

# undercurrent<sup>®</sup>

THE PRIVATE, EXCLUSIVE GUIDE FOR SERIOUS DIVERS

P. O. Box 1658, Sausalito, California 94965

Cable Address: Gooddiving

Vol. 13, No. 1

January 1988

## The Nikonos Technique Seminar, Bonaire, *et al.*

-- From Snapshots To Photographs

Dear Reader,

If one wishes to forsee the future of dive travel, one need only hop a plane to Bonaire, that desert-like island of 11,000 people located in the Curacao and Aruba archipelago, just a few hours sailing from Venezuela. For the future of dive travel is taking place at Photo Bonaire, a little shop nestled in the environs of the Flamingo Beach Hotel. I dispatched one of our long-time east coast correspondents to tell us about it.

C.C., travel editor

I'm writing to tell you about a "seminar" I took, as well, as the boom in underwater photography. Remember, I said photography. Not snapshot taking.

Flamingo Beach, a Divi hotel, advertises Nikonos Technique Seminars in Skin Diver, and I selected one led by Rick Freshee, a photographer whose work I've admired in Skin Diver and elsewhere for many years. I called Divi and learned that there would be no charge for the seminar, the only qualification being that I had to sign up for a week of unlimited diving. The booking agent at Divi could tell me nothing more and said they had no literature. After a little prodding he sent me a brief brochure about Photo Bonaire, explaining that I could rent what equipment I needed and get rapid E-6 processing.

As I was to learn, the *raison d'etre* for the seminars is Nikon's hope that the seminar attendees, upon improving their skills, will be tempted to buy more equipment -- perhaps a second strobe or that \$900 15 mm lens. And the seminars will do just that because, as I learned first hand, participants can use free-of-charge any Nikon underwater accessory, from close up kits to wide angle lenses. And when you see what that 15mm can do, you'll forget the 35 mm!

In 1988, at least a dozen seminars will be offered at the Flamingo (and two

### INSIDE UNDERCURRENT

Bleached White Caribbean Reefs .....	pg.2
1988 Seminar Schedule .....	pg.3
The Nikonos Shootout	
--Head To Head In The Caribbean .....	pg.5
Two Dangerous Dry Suit Valves	
--Uncontrolled Ascents A Result .....	pg.7
Goodbye For The Tekna Diver Propulsion Vehicle .....	pg.8
Just How Many Active Divers Are There?	
--3.5 Million...Or 700,000? .....	pg.9

more at Anthony's Key in Roatan), led by such renowned photographers as Freshee, Bill Gleason, Steve Frink and Paul Tzimoulis. Each instructor brings his individual interests and style to the course, so what you get will be a direct function of the teaching skills of the instructor. You can minimally expect lectures, reviews of individual slides, and perhaps accompaniment on the dives. Although a lot of technique will rub off by just hanging around a real professional, I do remember my college days, where some professors who were leaders in their field often didn't deliver in the classroom. The seminar concept is terrific, but the execution of my course led me to believe that unless it is more carefully managed and developed, what should be a consistently good thing for the diver, the resort, and Nikon alike, could fall short of its potential.

My seminar was advertised to begin on Saturday, December 5, and end Saturday, December 12. The Divi rep advised me to arrive on Friday, the 4th and depart on Sunday, the 13th. Upon arrival, I learned that the course would start Sunday and end Friday. I used Saturday for the warm up beach dive Flamingo generally requires, and my buddy and I rented rundown bikes from the hotel for a bit of sightseeing.

I arrived promptly for the 9:30 a.m. Sunday seminar, but it took an hour to get going. That tardiness became an unnecessary hallmark of many class meetings and even the boat dives, which was no fault of the boat crew. About a dozen people had signed up, but by the end of the course only five people were regular participants. Freshee (pronounced Frayzhee) explained that 40 people had taken his course at Roatan. But then, Nikon handled the promotion through Skin Diver, they had since backed off due to potential liability from sponsoring underwater affairs. Now the advertising and sponsorship is the hotel's responsibility, and the Flamingo hadn't geared up to get out the word. No matter, I speculated. A small class could only mean more personal attention. I should benefit.

And I did, but largely from my own tenacity. I used every lens I could get my hands on. I bracketed my exposures, bracketed my ISO, and tested distances from camera to subject. Rick pointed out that slight over exposures on some shiny fish could be eliminated by pushing my ISO from 100 to 200. With a 15 mm lens I learned how lucky one is to get a graceful looking diver in the picture unless the diver knows just how to look graceful. I learned that what I once naively considered fine subject matter for my lens quickly became mundane. And I

### Bleached White Caribbean Reefs

Since July a number of coral patches throughout the Caribbean have appeared to have been bleached white, leading to varied speculation as to the cause. Scientists now suspect that it's due to an increase of as much as 2°F in overall water temperature in the Caribbean. That increase is enough to kill the algae -- and ultimately the coral polyps -- that live symbiotically within coral heads. Some scientists believe it's another example of the overall warming trend on Mother Earth, labeled the "greenhouse effect" and due in large part to the burning of fossil fuels. If so, it could ultimately mean the destruction of coral reefs. However, Christopher Delia of the National Science Foundation isn't so sure that the greenhouse effect is at fault, noting that the increased temperature occurred only in July and August of this past year. The bleached reefs are not yet dead, he reported to National Public Radio, but if the warmer temperatures occur again next year death might indeed come to the reefs.

Copyright 1988 by Atcom, Inc., Atcom Publishing, 2315 Broadway, New York, NY 10024. All rights reserved. *Undercurrent* (ISSN: 0192-0871) is published monthly by Atcom, Inc. Copies of this guide are not available on newsstands, but are furnished directly to the diving public by mail subscriptions only. To maintain its independence *Undercurrent* carries no advertising. Permission to photocopy articles herein is granted by Atcom Publishers, Inc. to libraries and other users registered with the Copyright Clearance Center (CCC) for internal and personal use only at the base fee of \$10 per article plus \$1 per page paid directly to CCC, 21 Congress Street, Salem, MA 01970. Serial Fee Code: 0192-0871/88\$10-\$1. Other copying by any

electronic or mechanical means, including information storage and data retrieval systems, without the expressed written permission of the publisher are strictly forbidden. News media may use no more than one quarter page of material per issue, provided that *Undercurrent* is credited. POSTMASTER: Send address change with old label to *Undercurrent* Newsletter, 2315 Broadway, New York, NY 10024. Second Class Postage paid at New York, N.Y.

To receive the accurate, inside diving information *Undercurrent* offers, send \$45 (U.S. funds only) for a one year subscription to *Undercurrent*, Atcom Publishing, 2315 Broadway, New York, NY 10024-4392 and get a valuable FREE gift.

learned just how to use my partner to herd a fish toward me and to get him into the picture with a critter. I learned that when I've located a good subject, I must shoot and shoot and shoot until I'm certain I've got my shot.

Rick's lectures, sprinkled with interesting personal experiences, were quite useful, especially when he analyzed the strengths -- and admitted weaknesses -- of some of his superb shots. But we spent little more than five hours in actual "seminar," far too few for a course entitled "Nikonos Technique Seminar." My course could have been better titled as "A Vacationers Introduction to Nikonos Photography." Surely, Rick was always helpful when asked, but he wasn't always available, spending a great deal of time photographing and reviewing slides for other professional purposes. We had little help underwater -- or little opportunity to watch him work -- because he usually took his model away from the group. When I did tag along I learned a great deal watching him set up his shots. For example, Rick rightfully argues that photographers should not wear skins or kneepads, because it only gives them an excuse to bump against fragile coral. "Treat the coral gardens as if they are a flower bed," he said. And by watching him, one could see just how delicately he could do that.

#### 1988 Seminar Schedule

April 9-16	Scott Frier
April 23-30	Steve Frink
May 14-21	Bill Gleason
June 4-11	Jerry Schnabel/Suzy Swigert
July 2-9	Paul Tzimoulis/Geri Murphy
July 9-16	Jerry Schnabel/Suzy Swigert
August 6-13	Rick Freshee
August 30-27	Bill Gleason
September 17-24	Steve Frink
October 1-8	Rick Freshee
October 29-Nov. 5	Scott Frier
December 3-10	Steve Frink

We seminararians had a nice Peter Hughes dive boat all reserved for ourselves. Rick would see that sites were selected to lend themselves to particular lenses and would tell us whether to bring macro or wide angle, permitting us to get the best out of the dive. One day he didn't join the trip (I was to learn later, from a Nikon spokesman, that the instructor isn't expected to dive with the participants -- it's his option.), another day he left us onboard while he took two hours on land to shoot, and the final day -- which normally concludes with each participant showing a few slides for evaluation -- he didn't appear at all because he had left the island for another assignment. What was advertised by the Flamingo as a December 5-12 seminar was a December 6-10 seminar. But, always handy were the resident pros of Photo Bonaire: Jerry Schnabel -- who held our closing evaluation for us -- and Suzi Swygert who was always around to answer my questions.

In fact, much of what I learned I gained by asking questions of Schnabel or Swygert or getting them to take a look at my slides. They were always available to look at the work of anyone who asked (even people who weren't staying at the hotel) and to provide gentle criticism. "If you had gotten a little closer here, you would have had better lighting and the full fish would have been covered. But, I still like the shot. . . . This is a very good photo, but note how the tail of the seahorse is slightly out of focus. Tilt your camera slightly on these macro shots to get the framer properly aligned to bring the whole critter into focus. . . . That's a great picture of an angelfish, but notice how all the coral in the background takes away from the subject. Take a little more time to get the fish away from such a complex background and the subject will stand out better."

Today, as I ruminate about my "seminar," I am pleased I took it. I learned

a great deal experimenting with lenses and strobes and got basic information and assistance. But the limited classroom time and occasional instruction didn't really merit the lofty title of "seminar." Even though I paid nothing additional for the opportunity, I can't say I got my moneysworth. After all I selected the Flamingo and spent about \$3000 for two on the strength of the seminar advertisement alone. To please future participants, 1988 seminars will need to be offered with considerable more intensity -- as, Schnabel and Swygart, who themselves will teach seminars, acknowledged in discussions with me and my fellow classmates.

At least one change for the better already has been made. A Vermont travel agency, Aquaventure International, is marketing the seminars separately from Divi, and has produced a brochure which explains the seminar and lists upcoming dates. Jan George-Lamont, reservations manager, told me that in the future individual instructors will develop their own curriculum, which will be sent to participants 30 days prior to their seminar. To improve further the execution of the seminar, these are a few ideas I humbly offer.

\*as much as possible, everyone should get some personal attention on a few shots underwater, working on specific problems such as strobe coverage of the subject, distance from lens to subject, or whatever.

\*at least two hours a day ought to be devoted to the "seminar." Class meetings should be held at off hours (not 2 p.m.) so as not to break up a full afternoon, permitting the attendees the chance for other dives or touring.

\*those students who wish should be given specific assignments on any dive, with any sort of bracketing instructions, so strategies and results can be compared. For example, everyone could shoot tube sponges or snappers with a 35mm lens, then compare interpretations, techniques and results.

\*the class ought to be directed toward beginning and intermediate students. We had one highly skilled, self-serving participant whose expertise took over much of the instructor's time, leaving the less skilled and more timid students to work on their own.

\*the instructor, who is paid to teach, should be required to devote the better part of the five full days to teaching.

Nikon and the Flamingo (and Anthony's Key, I trust) have a good thing going. With the wrinkles out, the Seminar will be a very hot item. One reason is the organized and easy diving for all Flamingo guests. Personal gear is stored in buildings at the foot of two piers where the boats load. The staff handles all tanks, helped individual divers, and gave plenty of freedom underwater. The boats did get jammed with divers, but with a little patience everyone got into the water. Morning dives are set at a maximum 100 feet and the afternoon at 60, but competent divers are free to do as they please -- and follow their Edge if they use one. Boat dives are offered every night if eight people sign up, and you can always dive off the beach if you have a buddy (one can be easily located by leaving a note on the blackboard).

# The Nikonos Shootout

## -- Head To Head In the Caribbean

Unlike most other individual sports, scuba diving suffers from a lack of spectator events. It's not that divers haven't tried. About a decade ago divers swimming tricky underwater courses tied floats on their back so the people on shore could watch their progress. Imagine how exciting that would be.

Not too many years ago a national network tried to create and film competition in shark tagging but it proved a bore. The sharks weren't cooperative. Without spectator events, the sport lacks a vehicle to attract new participants.

Divers have also failed to come up with any sort of imaginative internal competition since spearfishing fell out of favor more than ten years ago. A few scattered spearfishing contests still remain, mostly in the southern U.S., but to most divers they're about as welcome as wind broken in a crowded elevator.

Enter the Nikonos Shootout, an unique form of underwater competition for amateur underwater photographers which carries the cachet of environmentally sound sportsmanship, a hell of a lot of fun, and prizes galore -- this year more than \$75,000 worth.

In a shootout -- and three will be held in the Caribbean in 1988 -- participating divers are given one 36 frame roll of film a day to shoot. The best shot is entered into the day's competition.

We called Frank Fennell, Nikonos Marketing Director, to get a line on the history of the Shootout and its increasing popularity.

"In 1986," Fennell said, "we held a Shootout at two locations and 300 divers participated. In 1987 we added a third location and more than 600 participated. I think this year as many as 800 will shoot for the first prize trip for two to Micronesia on a live-aboard boat, air fare from the west coast and \$3,000 worth of Nikon equipment."

1988 Shootouts will be held on Grand Cayman, May 7-14 (Treasure Island is the headquarters); Bonaire, June 11-18 (Flamingo Beach is the headquarters); and Cozumel, July 9-16 (Casa del Mar is the headquarters). These, and many other resorts on each island, have package plans for the shootout week. A participant may stay anywhere he wishes.

Shootouts are head-to-head competition with all the variables, except skill and luck, controlled. There is no entry fee. Each day you pick up a roll of film (which is provided free!), shoot it and

return it. The film is processed overnight (you pay about \$10 per roll) and given to you the next morning and you select one shot to enter. Three days of competition include macro, standard, and wide angle lenses.

Although the camera you use must be a Nikonos, it can be 15 years old or the latest Nikonos V. There are no requirements for the make of the accessories. "You don't have to have a Nikonos lens," Fennell told us. "Any lens that will work on a Nikonos is acceptable. Even if you don't have a wide angle or macro, it only costs for development, so enter the shot anyways -- you just might run into a basking shark and be the only one that is equipped to take a shot of it." Entrants must provide their own equipment, but some of the more expensive items like a wideangle lens or a second strobe can be rented on the island by those who get there first.

At each location there are twenty prizes, including a first, second, and third in each category and a best of show for the week. Prizes include a range of Nikon equipment as well as travel. Fennell says that "in reality there are no losers." The Shootout is great fun and everyone should come back with good experiences -- and hopefully some good photos."

And you do get those photos back if you request them, although a couple of *Undercurrent* subscribers have complained to us that they have had to pester and pester to get back their photos -- although they eventually were returned. We trust that the sponsors will be a little more responsive this year to the participants desire to get their shots back.

If you wish to participate, make hotel reservations well in advance, because the host hotel and many other diving hotels will sell out for the event. Entry forms will be available at the host resort for on-the-spot entry as well as in *Skin Diver* and in some camera stores for pre-registration, although that's not required.

For a form and more information call Nikon at its toll-free number (800-NIKON-U.S.).

Any travel agent can make reservations for you at the host hotels, or you can call. The Flamingo Beach, Bonaire: 800/367-3484; in New York, 607/277-3484. Casa Del Mar, Cozumel: Two Worlds Travel; 800/446-2166; in Texas 713/446-2166. Treasure Island, Grand Cayman 800/874-0027.

When I first traveled to Bonaire in 1975, only Cap'n Don Stewart had a dive boat, Bruce Bowker was his guide. During this high season, there will be a couple dozen boats hunting the 35 or so available moorings. Cap'n Don is raising money to mark up to 100 sites and they can't come too soon. Although at depths below thirty feet, the reefs are in good shape, years of dropping anchor, the scourge of divers piddling around anchor lines, and perhaps a storm or two, have raised havoc in the lesser depths. Bonaire has especially fine reefs and though increased diver pressure will continue to affect them, the decline will be slowed by proper moorings. Sadly, perhaps the biggest area of decline is off the hotel beaches, where years ago the diving was as virgin as anywhere, but now suffers from damaged coral and litter here and there. Still, night dives off the Divi Beach -- or the Habitat or anywhere -- can provide plenty of surprises -- orange ball anemones, parrot fish in cocoons, lobster. And a dive at the Town pier, where frogfish and sea horses live among clumps of brilliant macrolife, is mandatory.

Daily diving on Bonaire is among the best in the Caribbean. The usual rap is that it lacks surprises, but I sat in Photo Bonaire watching a video tape of a 50 foot whale shark that had visited in November. Now and then, sharks are spotted north around Washington Park and dolphins are regularly seen, and I chased a sizeable turtle. But the essence of this easy diving is sloping walls from 30 to 100 feet, exceptional hard and soft corals and sponges, plenty of typical tropical life (often in great number), including angels on just about every dive, occasionally 5 pound groupers, a jack or two, and lots and lots of macro life.

As for the Flamingo Beach, I had no complaints: essentially well prepared breakfast and dinner buffets, a clean and comfortable room, and an amicable staff. It is indeed a large hotel with a majority of the guests divers -- I was told 6,000 of us passed through last year.

But, back to the future. Photo Bonaire is a pro shop, right smack in the middle of the hotel premises, with two experts -- two teachers -- who can provide individual or group instruction for a fee, or provide you over the counter commentary and advice at no charge. Shop personnel can fix many camera and strobe problems, rent you a range of lenses or video cameras, and develop by 5 p.m. any roll of Ektachrome brought in by 1:30 pm. The developed film (at \$8 a roll) comes out in strips, and divers sit at the dozen or so light trays to review each shot and decide which to keep (mounts are \$3 a box of 36). If one can't decide between shots -- is this one really in focus? -- Jerry or Suzi will find a minute to help. It's a real pro shop.

And that, I bet, is where many divers whose bank roll can support the costs of underwater photography (film and processing alone can run \$300 in the week) will be heading: to those resorts and liveboards which offer full professional photography services. It was once good enough just to get overnight E-6 processing. Now, we photographers (I'm using that loosely; I'm still a snapshot taker) will want to be sure we can find a loaner if we flood our Nikonos, rent a close up kit if our extension tubes are too small for the subjects at hand, or get some expert advice. That's the future of diving.

P.S. To get a more complete look at Bonaire diving and a review of beachfront apartment rentals, you may wish to order our complete April, 1986 review, for \$5.00 from Atcom, 2315 Broadway, NYC 10024. On Bonaire, other good hotel/dive operations offer front porch diving, daily boats, and a range of accommodations with prices too varied to list. The colorful Cap'n Don still holds forth at his Habitat and offers luxury villas, modern cottage

accommodations, and budget spaces. I like the ambience of his bar (one afternoon whale songs played in the background) and outdoor restaurant. Although he's had his ups and downs, they're mostly ups now. The Sand Dollar is a new condo complex with a restaurant/dive shop right on the water, headed by local Andre Nahr. I dived here and it's efficient, but the condos are a little too sanitized a setting for me. The Hotel Bonaire is a large, touristy hotel, with the only legitimate hotel beach; I think it's best for families and not too serious divers. Bonaire Beach Bungalows and the Bachelor Beach apartments offer beachfront units with kitchens. Close to the Flamingo is Bruce Bowker's Carib Inn. Bowker, considered the premier island guide, schedules his boats to leave earlier than the others so that he's first to the mooring he selected. The 10 room beachfront Inn has no restaurant, but most units have mini kitchens and a little store is nearby. Within a 15 minute walk are several restaurants. I especially recommend Le Chic, for nouvelle cuisine, and the Mona Lisa, for more hearty fare. Both are owned by Dutch ex-patriots who pay close attention to the kitchen.

Divers Compass: To get a brochure on the Seminar or make reservations for the seminar or the Flamingo contact Aquaventure International, POB 237, Waitsfield, VT 05673 (800/345-0322 or 802/496-5067). . . .For reservations and information: Cap'n Don's Habitat; 800/223-5581; in NY, 212/535-9530; dial direct 011-599-7-8290. Carib Inn; dial direct 011-599-7-8819. Flamingo Beach; 800-367-3484; in NY, 607/227-3484. Sand Dollar, 800/345-0805; in NJ, 609/298-2298. Hotel Bonaire 800/223-9815; in NY, 840-6636. Bachelor's Beach; 202/338-0690. Bonaire Beach Bungalows, 717/586-9230. . . .If you don't use a travel agent or hotel, the best way to book flights from any city is through ALM airlines (800/327-7230); advance rates are roughly \$375 from NY (\$535 if you don't have a land package), \$376 from Miami, and \$569 from San Francisco, using Continental to Miami. . . .In December water temperature was a consistent 81° F.

## Two Dangerous Dry Suit Valves

### --Uncontrolled Ascents A Result

Two valves which come with DUI (Diving Unlimited International) dry suits (one comes on other suits as well) have serious problems and are being recalled by DUI. In the case of the Air Control Valve (AC) there are at least eleven recorded incidents of involuntary inflation, some reportedly leading to embolisms.

*Undercurrent* reader Edward Suarez sent us a first-hand account of a serious problem he had with the AC, a one-piece valve incorporating both inflation and deflation, while wreck diving in the cold water off the Jersey coast last March.

On his second dive of the day, Suarez and his buddy collected lobster and a few articles from a steel trawler at 90 feet. They had wandered away from the anchor line of the charter boat, but had carried an up-line with them. They decided to ascend after thirty minutes, and Suarez' buddy handed him the goody bag while he unreeled the up-line. Suarez needed more air for buoyancy to compensate for the added weight, so he hit the AC valve on his suit and added a little air into the BC he wore.

But the AC valve didn't stop flowing, pumping air into his suit until it caused his hood to expand, causing his mask to flood. He hit the exhaust portion of the AC valve, but this did not stop the incoming air, nor did it vent off enough of the excess air to slow his ascent.

At this point he was ascending rapidly while holding onto the goody bag and the up-line with one hand and trying to dump excess air from the neck seal of his suit with the other hand. While struggling, he accidentally tore the strap holding his emergency air pony bottle and it disappeared into the depths.

Beginning to tire, Suarez wrapped his legs around the up-line for additional control and finally managed, with his buddy, to hold at 10 feet to start their required 18-minute decompression stop. About 12 minutes into the stop Suarez' air gave out and his buddy handed him his main regulator and used the octopus. Suarez took a couple of breaths and decided that he should surface. He let go of the up-line, but instead of rising, nothing happened -- the two goody bags had become entangled in the line and he was still

attached to the wreck. Suarez suit had begun to fill with 43° water and he started to sink; he no longer had any air left in his tank to inflate the BC or the suit.

After sinking past to 50 feet, his buddy finally cut the line free; he couldn't get enough buoyancy to pull Suarez up, even after he dropped his weight belt, so he helped Suarez drop his and they popped to the surface. Suarez' partner was bleeding from the mouth; both men were rushed to the hospital for tests, but neither suffered serious injuries.

The incident reflects what can happen when an experienced diver in tough and frightening circumstances, finds himself in an uncontrolled free ascent. Suarez has logged 272 dives in the past three years and although if he were to relive the situation he might manage it differently, the truth is that any diver would be lucky to keep his cool and come out uninjured.

In May, Suarez reported the incident to the U.S. Consumer Product Safety Commission and to DUI. Suarez told *Undercurrent* that a DUI spokeswoman told him that they "consider the problem to be the result of user error....the majority of today's divers aren't sophisticated enough to use the AC valve properly."

However, more than a month prior to Suarez' complaint, on April 3, 1987 to be precise, Herb Williams, General Manager of DUI, sent a memo to DUI dealers stating that DUI was discontinuing the AC valve because it was not "user friendly." Williams wrote that "the concept of the AC Valve will be pursued by our Research and Development Department. Once we have perfected the concept, that is make it totally user friendly, it will be put back on the market." Dealers could return valves in stock for credit, or replace the AC valve with DUI's Soft Tough Intake Valve and Adjustable Exhaust Valve, at an added cost of \$65. Apparently, DUI made no effort to inform divers who owned suits with the valve that there was any problem.

Suarez continued to pursue the issue, further contacting the CPSC, DUI and others who would listen to his story, including *Undercurrent*. In fact, he turned up three more divers who had similar problems and turned their names over to the CPSC.

But Suarez wasn't the only one acting. Andrew and Ellen Whitehouse of Whitehouse Industries, a firm which repairs dry suits, also alerted the Consumer Product Safety Commission of problems with the valve and the dangers of diving with it. They stopped repairing the AC valves because they apparently considered the adjustments much too complicated and sent all DUI suits needing valve repair or adjustment back to DUI.

In November, with the Consumer Product Safety Commission still pursuing the case, DUI finally issued a recall of their AC valve. But the recall doesn't seem particularly well publicized and the

### Goodbye For The Tekna Diver Propulsion Vehicle?

Tekna's Diver Propulsion Vehicle, once heralded as a major advance in underwater exploration for the sport diver, has been taken out of production.

The reason is not lack of demand, Tekna President Ralph Osterhaut told *Undercurrent*, but skyrocketing insurance premiums -- now pegged at \$30,000 per month.

"We have not had any problems with the product for more than two years," Osterhaut said, "so we can't understand why the carrier increased the premium. We're looking for another carrier and hope this is only temporary, but we just can't continue to produce the DPV with this added cost."

Osterhaut said that Tekna will be able to provide parts and repair for existing vehicles.

CPSC may itself take official action. J. Demarco, a CPSC compliance officer, told *Undercurrent* at the end of December that it was still investigating and testing the valve and working out the procedures of an official government-enforced recall with DUI. It seems, however, that such a dangerous valve should have been recalled long ago and that neither DUI nor the CPSC is acting quickly enough.

Another dry suit valve (the GSD valve) which appears not only on DUI suits, but also on other dry suits may be faulty. GSD Sports Equipment, a supplier in Italy, informed DUI that some of the outer retaining rings that hold the top of the valve in place were made of an incorrect plastic material that may absorb water and change the dimension of the ring. This change in dimension could cause the valve to become easy to unscrew and perhaps fall off. GSD claims that only a few of these rings are defective, but all must be replaced because it is impossible to visually determine which are good and which are defective and dangerous.

DUI, one of several manufacturers using this valve, is managing the replacement. No matter where or from whom you purchased the valve or a suit with the valve, DUI will send replacement rings and instructions.

Anyone with an AC valve on their dry suit should return the suit to DUI for valve replacement. Indicate what valve should be added. There is no charge for a Delphi, but there is a \$65 charge for replacement with either an Apex or an updated GSD valve. DUI will also inspect your suit and repair any leaks.

To return a suit or a valve, the address is: DUI, 1148 Delevan Drive, San Diego, CA 92102. Further information on either of these recalls can be obtained by calling DUI's toll free number: 800/327-8439.



# Just How Many Active Divers Are There?

-- 3.5 Million ... Or 700,000?

Diving is purported to be a very safe sport, especially when compared to other sports. The truth is, comparatively speaking, it may be among the least safe because the number of active divers may be far fewer than popular industry statistics would have us believe.

Diving fatality and accident rates are determined by the National Underwater Accident Data Center (NUADC), which is housed at the University of Rhode Island. It's essentially a one-man operation, whose John McAniff has dutifully compiled and reported data since 1970. Historically it has been underfunded by the federal government, and now barely survives on a budget of less than \$60,000 per year, mainly through large contributions from the Diving Equipment Manufacturers Association, PADI and small contributions from others, *Undercurrent* included.

Although NUADC reaches out to a number of sources for information about diving deaths, according to its own statistics about 75% of the deaths it discovers comes from newspaper clippings provided by a clipping service. John McAniff has told *Undercurrent* that the NUADC has never received complete data -- or complete cooperation -- from the training agencies or other industry sources to develop a statistical base. Essentially, McAniff labors alone to arrive at his estimates of the number of divers and the number of deaths.

NUADC's figures generally leads it to conclude that diving is becoming a safer sport. The industry relies on those figures to publicize the safety of diving, and has demonstrated no interest in investing in any further research because it can claim that each year sport diving is becoming safer.

The starting point in NUADC's analysis is its estimate, today, of "3.5 million active sport divers." In trying to get a better handle on the numbers, we had a discussion with Robert Monaghan, a 35-year-old PADI master instructor who is completing his work on his doctoral dissertation in physical anthropology at Southern Methodist University. Monaghan, who has had doctoral-level training in human population modeling and statistics, has made a formidable effort to develop a census model of participation and safety in the industry. Although his approach is at times tedious, we present it all so that anyone wishing to mount a challenge can see exactly how his conclusions are derived.

★ ★ ★ ★ ★ ★ ★ ★

In this two-part article, we will look at some of the problems which underlie the statistics presented by

the National Underwater Accident Data Center.

I will demonstrate that there is only one-fourth of the number of "active" divers claimed by NUADC.

I'll discover that the number of reported deaths may be less than the actual number.

We'll find that today's divers are making only one-third as many dives as divers of just a decade ago.

And, I'll conclude that diving is not as safe a sport as is claimed.

## "Active" Divers Versus Real Divers

To begin to understand the death rate, one has to know just how many people actually dive. In the November issue of *Underwater USA*, John McAniff was quoted as saying that "there are over 3.5 million active divers." To NUADC, an active diver is someone who dives "at least three times" a year. In NUADC's last formal report, which covered deaths in 1983 and 1984, the claim was:

"Based on information obtained from all of the national training agencies, there have been approximately 5.48 million divers certified since 1960. Allowing for dropouts, cross certifications, etc., the NUADC is now estimating the active diver population in the United States at the end of 1983 at 2.6 million active divers, and at the end of 1984 at 2.7 to 3 million divers. Based on the above information and numbers of fatalities per year, we find that 1983 had a fatality rate per 100,000 of between 3.78 and 4.07 and in 1984 the fatality rate would be the best ever recorded by the NUADC at 2.33 to 2.59 fatalities per 100,000 active divers. These figures support the position that diving is becoming safer, especially when compared to the peak year of fatalities, 1976, in which year the NUADC reported a rate of 8.62 per 100,000."

These figures are open to question judging from available data.

In the early 1970s several organizations (including NUADC in its report #7 and the National Oceanographic and Atmospheric Administration in a 1975 report entitled "An Analysis of the Civil Diving Population of the United States") estimated diver population at roughly 500,000.

In 1976, NUADC estimated 1.7 million divers, a figure requiring a 1.2 million jump from 1970. Industry figures (see chart 1) suggest that as many as 1.3 million divers were certified in that period, but NUADC's figure allows for only 100,000 dropouts during those years.

The industry itself, which Al Hornsby reports in the *PADI Undersea Journal* in 1983, uses "a stan-

standard dropout rate of 80% a year," which means that 80% of the divers certified in any given year drop out of diving within the next 12 months. In that article, Hornsby went on to say that the PADI rate is better than that.

In a preliminary 1981 report on 1979 diver fatalities, NUADC estimated there were 2.3 million "active" divers. That means 600,000 more active divers than there were reported in 1976. The industry may have certified as many as 800,000 during that period, but NUADC only acknowledges 200,000 drop outs, or 1/4 of the divers certified over three years.

Curiously, NUADC sees a 400% increase in the number of divers between 1970 and 1979, yet during that period industry figures show almost no economic growth in the diving industry. From 1974 to 1980 the total real growth of the diving industry was "a pathetic 2.5%," reported Alex Brylske in the PADI IDC Candidate Workbook.

If there was a 400% increase in "active" divers, the latter didn't buy much dive gear. The diving industry's lack of growth would seem to preclude a 400% increase in the number of "active" divers. The truth is that growth is slow because as many as 80% of the newly certified divers drop out one year after being certified (or, if they don't drop out entirely, dive a couple of times a year or two later, then give up the sport). However, NUADC's figures don't seem to take this into account.

#### *Certification Shell Game?*

Let's begin with an initial 463,000 diver population. That figure is based mainly on a NUADC study (report #7) published in 1972. This is a maximum estimate since it includes some snorkelers and commercial divers as well. Other studies support an estimate of up to half a million by 1970, but that slight increase would have no material change in the outcome of our model so we'll stick to NUADC.

By gathering certification statistics from various agencies, we're able to look at growth in number of certified divers (see chart #1) from 165,000 certifications in 1971 to 400,000 certifications in 1986. We find that a total of 3.93 million people were certified in those 16 years. Added to the 463,000 presumed to be actively diving in 1970, the total is 4.53 million people who became certified divers through American agencies.

#### *Drop-out rate*

We can estimate the maximum number of active divers by using training agency and industry estimates of an 80% drop-out rate of new divers at the end of one year. NUADC itself used a similar figure in their report on 1972's statistics: "The major training organizations estimate the 'dropout' rate in recreational diving at the end of the first year to be as much as 75 percent.

A widely quoted diver survey, the Graham study, (a 1975 San Diego State University master's thesis), supports this high dropout-rate analysis. Study of statistics revealed by PADI also may support this high dropout rate (worst case analysis of basic diver dropout is reported to be as high as 79%, in Al Hornsby's "Latest Trends" PADI IDC Candidate Workbook 1984).

NUADC now claims to use a 45% dropout rate, although the rest of the industry apparently continues to use 80%. In the preliminary publication of 1979 fatalities, NUADC stated that "200,000 newly certified divers/year, minus dropouts result in 135,000-150,000 new divers yearly." That's a dropout rate of 25% to 32.5%, but it doesn't allow for any additional drop-outs later. If a diver hasn't dropped out after one year, he's counted for life.

But experienced divers stop diving all the time and, as the diver population gets older, the dropout rate will increase. We know from *Skin Diver* magazine surveys that their average actively diving reader had 4.7 years of diving experience (Bassett, "Taking the Risk of Decompression Sickness," *Undercurrent*, July 1987). Some surveyed divers were newly certified. Others were about to drop out. But the overall average was only 4.7 years' experience.

Let us generously assume that the average diving career is roughly twice this figure, or 9.4 years. Surely, some people dive many more years, but they are easily balanced by those who drop out earlier. From a ten-year diving career, let us infer a straight-line dropout rate of 10% annually for experienced divers, which, by the way, is about the same for the instructor population.

A study of PADI (Hornsby, *Latest Trends*) from 1980-1982 supports the estimated experienced diver dropout rate of ten percent -- 11.3% of the sampled divers at all levels considered themselves dropouts. Because this sample included some divers certified within the previous year, we would expect the experienced diver dropout rate alone to be less than the quoted 11.3%. The estimate of 10% seems well supported.

#### *How many Active Divers are there?*

We can now construct a model, using the 4.53 million as the number of people who have been active in the sport or certified between 1970 and 1986.

We can presume that roughly 80% of the new divers will drop out at the end of each year and 10% of the experienced divers will continue to drop out annually. So, if we take:

- ★ The old population, i.e. those active last year.
- ★ The experienced dropouts, i.e., that 10% who will drop out between last year and this year.
- ★ The new recruits, i.e., those who get cer-

**CHART I: MONAGHAN MODEL.**

YEAR	POPULATION	EXP. DROPOUTS	NEW DROPOUTS		EXP. DROPOUTS
			CERTS	NEW DROPOUTS	NEW DIVERS
70	463000				
71	449700	46300	165000*	132000	33000
72	448130	44970	217000*	173600	43400
73	446717	44813	217000	173600	43400
74	445445	44672	217000	173600	43400
75	443501	44545	213000*	170400	42600
76	443151	44350	220000	176000	44000
77	442836	44315	220000	176000	44000
78	442552	44284	220000*	176000	44000
79	444297	44255	230000	184000	46000
80	447867	44430	240000*	192000	48000
81	455080	44787	260000	208000	52000
82	464972	45508	277000*	221600	55400
83	483275	46497	324000*	259200	64800
84	506948	48328	360000	288000	72000
85	532253	50695	380000	304000	76000
86	559028	53225	400000*	320000	80000

**NOTE:** \*Is published estimate of certifications, others are interpolated. An error of 10,000 in estimate yields declining error under 2,000.

tified this year, less those who drop out, we have:

$$\text{New Population} = \text{Old Population} - \text{Experienced Dropouts} + \text{New Recruits}$$

Chart I estimates that at the end of 1986 there were 559,000 active divers.

And, if we were to use an even more conservative dropout rate of 75% rather than 80%, the model would show no more than 700,000 active divers. We have also considered that 80% of the divers drop out in the first 12 months of their training, but perhaps not in the same calendar year. That might mean that at any given moment there are 50,000 or so more divers than the model suggests.

NUADC claims that their starting point of 463,000 divers was for 1967, even though other sources cite that figure as a 1970 number. Even if that were the case, this would make the total less than 800,000.

But consider what is left out: In these certification figures are included multi-agency certifications which the agencies fail to eliminate in their reporting. If the basic diver gets both a NAUI and a PADI card, he's counted twice. In addition, some agencies apparently include advanced certifications in their statistics; certifications beyond the open water level now account for at least 10% of the totals and are expected to reach 20% shortly.

In fact, although our model used 400,000 for the certification figure for 1985, the *Harvard* report (see *Undercurrent*, May 1987) says that out of 400,000 total certifications in 1985, only 240,000 were new divers; of the 265,000 PADI certifications awarded in 1985, for example, 160,000 were estimated to be new divers.

So, let us use the more conservative 700,000 in our future calculations, although 559,000 predicted by our model may itself be generous.

If the industry is to maintain a constant 700,000 active divers, then the agencies must certify 350,000 new divers annually just to stay even.

But the industry continues to proclaim active diver population figures five times higher. When:

$$\text{The fatality rate} = \frac{\text{number of fatalities}}{\text{number of divers}}$$

is it possible that some people may believe it makes business sense to keep that denominator as high as possible?

In the next issue, we'll see just what these totals mean regarding diver safety. Is scuba diving the safe sport we all claim it is?

*Undercurrent Comments:* We asked for a publishable response to the Monaghan article from NUADC, and received a lengthy letter addressing the article but it was specified that it was not for publica-

**CHART II: BASED ON NUADC FIGURES**

YEAR	POPULATION	EXP. DROPOUTS	CERTS	NEW DROPOUTS	EXP. DROPOUTS
				45%	10%
				NEW DROPOUTS 45% dropout	NEW DIVERS
70	500,000				
71	540,750	50,000	165,000	74,250	90,750
72	606,025	54,075	217,000	97,650	119,350
73	664,773	60,602	217,000	97,650	119,350
74	731,250	66,477	217,000	97,650	119,350
75	775,275	73,125	213,000	95,850	117,150
76	819,000	77,275	220,000	99,000	121,000
77	858,100	81,900	220,000	99,000	121,000
78	893,290	85,810	220,000	99,000	121,000
79	930,461	89,232	230,000	103,500	116,500
80	969,415	93,046	240,000	108,000	132,000
81	1,015,474	96,941	260,000	117,000	143,000
82	1,066,277	101,547	277,000	124,650	152,350
83	1,137,850	106,627	324,000	145,800	178,200
84	1,222,065	113,785	360,000	162,000	198,000
85	1,308,859	122,206	380,000	171,000	209,000
86	1,398,000	130,859	400,000	180,000	220,000

**This chart uses NUADC's estimate of a 45% dropout, which leads to a maximum of 1.4 million divers at the end of 1986 (multiple certifications are double counted).**

tion. We have used some of that material to correct Monaghan's original draft. The biggest criticism was directed at the dropout rate, which Monaghan assumes a 75-80% rate, while NUADC assumes a 45% rate (no reason other than "extensive investigation" was given by NUADC for selecting this rate. One must remember that the agencies do not cooperate with NUADC).

For the sake of good sportsmanship, we repeated Monaghan's model using the suggested 45% dropout rate, with a starting point of 500,000 divers in 1970. As you can see, it predicts 1.4 million active divers at the end of 1986 (NUADC claims 3.5 million in November 1987). Of course, this projection still double counts multiple certifications, without which

the total could easily drop well below 1 million. If Monaghan has underestimated the population of active certified divers, it is most likely by less than 300,000.

Finally, we can conclude this first part by mentioning two other industry estimates. Paul Tzioumoulis, publisher of *Skin Diver*, told *Undercurrent* that they assume an active diver market of roughly 1.1 million when promoting their magazine. And the National Sporting Goods Dealers Association has published a study in which they say that in 1985, 1,254,000 Americans made one or more dives; in 1986 that number had jumped to 1,617,000. Presumably, these figures include all those people who took resort course diving or were in training.

*Undercurrent welcomes comments, suggestions, resort/travel reports and manuscripts from readers. Send material to our editorial offices:  
Undercurrent, P.O. Box 1658, Sausalito, CA 94965*

*Change of address? Want back issues? Have subscription problems?  
Want to renew, subscribe or give a gift subscription?  
Call Undercurrent Subscriber Services, TOLL-FREE 1-800-521-7004.*

*New York State & Canada call collect - 212-873-5900*