

NOAA-Navy Team Recovers *Monitor's* Revolving Turret

—By Dane Konop

On Aug. 5, a joint NOAA-U.S. Navy team recovered the revolutionary revolving gun turret of the Civil War battleship *Monitor*, including the skeletal remains of two of the 16 sailors who drowned when the ship sank under tow 16 miles off Cape Hatteras, N.C., on New Year's Eve 1862.

The recovery of the turret, human remains and other artifacts caps a ten-year effort to recover significant portions of the *Monitor* wreck before they deteriorated under the constant assault of sand and currents in the treacherous coastal waters known as the Graveyard of the Atlantic.

USS Monitor is considered the first modern warship, with innovations that included its iron hull construction, "cheesebox on a raft" design and the revolving turret, which allowed the ship to fire its guns in any direction without repositioning the ship. Its battle to a draw with the Confederate ironclad ship *Virginia* (previously the Union frigate *Merrimack*) at the Battle of Hampton Roads on March 9, 1862, ended the era of wooden warships.

A total of over one hundred Navy salvage divers dove round the clock in two shifts during the 41-day expedition to free the 150-ton turret from the *Monitor* wreck. They then attached the turret to a
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Monitor Turret Recovery Caps 10-year Effort to Salvage the Wreck



Michelle Fox/NOAA

NOAA marine archaeologist Jeff Johnston poses in front of the 150-ton, revolving gun turret of the sunken Civil War battleship *Monitor* after the turret's recovery off the coast of North Carolina Aug. 5.

It's All About the Science

Remembering the Late Tim Crawford

—By Jana Goldman

Tim Crawford died doing what he loved the best—flying his airplane while conducting scientific research.

The 53-year-old director of the Field Research Division of NOAA's Air Resources Laboratory in Idaho Falls, Idaho, suffered a stroke Aug. 3 while piloting his LongEZ light aircraft on a research mission. The plane fell into the Atlantic Ocean four miles off the coast of Martha's Vineyard.

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NOAA Mourns the Loss of Wage Mariner Eric Koss

—By Jeanne Kouhestani

In a tragedy Aug. 13 that spotlighted the dangers NOAA employees can face while working in a sometimes unforgiving environment, NOAA wage mariner Eric Koss lost his life while conducting hydrographic surveys in Alaska's Prince William Sound.

Koss, 30, from Woodinville, Wash., was an able-bodied seaman who drove a 29-foot survey launch for the NOAA ship *Rainier*, which surveys waterways to produce
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Crawford

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Many of his colleagues were in Massachusetts with Crawford for a research experiment which began Aug. 2. Instead of gathering data, they spent a week collecting the remains of the plane, waiting for the results of formal investigations and mourning the loss of their colleague.

NOAA research meteorologist Jerry Crescenti said Crawford was “my boss, my mentor and my friend.”



Jerry Crescenti/NOAA

Tim Crawford applies a NOAA decal to the tail of his LongEZ research aircraft.

Edward Dumas, Jr., a computer programmer and research pilot at the Air Resources Laboratory's Oak Ridge, Tenn., facility, said Crawford had an immediate and profound effect on him when they met in 1993.

“Within five minutes of talking to him, I knew this was the guy I needed to work for and this was where I needed to be,” Dumas said.

Both men were introduced to the LongEZ at the same time. In 1981, Dick Rutan, brother of airplane designer Burt Rutan, first

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Koss

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nautical charts.

Koss and shipmates David Fischman, a survey technician, and NOAA Ensign Jennifer Johnson were aboard the boat surveying waters in the vicinity of Elrington Island. The seas were not excessive and data acquisition was proceeding normally when the boat was suddenly struck by a succession of three high waves which rolled it over.

All three managed to get clear of the capsized survey launch. Fischman and Johnson, thinking Koss was right behind them, were able to get to the rocky shore through the pounding surf zone, but Koss never made it.

A Coast Guard helicopter airlifted Fischman and Johnson from shore about 20 minutes after the accident, but the high waves of the surf prevented a Coast Guard swimmer from recovering Koss's body. *Rainier* crew members recovered his body several hours later.

Rainier commanding officer Capt. James Gardner said, “Eric

was one to set aside his own interests and help others. He always had a smile on his face no matter how miserable and dirty the working conditions.”

Seaman surveyor Mark O'Connor was a good friend of Koss. “He was a quiet and very personal kind of man,” O'Connor said. “But I have no doubt that when this happened, his first thoughts were for his crewmates. I guess if you want to sum up my thoughts on Eric, they are these: I was proud to call him my friend. Or more appropriately, I was proud he called me his friend.”

Koss gave his best to NOAA, and it seems that NOAA gave something important back to him.

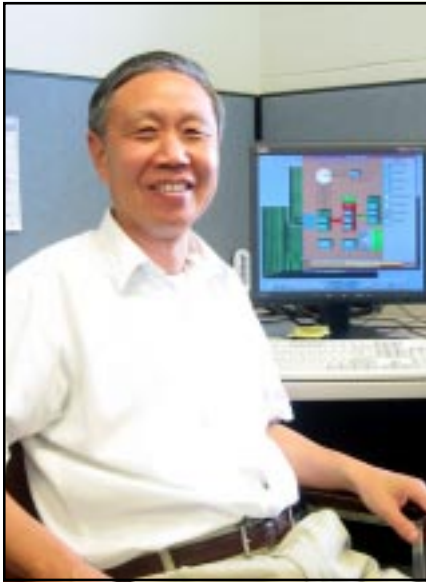
At Koss's funeral, his brother told Gardner's wife that Koss had been drifting before joining NOAA. He had a football scholarship from the University of Idaho, but dropped out. He tended to be a loner. But when he started working on *Rainier* about two years ago, all that changed. He loved the job and talked about it all the time. The work gave him a focus, he said.

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Ens. Michael S. Snow/NOAA

Eric Koss mans the helm of the NOAA Ship Rainier while Lt. j.g. Jennifer Dowling looks on.



Michael Jain/NOAA

Zhongqi Jing.

Zhongqi Jing Is the Team Member of the Month

—By Keli Tarp

Zhongqi Jing, research scientist with the NOAA Cooperative Institute for Mesoscale Meteorological Studies in Norman, Okla., is the September Team Member of the Month.

Described as a “critical member” of his team, Jing has worked with NOAA’s National Severe Storms Laboratory since 1995 contributing to an upgrade of the NEXRAD weather radars recently deployed by NOAA’s Radar Operations Center and the National Weather Service.

“Jing’s scientific and engineering innovation, technical leadership and mentoring contributed significantly to this highly successful and beneficial project,” said Michael Jain, a radar software development team leader with the National Severe Storms Laboratory. “Dr. Jing’s research and work have proven to be a crucial contribution to the enormously successful Open Radar Product Generator Project. His expertise in improving the

system’s capabilities not only supports the goals of the NEXRAD program, but also supports other research and development goals.”

Jing’s team, which included staff from the laboratory, joint institute and NOAA’s Radar Operations Center, was responsible for establishing the software architecture and design of the radar operations product generator to replace a component of the WSR-88D weather radar system designed in the mid-1980s. The radar product generator is the part of the radar that processes the raw data gathered by the NEXRAD system, performs data quality checks, creates radar images and products for display and sends those products to various display systems and end users such as the Advanced Weather Interactive Processing System used by the National Weather Service. The benefits extend beyond NOAA agencies, with open radar products being generated and distributed to the Federal Aviation Administration and U.S. Air Force, as well as to the private sector, where the images can be viewed on the World Wide Web and daily television broadcasts.

The Severe Storms Lab and the joint institute, recognized for their expertise in research-oriented meteorological radar science and engineering, were asked by the National Weather Service’s NEXRAD product improvement program to contribute innovative software engineering expertise to aid in establishing the new system, Jain said. Deployment of the new system was completed in August, and the product is being lauded as one of the best systems ever fielded by the Weather Service.

“This is probably the best and most effective software and installation that we have had in many, many years,” said Lans Rothfus, meteorologist-in-charge of the
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Reginald Lawrence/NOAA

Donna McNamara

Donna McNamara Is Sept. Employee of the Month

—By Patricia Viets

Donna McNamara, a physical scientist with NOAA’s National Environmental Satellite, Data and Information Service, has been named Employee of the Month for September.

McNamara, who works in the Interactive Processing Branch of the Satellite Services Division in Camp Springs, Md., spends much of her time working on NOAA’s fire products. These products, derived from satellite data, provide real-time information about fires and smoke throughout the contiguous United States and Alaska.

McNamara attributes much of her success to a team of people, both government employees and contractors, who devote much of their time to fire products.

McNamara came to NOAA in January 2001 as the environmental applications team leader.

“That position was vacant for over a year, and some of the duties had been absorbed by other
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Focus On...

NOAA Fisheries Hosts Rockfish Book Signing

—By Lisa Wooninck

On Aug. 16, Mary Yoklavich, a research biologist from NOAA's Southwest Fisheries Science Center, joined co-authors Milton Love, a University of California Santa Barbara researcher, and U.S. Geological Survey scientist Lyman Thorsteinson to unveil their new book entitled *The Rockfishes of the Northeast Pacific* at NOAA Fisheries Laboratory in Santa Cruz, Calif.

The authors were joined by other fishery biologists, fishermen and fisheries decision makers to unveil and welcome the long awaited and much needed book.

Held in the foyer and courtyard of the Santa Cruz laboratory, the event had a celebratory atmosphere, complete with the Younger Lagoon String Band, an amazingly crafted rockfish habitat cake, children and at least 150 fish aficionados.

A long line of admirers waited at the book-signing table for coveted signatures of the three authors and the book's cover artist, Ray Trol

The book comes at a critical time when the historically abundant rockfish populations have dwindled to alarmingly low levels, causing managers to implement drastic protective measures that are affecting the entire West Coast fisheries.

The book fills a need for a deep understanding and appreciation of the unique biology, ecology and management of West Coast rockfish populations.

The authors said the book is designed to be accessible and useful to educators, resource managers, conservationists, marine biologists
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Thomas Laidig/NOAA

Cover artist Ray Troll (left) and authors (left to right) Lyman Thorsteinson, Mary Yoklavich and Milton Love unveil their new book, *The Rockfishes of the Northeast Pacific*.



Thomas Laidig/NOAA

The lobby of the NOAA Fisheries Santa Cruz, Calif., Laboratory is crowded with West Coast scientists, fishermen and friends seeking autographs for their copies of the book.



Thomas Laidig/NOAA
 Authors Mary Yoklavich and Milton Love autograph stacks of books.

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 and the general public—anyone who is interested in marine fishes. The book offers clear accounts and summaries of the life history of rockfishes, but also is sprinkled with anecdotal and often entertaining information and top-notch photos.

Oregon State University professor William Percy said, “I have seldom read anything written with such exuberance and fun.”

Many of the photos were made possible through funds from the West Coast and Polar Regions



Thomas Laidig/NOAA
 NOAA author Mary Yoklavich is congratulated by Greg Cailliet, professor of ichthyology at Moss Landing Marine Laboratories.

Undersea Research Center of NOAA’s National Undersea Research Program, NOAA’s Office of Marine and Aviation Operations and NOAA’s Office of Ocean Exploration.

“It is only in the last ten years that many of the stunning images

of these fishes in their natural habitats have become available for such a book,” Yoklavich said.

Almost every biologist that works on rockfishes on the West Coast contributed to the book in one way or another with photographs, artwork, reviews and both unpublished and published information, including many NOAA Fisheries scientists.

To keep the book at a price even students could afford, the authors said several federal agencies and private companies helped underwrite its cost, including NOAA, the Nuevo Energy Company, Veneco, Inc., the U.S. Geological Survey and the U.S. Minerals Management Service.

“It is really a testimony to all of these groups’ sincere interest in assisting us in informing the public as well as colleagues about this special group of fishes. Because of their help the book can be found for \$25 or less depending on the source,” Yoklavich said. ☺



Thomas Laidig/NOAA
 For the book signing, NOAA Fisheries Santa Cruz Lab staff member Cheryl Kaine made a chocolate and cherry cake to resemble rockfish habitat, complete with soft and hard corals and lifelike replicas of rockfish species made from hard candy and chocolate.

Crawford

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flew the prototype LongEZ from California to a convention in Tennessee.

"Tim saw it and decided that this was the plane he wanted to build and fly," Dumas said.

Crescenti said that Crawford, who built five light aircraft, built his first airplane before he learned how to fly. At the time of his death, Crawford was a Federal Aviation Administration-certified commercial pilot with an instrument rating. He had clocked more than 3,100 hours in a LongEZ.

Dumas said that Crawford's planes were "built straighter, lighter and stronger" than anyone else's.

"The very first time I rode in the plane with Tim he said, 'Be careful, this will change your life.' And he was right," Dumas recalled. "This was in June and by October I was building my own plane."

"Tim found scientific applications for these aircraft," Crescenti said. "I think he was a true Renaissance man because he brought the science and the technology all together. He really loved doing this. He often said, 'It's not about flying, it's about the science.'"

Crescenti said the work the team was doing was special.

"There are a few small groups throughout the world using light aircraft for science, but not very many," Crescenti said. "But no one duplicated what Tim was doing with the LongEZ. We were doing some really cool stuff."

Crawford was always looking to invent or refine equipment so it would fit on the LongEZ. One example is the small, lightweight probe which has been tested this season on NOAA's P-3 research aircraft and will be used to measure wind speed and turbulence of hurricanes at speeds as weak as a

Koss

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According to his mother, Linda Koss, once Koss began working on *Rainier*, he found something he loved as much as football.

Chief survey technician Sean Rooney said that Koss was very intelligent and "always asking questions to better understand the systems he was working and how he could collect better data. He was always striving to do his best."

Eric had a fun loving side as well, Rooney said. "He once volunteered himself to be given a haircut of any style as a fund raiser for the ship's store. He ended up with the worst hair cut, but had the last laugh, as there was good beer at the next beach party," Rooney said. "He was large in stature and had a heart to match."

Lt. j.g. Richard Hester, Jr., *Rainier's* navigation officer, said

person's breath.

"It looks like a bat and so we used it as the acronym—best aircraft turbulence," Crescenti said.

Crescenti and other members of Crawford's group who were in Cape Cod for the experiment helped recover the remains of the plane as well as any data collected by the onboard equipment. They helped Crawford's wife Sharon, and two daughters, Ann and Tiffany, deal with arrangements.

"We just did it," Crescenti said. "It's all a blur. We received a lot of help from the folks at the Woods Hole Oceanographic Institution."

Then they sat down and compiled two pages of Crawford's scientific and personal achievements, including their thoughts of him as a supervisor and a person: "Lead by example," "highest level of integrity" and "believed in doing what was right" are some of the attributes.

Koss had finalized plans to finish college so he could get his degree in oceanography and then apply to the NOAA Corps. Even on a bad day Koss never wavered in his desire to pursue a career with the Corps, Hester said. "That was the day I realized he didn't just like reading Viking stories; he was a Viking. He had a Viking spirit," he said.

Hester said he felt a special connection with Koss.

"I felt lucky on the days I was assigned to work with him; I knew I would enjoy the day," he said. "I think a lot of us on *Rainier* felt the same way. I think his family and many of us take comfort in knowing that he had found his calling on this ship.

"He is missed. Now we are back in the same area of southwest Prince William Sound, and with heavy hearts, we return to the work that Eric loved." ☺

"He was open to new ideas and honestly wanted to know what he could do to improve as a boss," Crescenti said. "This was a great guy who went to the mat for us. It was neat having a boss who fought for you."

Dumas agreed, adding, "He was the best boss I ever had. He could motivate people and had the ability to take the most mundane thing you were doing and make it special. He was one of the really good guys."

The Crawford family has requested that memorial contributions be made to the Tim Crawford Scholarship through the Experimental Aircraft Association Aviation Foundation, P.O. Box 3065, Oshkosh, WI54903, Attn: Bonnie Lueck, Director of Development. Checks may be made payable to EAA Scholarship Fund, with the notation: Timothy L. Crawford Scholarship. ☺

Monitor

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special lifting frame called the “spider” so that it could be hauled to the surface using a barge-mounted crane.

Divers also found the ship’s two 11-inch, 16,000-pound cannons that fired from the turret. Other smaller artifacts, including a hydrometer used to measure salinity inside the ship’s boilers, working thermometers and an intact lantern chimney, were found near the turret.

The turret and other artifacts were transported to the Mariners’ Museum in Newport News, Va., for further examination, preservation and display. The museum is also conserving *Monitor* artifacts recovered in earlier expeditions, including the ship’s anchor, screw and steam engine, which was recovered last July 16.

Although the operation went as planned, there were unexpected difficulties.

“It certainly was as arduous as the engine recover,” said marine archaeologist John Broadwater, the expedition chief scientist and manager of NOAA’s *Monitor* National Marine Sanctuary.

As is often the case in the waters off Cape Hatteras, weather was a factor, particularly on the day of the turret recovery.

“It was a pretty intense day. It

wasn’t an ideal day,” Broadwater said. “We were running out of time and we were watching the weather. The weather was not perfect, but was close to the conditions we were looking for. The prediction was we were going to have a very small window of opportunity and then things were going to close in and we were going to have a long



Michelle Fox/NOAA

The expedition to raise the gun turret of the sunken Civil War battleship Monitor was a joint effort by NOAA, the U.S. Navy’s Mobile Diving and Salvage Unit Two and Naval Sea System Command and the Mariners’ Museum.

stretch of bad weather. There were a couple of fronts sort of battling each other.”

Although the weather did not affect dive conditions on the sea floor at the site of the wreck, 240 feet below the surface, it did affect the derrick barge *Wotan*, moored above the wreck.

“We were concerned about the sea surface because we don’t mind choppy seas. But it’s the swells that get us. Makes the barge roll,” Broadwater said.

Much of the concern focused on rigging the turret to the 25-ton steel spider that cradled the turret on a platform for the crane lift to

the surface.

“It took a lot of preparation just rigging equipment,” Broadwater said. “We had huge wire rope cable. We had synthetic cable. We had spreader bar assemblies [to distribute the lines]. All of that had to be rigged and checked and double-checked.”

The lift took several hours, with simultaneous operations on the barge and sea floor.

The turret, partly filled with silt and debris, was lifted from the wreck by the spider, which was then positioned on a lifting platform and attached by cables to a crane on the barge.

Once the turret was secured to the spider and lifting platform, Broadwater gave a thumbs up to begin the lift.

“When we knew [the turret] was going to break the surface, we were all standing right on the edge of the barge, right where it was going to come up,” Broadwater said. “We got a chance to watch it break the surface, right there close up.”

Broadwater said he felt a mixture of emotions.

“It was the end of a long process. This is something we’ve been planning for since the early 90’s,” he said. “To actually see it happen, to know we recovered the turret, the guns and the equipment inside, [to know] we’ve done it and we’ve done it right was a great feeling and also a real relief.” ☺

McNamara

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people,” McNamara said.

When the fire program received funding, NOAA needed to move fast. McNamara, who had just been hired by the government and had been working for NOAA as a contractor, was in a position to lead the effort.

“Donna has led in the development and acquisition of methods to use NOAA and NASA satellite imagery and other technologies to identify wildfires and smoke plumes in near real time,” said Gregory W. Withee, NOAA assistant administrator for satellite and information services. “Her efforts have helped to mitigate the effects of tragic wildfires that swept through the western United States earlier this year.”

McNamara spearheaded a multi-agency working group to hasten the development of a system that enables analysts to use automated detection systems, advanced geolocation software and other resources to produce an analysis of fires and smoke while minimizing false detects.

The hazard mapping system produces maps based on a geographic information system showing fires down to the county level. The hazard mapping system integrates data from the Geostationary Operational Environmental Satellites and the Polar-orbiting Operational Environmental Satellites. Data from NASA instruments are also included. This enables emergency response personnel to better pinpoint the location of the fire.

The wonderful thing about working at NOAA is supporting operations,” McNamara said. “You can see that your work helps people every day.”

Before coming to NOAA, McNamara worked as a contractor

for NASA.

McNamara, who has a bachelor’s degree in environmental sciences from the University of Virginia and a master’s degree in meteorology from the University of Maryland, also served as a weather officer in the U.S. Air Force from 1981 until 1991.

McNamara’s enthusiasm for her work and her love of family and community shine through. She and her husband Brien have three children: Kevin, 8, Jennifer, 13, and Katie, 16.

When she is not at work on fire detection, McNamara spends her spare time doing volunteer work at Trinity Episcopal Church in Upper Marlboro, Md. She produces their Web page, sings in the choir and works with the youth group. “I guess I try to jump in when I see something needs to be done,” she said. “I’m very honored to be selected employee of the month.” ☺

Jing

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Weather Service’s Atlanta, Ga., forecast office following a beta test. “So from the field vantage point, you could not do any better. My compliments to the ROC, NSSL and anybody else involved with the development of this software and the implementation,” he said.

“[Working on radar systems] is an opportunity for us to contribute to the real work,” said Jing, who is a native of China and a naturalized U.S. citizen. “The radar system is a major part of the National Weather Service system and it’s a privilege to bring the system to the cutting edge of technology. It’s what an engineer likes to do.”

Jing’s doctorate in electrical engineering from the State University of New York at Buffalo and his previous experience in meteorological radar and software engineering at the National Center for Atmo-

spheric Research in Boulder, Colo., made him uniquely qualified for the Open Radar Product Generator Project.

His engineering research and pathfinding activities in meteorological radar systems resulted in an innovative software architecture that is extremely robust and flexible, Jain said. It provides a highly reliable system that is easily expandable to meet the ever growing demands of all users of the WSR-88D.

“Jing’s contribution enables other researchers and implementors to develop new scientific algorithms and products on inexpensive computing platforms and streamline the integration of these new algorithms into the WSR-88D, speeding technology transfer from an 18- to 24-month release cycle down to a six-month release cycle by the Radar Operations Center,” Jain said.

Jing’s contribution continues to benefit future growth and capabilities for the system.

“Jing’s research and insight involving meteorological radar systems have contributed to effective software engineering concepts that are currently benefiting the nation and future meteorological and engineering research,” Jain said. ☺

The NOAA Report is a monthly publication for NOAA employees from the Office of Public and Constituent Affairs, Washington, D.C.

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