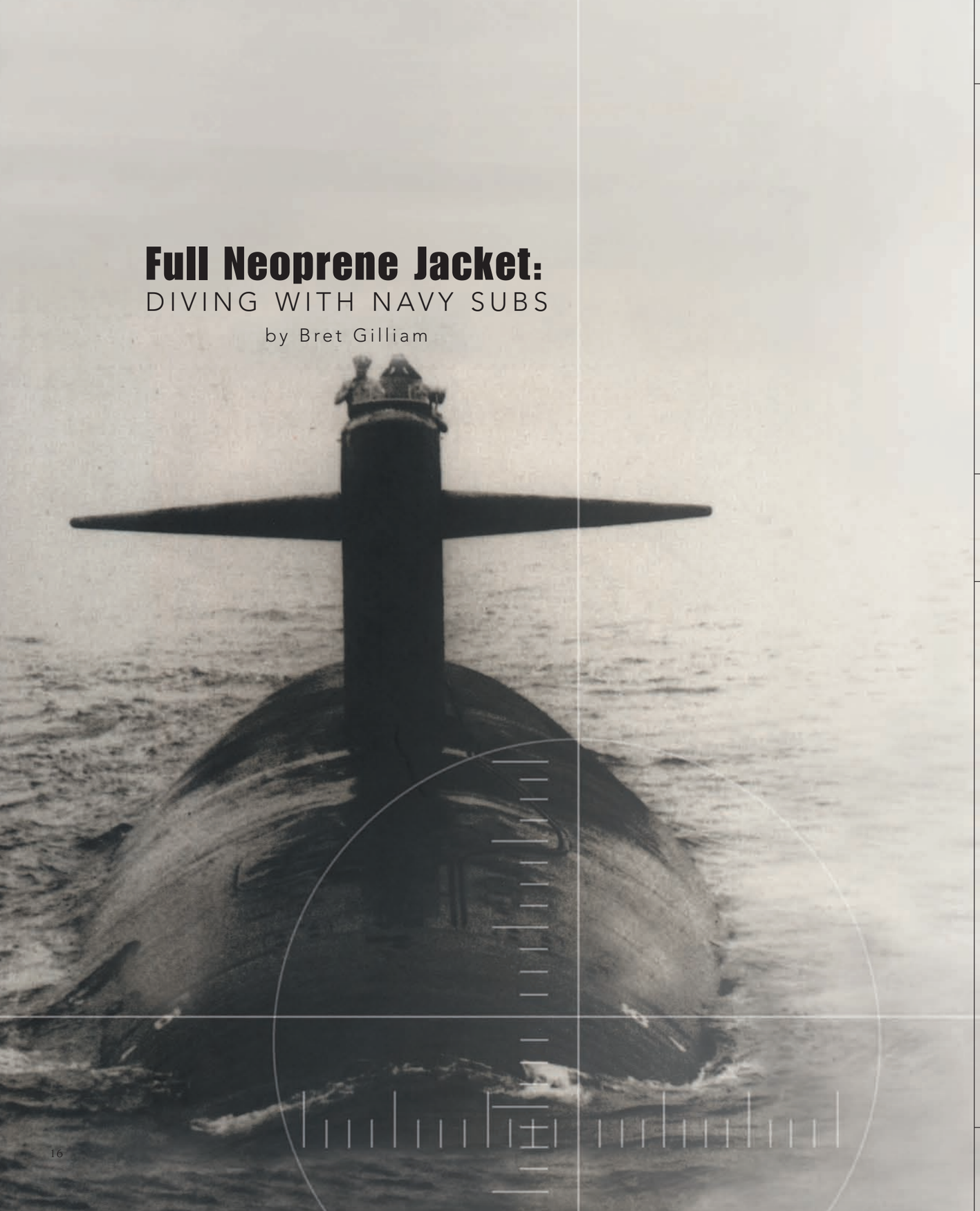
Full Neoprene Jacket:
DIVING WITH NAVY SUBS

by Bret Gilliam



ONE OF THE FIRST THINGS I LEARNED as part of my military officer training was, "Do not, under any circumstances, volunteer for anything." This was especially true in January 1971 at the height of the Vietnam war. But, through a rather circuitous route of give and take between the Army and Navy, a few months later I found myself standing on the heaving deck of a navy research vessel as the executive officer explained the exercise he wanted from the dive team to which I had been assigned.

The more he detailed the concept, the more I wondered if I would have maybe fared better in a rice paddy in Southeast Asia. But that decision was behind me and the immediacy of the task facing us as members of the dive team drew quickly into focus.

The Navy was making every effort to "silence" the fleet of fast attack nuclear submarines that hunted the Soviet missile subs called "boomers." The attack sub's mission was to seek out and destroy, if necessary, the enemy missile subs and they accomplished this by remaining as stealthy as possible. This meant minimizing every conceivable noise that might be emitted from the sub's machinery, reactor plant, plumbing, even sounds that might be generated by galley appliances and crew movement. One of the largest sources of traceable noise was produced by the massive single propellers that hurled the vessels through the dark abyssal plains of the world's oceans.

It's one thing to get a submarine quiet when it's running at slow speeds, but it's quite another story to maintain detection security when underwater speeds could exceed 75 knots! The Navy, however had some pretty bright engineering experts who had figured out that the key to reducing noise in these racehorses was to manage the wake vortex created by the propeller, dive planes and rudder. The wake vortex was a phenomenon that was visible to the human eye. This "corkscrew" trail followed the sub and created an acoustical signature that was detectable by Soviet submariners through hydrophones and other listening equipment.

Our mission was to film the wake vortex and provide the engineers back in the labs with a visible film model to effect modifications to the U.S. subs and help make them quieter. It all sounded so reasonable in the briefing room.

We already had great success with our films of the fast attack subs creeping silently along at crawl speeds. A few tweaks here and there and the damn things were virtually undetectable. But as part of their tactics in stalking the Soviet boomer fleet, it was necessary for the hunters to make brief speed bursts to get ahead of the enemy craft and then lay silent as they approached. You probably remember some of this from the various Hollywood movies dedicated to this genre of war drama. But no matter what era, World War II or the modern Cold War, the key elements to military tactical success in submarines were remaining quiet and undetected in order to kill the enemy.

Our dive team originally had worked with the hydrophone listening devices deployed from Navy P3V Orion aircraft. The mission was to detect enemy boomers from the air. These massive four-engine turbo-prop bombers would swoop low over the target area and drop dozens of canisters (that looked kind of like little bombs) in a patchwork grid of the ocean. Upon impact, the canisters exploded a floatation buoy and deployed their hydrophones to depths sometimes deeper than 200 feet. If everything worked okay, the technicians could now monitor any sub activity and track the intended targets.

In fact, we had gotten so efficient at the hydrophone work where we filmed deployments and actual functions of the devices at depth, that the lab guys in their nice neat white coats had decided to ask us to take over filming the passes of the fast attack subs.

Actually, we got the job after an attempt to use small submersibles failed dismally. Most of the time the external movie camera mounts seemed to end up pointed the wrong way or they jammed before the spool was completed. Then there was the almost fatal incident where one submersible lost ballast control and nearly sank to the bottom in over 12,000 feet of very dark ocean trench. The submersible pilot of that abortive mission quit the project on the spot. The depth rating on the mini-sub was only 600 feet; he finally arrested his descent at close to a thousand feet! No one was too eager to jump back into the tiny one-man submersibles after that.

So the torch fell to the dive team. That's why I found myself listening eagerly (and apprehensively) to the exec as he "chalk-talked"

Here's the scenario: they wanted us to descend to 250 feet and form an equi-lateral triangle with about a hundred feet between each man. We would then hold that position while a fast attack sub threaded the needle between us as we filmed it. And, oh yeah, we'd start the drill off at 50 knots. Any questions?

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us through the plan step by step. When he was finished, the three of us sat there in our uniform khaki shorts and asked politely for him to repeat the speech. We were sure that we must have misunderstood something along the way. It was just too crazy...

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Well, yes, we did have one or two little concerns. Like how were they going to avoid running us over and grinding us into fish food pellets? And what was going to happen to us once the sub passed and we were left to flounder in its considerable wake? Vortex my ass, this sounded a whole lot like a plan dreamed up by Pentagon idiots who lacked, shall we say, a certain feeling for conditions in the "field."

The exec smiled and reminded us that the key to the generous retirement program was surviving long enough to actually be eligible for the benefits. *Catch-22* lives on. Just call me Capt.Yossarian.

An officer from the sub we would be working with explained that we would be equipped with sound locators that allowed the sub to precisely fix our positions and allow them to maneuver through our "target area." That was a real comforting term to us. He noted that we would do a walk-through drill at slow speed first to let them set their navigation systems up on us before "winding her up" for the actual film pass. About then I was feeling more than a little "wound down" but we adjourned to the dive deck and began preparing our gear.

By one o'clock we were ready to go and slipped quickly into the water with our bulky 16mm movie camera housings. The ever-present oceanic white tip shark population swam up immediately to greet us. After a few banged noses and punches to the gills, the sharks backed off enough to let us split up and get into position.

We left John Hood at about 150 feet where he formed the top of the triangle. Pat Romano and I swam away from him to the prescribed distance and then dropped to 250 feet as the sub waited patiently in the blue gloom. Once set up, the sub eased through our pyramid without incident with about 25 feet of clearance on Pat and me. John was barely clearing the conning tower (or sail) so he moved up another ten feet or so after the requisite communications with the sub crew.

Now we were ready. The sub moved off into the blue and disappeared. They would give us a sonar ping when they began their run so we had some idea of when to start running the film. We hung nervously in the water column and waited. After what seemed like hours, but was really only minutes, we heard the ping. And felt it. Getting an active sonar ping underwater is about like being belted by an NFL defensive end. Please sir, can I have another?

We counted off ten seconds and jammed our thumbs on the camera housing triggers. The 16mm Bolex gears hummed efficiently as we stared into the empty void. In the open ocean visibility can exceed 200 feet but we never actually saw the sub as it screamed by us. You had the vague idea of a dark shape appearing out of the blue, but before the human eye could focus, it was on us and racing past. We stared at the 50-foot arcs created by the wake vortex and grinded away with the film.

About then the effects of the wake turbulence were felt by Pat and me. He was hurled up and to the south while I was thrown like a limp rag to the north and down by the power of the massive right-hand rotating prop. Pat ended up nearly level with John at the high side of our pyramid while I found myself watching my depth gauge needle peg itself at 350 feet.

Luckily we had clipped the camera housings to our harnesses because they were immediately ripped from our grasp like Kobe Bryant's wife snatched that six-carat, four-million-dollar diamond ring from his hand as a peace offering following his recent marital infidelity. But, incredibly, we were none the worse for our experience. (And apparently neither was she.)

We rendezvoused at 100 feet and swam up to decompress while fending off the sharks who looked happy to see us. An hour and a half later we struggled aboard. Two days later we all looked at the film. It was magnificent with these beautiful wispy corkscrew trails neatly marking the sub's path. The sub guys were happy. The engineers were ecstatic. And we were tired.

Over the next few months we would duplicate our exercises successfully, scores of times. We finally even got to experience what actual flank speed (full ahead) for the sub was like. It was simultaneously thrilling and terrifying. Try standing on the white dotted center line in the middle of the L.A. freeway blindfolded sometime. I suggest bringing a change of underwear the first time out.

Bret Gilliam worked on U.S. Navy ASW projects on location in the Virgin Islands and Puerto Rico for nine months in 1971. During that period his dive team conducted a variety of experimental diving protocols that advanced the traditional diving technology of the era.

SEACOLOGY:
making a difference... now!

BY BRET GILLIAM

Rarely a week goes by without being approached by a non-profit organization looking to have a puff piece run in *Fathoms*. Because the ocean environment in general, and coral reefs in particular, have been in better shape and because *Fathoms* is concerned about improving these conditions, we were initially inclined to look into the possibility of running a few articles about the important work being done by nonprofit organizations trying to protect the health of our reefs. A little obstacle, however, kept on getting in our way. It's called the truth.

Duane with one of the locals

While there are several well-intentioned marine-related nonprofits out there, many seem to be more concerned with self-perpetuation than saving a reef here and there. When I donate my hard-earned cash to a charity I want to make sure the money is put to good use. I'm not particularly interested in funding some more conferences or studies. I want the reefs preserved now. Somehow I think our readers share this value. So every time we were about to run an article about one of the nonprofits, even casual investigation showed that too much of my donation would go to fund a bloated bureaucracy.

A funny thing then happened to restore my faith. Stan Waterman and others started telling me about a new and unusual organization with a very small staff, little overhead and a focus on preserving the marine environment now. This organization, Seacology, works in a very unusual way. They make deals with local islanders whereby the islanders receive a critically needed tangible benefit such as a school room or a fresh water delivery system, in return for a specific sacrifice on behalf of the environment. Recently Seacology signed an agreement with Naikorokoro village in Fiji to construct a kindergarten in return for the establishment of a 17-square-mile marine reserve. Sounds good, doesn't it? Wait, it gets better. Because of the relatively low cost of things in Fiji the kindergarten will be built for $11,000. Your local school district probably couldn't get an architect to draw up plans for that amount of money. (In fact I think my first dive computer cost almost as much and as I recall was about the size of a kindergarten as well.) A school group in the Cayman Islands heard about this project and along with another school group in California raised enough money to go ahead with this project. Kids in the Caymans raising money to help kids in Fiji save their coral reefs makes for an incredible story. For $11,000 Seacology has built a kindergarten, established a 17-square-mile marine reserve and has created a model of international cooperation. That's what I call good value.

Then I found out that the director of Seacology, Duane Silverstein, was a former comedy writer. An environmentalist with a sense of

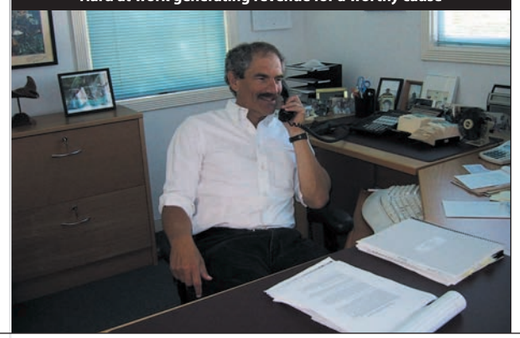
humor? Now that's a story.

Silverstein is the executive director of Seacology, a nonprofit organization with the sole focus of preserving island environments throughout the globe. For 20 years prior to heading Seacology, he was the executive director of the Goldman Fund, one of the West Coast's largest philanthropic foundations. He also headed the Goldman Environmental Prize, which has been dubbed the "Nobel Prize of the Environment" by *National Geographic* and news media throughout the world. Silverstein has met with many presidents of the United States, Secretaries General of the United Nations and heads of state throughout the world. His work has been covered in newspapers and periodicals as diverse as *Time* magazine, *The Bangkok Post*, *The San Francisco Chronicle* and *Asian Diver* magazine. Silverstein is an avid diver and a former comedy writer for Joan Rivers.

FM: How did your love of islands develop?
DS: Perhaps it was because I was born and raised on an island, Long Island, New York. Then in 1975, through Columbia Law School, I was selected for a volunteer internship with an environmental organization in Hawaii called Life of the Land. I was not only exposed to the beauty of islands but to the beauty of island cultures as well. I was so moved by my experience that I dropped out of law school and devoted my life to preserving our natural heritage for future generations. I have now visited 73 islands throughout the world.

FM: Where did your interest in the marine environment come from?
DS: While working in Hawaii I went snorkeling for the first time in Hanauma Bay. Growing up, the only fish I ever saw were in a fish store and they were dead and gray. Seeing all those colorful fish in the water was a case of love at first sight.

Hard at work generating revenue for a worthy cause



FM: Enough about you, tell us about Seacology.
DS: Seacology is the world's premier organization with the sole purpose of preserving the environments – both marine and land based – of islands throughout the globe. We specialize in win-win situations where islanders receive a needed tangible benefit for preserving their environment.

FM: How was Seacology founded?
DS: Dr. Paul Cox, one of the world's leading ethno botanists, was studying the pristine rainforests near the remote village of Falealupo, Samoa when logging equipment was brought in to cut down the trees. Dr. Cox found out that the government of Samoa told the village of Falealupo that they had to build a better school or all the teachers would be removed. With a per-capita income of less than $100 per person per year, the village had no choice but to sell the logging rights to their rainforest to build the school and ensure the education of their children. On the spot, Dr. Cox said, "If we raise the money and build you the school would you sign an agreement protecting the 30,000 acre rainforest forever?" The village chiefs said yes, Seacology was formed, the money was raised (thanks to a generous gift from fellow diver Ken Murdock), the school was built and a 30,000-acre rainforest will now be around for eternity. Then Seacology came in and, with the support of the Nu Skin Enterprises, constructed an elevated rainforest canopy walkway as an ecotourism project. This walkway project has now raised more money than the village would have received for cutting down their rainforest!

FM: Any examples of other Seacology projects?
DS: In Fiji we have built several community centers, and installed critically needed water delivery systems in exchange for the establishment of large no-fishing marine reserves to give the reefs a chance to replenish. In Indonesia we built several fish aggregating devices to offer local villagers an alternative method of fishing instead of using dynamite and cyanide on their reefs. In Palau and Papua New Guinea we have funded the deployment of demarcation buoys and trained rangers to turn "paper parks" into effective marine reserves. In Belize we helped construct a ranger station, which almost immediately put a stop to illegal manatee poaching.

FM: How many projects has Seacology launched?

At the opening dedication

DS: In our brief four-year history as a staffed organization we have launched 65 projects, all of which lead to immediate tangible results. We have a counter on the homepage of our website (www.seacology.org) which indicates that to date we have preserved 38,310 acres of island terrestrial habitat and 804,475 acres of coral reef and other marine habitat. These figures are precise and we can document every one of these acres.

FM: To accomplish so much in such a short time you must have a large staff.
DS: On the contrary, we have one of the smallest staffs I know for an international environmental organization, with a grand total of four staff people. Contrary to popular myth you can often accomplish more with fewer people as you can eliminate red tape and bureaucracy and have everyone work on implementing projects instead of attending staff meetings and writing unnecessary internal memos.

FM: Speaking of bureaucracy, what percentage of the money you raise is devoted to programs, administration and fundraising?
DS: According to our most recent audit, 83% of our budget goes to programs, 11% to administration and 6% to fundraising. This is why noted marine biologist Dr. John McCosker said in a radio interview with Charles Osgood, "Dollar for dollar, pound for pound, Seacology gets more output than any conservation group that I've seen. They're not giving money away, they're not making grants, they're making deals."

FM: What are the keys to success for Seacology's cost efficiency?
DS: First, a little goes a long way in many of the islands we are working in. We are building a kindergarten in Fiji for $11,000 and we built a ranger station in the Philippines for $7,000. Try doing that in the United States! Second, as mentioned, we keep the staff and the red tape as small as possible. Third, we do not engage in wasteful mass mailing or telephone solicitation fundraising campaigns.

FM: How do you raise money for Seacology?
DS: Our core support is provided by our generous board of directors, many of whom joined the board after accompanying us on one of our trips to see how effective our projects are in the field. We also receive foundation funding, corporate funding (Nu Skin has been particularly generous) and contributions from individuals.

FM: If our readers want to support Seacology's efforts how could they make a donation?
DS: We would be pleased to receive tax deductible donations via credit card, our secure server website or by mail. Our address is:

SEACOLOGY
2009 Hopkins St., Berkeley, CA 94707
Phone: 510-559-3505
Email: islands@seacology.org
Web: www.seacology.org

FM: Do you have any interesting trips planned in the coming year?
DS: We will be visiting our project in the Maldives in October aboard the new *Island Explorer* liveaboard. We are going to Madagascar in April 2004 where we are helping to create a new national park. We will be returning to Fiji to open three new projects in July 2004.

FM: Any parting thoughts you'd like to convey?
DS: Over the last four hundred years most of the world's plant and animal extinctions have taken place on islands. Coral reefs and marine ecosystems have been particularly vulnerable. It is incumbent on every member of the diving community to do something about this so that our children's grandchildren and future generations can share our joy and awe of the underwater experience. Donations received by Seacology will not be used to attend conferences or workshops or study that which we already know–the ocean environment is in dire straights. If one is looking for a way to make a cost-effective contribution to immediately have a tangible impact on preserving these environments, Seacology offers an ideal opportunity.