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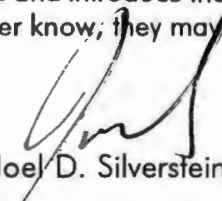
Time To Get Back In. . .

It was time to get back in the water. Wintertime at SUB AQUA keeps me busy with conventions, conferences and meetings. I got out all my goodies and set out to the deepwater pool. While a scuba class was going on I assembled my gear - double tanks, two regulators, hoses, dry-suit, (the pool was 92°) weights, computer and a scooter. Into the water I went. While I tried to remember how to use all this stuff I remembered why training is so important. The only practice for diving is diving. This was told to me by my first instructor - it still holds true. As I fumbled through the water it all started to come back - I was a diver again!

Back in the City Island office I pulled out the videos of last year's trips and some of the hot new training videos for a quick refresher. I made sure my calendar had some more room for pool time. With the season opening here in New York I wanted to make sure I would be ready.

This issue of SUB AQUA helps you get ready. It focuses on Training. One thing that makes diving exciting is that we are always learning more about how to do it better and safer. If you haven't been in the water for a while, get to a pool or shallow dive site and practice now. If you haven't learned anything new in a while, sign up for a course or workshop.

One more thing, when you go into your favorite dive store for that advanced training program, take along a friend and introduce them to the wonders of the underwater world. You never know, they may just turn out to be your next dive partner!



Joel D. Silverstein, Editor

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ON THE COVER - Instructor Barry Graves is wearing a Henderson Twin Shell Drysuit, a Zeagle Tech Diver BCD with a Cochran Consulting Nemesis Computer. Divemaster Wendy Ballentine is wearing a DUI TLS 350 drysuit, and Dacor Chameleon BCD. Both are using Dacor Extreme Plus regulators, OMS tanks and valves and Dive Alert signaling devices. Photographed with a Canon T-90 and a 50 mm at f 8, on Kodak Tri-X film using Dynalite strobes by Joel Silverstein.

DAN BERG - Diver of the Year

Daniel Berg, host and executive producer of the DIVE WRECK VALLEY television series and senior editor of SUB AQUA was presented with the Beneath the Sea 1994 Diver of the Year Award at the annual BTS symposium in White Plains, NY.



Dan Berg with BTS President, Armand Zighan.

Dan is a master scuba instructor and world renowned author of nine shipwreck and diving related books. A well known authority on northeast shipwreck diving, he was chosen for the award due to his continuing efforts in promoting the sport of scuba diving through his DIVE WRECK VALLEY television series. Berg says, "The goal of DIVE WRECK VALLEY has always been to promote northeast diving and to show first hand, the excellent conditions and visibility of our waters." ■

PETE NAWROCKY - Honored by NAUI



Pete Nawrocky, a 20 year veteran of diving and underwater photography is a recipient of this year's NAUI Award for Outstanding Contribution to Diving, NAUI's highest

award. In the 19 year history of the award, Pete enjoys the distinction of being one of less than a half dozen recipients who were not NAUI leaders.

Pete is known internationally for his multimedia shows and photos of diverse environments and marine life found in the Northeast. His underwater images have been showcased in numerous publications (including SUB AQUA) and at a variety of dive shows and symposia. ■

Dr. BILL HAMILTON - BTS Scientist of the Year



Dr. William Hamilton was presented with the Beneath the Sea 1994 Diver of the Year Award for Science. Bill is among the few true pioneers of the diving sciences. He has

revolutionized commercial and technical diving with new insights into the physiology of decompression. His REPEX method of oxygen dosage planning altered NOAA's Undersea Habitat Program and changed the way we look at the safe use of oxygen forever. ■

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Dive Training for the Physically Challenged

by Hugh Fletcher

If I had a perfect memory, I would be able to recall the Introduction to Scuba lecture the instructor gave during my first Open Water I class. However, I can only remember the theme: Training. Training meant we would dive safely and enjoyably. It would enable us to help others to become more confident and capable divers. The training I received has become the foundation to a curriculum that has become a life long learning experience.

Diving has fundamentally altered the way I perceive myself and my surroundings. If I encounter what appears to be an insurmountable challenge, I compare it to my first night dive. I realize that if I could strap on my dive gear and overcome the natural trepidation I felt when I dropped into an ink-black sea, then certainly I can do just about anything. The training I received enabled me to feel comfortable enough to experience that.

A man from Ohio recently contacted me, he described himself as someone who uses a wheelchair. He wanted to become a diver but didn't know how. I completed the circle — I became the instructor. Here's what I told the aspiring diver:

- Commit yourself to an idea of becoming more independent and free than you have felt before. Decide that no matter how many odd looks you get, you are willing to put in the time and effort to become a skilled and knowledgeable diver.

- Get a physical and a signed medical waiver from a doctor who understands the physiology of diving and disabled divers.

- Contact local dive shops and find out if they have any familiarity in training the disabled. If they don't work with them to find people who are.

- Join organizations that contribute to the understanding of diving and the disabled. Groups such as Moray Wheels, Open Waters, and CURE are prime resources. Read the book "Scuba Diving with Disabilities" by Jill Robinson and A. Dale Fox. Go to dive shows and participate in the seminars. Network, network, network!

- Find an exceptional instructor who is willing to spend the time and effort to help you become a diver. I have yet to find a way to thank the one I was introduced to. She's a mixture of Marine Corps Drill

Instructor, mechanical engineer, physical therapist, and dive buddy rolled into one. Ideally, everyone should have an instructor this capable. For a disabled diver it's critical. Most disabled people will not complete their training in the normal four week course schedule. An instructor who has worked with the disabled with understand this and will make the necessary accommodations. If you're lucky and get to train one on how to train you, have patience with them, they're learning too.

- Experiment, improvise, re-design, and invent new gear and whatever else is necessary to feel comfortable underwater. I can't get into a standard wetsuit top — my arms simply won't let me. We modified my first wetsuit so it had a zippered front and a Velcro seam running down the back. I put one side on, then the other then zipped and velcro'd it together. I later moved on to a back zip full length suit with zippers on the arms and legs. My BCD is a model designed for women. Its straps "cross my heart" to prevent the tank from rolling around on my back — my instructor found it at the DEMA show several years ago. You've got to keep your mind open to the most unlikely solutions.

- Continue the education you've started. Take classes in advanced diving techniques. Become knowledgeable in boat handling,



J. Silverstein

dive rescue, emergency medicine — even if you don't do that kind of diving, so long as the training and the learning process never stops.

Some day someone might ask you: "How do I become a diver?" You are going to be their introduction to the sport. Hopefully, you will be able to pass on the excitement. For myself and many others, this isn't difficult — we have to control ourselves in most instances. Tell them that with the proper training and commitment, almost anyone can enjoy diving. Remind them that once they try it, they will continue to be a diver for the rest of their lives and explore beautiful places with wonderful people. ■

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MAY

TREASURE HUNT

The Bay State Council of Divers will hold its 9th Annual Treasure Hunt on May 22 at Stage Fort Park Gloucester, MA. The day's events will begin at 9 AM and will include a Scuba Treasure Hunt and a Snorkeling Competition. Advance registration is suggested. Contact: Bay

State Council of Divers, 55 Sea Street, Quincy, MA 02169 (617) 391-1034 ■

JULY

TREASURE HUNT

Norwalk Seaport Association will hold its Annual Treasure Hunt on July 10. This annual event brings divers and their families from the tri-state, NY, NJ and Connecticut area. In addition to the treasure hunt you can tour the Maritime Museum and view films like *Titanica* and *Shark* in their I-MAX theater. For more information and directions contact: Norwalk Seaport Association (203) 838-9444 ■

AUGUST

AQUA WOMAN DIVE

14th Annual Aqua Woman Dive. This annual woman-only diving event, sponsored by the American Sport Divers Association and the Long Island Divers Association, will be held this year on August 7. The event will take place aboard the *Eagle's Nest*, and will leave from Point Lookout, Long Island. Contact: Karen Gurian (516) 798-1726 (7-9 PM only). ■

OCTOBER

DIVE PHILADELPHIA

The 2nd Annual Dive Philadelphia Symposium will take place October 14-16 at the Valley Forge Hilton Hotel (just outside of Philadelphia). This year's events will combine the NAUI Mid-Atlantic Branch Meeting a day of diving science, with the Undersea Hyperbaric Medical Society, speakers and workshops include O₂ administration, nitrox, cylinder inspection, wreck diving, photography, evening parties and much more. The program is presented by Beneath the Sea, a not for-profit organization. Contact: Beneath the Sea P.O. Box 644 Rye, NY 10580, (914) 961-2088 ■

NORTH AMERICAN HYPERBARIC CENTER RE-OPENS

North American Hyperbaric Center a division of International Underwater Contractors, will re-open its treatment facility on June 1st.

After a two year hiatus from treating divers, IUC chairman Andre Galerne said: "With the increase in diving activities in the North East, especially in the technical area, we need to re-open our doors. Our facility is the only one of its kind north of Pennsylvania that can treat acute cases of DCI resulting from commercial or technical diving accidents."

North American Hyperbaric Center is located on City Island, NY (just a few steps from the SUB AQUA office) and consists of two multiplace wet/dry recompression chambers capable of standard recompression treatment as well as saturation treatment when needed. DCI cases from air to mixed gas to arterial gas embolism can be treated.

An open house tour with seminars on Dive Boat Safety and Technical Diving will take place on Saturday June 18th. For more information and directions contact: SUB AQUA JOURNAL at (718) 885-3332. ■



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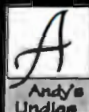
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The Australia

Down Under Southern Style

by Captain Roger Huffman

August 14, 1989: Half asleep, I'm tucked away into my Jon line, stretched out in the current decompressing when — I hear them. I am instantly ecstatic upon hearing the squeaks and clicks. I have been waiting for this one for a long time. Every year a handful of divers are fortunate enough to have a dolphin encounter. Now its finally my turn and for the second time in my life I just happen to have a video camera with me. Twelve minutes later all eight dolphins move on and I come out of the water, suffering from mental overload. See, decompression really is good.

That was my first dive on the *Australia*. She's a big WW II tanker torpedoed at the tip of the Outer Diamond off Hatteras, North Carolina. After being hit the captain and crew got off the ship and ended up in Ocracoke. During the course of the night the ship's stern sank to the bottom in the shallow waters of the shoal, leaving most of the ship exposed.

That's how she was found at first when two Hatteras fisherman, Nelson Stowe and Byron Byrd, first spotted her. Being good island boys with shipwrecker blood in their veins they immediately pulled along side and tied off to the ship. While Byron was pontificating about laying claim to "this here abandoned vessel in the name of the people of the village of Hatteras in the county of Dare located in the Great State of North Carolina," Nelson climbed aboard and headed straight for the captains cabin — and the ships safe. Well, the door was both locked and stout and Nelson was looking around for an axe when Byron came running up to tell him it was too late, the Coast Guard had arrived! With the Captain, and the key to the door, and the combination to the safe which was full of money. Thus Nelson Stowe almost became a rich man. The Captain did point them in the direction of another locked door and told them what they wanted was in that room and in the forward hold. A quick axe job later they discovered a load of cigarettes and whisky!

A strange cargo for a Texaco tanker but the local boys spent three days loading



Divers Doug Newlon and Ron Wallace with brass portholes from the *Australia*.

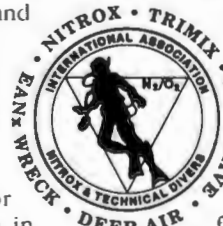
their boats and then sailed up to Norfolk to sell their loot. Unfortunately by then the insurance agents had gotten wind of what was going on and the Coast Guard

was forced to confiscate their cargo. Thus go the fortunes of war. Times change, once upon a time "wrecking" was so common around here that the state

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This creamer was saved from the ship's sinking by Nelson Stowe back in '42. Some may still be found.

actually taxed it.

Rest assured though that a lot of very nice artifacts from the *Australia* adorn living room mantels around Hatteras village. Divers have to work a little harder at it but we have found some nice stuff including portholes and china with the Texaco star emblem.

The wreck's maximum depth varies between 90 and 100 feet. She sits in a bowl (the surrounding bottom is only 70 fsw) which is handy when the current is running since you can duck down below most of it. The *Australia* is in two pieces. The bow section is pretty broken up but the bow itself is intact with a large anchor and anchor winch the predominant features. The stern section is about 75 feet away and on a clear day you can see across the gap. The stern is much more intact and has a very interesting engine room section. Relief at the stern is about twenty feet allowing a computer diver to gain a fair amount of extra time. Perhaps the most fascinating thing about the stern is the marine growth. This entire section of the wreck is covered with coral, making it a real visual treat.

Hatteras is where the northernmost point of the Gulf Stream sweeps into divable waters. The Diamond Shoal juts out from shore nearly twelve miles and causes what we term the "squeeze play." The squeeze play works for you and against you. Pelagic gulf stream fish are concentrated in this area as they pass between the shoal and the 100 fathom edge. Thus we have seen mantas, dolphin (fish), wahoos, king mackerel, and yellowfin tuna while diving this wreck. The other side of the squeeze play

involves the current. As the water flowing up the coast comes out of the 100 - 150 fsw range into 40 - 80 fsw it accelerates. I think the new technical divers call this the venturi effect. The current also bends a little here to swing around the shoal, changing from a NE to an easterly flow. What all this means to the diver is that the odds of diving in some current are higher around the shoal, but when the current moves offshore things really get right on the *Australia*.

Tropical fish predominate on the wreck with blue angels, Spanish hogfish, blue damsels, small groupers, snappers, and sea bass making their home here. Visibility averages about 50 feet with 100 foot days when conditions get right. That is also when you get those collector quality pictures since the particulate matter settles out. The subject matter is there everyday. As interesting and beautiful as this wreck is, I still find the trip down and back up the anchorline to be as good as any part of the dive. Going down you pass through barracudas, then the amberjacks come up to meet you. Then the water darkens as you pass through the dense school of cigar minnows pulsing over the wreck and the wreck itself comes into view. Ascending the order is reversed but you get to spend time hanging out with the barracudas under the boat, watching the patterns that the cigar minnows make in midwater, and listening for that friendly squeak to come your way. ■

Captain Roger Huffman owns and operates the dive boat, Rapture of the Deep in Cape Hatteras.

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Surface Interval with: Captain Noel Voroba

by Barb Lander

Captain Noel Voroba settled in with his morning cup of tea and apologized for the distinct rasp in his voice. "I taught a class last night, and my voice it's like Clinton's," he explained, "when I talk too much it goes."

Frequently teaching scuba four nights a week, it is easy to understand the source of Noel's voice stress. Several hours of lecture, followed by several more hours of dry compressed air lead many to the dreaded "instructor burnout." Not Noel, who avows, "my allegiance is with my students."

Noel grew up close to the Long Island Sound A competitive swimmer as a teenager, free diving was a natural progression. His family enjoyed the fruits of his breathhold diving, flounder, blackfish, and an occasional lobster. When he wanted to spend more time on the bottom, he read a how-to book on scuba, bought equipment out of a catalogue and dived in.

Based in Bridgeport, Connecticut, Noel owns the dive shop Orbit Marine. His fleet of boats is moored less than five minutes from the shop.

Noel together with a "fleet" of ten instructors (six of whom are captains) shares a love of the water and diving with students, introducing them to the lure of Long Island Sound.

For introductory level students, just the thrill of successfully navigating from the boat to the lighthouse and back is enough. For others, they try their hand at spearing flounder or blackfish or outwitting the local lobster. For his advanced students, ("advanced" and "open water two" are not synonymous) Noel reserves the wrecks of the mid-sound.

Dark, muddy, and prone to strong currents, many of the wrecks of Long Island Sound have not been identified. Noel explains many of these unidentified wrecks may be old steamboats. During the last century the fastest way from New York to Boston or Rhode Island was through the Sound. Steamboats had a unique glamour all their own as they churned through the water, smoking and belching fire.

Competition among the steamship lines was fierce, wooing customers with the fastest, most reliable, and most comfortable service. Fire or collision was the fate of

many of these giants. What is left of many of these glorious steamships is a pile of uncharted rubble buried in the mud of the Sound.

Noel likes to search out these depth sounder anomalies and explore the unidentified wreckage. On these wrecks the skills that Noel ingrains in his students really show their value. Navigation, stress management, and buoyancy control are key. "One fin kick of the bottom and the diver is reduced to a black-out situation." "These old wrecks will not reveal their secrets to the timid," Noel says that after diving one these wrecks you feel like you have "conquered the world."

With a focus on training, Captain Noel doesn't see many straight charters. His students go on to dive the likes of the *U.S.S. San Diego* and *Oregon*. But, his voice swells with pride when he tells me that not a week goes by without someone calling to pass along a compliment about how well-trained his students are.

Noel elaborates saying, "Many divers have never been trained properly from the beginning." He has seen many divers let go of the tag line or anchor line and get carried away in the current, or not keeping track of where they are and coming up too far from the boat or not stowing their gear properly on the boat. "We train for all that," he says.



J. Silverstein

Long Island Sound may not sound like a dive trainer's dream location, but Noel has managed to make it so. Navigation, stress management, and boat diving skills are taught with the same priority as mask clearing and buoyancy control. Certifications are done in the Sound; no beach or quarry diving for Noel's students. They get more than a certification card, they get confidence. Captain Noel Voroba firmly believes that if you can dive Long Island Sound you can dive anywhere. ■

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BASIC NAVIGATION FOR WRECK DIVING

by Daniel Berg



It is my opinion that mastering navigational skills is essential to safely enjoying Northeast shipwreck diving. Most wreck dives are, of course, done from a boat, anchored above the site. However depending on visibility and currents, it can at times be quite difficult to find the anchor line once the dive is over. The consequences of not returning to the anchor line include long swims back to the boat, or if the diver has exceeded the no-decompression limits, a free floating hang. Here are a few helpful hints for navigating around a wreck site.

First, as with any boat dive, divers should try to start their dive into the current; this will make for an easier swim when

returning. If the wreck is intact and the visibility is good, it is often no problem to simply note where you are and return later. But, if visibility is limited or if the wreck is scattered over a large area with no distinct reference points, you can use a tether line reel. Simply clip one end near the anchor while letting the line out as you swim to explore the wreckage. This method is almost foolproof as long as the line does not get severed you can easily return to your starting point. Although this is very safe and dependable, this method also has its disadvantages. One is the way it limits a diver's investigation to the length of the line, the same territory must be covered during the second half of the dive. The other disadvantage is entanglement, be careful not to let out too much line as you swim. Use caution and common sense — the tether reel is used to aid your navigational skills not replace them.

Another commonly used method is the

perimeter search. In this case the diver descends on the anchor line and then swims directly to either side of the wreck. The next objective is to take note of a unique feature or characteristic and its relative position, then swim up current while exploring, spear fishing, taking photos or whatever is desired. When you want to return, simply swim down current along the wreck's side until you see the same object or road sign. Lastly, swim towards the center of the wreckage where you should be able to find the anchor.

Other methods include attaching an underwater strobe light to the anchor line about 20 feet off the bottom. Divers can then freely explore the wreck as long as they remain in sight of the light.

After a while navigation becomes second nature: the more dives you do, the better you become. The more you dive on each wreck the better your mental image of that site will be. Pretty soon you will recognize parts of the ship and their location in relationship to other areas of the wreck.

After many excursions to the same wreck, you will be able to navigate from your own knowledge of the area.

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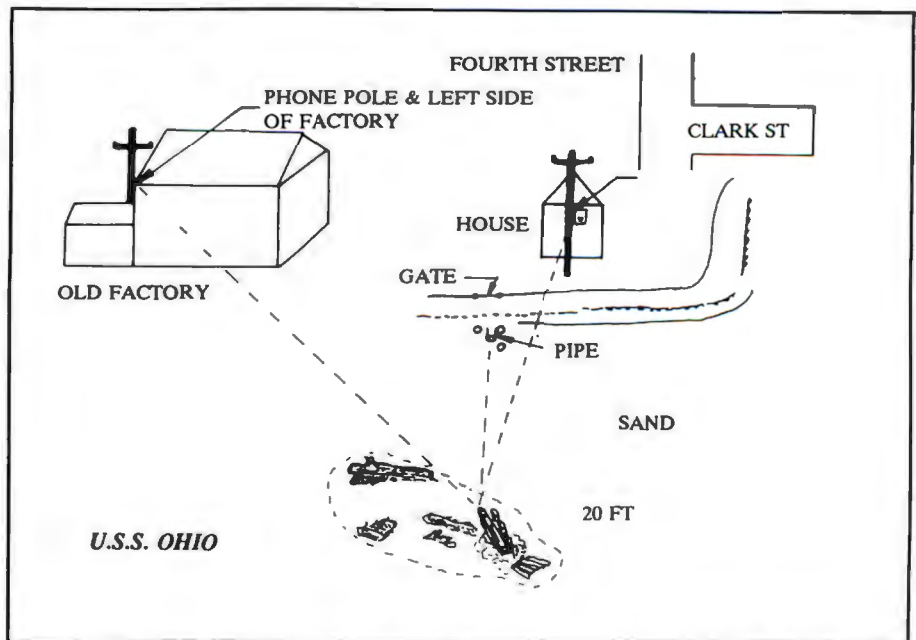
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Dan using the tether reel on the USS San Diego.

you can't find it, you can use your tether reel, or Jersey up-reel (large spool of manila rope carried on back of tanks) as an ascent line. One way to use the reel is to attach a lift bag to the free end and send it to the surface. Be sure that your reel is free spinning or it may pull out of your hands. The line is then tied to the wreck and the reel cut off. This method provides a surface marker and acts as your own personal anchor line. The second method is to attach the line to the wreck and un-reel the line as you ascend. The down side to this method is there is no marker on the surface. I recommend that you have a reel with at least 1 1/2 times the depth of the water in line of the reel. This would take into consideration any current you may encounter. Also if you are using your reel for navigation, a back-up for an up-line would be preferred.

Some shipwrecks are located in shallow water close to shore. Navigation on these wrecks involves the know how of finding them and getting safely back to shore when the dive is over. First of all, whether someone has told you of a wreck or you just stumble into one, it is a good idea to take note of its location so you can return. You have to pick at least two objects on the shore at approximately 90 degrees and note how they line up with objects behind them. For example, a telephone pole lines up with the right side of a house, and a water tower's right side just touches a building's left corner. You will note how accurate these ranges are by swimming a few feet in each direction and noting how each range changes. From now on, all you have to do is to navigate to those ranges, descend, and the wreck will be found again. The next step is to take a compass course to your shore entry point and after your dive, navigate to it. Be sure to count each fin kick and make a note of it. I have always found it easier to



Triangulation sketch of the Ohio wreck site in Greenport, Long Island. Sketch by Dan Berg.

navigate to a wreck underwater. With the reciprocal of the compass course and the number of kick cycles, you may navigate easily out to the site. If this fails, you can always surface and use land ranges before descending again.

Good navigational skills have certainly made my wreck diving experience much more rewarding, productive and enjoyable. Of course, the more practice at each skill,

the better you will become. Please remember that navigation, like any other skill is not something that can be learned overnight. You must continually practice and fine tune your own abilities. I highly recommend advanced training as well as the common sense guideline to always stay within your own personal comfort zone. Never let peer pressure lead you to do a dive beyond your own capabilities. ■

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Deep Thoughts on Training

by Dave Morton and Captain Eric Takakjian

Most wrecks that lure divers away from the warmth and brightness of the sun typically lie deeper than 60 feet, with many in the 100'-plus depth range. Very popular wrecks, like the passenger ship *Oregon*, and the German submarine *U-853*, rest at the edge of the "recreational sport diving limits" of 130', and many other wrecks, like the *Andrea Doria* and the *U-Who*, lie in much deeper waters. Regardless of whose definition of "deep" is used, visiting these, or other wrecks, requires that the diver not only possess the skills and knowledge of a wreck diver, but must also have a solid foundation in the theoretical and practical aspects of "deep diving."

Deep diving is a relative term. What may be deep for some divers could be a routine dive for another. As a diver starts to descend to depths beyond 60', problems such as narcosis, decompression sickness, and thermal regulation become real concerns, while options such as emergency swimming ascents and buddy breathing become less and less palatable. All divers are not meant to be deep or wreck divers,

but those that have the desire to pursue it must have the training, skills and equipment necessary to ensure the highest degree of safety possible.

One of the most effective ways to develop a strong foundation in the theoretical and practical

aspects associated with deep diving, as well as helping to shape and identify personal diving limits, is to take a deep diving course. Before signing up for a class, take the time to carefully select a course that balances theoretical classroom lectures with practical hands-on skills. Further check to



ensure that the instructor is experienced in deep diving in your local environment, and well-versed in the skills and techniques that you would like to learn.

A detailed deep diving course will include classroom lectures on diving physics, physiology and science, including such topics as calculating air consumption rates, gas management, and contingency planning. Other subjects, such as problems associated with oxygen, nitrogen, and carbon dioxide, and the importance of stress management should all be covered in detail. The course should also explain the history and development of dive tables, and diving computers, because a well educated deep diver must not only be able to use a dive table or computer - she must also understand how and where the numbers came from.

Practical deep water training is just as important as theoretical development. A diver must become familiar and comfortable with redundant and safety equipment required for deep diving, such as pony bottles and emergency ascent lines. Numerous in-water skills such as buoyancy control, buddy awareness, self-rescue, and stress management at depth should be taught, and practiced. One of the most important safety factors of deep diving is the self-regulation necessary for a diver to keep him or herself always comfortable, and within a personal safety zone. How can a diver tell when a personal limit has been reached, or worse, exceeded? The diver must be comfortable and confident throughout the dive, and must also be able to recognize any abnormalities or problems in his or her buddy, and be able to immediately render the necessary assistance.

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Captain Billy Deans

A well structured deep diving course will help identify, and shape, such personal deep diving limits.

Deep diving should never be thought of as an objective, or goal of a dive, but rather as a technical skill, which, when applied judiciously, allows the successful completion of a desired plan. As mentioned, many wreck dives require the application of deep diving skills, and some of the best places to train for deep diving is on some of these wrecks. Two wrecks in Cape Cod Bay that provide ideal sites for deep diver training are the tug *Mars*, and the schooner barge *Endicott*. The *Mars* was a 117' iron hulled ocean-going tugboat that sank in a collision with the tanker *Bidwell* on September 20th, 1942. She lies intact and upright in 130 fsw, with her main deck at 105-110 fsw. Large open deck areas on the bow and stern of the *Mars* are ideal for practicing basic deep diving skills. The wreck's twenty-five feet of relief enables divers to perform skill circuits between noticeably different depths, while still permitting a sufficient bottom time. Numerous tie-off points are located around the top of the wreck, providing great opportunities to practice emergency ascent line drills, and lift bag use at depth.

A short distance away from the *Mars* lies the wreck of the *Henry Endicott*. This schooner barge sank in a storm in September of 1939, loaded with a cargo of cobblestones and a steam locomotive lashed to the deck. The remains of her 191' wooden hull rest on a clay bottom in 90 fsw. A fifteen foot high pile of cobblestones runs the length of the hull, and scattered timbers lie around the wreck's perimeter. The large windlass and chain pile mark the bow, while the steam locomotive rests in the sand a short distance away. At 90', students practicing out of air drills and other emergency techniques do not have the surface as a last option, but must rely on self-sufficiency and a competent buddy to keep the dive in control. The cobblestones also are ideal for practicing salvage techniques and deep water lift bag use.

Deep diving techniques are frequently required by divers who visit wrecks, take photos, capture lobsters, or explore new sites, but there's much more to deep diving than carrying a lot of air and wearing an expensive dive computer. A carefully designed deep diving course can be a great place to learn the ropes, but the most important skill of deep diving, self-regulation, can't be taught to any diver — divers can only be taught to listen to themselves. Remember, regardless of how deep you dive, whether it's 50' for lobsters, or 150' for portholes, when you're uncomfortable, you're over your head, and it's time to turn the dive. There's always another day for the next dive - make sure you're around to enjoy it. ■

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Who Trains What?

by Hillary Vidars, PhD

For the last ten years, one of my diving specialties has been dive accident management. Since there are many sport divers currently making dives requiring advanced specialty training, particularly what we are now referring to as Extended Range Diving, I wanted to find out how available and extensive advanced training is for sport divers and what programs were available for the handling of dive emergencies.

Because mixed gas, nitrox and deep diving are controversial issues for many training agencies, I worded the questionnaire in a way that would not intimidate or embarrass any one agency. I simply asked for basic information about advanced diving and training in first aid and accident management. It is not our function in this report to critique the programs, but to report the results of the sixteen agencies queried. Many do not currently offer any training or offer limited training in extended range diving activities and in dive accident management.

The survey was conducted in 1993 as part of a research project for the Extended Range Diving Organization (a not-for profit communications organization). Questionnaires were sent to the training directors of sixteen training and consulting agencies. Each responded accordingly as to advanced specialty training programs which they currently offer or are in development. Many of the agencies offer distinctive specialties which are instructor authored and sanctioned for certification but may only be available by a specific instructor. ■

DIVE TRAINING AGENCIES

American Nitrox Divers Inc. (ANDI)
74 Woodcleft Ave.
Freeport, N.Y. 11520
Ed Betts, President

Delta Barics
4815 Island View
Oxnard Shores, CA 93135
Ron Ryan, President

Divers Alert Network (DAN)
3101 Petty Rd. Suite 1300
Durham, N.C. 27707
Dan Orr, Director of Operations

International Diving Educators Association (IDEA)
PO Box 17373
Jacksonville, FL. 32245

International Association of Nitrox & Technical Divers (IANTD)
1545 NE 104 st.
Miami Shores, FL. 33138
Tom Mount, Training Dir.

Lifeguard Systems, Inc. (LGS)
PO Box 548
Hurley, N.Y. 12443
Butch Hendrick, President

Los Angeles County Dept. of Parks and Recreation
Underwater Unit
419 East 192 Street
Carson, CA. 90746

NASDS
8099 Indiana Ave.
Riverside, CA 92504
Gary Shows, Director

National Association of Scuba Educators (NASE)
PO Box 5366
Lubbock, TX 79417

National Speleological Society-Cave Diving Section
PO Box 950
Branford, FL. 32008-0950

National Association For Cave Diving (NACD)
PO Box 14492
Gainesville, FL. 32604

National Association of Underwater Instructors (NAUI)
4650 Arrow Highway, Suite F-1
Montclair, CA 91763-1150
Darren Douglass, Training Mgr.

Professional Diving Instructor Corporation (PDIC)
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Scranton, PA 18505
Frank Murphy, President

Professional Association of Diving Instructors - (PADI)
1251 East Dyer Ave. Suite 100
Santa Ana, CA 92705-5605
Drew Richardson, V.P. Training

Scuba Schools International (SSI)
PO Box 1201
Avalon, CA 90704
Jon Hardy, Training Dir.

YMCA National Scuba Program
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Norcross, Georgia 30093
Frank Wingert, President

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AGENCY	PROGRAM													
	ANDI	DAN	DELTA	IANTD	LA	LGS	NACD	NASD	NAUI	PADI	PDIC	SSI	YMCA	
ACCIDENT EVACUATION		X		X		X	X		X	X	X	X		
CAVE DIVING				X			X	X	X*					
CAVERN DIVING	X			X			X	X	X*	X		X	X	
CPR				X	X	X		X	X	X	X			
DEEP DIVING*	X			X					X	X		X		
DRY SUIT DIVING	X			X		X			X	X	X	X	X	
FIELD NEUROLOGICAL	X	X	X	X			X	X	X	X	X	X		
FIRST AID				X	X	X		X	X	X	X			
HYPERBARIC TREATMENT		X	X	X					X	X				
ICE DIVING				X		X		X	X	X	X		X	
MIXED GAS (TRIMIX)	X			X										
MULTI LEVEL COMPUTERS	X			X		X			X	X	X	X		
NITROX	X			X			X	X*	X*					
OXYGEN ADMINISTRATION	X	X	X	X	X	X	X	X	X	X	X	X	X	
RESCUE (IN-WATER)			X	X	X	X		X	X	X	X	X	X	
WRECK DIVING	X			X					X	X	X	X	X	
WRECK PENETRATION	X			X			X		X	X		X	X	

Deep Diving: PADI, NAUI, (to 130', 4 dives in course) ANDI, (to 150' on air/safe air) SSI (60' to 130' 4 dives required in course, 12 dives total) IANTD (190' Max. depth) PADI (130' max, 4 dives).

Cave / Cavern: NAUI sanctions qualified instruction but does not have its own program.

NITROX: NASDS and NAUI sanction qualified instruction and will issue certifications but do not have their own agency-wide program.

Each agency has prerequisites for each course. Sub Aqua Journal encourages continuing education, we recommend that you seek out qualified instructors and obtain all the necessary education required *before* attempting any of these in-water activities.

Be a Responsible Diver!

Hyperbaric Workshop

by Stephen J. Lombardo, MD

What is the quickest way to become saturated with Hyperbaric Medicine? Enroll in a training program offered by the Beneath the Sea Hyperbaric Center at St. Agnes Hospital, in White Plains NY. In March, 1994 I attended and participated in the five day course in Hyperbaric Medicine, designed to be an introduction to the field. Most divers know that hyperbaric medicine is used to treat decompression illness and other pressure related problems, but this course takes it a little further.

Course Directors for the program are Dr. Eric Kindwall, Chief of Hyperbaric Medicine at St. Lukes Hospital in Milwaukee, and Dr. Owen O'Neill, co-director of the Beneath the Sea Hyperbaric Medical Center at St. Agnes Hospital. The program was smoothly coordinated by Nara Sullivan, RN CHT, who supervises hyperbarics at both St. Agnes and Westchester County Medical Center, which together have all the active monoplace chambers in the Metropolitan New York area.

Highlights of the 40 hour certification course focused on experience in both monoplace and multiplace chambers, guest lecturers and video presentations. The bulk of the course was given by Dr. Kindwall, full of the authority derived from having been a moving force in Hyperbaric Medicine for the past twenty-five years. His real feat, however was to reach every

student in a class as diverse as the dive community itself. Not only was this task accomplished with ease, but with humor, tact, and a firm grasp of the differences between fact and fiction. All class participants came away with a better understanding of the basics of Hyperbaric Medicine, and a desire to learn more.

Following the course was a full day Diving Safety and Hyperbaric Medicine Seminar. This was timed to coincide with Beneath the Sea, the largest dive show in the Northeast. Highlights of the seminar included Dr. Enrico Camporisi, Chief of Hyperbaric Medicine at SUNY Syracuse, speaking on Monoplace Chamber treatment of Iatrogenic Air Embolism, and Dr. Giuliano Vezzani, Director of Intensive Care and Hyperbaric Medicine at Fidenza Hospital in Italy, who spoke on both carbon monoxide poisoning and the synergism of Hyperbaric Oxygen and antibiotics in sepsis. Laura Josefson, RN gave an interesting perspective on Hyperbaric Medicine as seen from her 25 years of experience at SUNY Syracuse, 10 of which were spent in



Dr. Eric Kindwall

J. Silverstein

Hyperbaric Nursing.

Dr. Bill Hamilton, the physiologist many turn to make custom decompression tables, spoke on Managing Oxygen Exposure, including an explanation of his Repex tables which revolutionized the world's approach to whole body oxygen toxicity. He was followed by Captain Steve Bielenda who showed video footage depicting a range of subjects from a dry suit

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blowup to a helicopter airlift of a bends victim. The video, entitled Bubble Trouble, gave a demonstration showing the effects of nitrogen narcosis and how it affects working divers, plus an exclusive interview immediately following a near fatal CO2 hit while setting the anchor on the *Coimbra* (180 fsw). Perhaps the most interesting footage was that of a diver with cutaneous decompression illness (skin hit) which markedly improved with surface oxygen and fluid administration over a two hour period.

Next came my presentation on Medical Implications of High Tech Diving, including an overview of DCI, Oxygen Toxicity, Nitrox, Trimix and Nitrogen Narcosis. A dive made on the *USS Kendrick* (325 fsw) was analyzed for equivalent narcotic depth using Trimix 13/50. This analysis gave the workshop a more critical view of how some technical dives are planned and executed as well as how the contingency plans were derived. In addition to my presentation on technical diving, Mark Meinychuk, an EMS Paramedic who is well versed in stabilization and transport of diving accident victims to definitive care, discussed the EMS protocol for Diving emergencies.

The seminar closed with Glen Butler, President of Life Support Technologies, Inc. on Technical Diving Accident Management. Coming from an intense commercial diving background from his many years at International Underwater Contractors, Glen described Technical Diving as "Commercial Diving Containerized." He made the point that deep diving injuries would often be treated better with heliox at a pressure of 3 ATA's of oxygen initially, with modifications dictated by the specifics of the individual situation. Recompression treatment tables such as the Comex 30 (heliox 50/50 at 30 meters) and the Royal Navy 71 were invoked for specialized technical situations.

In an ideal world one would take a lengthy Fellowship in Hyperbaric Medicine at one of the centers offering this kind of training before presuming to treat anyone in need of hyperbaric oxygen. However, practicality dictates that a one week course of this kind will continue to be an excellent way of introducing all to the basics of the fascinating field of Hyperbaric Medicine. Professionals in dive medicine and safety will find the program essential, and advanced specialty divers and dive leaders will find it an extremely valuable addition to their training. ■

For more information and schedule contact: Nara Sullivan at the Beneath the Sea Hyperbaric Medical Center at St. Agnes Hospital (914) 681-4844.

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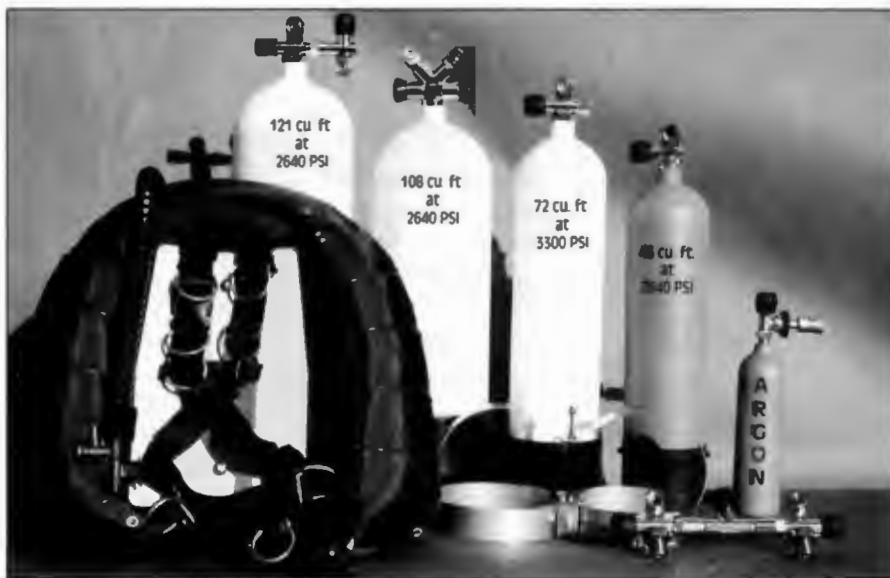
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ANDREA DORIA

A Silent Lady Calls

by Captain John Lachenmeyer

Every year for the past several years after diving the *Andrea Doria* I swear to the Water Gods and my wife that this was the last time I would dive the "Mount Everest of Diving." However come spring of each year the *Sirens* which haunt the *Doria* sing and I find myself committed to another trip.

What is so compelling about this dive to cause such a change in attitude? The answer is somewhat complex — a battle with the id — ranging from "was it worth the effort" to "that's the greatest dive I have ever made."

One only has to see the promenade deck looming up at 165 fsw while descending down the anchor line to appreciate the magnificent awesome beauty of this once luxury liner. Combine this with retrieving a piece of fine Ginori china or a piece of crystal or silverware can make the dive almost unbelievable. However, a decompression hang in rough six to ten-foot seas with a one to two-knot current running can be just as unbelievable, frightening and exhausting. Ear drums have been punctured and anchor lines cut for a hasty departure under such conditions.

Multiple days at the *Doria* with sea crests turning white and the dive vessel sporadically broadside to the waves due to the Gulf Stream currents can quickly blow the wind out of the best seaman. Yet there have been trips which were flat calm with virtually no current which would make the novice question — "So what's so tough about a *Doria* dive?" Another trip could burn the answer in his brain forever.

One trip, which I hope to never experience, caught a dive boat on the fringes of a hurricane as they departed the wreck. Story has it that the vessel was slamming off fifteen foot seas at night with divers praying on the deck while soda cans exploded in the coolers — definitely a real life nightmare.

It's these varied diving conditions combined with the loss of rational control while watching artifacts being recovered that make the *Andrea Doria* the true Mt. Everest of diving — and a very dangerous place for the newcomer. Each year for the past few she has claimed the lives of many divers. Some were pure novices and others were very experienced — but diving outside of their normal environment.

Each year as the pickings get slimmer (but not entirely gone) such as windows

from the Promenade deck at 180' or first class dishes from Gimbel's hole at 200', divers are venturing farther into the wreck to the bottom at 235 feet. These divers are using lines, extra tanks, alternate breathing gases etc. (all which is fine when all goes well) in search for the cup or fresco buried in the lower debris field.

As a diver touches the wreck at 165 fsw there may be some monofilament from the fishing charters or trawler nets on the boat deck but these are easily avoided. It is penetration that is the difficult part. Ship's wiring hangs down into parts of Gimbel's hole and divers safety lines zig zag in second class.

Divers who have ambitions of diving at the aft end for second class china, stemware and silver plated dishes and bowls will find it more difficult than it was a few years ago. It requires descending down a stairway lying sideways; it sort of twists your brain straining your judgement, especially when a fin kick brings visibility down to a few feet. Combine this with nitrogen narcosis, CO₂ buildup and oxygen toxicity potential and it makes you wonder, is it worth it?

Of course many of the newer divers would say "Why dive on air? We can use trimix." — only half true. Mix travel bottles can get cumbersome if they are carried



J. Silverstein

inside and can become unavailable if left outside and an emergency sets in. Besides how many people are really trained in mix *and* have the experience necessary for a deep water penetration dive? A couple dozen, maybe. It would be stupid to make the *Andrea Doria* a mix training dive.

Presently third class china remains mostly untouched in its original straw packing. Where? I honestly don't remember anything other than it was dark.

For those that have already signed on to a *Doria* trip I hope you use caution when diving, have trained up to this dive and are not just *doing it*. For those who are just thinking about it I suggest you read the books, take the proper training courses, practice your skills, hone your boating abilities and only set out to do it when your *really* ready.

Am I planning on another trip this summer? I actually don't know, but I am already beginning to hear the "Siren" sing. ■

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Fossil Fuel

by Kirby Kurkomelis

It was time for a well earned vacation. With 200 dives under my belt in the '93 season. I needed a rest, peace and quiet. So I packed up the family, and headed south for a few weeks to visit my parents in Florida.

At Kennedy Airport the temperature outside the plane was 19 degrees. Over the loud speaker the captain shouted with enthusiasm, "Next stop Venice Florida with a high temperature of 85 degrees." The engines roared, we were off. During the flight I studied my fossil book. Shark teeth are fun to collect. The jaw of a shark is made up of cartilage, it does not fossilize, only leaving teeth behind to be collected by artifact hunters. When the plane landed, my parents greeted us with warm hugs and kisses, enough for a whole year.

The following morning I headed out to the nearby dive shop to get directions to shark beach. John, the dive shop operator explained to me, how to search

for petrified sharks teeth. John mentioned stories about local divers finding fossilized shark teeth, giant tusks, and other skeletal remains in and around the shore at Venice beach. In one of the display cases in the shop lay 10 large fossilized shark teeth, Galeocerdo (tiger shark), Carcharhinus (dusky shark), Odontaspis (sand shark) and many more. These teeth resembled pictures in my fossil identification book. After a 15 minute pep talk. I was ready to start hunting, with directions in hand to shark beach.

I drove at warp speed. Down 41 South, right turn on Venice Avenue, 3 blocks make left turn on Harbor Drive, follow to end, turn right at Sharky's Pier. I was overcome with fossil fever. Racing to get out of the car, I fell into the shiny white sand. Brushing the sand off my face. I looked up with horror.

For as far as the eye could see, there were no less than eleven dive

flags on my beach. Those divers were removing my artifacts. It was time to get into overdrive. I donned my equipment in seconds flat. Time was short. I revealed my true colors — skull and crossbones. One final check of my gear — noting my compass heading. The cool clear green water engulfed my soul. I swam west about 50 yards.

The water was a warm 62 degrees. I made sure to wear a full wetsuit with hood and boots. The visibility was 15 feet, typical of this time of year, along with waves breaking on the surface. I immediately came upon my first find in 4 fsw. On a hard sandy bottom next to some shells was a Lemon Shark's tooth. Then another, a dusky shark tooth, to my right a nurse shark tooth. Each fossil fueled my fever. My new heading was southwest in 6 fsw, coming up fast on some white coral. My dive flag trailing behind me, I moved very slowly across the bottom. My eyes took time to

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Prehistoric sharks teeth photographed at half actual size.

J. Silverstein

adjust for triangular shaped teeth. Then it happened, I found the graveyard of fossilized bones. Mounds and mounds of artifacts. In the piles of sawfish teeth and vertebrae bones were large stone crabs napping.

Now I was in deep trouble. All the

bones were black, covered with a dark brown algae. Broken teeth littered the site. Before I started to fill my bag with teeth I checked my dive time. My depth was 9 fsw, with 40 minutes into the dive.

While checking my console, something flashed across my field of vision. It was a large ominous looking barracuda, with his long spiked teeth and sleek body. The barracuda looked adjust for triangular shaped teeth. Then like he was smiling at me. I continued my dive, keeping a sharp eye on my new found "friend."

In front of me I could see another diver with yellow fins, fanning the sand looking for artifacts. He kept missing them so I filled my bag. I made sure to stay out of sight. It felt great to have my own personal guide though this underwater site.

I started to chill. Checking my gauges, my bottom time was now 80 minutes in 8 fsw, with 750 psi left in my tank. It was time to head east 30 kick cycles. On the shore there were divers, showing off their artifacts. I had a big smile on my face, I had plenty teeth, bones and a couple of stone crab claws. Then I noticed the diver with the yellow fins. He had sharks teeth that were twice the size of mine. He looked up at me and said: "I left you a few small ones..." ■

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Dan Berg: June 8

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Dan will discuss his special and unique techniques for intact shipwreck exploration, and navigation. This one day workshop will take you diving on the *USS San Diego*.

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All courses are by reservation only. Once your reservation is received you will be sent a confirmation kit. Full payment must be received to ensure reservation. Refunds will be made only if course has been cancelled. Schedule is subject to change. All reservations are final. More information is in your reservation kit.

TECHNICAL DIVING SYMPOSIUM

June 18

Tuition: \$45

This symposium is an introduction to technical diving — the wonders and hazards of this special activity. You will be taken on a tour of the North American Hyperbaric Center Facility with Andre Galerne followed with seminars by Dr. Steve Lombardo on the *Medical Aspects of Technical Diving*, Captain Steve Bielenda, *Bubble Trouble* (Dive Accident Management), and Joel Silverstein, *What We Can Learn from Technical Divers*.

DAN OXYGEN ADMINISTRATION

Kathy Weydig: June 18

Tuition: \$75

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INTRODUCTION TO WRECK DIVING

Barb Lander: July 1-3, July 22-24

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Barb will discuss the special techniques she uses to make wreck diving fun, exciting and educational. This *women only* course will discuss the unique requirements and techniques of gear rigging, navigation, thermal protection and decompression management. You will enjoy two days of diving on the *USS San Diego* and *SS Oregon*.



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Joel Silverstein: July 29

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Joel will discuss specific techniques used in deep diving, which will include gear rigging, decompression management and emergency procedures. You will dive the US Navy *Texas Tower*.

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11 USS San Diego
12 Lizzie D
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7 Tarantula
9 Linda 140'
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12 Kenasha
13 USS San Diego
14 Tarantula
16 USS San Diego
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8 Oregon
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18 USS San Diego
20 Linda 140'
21 USS San Diego
22 USS San Diego
25 USS San Diego
27 USN Algol
28 USS San Diego
29 Oregon
June 1 USS San Diego
3 Stolt Dagali
4 USS San Diego
5 Oregon
8 USS San Diego
10 Coimbra 180'
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