Graduate student Jarvis Caffrey worked as an on-board radiation safety officer while testing seawater for concentrations of Cesium off the coast of Japan. Three hundred kilometers off the coast of Japan, OSU graduate student Jarvis Caffrey rides the waves in a tiny, windowless laboratory deep inside the research vessel Kaimikai-o-Kanaloa. Caffrey is using a purpose-built device to collect seawater and feed it through a digital radiation detector that measures concentrations of Cesium. The device was constructed by OSU scientific instrument technician Steve Smith, using a state-of-the-art detection system supplied by Avicenna instruments, an OSU spin-off company. Cesium is a radioactive isotope produced by fission and one of the contaminants released by the Fukushima nuclear plant disaster in March.

Joining an international team of environmental scientists and oceanographers, Caffrey sailed out of Yokohama in June for a 15-day voyage coordinated by scientist Ken Buessler of the Woods Hole Oceanographic Institute (WHOI). The expedition was the only multidisciplinary study organized in time to measure the presence of radioactive materials before they became further diluted and washed out to sea.

Buessler is well known in the radiochemistry community for his ‘Cafe Thorium’, an on-board espresso machine that cranks out coffee 24/7. “We were definitely fueled by caffeine,” says Caffrey. “Ken was often seen with his tiny cappuccino cup and some printout of data as he made his rounds to keep the science running smoothly. He was a very impressive scientist to say the least... he made a lot happen in a short time with very few hangups.”

Most of the team’s day-to-day mission was to collect samples of water, plankton, krill, and fish to be taken back to laboratories for analysis later. Caffrey, a doctoral
Alum Spearheads Program Accreditation

Thanks to the combined efforts of department staff, faculty and a recent alumna, the department’s new Medical Physics program is now accredited by the Commission on Accreditation of Medical Physics Educational Programs (CAMPEP).

The final report submitted to CAMPEP was assembled by Krysie Tack who received her M.S. in Radiation Health Physics from OSU in 2006 and a Ph.D. in Medical Physics from University of Texas in 2010. Last summer, while considering her post-bac options, she worked for NERHP compiling the extensive information needed to apply for accreditation. Her technical expertise and familiarity with NERHP made her the perfect person for the challenging job. “Since I was a consultant who graduated from a CAMPEP accredited program in medical physics, but also got an M.S. from OSU, it was a bit easier for me to know who to ask for information,” says Tack. “The challenging part was conveying every detail so that the report did not show OSU as deficient when they had truly met every requirement for accreditation.”

Soon after completing the NERHP project, Tack was hired as the Director of Medical Physics at the Chicago Prostate Cancer Center. “My job is to safely deliver large amounts of radiation to a focus of disease while sparing the surrounding normal tissues, protecting the employees from radiation, and ensuring that all of our machine calibrations, patient plans, delivery methods are accurate, effective, and safe,” says Tack.

A native of Sweet Home, Oregon, Tack enjoyed spending the summer back at OSU. “The further I’ve traveled and the more I see of academia, research, and industry, I realize how special NERHP really is,” she says. “It’s such a collegial, forward-thinking group of nuclear scientists.”

Russians Visit Radiation Center

On a trip to Chicago this past summer, Head Advisor Joan Stueve took time out to visit the human resource departments at Argonne National Laboratory and the Nuclear Regulatory Commission. Her mission was to gather information that will help NERHP students gain summer internships at both organizations. “I was looking for some tips in getting our students’ resumes into the right hands for internships,” says Stueve.

The number of internships vary with changing budgets so Stueve wants to maximize opportunities for OSU students. “I found out that it is very important for students to familiarize themselves with the organization’s website and learn about current research projects,” says Stueve. “When they submit a resume, the students should describe why they are interested in a particular field and relate it to current projects.”

At the NRC, Stueve took a tour with current NERHP intern, Sean Belding. She found it very helpful to visit the different departments and observe the work going on. “Now I can speak more to the types of work they will do as interns,” she says.

Back in Corvallis, Stueve is busy organizing a process for informing students about internship opportunities. That process will include sharing the information she learned this summer. “I plan to send emails to all the undergraduates in January telling them about internship application strategies and reminding them about deadlines.”

Fukushima Study

Steve Smith, an OSU scientific instrument technician, builds a flow-through monitor for graduate student Jarvis Caffrey to use on a research expedition off the coast of Japan. The monitor contains a digital radiation detector designed by NERHP professor Abi Farsoni.

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Student in the Department of Nuclear Engineering and Radiation Health Physics (NERHP), was the only nuclear scientist on board and served as the radiation safety officer for the group. He also helped pull nets and lug cubitainers of water. “We split into two, 12-hour shifts,” says Caffrey. “We all had to know each other’s jobs so we could fill in. When someone had to go pull samples or went off shift, we had to keep their experiment running.”

Early results from Caffrey’s experiment found very low radiation dose rates in the air and water, even when the ship sailed close to the thirty kilometer exclusion zone. “We could see the plant from the ship and every once in a while we’d get a wind drift and I’d see the dose rate rise but it was still negligible,” he says. His readings for Cesium in the water were also low. “It was all definitely within safe levels,” he says. “We were just watching how the currents were flowing, they can take it pretty far out.” In fact, one of the primary objectives of the team was to quantify how the Kuroshio current moved radioactive materials through the ocean.

Back on dry land, the team’s collaboration will continue. Participants will share their final results with each other and NERHP department head Kathryn Higley plans to help WHOI scientists run complicated testing for alpha radiation in their sealife samples.

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Brigadier General OSU Alum

In June, OSU alumna Julie Bentz stepped over the gender barrier and became the first female general in the United States National Guard.

Brigadier General Bentz graduated from OSU with an undergraduate degree in Radiological Health -- what is now the Radiation Health Physics program. With a Ph.D. in Nuclear Engineering from University of Missouri-Columbia, she began her military career as a nuclear medical science officer.

Colonel Bentz has more than 24 years of service and has held multiple roles from field work to White House advisor. Throughout her career she earned more than 15 awards, medals and citations.

"We couldn’t be more proud of her or her accomplishments," said Maj. Gen. Raymond F. Rees, Oregon Adjutant General. "Bentz’s selection to Brigadier General highlights the significance of Oregon’s education and leadership programs. We are proud to have been a part of her already amazing career."

Following her promotion, Bentz will serve in the White House on the staff to the National Security Council and the Homeland Security Council.