at MIT?

Continuum electrodynamics under Prof. Jim Melcher in Course 6 and the behavior of towing cables in the ocean under Nick Newman and Jerry Milgram.

How did you balance MIT and the Navy?

My undergraduate degree didn't require a lot of dedication to the Navy, because the NROTC program at that time was a so-called contract program involving only a 2-year active duty commitment. The MIT on campus effort was a

Spotlight on 13A Alumni: Navy Admirals



Frank L. Bowman ADM USN

Current Position: Director, Naval Reactors,
Naval Sea Systems Command (Left)

Paul E. Sullivan RDML USN

Current Position: Deputy Commander for
Ship Design, Integration and Engineering,
Naval Sea Systems Command (Right)



What is your current position and role in the Navy?

Since September 1996, I have been the Director, Naval Reactors—a joint Department of the Navy/Department of Energy (DOE) organization. My position within the DOE is Deputy Administrator for Naval Reactors in the National Nuclear Security Administration. The Naval Nuclear Propulsion Program's mission is to provide militarily effective nuclear propulsion plants to the Navy, and ensure their safe, reliable, and long-lived operation.

If the Navy has a chief engineer for ships, I am he. It's a little tougher than it used to be, because the combat systems, communications suites, networks, etc are run out of different parts of the Navy, but the total ship design and integration still takes place at NAVSEA and its associated Program Executive Offices (PEO's). The PEO's are the folks that have the money and the contract to design and build the ships. They draw on a team of Navy and Industry to get the work done. In today's Navy, typically the headquarters Navy folks are team leaders and overseers, while the rank and file designers and line managers are shipbuilder/design agent employees.

What was the most valuable lesson you learned from your time at MIT?

Obviously, the technical education at MIT is second to none and has since served me well for over 30 years of submarine and navy nuclear power service. But I also took away from MIT an appreciation for the dedication and patriotism of so many not in uniform, and for the importance of the "minority opinion" in dealing with technical issues.

I learned my design and integration skills at MIT. The overall integration of the ship, from basic lines to hydrostatics to arrangements to speed/power and structures to installation and integration of the ship are all skills I draw on daily as I ask hard questions about the 25 ship designs going on right now.

How has your educational experience at MIT influenced your career?

The Institute, the studies of Course XIII and Course XXII, the professors, and my fellow students transformed my professional development. The Institute's high standards of excellence have had a primary influence on my career because of the unswerving commitment to excellence required in the field of naval nuclear propulsion—truly an unforgiving technology, and, under the seas, in an unforgiving environment. My experience at MIT taught me that I could accomplish far more than I ever thought I could.

Most Engineering Duty Officers today work in fleet maintenance. I have been very fortunate to use my MIT Naval Construction and Engineering Program experience repeatedly. I have had several stints in design and construction of the SEAWOLF and VIRGINIA class submarines, during which the integration piece was very important. I've also been lucky enough to return to MIT to teach the 13A program for 3 years, and I currently run the Submarine Design class at MIT Professional Summer.

Do you have any advice for current students in the Department?

MIT's Department of Ocean Engineering represents a focal point of engineering excellence in this country. The Department of Ocean Engineering is the **only** department at MIT I found that understands and teaches **systems** engineering, as opposed to discrete technical disciplines. In **real** projects, in the **real** world, the engineer who can bring it all together as a functioning **system** is the one who is valued. While you are enrolled, I encourage you to seize every opportunity to achieve more than you ever thought you could. Make the most of this experience.

My advice to the students today is to try very hard to understand the total picture of complex systems design. Ocean Engineers create and design some of the most complex systems on Earth. These are actually "systems of systems". Designing and building them requires us to know not only the traditional disciplines of mechanics, dynamics, materials, hydrodynamics and the like, but we must now also understand networks, software development and integration, and control systems. We should strive to be total systems engineers.

Spotlight on U.S. Navy Associate Professor, CDR John Amy Jr.

After Associate Professor, CDR John V. Amy Jr. graduated from the U.S. Naval Academy with a BS in Electrical Engineering in 1983, he furthered his academic career at MIT with a SM in Naval Engineering (13-A) and in Electrical Engineering and Computer Science in 1990. He then topped it off with a PhD in Naval Electric Power Systems in 1992. Prior to his appointment as Associate Professor of Naval Construction and Engineering last year, CDR Amy's post was as Deputy Assistant Program Manager in the Future Aircraft Carriers Program where he helped develop the requirements and test evaluations for the U.S. Navy's future aircraft carriers. Amy is an avid sailor and is married with five children. Amy always has amusing stories to tell and he let us in on some of his experiences here at MIT.

What was your fondest memory as a student of MIT? There were many great memories while I was at MIT. One of my fondest has to be, during my third or fourth year here, when we won the Softball intramural championship. Back then we had a real good softball team always that would always create some amusing moments, the funniest of which had to be, in the words of the intramural umpire, the only time in MIT's history where teams cleared the bench to get into a fight. The funny part of this was that it wasn't any of the players that started the fight but some of the player's wives. During game play, someone in the opposing team threw their bat after a hit, like in any baseball game, and the bat came too close to some of the children. Well as you can imagine how defensive some mothers can get, one of the wives ran over to confront that player and from that point on all I remember was that a push was involved and then the bench from both sides cleared, including all the wives. The funny part of all this was that, picture this, the intramural umpire stepping back in disbelief and repeating over and over, "I can't believe I am seeing this, I can't believe I am

seeing this."

Have the students of 13-A changed much since you were here as a student?

I detect a difference in a lot of the 13-A students from when I was here. The main difference that I have noticed is that, today, many are married with children. When I was here, many of us were married but without children. As a result we used to have socials that, in the beginning, occurred about once a week, and then later about one every other week until we tapered down to about once a month. But the biggest difference was that, get this, we used to have tankard seminars every Friday afternoon, open to all of 13, which involved pizza, beer, and some type of presentation, usually Doc Edgerton showing off his latest work. 5-314 was standing room only and it was a great way to socialize with everyone, professors included. We would hang out with Marcus' students (13-B) and the rest of 13. It was very social. Yeah, things have changed - in terms of how students interact - you don't see anyone in the Athena cluster anymore since everyone has their wireless laptops and home PCs; so there is no need to go sit in that stinky, dingy and stuffy room anymore. Back then we had the old 286s, so when you needed some serious computing power you went to the cluster to get your work done. Naturally, it was the place where everyone hung out. Now what would I recommend to get current students to get to socialize with each other a little more? I would have to get back to you on that one. One thing that we used to do is organize a ski trip to Talbot House - that was a fun event too. *[Writer's Note: This is currently being planned - see George Katsoufis (gpk@mit.edu) to find out more]*



What advice would you give to current students of Ocean Engineering, with respect to what they should do while at MIT? Assuming all of them are MIT geeks that are going to get good grades and will write fabulous theses, that, first of all, there is life after MIT and it is good. What has been immensely valuable to me subsequent to leaving here was just getting to know people and listening to them. Every place you go, get to know the people you meet. A lot of the success that you will get to enjoy later in your life is due to personal relationships that you build, acquire, and make. So while you are here in Boston, get to know the people you meet.

Promotions! Promotions! Promotions!

Bill Hardman, BS Physics and Geophysics, and MBA graduate of the University of Utah, was promoted to Lieutenant Commander this past summer. Before joining the 13A program at MIT, Bill served the U.S. Navy as a submariner on the USS Rhode Island, a trident submarine stationed in Kings Bay, Georgia. When he graduates in June of 2004, Bill hopes to be stationed at the Naval Shipyard in Puget Sound, Washington. Bill is one of several 13A students with children. Most of us have a hard enough time juggling our course loads and a few calls home each week.

It is amazing that these 13A students can juggle MIT, family, and their military obligations so successfully.

Julie Higgins, a Harvard graduate from Naples, Maine, was promoted to Lieutenant Senior Grade (LT) this past June. **Michael Roach**, a Colorado School of Mines graduate from Denver also received this promotion. Both of these students served on surface ships before becoming 13A students. Both based in San Diego, Julie was stationed on the USS HIGGINS, a Guided Missile Destroyer, California, and Mike was

on an aircraft carrier. Julie hopes her next stop after MIT is attending Navy Dive School and she hopes to do her qualification tour at Bath Iron Works. Mike, working towards two Masters Degrees, 13A and 1C, is hoping for orders to the Puget Sound Naval Shipyard.

Eight other students were selected to receive LCDR promotions: **Stu Blair, Andy Gish, Andy Johnson, Eric Oller, Steve Ramsey, Jon Rucker, Beth Silsdorf, and Ere Withee**. Congratulations to all!

Young Alum in the Navy, LT Andrew "Drew" Mutch III

Having grown up sailing in Annapolis, Maryland, the Ocean Engineering Department was a clear choice for Drew Mutch. At MIT, Drew was a member of Beta Theta Pi fraternity and like many other ocean engineers spent most of his free time on the Charles sailing for the MIT Varsity team. In addition, Drew was part of the NROTC program and upon graduating with his BS in Course 13 in 1998, he was commissioned as an Ensign and has been serving in the Navy ever since. He met his wife, Beth, who is currently a Lieutenant in the Navy, when the two served together aboard the USS Thorn. The two are proud parents of Andrew, born in June 2002. Congratulations Drew and Beth!

Describe your current position and role in the Navy.
Engineering Duty Officer/Project manager for ship repair.

What was the most valuable lesson you learned at MIT? In the OE department?

How to prioritize tasks, accomplish the important things, and defer the trivial. OE dept: How to view a system as a whole and work together as a team to bring a concept to reality.

What is your fondest memory of the time you spent at the Institute?

The hours spent with the sailing team around New England and on our home waters, the Charles River.

Do you have any advice for current OE students ?

Make the effort to take the EIT exam senior year. It isn't much fun, but it will be much easier with the material fresh in your mind. I didn't hear about Professional Engineering licensure at MIT, but it is a worthwhile credential to earn.



Deepwater ...The Future of the Coast Guard

For several years, there has been an all-important buzzword on the mind of every member of the United States Coast Guard. A word that is both an initiative and a complete change as to how the Coast Guard will operate. That one word is Deepwater.

On October 10, 2002 at the Coast Guard Academy's Officer Club in New London, CT, CDR Douglas Henke, Assistant Program Manager for the Surface Design Team in the Deepwater Program, spoke about this Initiative as part of the October New England SNAME Meeting. The "Deepwater" program began in the early 1990's when the Commandant of the Coast Guard formally acknowledged that there was a looming problem for the deepwater assets (Vessels larger than 100ft that patrol off the coast). More than two-thirds of the existing deepwater assets were expected to reach the end of their planned service life over the next 15 years, becoming the third oldest of the world's 39 similar naval fleets. However, rather than focus on a simple one for one exchange of vessels, the Commandant wanted a total integrated system that could meet the current missions of the Coast Guard, and provide flexibility for any future missions. The program would be developed as a system that integrated surface, air and sensor components. Over the next several years, competing industry teams were able to design the whole package of deepwater assets - cutters, aircraft, sensors, communications, and logistics, - and not just individual components. Industry was given great latitude in developing the best equipment needed for the deepwater mission. Instead of replacing assets

individually, the replacement program became system-wide.

On June 25, 2002, U.S. Deputy Secretary of Transportation Michael Jackson, joined by U.S. Coast Guard Commandant Thomas H. Collins, announced the award of the largest acquisition in the history of the Coast Guard. The Integrated Deepwater System contract was awarded to Integrated Coast Guard Systems, a joint venture established by Lockheed Martin and Northrop Grumman. The Deepwater contract has the potential to extend up to 30 years, with an approximate value of \$17 billion.

Along with the new surface assets, a new fixed-wing manned aircraft fleet, a combination of new and upgraded helicopters, and both cutter-based and land-based unmanned air vehicles (UAVs) are going to be added to the Coast Guard's arsenal. All of these highly capable assets are linked with Command, Control, Communications and Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) systems, and are supported by an integrated logistics regime. This new system will help enable the United States Coast Guard to achieve its missions and protect the interests of the American people for decades to come.

Sources: Deepwater, Coast Guard Magazine, August 2002
www.uscg.mil/deepwater/



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Looking Ahead...

Date	Time	Place	What's goin' on
12/5	7pm		IEEE/OES New England Meeting
12/6	12-1	5-314	13SEAs Seminar: The 13.018 Swath Boat MTS Meeting
12/10		TBA	OE Department Holiday Party
12/11			Last Day of Classes
12/16-20			Finals Week
12/21-1/5			Winter Break
IAP	TBA	Essex, MA	13SEAs Field Trip: Guided tour of the H.A. Burnham Shipyard.
1/30	5:30-9:30	Faculty Club	SNAME Paper Night
2/3	12-1:30	3-310	OE Women's Lunch
2/12			Lunchard: Glenn Ashe, American Bureau of Shipping
3/3	7:00-9:00 PM	5-314	SBNMS Scuba Diving Fish Id Class

