CONTENTs

DEPARTMENTS

1 4 LETTER FROM THE DIRECTOR OF THE BRC
6 6 NEWS AND EVENTS
8 8 BRC SUMMER RESEARCH

FIELD REPORT

12 12 THE ANCIENT SHIPWRECK EXCAVATION AT GODAVAYA, SRI LANKA
Finds from the oldest shipwreck in the Indian Ocean
BY DEBORAH CARLSON, ORKAN KÖYAĞASIOSO, AND STACI WILLIS

ARTICLES

10 10 NITROX IN UNDERWATER ARCHAEOLOGY
Learn how Nitrox can be used to safely prolong deepwater dives
BY LAURA WHITE

20 20 BUILDING VIRAZONE II
Construction of INA’s new research vessel gets underway
BY JOHN DE LAPA


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Greetings from Turkey!

It has been an eventful year for the Bodrum Research Center (BRC), starting with the INA Annual Board Meeting held in Turkey last October (see INAQ 41.3). It was wonderful to host the Directors and their families and we hope that everyone enjoyed their time in our beautiful Mediterranean home! As soon as the winter rains abated, we initiated replacement of the roof covering the main INA offices in Bodrum. Despite a few days of unexpected rain, the roof was finished in time for the arrival of our summer researchers.

In early summer, the Bodrum Museum of Underwater Archaeology received a new Internim Director, Tayfun Selçuk. Tayfun Bey is an archaeologist and university classmate of mine, and we look forward to working with him to showcase the work of INA and the Bodrum Museum.

In June, INA President Debbie Carlson, INA archaeologist Orkan Köyüşoğlu, and I traveled to Istanbul to meet with naval architects at Navtek who designed and will build INA’s newest research vessel, Vinzenz II. While there, Debbie and Orkan oversaw the cutting of the first steel plates for our new ship, and you can read more about Vinzenz II in this issue.

Shortly thereafter, I defended my thesis and received an M.A. degree in Archaeology from Muğla Sıtkı Koçman University. One of my fellow graduates is Süzen Kırkoğlu, a member of INA’s conservation staff. In addition, Etra Afınanlı Bıçer, who heads the BRC laboratory, obtained her M.A. degree in the Conservation and Restoration of Movable Cultural Assets from Istanbul University. I applaud our collective commitment to furthering our education in archaeology and conservation.

An archaeologist’s job doesn’t finish after the artifacts have been excavated and brought to the surface. Photography, drawing, conservation, and archival research are just a few of the tasks that continue year-round after an excavation comes to an end. For example, we stay hard at work on multiple shipwrecks, including those from Uluburun, Kizilburun, Yassıada, Cape Gelidonya, Pabuç Burnu, and Tektaj Burnu. Students from Texas A&M University, Trinity University, Stanford University, Brock University, and the Universität Lumière Lyon 2, alongside research directors Debbie Carlson, Elizabeth Greener, Nicole Hirschfeld, Justin Leidwanger, Cemal Pulak, Kristine Tegro and Fred van Doorninck, return each summer to advance research and publication of these iconic INA shipwrecks. Read more about the status of those projects in this issue.

We look forward to the winter rainy season with new confidence in our renovated roof. With thanks, gül gile!

Tuba Ekmekçi
tubae@nauticalarch.org

JOIN US AND SUPPORT INA TODAY!

The Institute of Nautical Archaeology (INA) is a non-profit international research organization committed to locating, excavating, recording, preserving, and publishing shipwrecks and other archaeological sites of maritime significance. INA was founded over 40 years ago by Dr. George Bass, who in the 1960s pioneered the science of archaeological excavation underwater. Today there is greater need than ever before to support the work done by INA; dredging and commercial fishing have severely damaged or completely erased sites around the world. INA members are institutions, professionals, enthusiasts, and students united in their passion for discovering the untold stories that lie hidden beneath the sea.

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> Four print or digital issues of the INA Quarterly, now in its fifth decade
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> 20% discount on membership in the Nautical Archaeology Society (NAS) which includes two issues of the International Journal of Nautical Archaeology (IJNA)
> 10% discount on merchandise available through INA’s online store

Visit us at www.nauticalarch.org to become a member or call (979) 845-6694

The Institute of Nautical Archaeology is a non-profit organization whose mission is to advance the search for the history of civilization by fostering excellence in underwater archaeology.

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If you are interested in submitting an article for publication please contact the Editor at inaq@nauticalarch.org.
NEWS & EVENTS

INA ONLINE

Get your smartphone, tablet, or laptop and check out INA’s streamlined and redesigned website at www.nauticalarch.org. Learn more about INA researchers and some of the many projects taking place around the world. Our searchable online content features news about INA people and projects, blogs from the field, image galleries, INA Quarterly back issues, other scholarly resources, and INA merchandise. Join INA today and gain access to exclusive archival material through the members-only portal. Members also receive discounts on publications including nautical archaeology titles from Texas A&M University Press, as well as the monthly INA Insider e-newsletter with “fresh-from-the-field” updates about archaeological opportunities.

UPDATE FROM DUTHUIT GRANT RECIPIENT IN CROATIA

The 2015 Claude Duthuit Archaeology Grant was awarded to Dave Ruff, a Ph.D. student in the Nautical Archaeology Program (NAP) at Texas A&M University, to support the excavation of a Roman ship in the Bay of Kastela, Croatia. Dave co-directed the excavation with INA Affiliated Scholar Dr. Irena Radić-Rossi (University of Zadar) and assembled an international team including students from Texas A&M University, the University of Zadar, the University of Leicester, and Oxford University, who participated in the month-long excavation from April until May.

The ancient ship in the Bay of Kastela was filled with rocks and intentionally strengthened a sea wall of a Roman villa near the ancient city of Salona, the capital of the Roman province of Dalmatia. Discovered in 2006, the ship was partially excavated in 2012 by a team from the University of Zadar. Results of the 2015 excavation season will be presented at the International Symposium on Boat and Ship Archaeology in Gdansk, Poland in September and published in an upcoming issue of the INA Quarterly.

NEW ADDITIONS TO THE INA FAMILY

We are delighted to announce that Mrs. Judy Sturgis has joined INA’s Board of Directors as an Associate Director, though she and her family are no strangers to INA. Judy’s husband Bill was a Director of INA from 1984 until his death last year (INA Quarterly 41.2) and her son Jason, who has been an INA Director since 2007, also serves as Vice Chairman of the Board.

Dr. Warren Riess, a Research Associate Professor of maritime history and archaeology at the University of Maine, joins the ranks of INA Affiliated Scholars. Riess has been a long-time advocate of ethics in nautical archaeology and was responsible for the excavation and publication of the Ronson wreck, an 18th-century ship uncovered during construction in Lower Manhattan in the 1980s. Read a review by INA Vice President, Kevin Crisman, of The Ship That Held Up Wall Street in the last issue of the INA Quarterly.

FIRST CORHORT ENTERS NEW M.S. PROGRAM AT TAMU

Founded almost 40 years ago following the Institute of Nautical Archaeology’s affiliation with Texas A&M University (TAMU), the Nautical Archaeology Program (NAP) is a graduate program offering Master of Arts (M.A.) and doctoral (Ph.D.) degrees provided by a full-time faculty of seven dedicated archaeologists, conservators, and educators. Beginning Fall 2015, NAP will offer a Master of Science (M.S.) degree in Maritime Archaeology and Conservation. The new degree is designed to better prepare students for employment in maritime museums, cultural resource management firms, companies affiliated with the offshore oil industry, and federal and/or state government agencies. All graduate students in the Nautical Archaeology Program will continue to benefit from the research opportunities, internships, and funding from INA as well as TAMU’s Center for Maritime Archaeology and Conservation (CMAC).

The new curriculum is designed to allow students to complete the M.S. degree and write a thesis in a two-year time frame, with a thesis-based graduate degree being a prerequisite for inclusion on the Register of Professional Archaeologists (RPA).

NEW TITLES FROM TAMU PRESS

INA’s newest publication in the Ed Rachal Foundation Series, Maritime Studies in the Wake of the Byzantine Shipwreck at Yassıada, Turkey, has been a long-time advocate of ethics in nautical archaeology and was responsible for the excavation and publication of the Ronson wreck, an 18th-century ship uncovered during construction in Lower Manhattan in the 1980s. Read a review by INA Vice President, Kevin Crisman, of The Ship That Held Up Wall Street in the last issue of the INA Quarterly.

NEW TITLES FROM TAMU PRESS

INA’s newest publication in the Ed Rachal Foundation Nautical Archaeology Series, Maritime Studies in the Wake of the Byzantine Shipwreck at Yassıada, Turkey, is now available for purchase through Texas A&M University Press. With a foreword by INA Founder George Bass, the anthology includes seventeen papers from the 2007 Yassıada symposium that broadly illustrate varied topics, such as ships and seafaring life, maritime trade, naval tests, commercial cargoes, and recent developments in the analysis of the Yassıada ship itself.

Two additional titles from the Ed Rachal Foundation Series are available for purchase in 2015—East Dutch India Company Shipbuilding: the Archaeological Study of Batavia and Other Seventeenth-Century VOC Ships, by Wendy van Duivenvoorde, and The Origins of the Last Fleet of the Mongol Empire, by Randall Sasaki. INA members can purchase these books, and others, from TAMU Press at significant savings (30% discount) – contact us at info@nauticalarch.org for more information and keep an eye out for new titles set to be published by TAMU Press this fall!
Advancing the research and publication of numerous iconic INA-excavated shipwrecks

**CAPE GELIDONYA LATE BRONZE AGE SHIPWRECK**
INA Affiliate Scholar Nicolle Hirschfeld and a team of undergraduate students from Trinity University spent three weeks in Bodrum photographing and drawing artifacts from the Late Bronze Age Cape Gelidonya shipwreck. Additionally, she has begun the process of digitizing this artifact assemblage and making it available to the public via a dedicated website.

**KIZILBURUN LATE HELLENISTIC SHIPWRECK & TEKTAŞ BURNU CLASSICAL GREEK SHIPWRECK**
INA President Deborah Carlson and INA Affiliate Scholar Kristine Trego are studying the ballast stones and wood fragments from the Tektaş Burnu Classical Greek shipwreck and continuing analysis of the marble column drums from the Kızılburun Late Hellenistic shipwreck. Cécile Moulin, a Ph.D. candidate from the Université Lumière Lyon 2 in France, is conducting a study of the fine ware pottery from Kızılburun. Namık Aysal, a geologist from Istanbul University, is sampling stone objects from Kızılburun and Tektaş Burnu.

**BURGAZ HARBORS PROJECT**
Elizabeth S. Greene and Justin Leidwanger, both INA Affiliate Scholars, have returned to direct another season of fieldwork in conjunction with the Burgaz Harbors Research Project. Because the site is located on the neighboring Datça peninsula, Greene and Leidwanger use the Bodrum Research Center (BRC) to prepare their gear and assemble their team, including students from Brock and Stanford Universities. This ongoing project aims to contextualize the development of the town of Eski Knidos, its ports, and its integration within a broader maritime cultural and economic landscape.

**ULUBURUN LATE BRONZE AGE SHIPWRECK**
INA Vice President Cemal Pulak and a team of graduate students from the Nautical Archaeology Program (NAP) at Texas A&M University (TAMU) continue their volumetric and typological study of the Canaanite amphorae from the Uluburun shipwreck. A portion of the team continued preparation of the copper bun ingot catalog, while others cataloged the hundreds of lead fishnet weights.

**YASSIADA BYZANTINE SHIPWRECK**
INA researcher Fred van Doorninck and INA Affiliate Scholar Justin Leidwanger continue their restudy of the Yassıada amphorae, assessing the uniformity of production among the corpus. For more on this ongoing work, see van Doorninck’s chapter in Maritime Studies in the Wake of the Byzantine Shipwreck at Yassıada, Turkey (2015).

**YENİKAPI HARBOR SHIPWRECKS**
INA Research Associate Michael Jones advances his examination of the hull remains from the Theodosian Harbor at Yenikapi which yielded evidence for several different merchant vessel types among 37 Byzantine shipwrecks.

FOLLOW INA ONLINE:
Want to learn more about the Bodrum Research Center? Go to www.nauticalarch.org/ina-turkey for the history of INA in Turkey!

This page, from left: Deborah Carlson, Nicolle Hirschfeld, visiting scholar Nicholas Blackwell, and Trinity University undergraduates; Graduate students Rachel Matheny (TAMU) and Anja Krieger (Stanford) record markings on a Canaanite jar from the Uluburun shipwreck.
NITROX IN UNDERWATER ARCHAEOLOGY

How oxygen-enriched air was used to improve diver safety on the ancient shipwreck excavation at Godavaya, Sri Lanka

BY LAURA WHITE

One of the greatest challenges of underwater archaeology is the limited time on site. This limitation exists for two reasons: first, there is a finite amount of air in a scuba tank. Second, breathing compressed air at depth causes a build-up of nitrogen in the bloodstream; staying compressed air at depth causes a buildup of gas in a scuba tank. Second, breathing air for too long or ascending too quickly can introduce nitrogen bubbles in body tissues, resulting in a dangerous condition called Decompression Sickness (DCS) or "the bends." To prevent DCS on long, deep dives, divers are required to make decompression stops, waiting under water at specified depths for nitrogen to be released from the bloodstream. Decompression on pure oxygen can speed this process, and INA pioneered the use of oxygen decompression for archaeological diving.

During the 2013 excavation season at Godavaya, Sri Lanka, the only tanks available locally were 80 ft³ aluminum cylinders. By contrast, INA excavations in Turkey have relied on steel scuba tanks with twice that capacity for decades. These same INA projects used surface-supplied oxygen for decompression, but the harshing seas and insecure moorings in Sri Lanka made it impossible to replicate this practice. In 2014 our immediate goal was to address these shortcomings in order to work more efficiently and safely on site. We loaded into a shipping container large, stainless steel, 121-ft³ diving cylinders purchased in Texas. Knowing the difficulties we would face with strong surface currents, we filled these cylinders with 32% Enriched Air Nitrox, and followed a dive profile that allowed longer dives with short decompression stops, eliminating the need for surface-supplied oxygen. Enriched Air Nitrox (known as EANx or Nitrox) is composed of the same chemical elements as normal air, but with a higher percentage of oxygen (in this case 32%, rather than 21%). Nitrox has been used for decades at moderate depths: it increases bottom time, decreases surface intervals, leaves divers feeling more energetic after a dive, and reduces the risk of DCS.

There are two options for creating Nitrox: membrane systems and continuous blending systems. Divers on INA’s Bozburun Byzantine shipwreck excavation (1995-1998) benefited from the donation of a Nitrox membrane system, but we were unsure whether this unit could be serviced in Sri Lanka. In general, membrane systems operate more slowly and are more expensive, but also more reliable. For diving in the Baltic Sea, where more stringent decompression schedules apply, the INAPm membrane systems are sometimes regarded as dangerous because they require the handling of pure oxygen, all team members had previously been certified as DAN Oxygen Providers in the safe and effective administration of oxygen for medical purposes. The use of Nitrox is, however, not without risk: as one dives deeper, the proportion of oxygen that can be safely inspired decreases. For example, 100% pure oxygen is not recommended deeper than 25 feet, 36% oxygen mixtures are not recommended deeper than 95 feet, and 32% oxygen mixtures, which we used in Sri Lanka, are not recommended beyond 110 feet. Failure to respect these limits can result in a dangerous condition called oxygen toxicity. What does this mean for dive safety on an underwater excavation? We set up meticulous procedures for filling, monitoring, recording, marking, and checking tanks, so that all divers knew exactly the percentage of oxygen in their tank. Every member of the team was well-versed in these procedures.

This extra effort meant that we extended the morning dives, which were only 15-18 minutes long in 2013, to a generous 27 minutes, with 6 minutes of decompression in 2014. Furthermore, each team member could dive for an additional 20 minutes in the afternoon. With the gas needed for decompression already in their tanks, divers no longer had to worry about worsening sea conditions preventing access to surface-supplied oxygen.

As a result of these two modifications to INA’s existing dive safety protocol, our increased productivity was staggering, and we have been inspired to see how Nitrox can be deployed effectively on other INA projects. Read more about the ancient shipwreck excavation at Godavaya, Sri Lanka on the following page!
In the spring of 2014, with financial support from the National Endowment for the Humanities (NEH), INA launched its longest ever archaeological field season at Godavaya, Sri Lanka. Two short campaigns in 2010 and 2012-13 had brought to light the remains of a sunken cargo dated by radiocarbon analysis to the 1st century B.C. or the 1st century A.D., making it the oldest known shipwreck in the Indian Ocean.

FINDS FROM THE OLDEST SHIPWRECK IN THE INDIAN OCEAN

BY DEBORAH CARLSON, ORKAN KÖYASİOĞLU, AND STACI WILLIS
The ancient shipwreck excavation at Godavaya, Sri Lanka is a collaboration spearheaded by principal investigators Osmund Bopearachchi (Université of Paris-Sorbonne), Deborah Carlson (INA/Texas A&M University), and Sanjyot Mehendale (University of California-Berkeley), in partnership with Senerath Disanayake, Director General of Sri Lanka’s Department of Archaeology (DOA). A team of 15-20 individuals comprised in part of INA staff and graduate students from the Nautical Archaeology Program (NAP) at Texas A&M University spent almost four months working to advance the scientific practice of nautical archaeology in this part of the world. Most underwater archaeology projects take place during the summer months but the Indian Ocean monsoons necessitated that a protracted dive schedule like ours be carried out during the calmest possible weather, which occurs in late winter and early spring.

LOGISTICS AND PREPARATION
Some INA Quarterly readers will recall the greatest obstacle to launching a full-scale underwater archaeological shipwreck excavation in Sri Lanka was procuring the necessary diving and safety equipment to support a team of 10-20 diving twice per day in an area that is subject to poor visibility and strong currents. For the 2014 season, therefore, INA purchased a shipping container and installed within it a fully-refurbished, four-person double-lock recompression chamber, supplied by banks of six oxygen and ten air cylinders. In early January 2014, the INA shipping container departed Galveston, Texas filled with 18 new steel scuba tanks, two rigid inflatable boats (RIBs), underwater lights, digital and video cameras, and all the necessary diving, excavation, and medical supplies to sustain our team of 15-20 for a four-month campaign. The shipping container safely reached Colombo, Sri Lanka in early February, at almost precisely the same time as our core excavation team, comprised of four NAP graduate students and three staff members from INA’s research center in Bodrum, Turkey. Once on the island, we were joined by 10 team members from the Sri Lankan Department of Archaeology (DOA) including divers, conservators, two cooks, and a driver. In previous seasons, DOA archaeologists Palitha Wessasinghe and Amalka Wijesuriya served as our primary collaborators in the field and oversaw the coordination of the Sri Lankan team, while

When we arrived on Sri Lanka for a preliminary site visit in 2010, we were greeted by divers representing both the CCF and the DOA. The DOA is the governmentally-sanctioned archaeological authority on the island, and CCF was established in 1982 with funding from UNESCO, tasked with preservation of the country’s historic monuments. It is a unique feature of Sri Lanka that archaeology is a wishbone “shared” by these two autonomous groups. In 2012 and 2013 our international NEH-funded team worked alongside archaeologists from both units, as well as local fishermen, with great success.

The Godavaya shipwreck was discovered in 2003 by local Sinhalese fishermen B.G. Preminda and Sunil Ratnaweeratapabandige and brought to the attention of German archaeologists excavating the nearby 2nd-century A.D. harbor and Buddhist monastery at Godavaya. In 2010 Sri Lankan archaeologists representing the Maritime Archaeology Unit (MAU) of the Central Cultural Fund (CCF) carried out further exploration and mapping of the Godavaya wreck.

the two local fishermen who discovered the shipwreck (and continue to be its year-round caretakers) completed the 2014 excavation team.

The field team convened on Sri Lanka in early February, but it took several weeks for the shipping container to clear customs at Colombo and be transported by truck to Hambantota port. Project field director Orkan Köyagaşioğlu and INA diving safety officer Laura White worked assiduously to speed the release of the container, while the rest of the team, led by assistant field director Staci Willis, traveled by truck to Hambantota in late February, the shuttle divers back and forth between Sea Horse and Hambantota port, where the recompression chamber was stationed and tank-filling took place, while the other tender remained with Sea Horse as a crash boat in case of medical emergency. The rapidly changing winds and dangerous surface conditions, strong currents in the water column and surge on the seabed, often meant that it was possible for team members to dive only once instead of twice per day, which has long been the standard on INA excavations.

ACHIEVEMENTS ON SITE

While the addition of Nitrox increased dive times to 47 minutes per diver per day, challenging sea conditions and the Sri Lankan Navy’s decision to suspend diving early – in late April – meant that the 2014 team logged just five weeks of archaeological dives on the Godavaya shipwreck.

Within that window, we carried out a swimming survey in all cardinal directions from the main 60’-long pile of encrusted iron ingots. The survey revealed sparsely scattered artifact clusters to the north, more densely-packed concentrations of artifacts to the south and east, and little or nothing to the west.

Artifacts uncovered just beneath the sand included four stone querns, several cylindrical grinding stones, and a wide array of ceramic vessels ranging from large (more than 3’ tall) storage jars to intact round bowls to an intriguing conical flask. As a result, the team decided to focus the bulk of our excavation efforts to the south and southeast of the ingest pile. Here, beyond the large pile of encrusted metal ingots, we uncovered fragments of several finished metal jars or bowls, a curious metal ring, and a bronze spearhead.

The accomplishments of this nascent project cannot be overstated. Our international team overcame significant logistical and safety challenges to carry out multiple seasons of underwater excavation on a site that has tremendous archaeological potential and historical value. When the promise of local support failed or proved inadequate, we redoubled our efforts to find cost-effective solutions that ensured exposed artifacts, which they did. In May we prepared to ship all the equipment we had worked so hard to bring to Sri Lanka back to Texas. Before leaving the island, we delivered all excavated artifacts into the capable hands of Anusha Kasthuriarachchi, head conservator at the Chemical Conservation Laboratory in Colombo, who had been with us on site at Godavaya.

From left: A nearly complete bronze spearhead and metal ring that may be a handle for a wooden shield; Laura White and Staci Willis excavate in grid squares L10 and N10.

The ANCIENT SHIPWRECK EXCAVATION AT GODAVAYA. DEBORAH CARLSON, ORKAN KÖYAĞAŞIOĞLU, AND STACI WILLIS

Here, beyond the large pile of encrusted metal ingots, we uncovered fragments of several finished metal jars or bowls, a curious metal ring, and a bronze spearhead.

DEBORAH CARLSON, ORKAN KÖYAĞAŞIOĞLU, AND STACI WILLIS
the safety of all participants. Not all of the methodological strategies developed by INA during five decades of working in the Mediterranean translate to the Indian Ocean. Nonetheless, we successfully trained and thoroughly enjoyed working with various staff members of the DOA in many key aspects of INA’s dive safety and excavation protocol. Where we were unsuccessful has much to do with the fact that the organization of archaeology (and particularly maritime archaeology) in Sri Lanka is both deeply polarized and politically charged.

With regard to political challenges impacting our 2014 season, at the time, any U.S.-funded project would have suffered from governmental ill-will owing to heightened tensions between the U.S. government and the regime of former President Mahinda Rajapakse over alleged human rights violations in the Tamil north. In addition, the project endured interference from local officials who sought participation in and control of the project, a result of fragmentation and politicization of archaeological institutions and personnel during the Rajapakse regime (not to mention the project’s global visibility).

Now that a regime change has occurred in Sri Lanka and new global alliances are being shaped (Secretary Kerry pledged technical assistance and deeper ties to the U.S. during a visit to the island in May 2015), we expect that governmental institutions will be positively affected and, as such, we are optimistic about increased support in the future. Outside of Sri Lanka, the project received positive press in two 2014 articles authored by Andrew Lawler in Archaeology (November/December 2014) and Science (Vol. 344, no. 6191). Carlson delivered a scholarly paper about the project at the 2014 annual meeting of the Archaeological Institute of America in Chicago, IL, and two graduate students are researching aspects of the Godavaya assemblage for their M.A. theses at Texas A&M University.
In 2012, on the last night of the annual meeting of INA’s Board of Directors in Bermuda, George Bass called a meeting with Barbara Duthuit, INA President Debbie Carlson and myself, then Chairman of the Board. Barbara had recently announced her plans to endow an annual award to be named the Claude Duthuit Archaeology Grant, that would fund INA fieldwork, one of many pursuits that Claude had supported heartily during his life. George commented wryly that if he had known Barbara was contemplating such a generous donation, he would have asked her to finance an ocean-going catamaran he had been working on for many years in anticipation of Virazon’s eventual retirement.

Although many believed that the best place to build INA’s next research vessel was in Turkey, some were reluctant. In recent decades, many sophisticated yachts have been built in Turkey, proving local shipbuilders were up to the task. Once back in the U.S., George contacted a naval architect in Houston to discuss his preliminary ideas about the new vessel. Over the next few months, we weighed the advantages and disadvantages of an ocean-going catamaran. With two hulls, painting and other expenses would be greater than a monohull. Below the waterline, working space and storage space would be far less with a catamaran. Having read an article about a recent catamaran accident in the Indian Ocean, safety was also a concern. George however persisted in his conviction that a catamaran would be best and no more expensive to maintain than a monohull.

At the 2013 annual meeting of the INA Board in San Antonio, Texas, INA Archaeologist Orkan Köyűaşoğlu produced detailed plans that he had drafted for a new research vessel. The plans featured a unique stern that would allow the two-person submersible Carolyn to be lifted for easy entry and exit by passengers. Having spent considerable time working and living aboard Virazon, Orkan had put much thought into every aspect of his design. After the Board Meeting he and I went to Houston to meet the naval architects selected by George. Our meeting went well and soon we signed a contract for them to design our vessel using Orkan’s drawings as a starting point.

With the committee members living on different continents, we were not able to meet with the naval architects routinely during the design phase. Flotation calculations soon proved that Orkan’s idea for Carolyn’s wet well took away necessary buoyancy. With every minor modification that we debated, we realized how much trial and error had gone into making Virazon a vessel ideally suited for underwater archaeological research. Many new ideas were brought to the table and challenged.
but not all were embraced by the naval architects.

In response, we began exploring other design options. Tuba Ekmecki, Director of INA’s Bodrum Research Center, asked a friend and respected ship’s captain to recommend a naval architect in Turkey. During the summer of 2014 Debbie, Tuba, and Orkan met with Orkan Ozbek and Ferhat Acuner from Navtek Marine Technologies in Tuzla, the largest shipyard in Turkey. Debbie’s impressions of Orkan and Ferhat were very positive, but it was not until the October 2014 INA Board Meeting in Istanbul that I was able to meet them. I was as impressed as the others.

A year passed since we delivered Orkan’s drawings to the naval architects in Houston. By the time we received the final plans, Orkan had found solutions to problems of capacity, comfort, and privacy that the Houston firm could not. As Orkan worked with Navtek, minor interior changes became major changes, and the hull design was improved as well. Navtek did a considerable amount of work on this project without asking for any money long before we signed a contract with them to build INA’s next research vessel.

With the help of INA’s pro bono legal counsel, Jim Goold, we negotiated a contract with Navtek to build our new research vessel, which Barbara has said she would like to be named Virazon II. I know I speak for the entire INA family when I offer a big thank you to Barbara for funding our new vessel and to George for asking her!

INA’s newest research vessel, once completed, will be 24.95 m long and 8.10 m wide, with a tonnage of 170 m³. Virazon II will have a cruising speed of 10 knots, thanks to twin 425 HP engines. She will be built from 70 tons of steel; Debbie and Orkan had the honor to cut the first piece of steel in the shipyard outside of Istanbul in late June 2015.

The main cabin on the lower deck will accommodate 16 in bunk beds with two full bathrooms. There is also a two-person VIP cabin with an ensuite bathroom and shower. The captain’s cabin is adjacent to the wheelhouse and a multi-station offices next to the galley on the main deck. The galley will accommodate all 19 people aboard at two large tables, one of which can be converted to surgeon’s quarters in the event of a medical emergency.

Virazon II will be fitted with a free- ton A-frame for lifting the two-person submersible, Carolyn. There will be attachments for side-scan and bottom-scan sonar, which will assist INA researchers during shipwreck surveys. Diving support includes a brand new Hipertek recompression chamber, and dedicated high- and low-pressure compressors for tank filling and air lifts, a key component of any archaeological excavation.

When asked about designing a new archaeological research vessel, Debbie said, “The entire process reminded us that what worked best aboard Virazon was the result of decades of trial and error and minor modifications. Virazon had become a totally customized vessel, and building a new boat meant taking stock of many lessons that had been learned the hard way.”

Stay updated on the ship’s construction via INA’s website (www.nauticalarch.org) and read about the launching of Virazon II in a future issue of the INA Quarterly.
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