

Tobermory, Ontario, Canada

--22 Wrecks In Cold, Cold Water

Readers sometimes ask why we don't cover sites in the United States and Canada. They say not everyone can afford to travel to the South Pacific, let alone the Caribbean. How about evaluating sites close to home?

I always respond by saying that this is really not our *raison d'etre*. Local sites get plenty of coverage in *Skin Diver* and *Underwater USA* and local people can usually get the poop from local divers and local diveshops. We write about vacation diving and diving services, to tell you beforehand what to expect so you won't taste a small fortune on an unpleasant experience.

Now there are some "vacation" sites in North America. We've written about Los Angeles and Santa Barbara dive boats; we've covered boats which ply the waters of New York and have written about the Keys. Normally we focus on warm water diving. But because a lot of divers thrive on cold water wreck diving, we decided to report on Tobermory, Ontario, an outpost on Lake Huron, 3+ hours by car from Toronto, and accessible by auto from New York or Michigan. We recently asked an East Coast correspondent to dip into those chilly waters in May to give us a preview for the summer season. We didn't give him enough time to sample all the wrecks, but since he's dived there more than just this trip, you'll get a pretty clear notion of what you can expect should you head to Tobermory.

INSIDE UNDERCURRENT

North American Wreck Diving Charters . . .	p.3
The Techniques Of Decompression: Part I --When You Plan...And When You Don't..	p.5
Stopping Underwater Sinus Headache	p.6
Equipment Problems And Equipment Repair --One Diver's Experience	p.9
Scuba Equipment: Care And Maintenance	p.10
Tax Deductible Dive Trips --More Than A Vacation	p.11
Dear Undercurrent --Tempered Glass, Another Breath Of Air	p.12

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Though it has been a few summers since I dived Toby, etched in my mind are its frigid, sometimes hazy waters, its rugged setting. This kind of diving provides a sense of accomplishment much greater than an afternoon in Bonaire's 80° waters. After diving Tobermory, I'm ready for any expedition Captain Cousteau throws my way.

For what Tobermory offers are 22 shipwrecks in just about every state of repair and disrepair, and now saved from pillage in the Fathom Five Provincial Park. The wrecks aren't the only reason to come to this isolated village

clinging precariously to the tip of Bruce Peninsula, but they are the reason for a thriving summer business catering to divers. Nowhere else in the world are so many fresh water shipwrecks in a small geographical area accessible to divers of all degrees of skill. The cold waters around the tip of land separating Lake Huron from Georgian Bay are a wreck diver's Mecca.

Tobermory is a government park, so one must register upon entry and abide by park rules. They are few and reflect common sense, but they are strictly enforced. They include: no diving alone; no uncertified divers without instructor's supervision; don't leave boats unattended while diving; don't dive in boat channels; and use a dive flag. But first among the rules is that you leave the wrecks the way you find them. Souvenir hunting is not just discouraged, it is downright illegal.

To get to the various wrecks, you have to hire a boat, although it is possible to take long swims from the beach to reach some wrecks. Charter boat skippers know diving, and know the wrecks, but few dive with their customers. Basically a skipper will moor over a wreck, tell you a bit about its history and what you will see, explain the dive, and then you're on your own. Once a dive boat is chartered, the skipper is at your disposal. They don't restrict the number or types of dives you can make, but expect good sense.

To meet my story deadline, I couldn't join with a group ahead of time, so I arrived at Tobermory alone, the weekend before the "season" started. Without a boat for diving and a bed for sleeping, I was unsure what to expect; I got lucky fast. I discovered an old friend who got me oriented. Only two dive groups were in town this early and one was staying at Big Tub Harbour Resort, the only hotel with full dive facilities.

Tobermory has but 550 full-time residents and two harbours: Big Tub and Little Tub. On-shore activity centers around Little Tub harbour, which is circled by dive shops, stores and hotels. At the Big Tub Harbour resort I met Rollie Blais, the owner who gave me an early season break on the price, and directed me to seven guys from Scarborough, Ontario. They welcomed me to their group. Because it was the first dive of the season and two divers were newly certified, they had selected shallower wrecks. They had hired the Big Tub launch for the day and my share would be \$18.00 (all quotes are Canadian; U.S. funds are about 30% less). One can call ahead to any of the dive shops and they'll let you know who has vacancies and put you in touch with a boat captain. Or, as I did, you can show up and take your chances. You're just about certain to find a piece of deck to dive from.

The trip to the Avalon Voyager II takes only 15 minutes, but in an open launch with the air temperature in the high 60s (it is regularly in the 80s and even 90s in the summer), it was decidedly breezy. The 135' Avalon, the newest of the Tobermory wrecks, was built in 1947 to serve small ports along the Atlantic Seaboard and the West Indies. She then became a seafood restaurant at Kincardine, Ontario. In 1980 she took her last voyage and ran aground off Bonnet Island. She now rests in about 15 feet of water.

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North American Wreck Diving Charters

These operations offer wreck dives. We have not checked these out, so this is merely a listing and not an endorsement:

<p>British Columbia</p> <p>Magna Yachting PO Box 866, Stn A Nanaimo, B.C. V9R 5N2 604/753-3751</p> <p>Oceaner Recreation 995 W 22nd Ave. Vancouver, B.C. V5Z 2A2 604/738-6811</p> <p>California</p> <p>Scuba Queen 600 Laura St. La Habra, CA 90631 213/691-0423</p> <p>Florida</p> <p>Hydrospace Dive Shop 3605A Thomas Drive Panama City Beach, FL 32407 904/234-9463</p> <p>Norine Rouse Scuba Club 4708 North Dixie Highway West Palm Beach, FL 33407 305/844-2466</p> <p>Maine</p> <p>Harbor Divers Rt 102 A, Star Rt. Box 40 Bass Harbor, ME 04653 207/244-5751</p>	<p>Massachusetts</p> <p>Cape Cod Divers 815 Main St. Harwich Port, MA 02646 617/432-9035</p> <p>Easy Diver Scuba Charters Cape Ann Marina Gloucester, MA 01930 617/944-4785</p> <p>New York</p> <p>Port Diver 811 Route 25A Port Jefferson Stn, NY 11776 516/331-9609</p> <p>Atlantis II 498 6th Ave. New York, NY 10011 212/924-7556</p> <p>Lake Huron</p> <p>The Sportsman Inn Channel Street Georgian Bay, Killarney, ON P0M 2A0 705/287-2411</p> <p>Thunder Bay Divers 1157 Hinkley Alpena, MI 49707 517/356-9336</p>	<p>Lake Michigan</p> <p>Cramer Dive Charters Box 1131 Sheboygan, WI 53001 414/452-1668</p> <p>Marine Discoveries 8611 Gross Point Skokie, IL 60077 312/673-5407</p> <p>Lake Ontario</p> <p>Lloyd Shales Diving Supplies 208 Division St. Kingston, ON K7K 3Z1 613/548-8427</p> <p>Tam Dive 246 E. King St. E. Toronto, ON M5A Q1K1 416/861-1664</p> <p>Lake Superior</p> <p>Grand Island Ventures Rt. #1, Box 436 Munising, MI 49862 906/387-4477</p>	<p>The Superior Diver P.O. Box 388 Grand Portage, MN 55605 218/475-2550</p> <p>Tomasi Tours 455 E. Ridge Marquette, MI 49855 906/225-0410</p> <p>New Jersey</p> <p>Paul Hepler RD 1, Box 592A Jackson, NJ 08527 210/928-4519</p> <p>Tom Napolitano 19 Oakland Drive Jackson, NJ 08527 210/928-0455</p> <p>North Carolina</p> <p>Nags Head Pro Dive Center PO Box 665 Nags Head, NC 27959 919/441-7594</p> <p>Dive Boat Olympus I 2713 Shepard Street Morehead City, NC 28557 919/726-9432</p>
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I wore a full Farmer John 3/8" wet suit over a short 1/8" torso suit, with a cold water hood and gloves. We dropped into the water in buddy pairs and moved along the side of the wreck, pausing to poke and prod, to pick up and examine. I had forgotten how terribly bone numbing the 38°F water can be this early in the season. The visibility was about 30'.

The engines are massive and impressive. Her large copper screw is missing one blade, presumably broken off when she went aground. Much of the original planking is intact, but details of the ship's solid construction are wide open. And it's fun to play with the small crayfish making the wreck their home. Despite an occasionally swift current, a fine silt lies over this wreck as it does over most at Tobermory. Photographers like the Avalon for available light pictures because of the shallow depth, but they would be wise to be the first to get into the water to avoid sediment stirred up by previous divers. After a circuit of the wreck, my buddy and I moved into deeper water. Here I saw the only fish of the weekend: a dead two-pound rainbow trout. I could easily have spent an hour picking over the Avalon's bones, but the cold got to me in half that time. I packed it in. The launch did not have a ladder, so I handed my heavier gear to the launch skipper and clambered up over the outboard engine at the stern, no easy feat with numb and swollen hands. Then came the real pain of thawing out.

I returned to the lodge for air fills (\$3 for 2450 psi) and lunch (two burgers, chips, and two Cokes for just over \$5). In the afternoon we visited two other shallow-water wrecks, the City of Grand Rapids and the Sweepstakes, 120' long, 23' wide... a perfect introduction to the area. Even experienced divers can enjoy this wreck at 20 feet. Built in 1867, she is one of the best-preserved Great Lakes schooners and her hull can be safely penetrated. My buddy on this dive was a photographer so I agreeably posed all over the wreck, peering around structures, examining the windlass on the foredeck, and pointing out the two-foot mast holes in the deck.

We took a heading from the bow and swam 100 feet over an uninteresting bottom to the City of Grand Rapids. Until silt was stirred up, visibility ran 15'-20'; with no current; once it gets stirred up it stays for some time. A 122' doubled-decked steamer built in 1879, she worked the coastal trade along the Bruce Peninsula. At Manitoulin Island she caught fire in 1979 where she grounded in 10' of water on a sand bottom. It was eerie, even in this shallow water, to come up on her thick wooden hull looming out of the silt. While the hull is basically silted inside, I could see the boiler, the propeller shaft and other debris. I didn't think this was a particularly good dive.

I dropped off my tank for another fill and headed back to my room for a steaming shower. But the early-season jinx struck and the hot water ran out. I was told later that only one of the hotel's hot-water heaters was turned on. Hopefully, summer visitors won't have the same problem. Otherwise, the room was basically motel modern, with two double beds and a super view of Big Tub.

I drove to Little Tub for dinner at The Grand View which is one of several decent restaurants that thrive in the summer season. It was crowded with both local residents and passengers who had just disembarked from the Chi-Cheemaun, the huge ferry that goes between Tobermory and Manitoulin Island daily. From the varied menu I ordered Fiddlehead soup (excellent!), Georgian Bay Whitefish (\$8.50) with the trimmings -- and superb homemade muffins. I considered joining the others for a night dive, but a full dinner and the icy waters took their toll. There's little in the way of night life in Toby unless you make your own, and I hit the sack as soon as I got back to the hotel.

Sunday we opted for shore diving at nearby Lighthouse Point. Gear has to be carried a very short way to the water and you suit up on the rocky shore. Entry is easy and the water drops off quickly. I headed out along the dropoff, hugging the shoreline, hitting a maximum depth of 63', but spending most of the dive between 10' and 30' examining the huge pock-marked boulders littering the steep slope. Occasionally I came upon a waterlogged piece of old wood that had obviously been worked by man. Lake trout, whitefish, bass were noticeably absent. Visibility was about 30'. The cold got to me in about 45 minutes, and even my buddy who was wearing a dry suit wanted to cut the dive short.

Now there are deeper wrecks here and although I didn't visit them this trip, that's where the excitement is. The Arabia, an almost completely intact three-masted barque, 131' long, 26' wide lies in 100' of water, her main deck now collapsed. It's a spectacular wreck, but not for novice divers. In these dark and deeper waters one is well advised to have a light. As the soft haze glows from the silt stirred by divers, I have often found myself becoming disoriented, unsure which way is up. More than once I've had to watch my bubbles rise to be certain I knew where to ascend. Another spectacular wreck is the Forest City, which begins in 60 feet of water. More than one unsuspecting diver has gotten into trouble here by enjoying the slow trip downward along the deck, paying no attention to his depth gauge, until he finds himself at 150 feet. Because of the potential dangers on the wreck, the Park Supervisor no longer marks it, so that

only the licensed captains can find it. Most charter captains are mindful of the skills of their divers before bringing them here.

Which brings me to the down side of Toby diving. The place not only kills ships, it kills divers too. Tropical experience means little here. Inexperienced, unprepared, or overconfident divers can get in trouble. Park Supervisor Stan McClennan told me that since Fathom Five was established in 1971, 16 divers have died, mostly due to alcohol, inexperience in cold water, or error. There is a hyperbaric chamber located a couple of miles south of Tobermory, operated by trained personnel 24 hours a day. For a fee, divers can go through a hyperbaric experience down to a maximum simulated depth of 150'. (Phone 519/596-2305)

One reaches Tobermory by boat or by car. If you have the lifestyle of the rich or famous, you could cruise on your private craft through the Great Lakes. Most Americans drive from New York through the Niagara Peninsula in Southwestern Ontario or through Michigan over the top of Lake Superior to Manitoulin Island and then by car ferry to Tobermory. The diving season runs from the last weekend in May until the last weekend in September. Some hotels do stay open year round to serve the occasional ice diver.

The best way to visit Toby is with a group of experienced friends. A good boat to charter is the Scuba Queen (\$240 for the day). I'd surely recommend dropping down on the Arabia. And I'd suggest the Philo Scoville, a 139' schooner lying between 55' and 95' on a steep slope off Russel Island, or one of the best wrecks in Tobermory waters, the W. L. Wetmore, a propeller steamer in 20'-25'. And picnic on Cove Island and visit with the lighthouse keeper or hike the trail on Flowerpot there and ... but you get the idea.

Divers compass: To get more information and numbers for hotels, motels, cottage rentals, dive shops and camping in and outside the park and to make reservations for charter boats, write or call: Fathom Five Provincial Park, Post Office Box 66, Tobermory, Ontario, Canada, NOH 2R0. . . .You can get information on the Scuba Queen and other dive boats by writing or calling G&S Watersports, PO Box 21, Tobermory, Ontario, Canada NON 2R0 (809/596-2200). . . .You can rent all the cold water gear you need here (including dry suits) and buy air. . . .Big Tub Harbour Resort will send you an information kit; Box 298, Tobermory, Ont., NOH 2R0 (809/596-2219); they have a weekend dive package for \$55. . . .Surface water temperature can get to the 50s, visibility can reach 100 feet. . . .To enter Canada you will need proof of citizenship. . . .Bring your C-card. . . .Air fills are first quality -- the air stations are inspected by the Ontario Underwater Council. . . .There are several decent restaurants; try the Fiddlehead soup and Georgian Bay whitefish at the Grandview.

The Techniques Of Decompression: Part I

--When You Plan ... And When You Don't

According to most instructional agencies, decompression diving is not for sport divers so it is not taught. Yet, many divers routinely make decompression dives, learning the serious subject first hand, perhaps without even reading a proper text about it.

That doesn't make much sense to us, so we asked a longtime decompression diver, Gary Gentile, to provide our readers with a primer on decompression diving. Gentile, who lives in Philadelphia, has made

more than 700 decompression dives, including more than 40 on the Andrea Doria. He has recovered hundreds of pieces of jewelry and souvenir items from the Doria's Gift Shop -- at 220 feet. Here are his recommendations:

★ ★ ★ ★ ★

Consider an incident which occurred last year off the New Jersey coast. Seventy miles at sea, a group

was making a dive on a sunken freighter in 190 feet of water. One diver, a novice at decompression, became disoriented on the bottom and could not locate the anchor line on which he was planning to ascend and decompress. He had to come up without a line, using only the buoyancy in his dry suit to maintain the proper depth. This is almost impossible to do with any accuracy, but it was an emergency.

In the thirty minutes he took to complete the required stops, the current carried him far from the boat. When neither he nor his bubbles appeared on the surface, those on board thought he must be dead. The boat captain, himself a diver, went down to look for the body. An hour later he returned empty-handed.

He was about to call the Coast Guard when a fishing boat radioed that it had picked up a diver floating in the ocean -- alive and in good condition. The probability of being spotted by a passing boat *seventy miles at sea* is astronomical! The boats rendezvoused and the diver was returned to his own charter boat. He was lucky.

At least this diver knew he *had* to decompress. Perhaps more common is the case in which a diver plans a nondecompression dive and forgets to look at his watch until he has exceeded the limits. Or, he is just about to leave the bottom and becomes entangled in monofilament and it takes several panic-stricken minutes to free himself. Now, decompression is required, but he has no idea how to go about it, or how long he must stay, and at what stages, before he can come up safely.

In this two part article, we will look at both the planned decompression dive and the unplanned decompression dive. First, the planned dive.

Planned Decompression:

The U.S. Navy Standard Air Decompression Tables are the bible of decompression diving. To follow the tables requires rising at a controlled rate of 60 ft/min and stopping at prescribed depths to allow the nitrogen in the tissues to come out of solution and be expelled from the blood before it expands, forms bubbles, and constricts circulation.

By coming up the anchor line, the diver can monitor his watch and depth gauge, while controlling his ascent by holding on to the line. But, there can be few problems.

First, the diver must locate the anchor line on the bottom. Even with a good sense of direction and a compass, finding the line in poor visibility is not always easy -- or possible.

Second, the anchor line may not be there when the diver returns. Anchors or grapples have a way of pulling loose, especially when high seas jerk the line taut, ripping the wreck or straightening the tines of the grapple. In calm weather, the grapple can come loose because of slack in the line and the boat can drift away. The solution is to "tie the hook:" the

first diver down takes the grapple and snags it in a good spot; or, he wraps the chain around a piece of wreckage; or he takes another line and uses it to tie the grapple to the wreck.

Once the grapple is set, the diver lets others know they can begin the dive by jerking the line or returning to the surface. Or, he can use a styrofoam coffee cup which the diver carries in his goodie bag. Upon its release, it floats to the surface where it is spotted

Stopping Underwater Sinus Headache

If you suffer from sinus headaches after a dive, and thought you were doomed to suffer --no more! This ascent technique will virtually eliminate them.

Are you ready? Make a super slow ascent --**UPSIDE DOWN!!!** Go to the anchor line or descent line, turn yourself over so your head is aiming towards the bottom and bring yourself up very, very slowly! I ascend 2 or 3 feet and stop for 30 seconds or so. You can hear and feel the air moving out of your sinuses -- the best analogy I can come up with is that it sounds like a creaky door in a haunted house movie.

Two cautions: It's a bit disorienting the first couple of times you do it, but this will pass. I'm so good at it now, I can do a perfect feet first ascent without a line. Second, many regulators will leak a bit when you're upside down. Either turn it around in your mouth, or curl your tongue up against the roof of your mouth and make a "splash board!"

Now why does it work? We get air trapped in our sinuses (at ambient pressure) during a dive. As we ascend the air inside the sinuses expands, pushing upwards against the "roof" of the sinuses, trying to rise. But the openings to the sinuses, all face down. If the sinuses are clear, ascents are no problem -- the expanded air works its way out through the openings. But if you are plugged with mucous, by inverting your head, you are now putting all that air pressure to work directly against the "plugs," and the air will force its way through all but the most severely impacted openings. As you make your stops, move your head around a bit -- your sinus openings are at different angles. I've also found this helpful in clearing reverse ear squeezes. One final caution -- warn your buddy and/or divemaster if you think you'll need this and they don't know you, so that you're not met at the surface by the rest of the dive group trying to wrap you in a funny white jacket -- the kind with sleeves that tie in the back!

-Lisa Choquette
Dive Makai
Kona, Hawaii

by divers waiting to hit the water. For deeper dives, a marker buoy inflated by a CO₂ cartridge can be used.

Anchor Line Decompression:

Crowding can create a serious problem when decompressing on the anchor line. Once I was diving on a wreck at 120 feet in 100 ft. visibility. Everyone overstayed his time due to the unusual clarity, and everyone found his way back to the anchor line at the same time. For twenty-five minutes, eighteen divers fought to get their hands at the ten foot mark. Fortunately, it was a calm day. But there were small mishaps: masks getting knocked askew by flippers and dangling crowbars; gear bags getting intertwined; and pressure gauges catching on the brass clips of another's weight belt. To make matters worse, someone sent up a lift bag clipped to the anchor line, and divers at the twenty-foot stop were peeled off by the rising carabiner. To my great shame, I was the culprit. I endured many angry stares until some of the divers found they could hang onto the line from which the hundred-pound artifact was dangling.

Ideally, the anchor line should be as straight as a firehouse pole. But unless the seas are flat, this puts too much strain on the boat, the line, and its point of connection. Yet, the more slack in the line, the more difficult it is to hang at the right level. As the boat rises up and down, so does the diver, alternately placing him either too deep or too shallow.

"An equipped diver carries his own ascent or decom line with him."

A diver whose suit or BC is slightly over-inflated will cause the line to lift; one who is negatively weighted will cause it to fall. Thus, there is a gyrating effect as the divers turn the line into a yo-yo. The more slack in the line, the worse this condition becomes, until a point is reached where the line looks like a zigzag lightning bolt: divers closer to the boat are deeper in the water than those supposedly lower down. Then, when the whole contrivance rises to the surface, there is mild panic. Everyone scrambles to get to a lower position which, because of the sudden weight, descends to twenty or thirty feet. So,

everyone dances back up.

In rough seas this exaggerated up and down motion can make a queasy diver seasick. Having had to vomit through my regulator on more than one occasion, I can state unequivocally that this is an uncomfortable way to decompress. It's also bad on the shoulder joints as your arms are nearly ripped out of their sockets. The trick is to maintain the proper buoyancy for your stage, and hold the anchor line lightly with the thumb and forefinger so it slips through your hand.

The Personal Decompression Line

An equipped diver carries his own ascent or decom line with him. He ties it off on the wreck, then unreels it as he rises, using it to maintain depth while decompressing.

I once came up in a rough sea and saw nothing but horizon. I was alone. The anchor had pulled loose and the boat had drifted away. Since there were divers decompressing on the anchor line, the captain could do nothing until they were all aboard. It was a long twenty minutes until I saw the boat coming. Had I not held onto my line, I would have drifted with the current, while the boat would have drifted with both the wind and current. I might not have been found.

In its simplest form the personal decompression line is a piece of strong string carried on a spool. A rod setter's wire tie reel, made of plastic, can be filled with eighth-inch nylon line. When the diver leaves the bottom, he ties some line (or uses an expendable metal clip) to a convenient piece of wreckage (without sharp metal to cut the line) and unreels it as he makes his ascent. When he reaches the desired depth he snubs it off. This small reel can easily be carried in a goodie bag.

Some divers make a larger version of this, using a two foot long wooden dowel with metal dowels in the end to hold cheap, expendable, and biodegradable, 600 lb test, quarter-inch sisal rope. Requiring two hands to work, it can be tiring. To avoid snagging it, it is usually fastened to the back or the side of the tank.

Whichever type of spool you choose, a personal

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decompression reel should be part of your emergency or back-up equipment. If you accidentally overstay your time, or can't find the anchor line, or just want to hang around on your own, you will have the opportunity to do so.

Having your own reel will make you feel more at ease since you don't have to worry about finding the anchor line. You can also be more efficient in your dive: instead of spending half your time retracing your steps, you can wander freely and come up wherever you are when your planned dive time runs out.

Ascending

Ascending can be tricky. With both hands occupied with the reel, the diver must stop to release the expanding air from his suit or BC, while not letting out too much air and start dropping. He must not get the rope hung up in his own gear and since he cannot see his gauges, he must watch his bubbles to measure his ascent rate.

But the worse problem is current. Once you've hung like a flag on the anchor line, you know you could never have the strength to do it on a freely swinging line. Because of the angle produced by the current, you may need two hundred feet of line to reach the ten-foot stop in 130 feet of water. Then, because of the pendulum effect, the current will push you down deeper than your stop. You will add air for buoyancy and rise. It will expand and push you too high. You will release air, and the current will push you too far down. Besides being unsafe, this yo-yo effect is exhausting.

The alternative is to tie a lift bag onto your decompression line, inflate it, let it rise to the surface, then cut it and tie it off. Now you have your own anchor line which can be easily watched on the surface. Those who use this technique attach a small lift bag to the decompression line *before* the dive and wrap it onto the reel. All they have to do is pull it free and start inflating -- no wasted time tying knots.

To assure the safety of this technique, one must maintain his lift bag. It can't leak. Periodically hang it up, fill it with water, and check it. If you carry it on your back, where it can frequently rub against the sharp metal of wreckage, it should be checked after

every dive. And while diving, you should reach around every once in a while, especially when you reach the no decompression limit, and make sure it's still there.

To compensate for unplanned difficulties, you should start your decompression procedure before it is necessary. You can always send up the line, then spend a couple minutes in the vicinity to use up your bottom time.

Two cautions here: if there is current, don't cut the line and have it pulled out of your hand before you get it tied off. After the bag reaches the surface, either wrap the entire reel around a projection of metal, then cut and tie, or pull off a lot of line so you have plenty of slack to work with. And when you wrap the line on the reel, make sure you overlap the coils neatly: you don't want it to snag when it's zooming up and have the reel jerked out of your hand.

Also, since your line has so little slack, even in rough seas there is not much up-and-down motion. The bag may sink when a high wave crest passes, then bob up in the trough. But you will not feel the sickening motion.

"Too slow an ascent will add to your bottom time the difference between the prescribed ascent time to your first stop, and how long it actually took."

When you are done decompressing, you can cut the line from the reel and let it fall back down to the wreck. The sisal will eventually decompose. (Don't use artificial materials: there are enough hazards in wreck diving without adding entanglement in old decompression lines.)

Too Fast An Ascent

The worst hazard of decompression diving is too fast an ascent. Even if you stay at the proper stages for the specified amounts of time, a quick ascent will cause bubble formation which further decompression will not be able to reduce. You should also understand that too slow an ascent will add to your bottom time the difference between the prescribed ascent time to your first stop, and how long it actually took.

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Monitoring your ascent time is a key to safe decompression diving. Any serious decompression diver knows that a watch or a bottom timer is as essential as a depth gauge. But these are people who *plan* decompression dives. Many sport divers,

because they have failed to monitor their time or depth, find themselves in situations requiring decompression. And some don't have watches or don't remember the tables.

What to do? I'll discuss that in the next issue.

Equipment Problems And Equipment Repair

--One Diver's Experience

One of our writers has had problems with his new gear in the past few months, and though he alluded to those problems in a recent travel review. I asked him to go into greater depth.

He has been diving for 26 years. He's been in each of the seven seas, and still braves the chilly waters off the coast of California and New York. He's written a dozen stories for *Undercurrent*. His full time profession requires a high degree of objectivity, as well as strong analytical and technical skills. When he reports a problem, you get the facts.

To solve at least part of his problems, he decided to learn scuba gear repair himself and will tell you how you can. In the meantime, let this article be an invitation to you to share any equipment problems that you might have. We'll see what we can do about them.

Ben Davison



It seems that every piece of sport diving gear is advancing rapidly in looks and price. But, I'm more concerned about what's happening to quality. As a veteran of 26 years of diving, I have had relatively few equipment problems until recently. Have I just been unusually fortunate or has the quality of diving equipment deteriorated? To illustrate what I mean, let me discuss my equipment problems on my last two diving trips.

First problem: a new Nikonos 103 Sub-strobe. After only five dives the strobe failed to charge. It was thoroughly inspected by a professional underwater photographer who happened to be on the diving trip, and found the unit dry. The batteries were in good shape and the unit was assembled correctly.

I mailed it to Nikon in Garden City, NY. After about a month with no correspondence from Nikon, I called them. To say the woman who answered the telephone in Customer Service was rude, would be generous. She finally consented to check and call me back if I could give her the strobe serial number. I did and she didn't. I then received a notice from Nikon in Norcross, Georgia indicating that they had my strobe, had inspected it and determined it had been flooded. It would be repaired and returned to me COD for \$102.

I wrote advising them that it had been inspected by a professional photographer and found to be dry. In 14 years of underwater photography, I had never flooded a strobe, but I needed my strobe for a diving trip and I decided to enclose a check fully expecting that they would re-examine the strobe and upon finding that it had not been flooded, return my \$102.

Five weeks later, with no answer and no strobe, I called Nikon Customer Service in Garden City again. I received the same rude treatment; the woman said my check had not been received so that I should check with the post office. (Have you ever heard of anyone having any success checking with the post office for a lost letter?) She had absolutely no sympathy for my problem and offered no assistance.

That night my bank statement arrived. Included was the canceled check -- cashed a month ago by Nikon. Another call to Nikon Customer Service resulted in the same treatment, even though I gave her all the canceled check information. I gave up on Nikon in New York and called Norcross, GA.

Leon Banks, an extremely courteous and helpful man, answered my call. He took my information, and even called me back the same day to say that he specially would mail my strobe. Of course, he was not the one to argue with about my \$102 bill. The warranty was intact on my week old strobe, but because Nikon argued that it had flooded (if it had flooded it must have been in their factory testing), I never received an answer to my letter or my \$102. The very polite Japanese had better look closely at their interests in rude New York and find some courteous people to work in their Customer Service department.

Problem Two: a set of close-up extension tubes is given by Nikon to each purchaser of a camera or strobe. I received the tubes with absolutely no instructions, and a call to Nikon Customer Service produced no help. So, on my next dive trip I guessed at camera settings and guessed wrongly. Thankfully, I could develop my film overnight. What about those divers who have gone off to the netherworld and shot their bloody eyes out, only to find that they too guessed wrongly.

A Nikon representative later disclosed that no one had received instructions with their tube set, but that

information would be coming out soon. If you're one of the uninformed, call 800/845-3464 to have instructions mailed.

Problem Three: the ScubaPro AIR-II. Six of us with brand-new AIR-IIs were diving together. Five of the six AIR-IIs malfunctioned -- all seriously. The malfunctions were:

****Free-flow.** All but one had constant freeflow problems.

****Random BC inflation.** This was the most dangerous one. One AIR-II randomly and automatically inflated the BC. Luckily, the diver was in relatively shallow water each time so there were insignificant consequences when the Air II fired and she rose rapidly before she could disconnect the power inflator and dump the air.

****Sand.** The AIR-II appeared to be more sensitive to sand than other regulators. We had problems on every beach dive. The regulator would lock-up completely; Neither I nor my buddies could breathe through it, purge it, or inflate the BC.

At the DEMA show, a representative of ScubaPro told me that they knew of the AIR-II problems and were putting out a kit to modify the regulator. Apparently, the kit that came out resolves a slow leak from an inflated BC through the AIR II. Dick Bonin, President of Scubapro, has told *Undercurrent* that they have no other reports of problems than ours and that they might be attributable to air fills beyond 3000 psi, which is the limit for the AIR II. Scubapro is not issuing a recall and probably won't even inform Air II owners of the correction. But if you own one, return it to your dive store for modification.

Problem Four: Two brand new ScubaPro AIR-II power inflators had "O" ring failures. None of the special ScubaPro "O" rings was available anywhere on Bonaire, where the malfunction occurred. Couldn't spares be provided? Or can't common rather than "special o-rings be part of the equipment?

Problem Five: A new pair of Mares Graphite Power Plana fins split at the top of the foot after fewer than ten dives. We have written about Power Plana fins splitting in the past (see *Undercurrent*, August, 1982) but the company claimed the problem was resolved and we've not heard of incidents since. Was this a random event, or a return of the same?

Problem Six: Two divers had brought new U.S. Divers Pacifica silicon masks. The masks fogged up completely in less than five minutes. We tried dish soap, spit from at least half a dozen divers, four kinds of anti-fogging compounds, toothpaste, and some magic words known only to divers: all to no avail. I didn't try any powerful powdered cleanser, such as Comet or Ajax, and that might have helped. But, shouldn't U.S. Divers solve this problem before putting their mask on the market? (It seems to be a problem with most silicone masks.) Should they not

at least have instructions for treating the mask prior to the initial use? Stuff like this makes me think that of all the people who work at U.S. Divers, not one has ever taken a dive. What's worse than struggling through a dive with a mask that is constantly fogging. Imagine being on a week's boat trip with that problem and no spare mask to fit you.

With these problems in mind, I decided I had better learn more about scuba maintenance. Especially, if equipment was getting more and more sensitive -- i.e., less reliable. Now, I've done my share of field repairs, but at a friend's urging I signed up for a course in equipment maintenance at Divers Way in Bayshore, NY. The fee was \$100 for four 3½ hour classes and we were to cover everything from K valves to compressors.

The class had nine people. One instructor taught while another circulated among the class, answering questions and helping with problems. I completely disassembled and assembled the first and second stages of a regulator. Only once before had I tried this; my second stage free flowed while hundreds of miles from the nearest dive shop and with no spare. I took the regulator apart while sketching each part and where it fits. The problem was sand, the reassembly went smoothly and the regulator worked. But I was lucky.

Scuba Equipment: Care And Maintenance

About the best book we've ever seen on equipment maintenance is written by Michael Farley and Charles Royer and aptly titled *Scuba Equipment: Care and Maintenance*.

The authors cover every significant item of diving equipment, from wetsuits to regulators, from knives to camera, from snorkels to weights, and provide tips that every diver needs to know. To keep your gear in shape, we can't think of a better investment.

Many dive shops carry the book or you can order it directly by sending \$10.95 (California divers add 66¢ tax) to Marcor Publishing Company, Post Office Box 1072, Port Hueneme, CA 93041.

In class, we disassembled and reassembled valves, BC's, inflator assemblies, and gauges, learning the principles of each system's operation. The instructors emphasized techniques of equipment maintenance, which will surely make my equipment more reliable.

As an example of some of the things one can learn in these classes, let me share the following:

*Almost all sizes of "O" rings can be purchased at automotive transmission shops. This opens up a whole new area to find that one necessary "O" ring that the dive shop at your resort doesn't have.

*Before hooking up your regulator, momentarily open the valve on your tank to blow any water out. If you don't, the water will be blown into your first stage.

*Before having your tank refilled, momentarily open the tank valve to prevent water in the valve from being forced into your tank during filling.

*If a tank has failed its hydrostatic test and has not had a hole drilled in it or been discarded, it may pass its second hydrostatic test. But, it has become a time bomb.

*Leave a couple of quarts of water in your inflated, stored BC in the winter. Swish the water around once in a while to keep any salt left in the BC from crystallizing.

*To enable the bladders to be changed on BC's with zippers, leave the zipper open about two inches. This will allow you to work it back and forth to free it if corrosion sets in. If it's completely closed, you can't work it back and forth to free it, and a dealer will charge about \$35 to take care of it.

*When manually inflating your BC, blow first to clear the water out of the mouthpiece, then depress the inflation button and blow.

*If you have a BC with the feature that allows you to dump air by pulling down on the inflation hose, use it rather than holding the inflation mouthpiece over your head. This will prevent salt water from entering your BC.

*Store dry suits with the zippers open. Clean zippers with a soft toothbrush.

*A dry suit accidentally inflated while diving can be exhausted most rapidly by holding the neck seal as far open as possible.

*There is no regulation or procedure for checking the quality of a dive shop's air. Always be careful where you have your tanks filled.

*Exploded views of your regulator may be obtained from the manufacturer. These can come in handy in the event of a problem miles from a dive shop.

*A responsible dive shop will always attach a plastic bag to your serviced equipment containing the parts which were replaced.

It seems that just about everything I have written about *should* be taught in a standard scuba class and certainly in a "post-graduate course." I also realize that some manufacturers are dead-set against anyone but a certified repair-person attempting to make repairs on regulators. There's some merit in the argument, but then what does one do when he's off on a diving safari and no certified repair person is within a day's journey? Nearly everyone I know would give it his best shot. So, by being tutored on regulator repairing, one at least has a good idea about what he's doing. Make the repair and then thoroughly test your regulator in a tank before diving. Some professional will scream about such advice, but what solution can they offer that permits diving with an otherwise malfunctioning regulator. On the other hand, if you're at home, let dive shop handle the repair.

To locate a repair course contact a dive store near you. It might not be easy to do because many don't offer such courses. Some just don't believe that divers should do repairs; others don't want to forego income from repairs and routine maintenance; and others don't have anyone teach such a course since they farm out their repairs. But look around. You'll find some shop that has elevated itself into the 1980s and teaches scuba repair. And if it's true that equipment reliability is diminishing, as has been my experience, you'll need every bit of repair skill you can get.

Tax Deductible Dive Trips

--More Than A Vacation

Dear *Undercurrent*:

I am an experienced diver; a solo (as you wrote about in your March issue), French diver who finds that atmosphere is more important than the quality of diving. I get a little blasé and bored with diving, mostly because I began diving in 1957 and long ago was spoiled.

Photography was a solution for a few years, but now I ask your help in finding a different kind of diving trip.

I don't want to be an underwater tourist, but a participant in an interesting program where I could be of some help in studies or research. I am fascinated by

animal behavior. Do you know of such a trip?

Jacqueline Bardach
Providence, RI

We can recommend three organizations which sponsor these kinds of trips and they're just the ticket for the solo diver, for buddies, or for anybody.

And a surprising side benefit is that these trips are *legitimately tax deductible!* You engage in volunteer research for a nonprofit organization and the IRS allows the expenses you incur, up to a point, to be tax deductible.

The most widely known group sponsoring these kinds of tours is Earthwatch. They offer scores of

trips annually, many of which are of particular interest to divers. For example, they are recruiting people for September to help teach dolphins a language (at the Kewalo Basin Marine Mammal Lab in Honolulu). They have just conducted studies of deep coral reefs on Bonaire. In June Worldwatch volunteers captured and marked dolphins in Sarasota Bay, Florida. In August they have a group going to Fiji to study the coral communities.

It costs \$25 to join Earthwatch and you'll get catalogues which invite you to participate in any of their adventures. Their address:

Earthwatch
PO Box 403
Watertown, MA 02272
(617) 926-8200

CEDAM (which stands for Conservation, Education, Diving, Archeology, Museums) offers four trips this year: five days of study in the Florida keys, trips to Roatan and the Red Sea to collect fish for the New York City Aquarium, and a Venezuelan trip to dive on old shipwrecks.

First year dues for CEDAM are \$15 (plus \$20 for initiation fee). Write:

CEDAM
Fox Road
Croton on Hudson, NY 10520
(914) 271-5365

The Cousteau Society (\$20 annual membership fee) has two ten day trips this year to explore the reefs on the west side of Mosquito Island in the British Virgin Islands. Jean Michael Cousteau will attend. Apparently, this trip is not tax deductible.

The Cousteau Society
930 West 21st Street
Norfolk, VA 23517
(804) 627-1144

These trips are usually more adventurous than any normal diving trip. Accommodations may be spartan and the food not four star. But most people who join up for these sorts of adventures not only learn a great deal, but develop strong bonds with their fellow volunteers, which provides an unusual and fascinating vacation diving trip.

And one last thought. The trips often book early, so you may not find anything available for 1986, and you'll need to make plans soon to ensure a spot in the 1987 trip of your choice.

Dear Undercurrent:

--Tempered Glass, Another Breath Of Air

Dear Undercurrent:

I purchased a new Tekna T-1220 Mask II during my certification class and my instructor told me that it should have tempered glass and so marked. But the glass in this mask does not carry a tempered catchet. I called Tekna and was told that the mask *is* made with tempered glass. My instructor doesn't dispute this, but says they are in violation of federal laws by failing to state the glass is tempered. Is that so?

James Caldwell
Rhineland, WI

Tekna's mask, which is tempered, is not in violation of any law because it's unmarked. According to a spokesperson in the San Francisco office of the Consumer Product Safety Commission there is no requirement that glass used in face masks must be tempered. If it is tempered, there is no requirement that it must be so marked. However, the Diving Equipment Manufacturers' Association requires that face masks produced by its members be tempered, but they do not require marking. DEMA standards apply to its members only.

Ralph Osterhout, the President of Tekna, says there is one simple way to check whether a faceplate

is tempered. Take a polarizing filter (many people use them on camera lenses), hold it in front of the mask and rotate. If you see a change in the surface of the face mask lens (a wavy looking surface), then the glass is tempered. That technique, however, will not tell you to what standard the glass was tempered.

Divers should use masks with tempered glass. You can ensure that by purchasing a mask made by a DEMA member, by locating a mask with a tempered catchet on the glass, or by reading the manufacturer's standards in literature accompanying the mask. Ben Davison

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Dear Undercurrent:

Regarding B.C. Rebreathing: I disinfect my BC with an eighth of a cup of bleach to a gallon of water.

And for one more breath of air, try the power inflator. When my Poseidon refuses to draw any more air, the power inflator can usually pull enough to inflate the BC one more time. Although my dive instructors have dismissed the idea as too complex in a panicked state, I think it's still worth a try.

Jim Mulholland
Huntington, NY