What does *"Nation of Secrets"* have to do with the scuba industry?

Investigative reporter Ted Gup is 180-degrees from a tabloid sensationalists. With over 20 prestigious journalism awards, Gup has been called, "A National Treasure" by the Director of Harvard University's Kennedy School of Government, Alex Jones.

Gup has no agenda for either side of the aisle, but is a patriot who understands that sometimes secrets are necessary. Some may know that inside the lobby of CIA's headquarters are black stars on a white marble wall. Each star represents a CIA operative killed in the line of duty, and most stars are anonymous, only the date of death is shown. Gup is the only journalist ever allowed access to the stories behind the CIA Stars, compiled in his previous book, *"Book of Honor: The Secret Lives and Deaths of CIA Operatives."* This unprecedented history of covert operations at the CIA was compiled from interviews with over 400 current and former CIA officers, and access to personal letters and diaries.

Ted Gup's latest book, published in June 2007: ***"Nation of Secrets: The Threat to Democracy and the American Way of Life"*** details how from the classroom to the boardroom, from your doctor's office to the highest reaches of government, your right to vital information has been hijacked by someone else's claim to secrecy. Each year, tens of thousands of secret court settlements involve defective consumer products from most industries. Some products, already known to be defective, remained on the market for years to cause further deaths and injuries, as unethical manufacturers game the CPSC's rules of compliance.

A particularly grievous example uncovered by Gup involved *multiple* multi-million dollar settlements paid by Scubapro / Uwatec, a leading manufacturer of recreational scuba equipment, related to their defective dive computers known by insiders to have caused life-long debilitating injuries.

After Gup's book was published he learned that the New York Harbor Department's Dive Team had purchased 20 of these defective computers, years after Scubapro / Uwatec*, and many Scubapro retailers knew the computers were defective.*

Sealed and secret out-of-court settlements are a common tactic of the major scuba manufacturers and training agencies in the USA; this includes currently pending cases *already* sealed months before a pending trial date. Cloaked from daylight are accidents involving defective scuba products, and training standards for instructors and consumers known to be deficient by the industry's leadership and insurance underwriters. The USA is the *only* industrialized country in the world that lacks any form of government oversight of recreational scuba, and the only country where self-regulated accident reviews have never blamed defective equipment. When accidents occur, the USA's recreational scuba industry's "playbook" is to (A) attempt to bury the story, (B) blame the victim, (C) impugn all sources of information outside the industry, and (D) stand behind the liability waivers signed by the victims.

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TED GUP CONTACT INFO

NATION OF SECRETS

The Threat to

DEMOCRACY

and the

AMERICAN WAY OF LIFE

TED GUP

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First Edition

Officer Zepetella's widow, Jamie, spent the three years following her husband's brutal murder seeking justice. Her husband's assailant, Adrian Camacho, is now on San Quentin State Prison's death row. On September 7, 2006, a Vista Superior Court jury in California returned a $2.5 million verdict against Second Chance and Toyobo, the firm that manufactured the vest material.

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There was a certain irony that the claims about the Zylon vest, like the vest itself, ultimately could not withstand prolonged exposure to light. Other secrets lay fathoms deep, well beneath the surface, where light can scarcely penetrate.

On April 18, 2002, 41-year-old Robert Raimo, a seasoned diver with more than 2,000 dives to his credit, entered the warm waters off the Caribbean island of Bonaire. A man of superior fitness, he cherished nothing so much as time in the water. Yet time to a diver can be both a friend and a foe. Too much time below and not enough time taken to surface can cause dreaded decompression sickness, commonly known as the bends. An often-complex computation of blood gases is required of anyone who ventures into the depths, and a miscalculation can prove disastrous, even fatal.

Raimo knew this better than most. He had managed retail stores that sold diving gear and distributed, among other products, a tiny wrist-worn computer that did the unwieldy math for divers, determining, once certain parameters were set, how long and how deep they could go. It was said to be a revolutionary device without peer. The maker of that computer was Uwatec, a Swiss company that by 1996 dominated this niche market. The name of the model Raimo wore on his wrist that day invoked a mix of computer science and magic—the 1995 Aladin Air X Nitrox.

Later, in some ways, Raimo would say that he never fully surfaced from that day's dive. Instead he showed symptoms of serious decompression sickness, including dizziness and loss of memory. Here was a man who had made vastly more demanding dives. This dive he had contemptuously dismissed as a "baby dive" for its lack of challenge. He couldn't figure out what had happened to him. But what he faced was no mystery of the deep. Instead, he would slowly and painfully learn of

a string of similar seemingly inexplicable cases of decompression sickness allegedly suffered by veteran divers wearing the same model Uwatec computer. And he would learn that the manufacturer had known more than it was telling divers.

The story unwinds like a skein of yarn, going back a full six years before Raimo fell prey to the bends. The model Raimo wore sold for about $1,000 and was marketed by Uwatec between July 1995 and March 1996. In 1997 the company was purchased by Johnson Worldwide Associates (later, Johnson Outdoors). The first whiff of trouble with the device is believed to have surfaced in January 1996 when a software engineer allegedly wrote an internal memo referring to a "question about the faulty Aladin Nitrox." The memo concluded, "Please keep the information confidential."

Uwatec employees Frank H. Marshall and Patricia Dougherty, the office manager and bookkeeper, were made well aware of a potential problem with the device, in particular with a logarithm that could, under certain circumstances, miscalculate the amount of nitrogen in the body, especially in the context of repeat dives. They were troubled by the notion that something could be wrong with a device to which people entrusted their health. Dougherty says she and Marshall asked Uwatec to issue a product recall, but were told not to pursue it.

Instead, says Dougherty, she and others within the company decided to take matters into their own hands and do what they could to get the product off the market—a kind of secret recall. Each time a customer sent one of the units in for a fresh battery, says Dougherty, they would keep the device and send out a newer model, one they believed to be free of defects. Sometimes, she said, they would pretend that in changing the battery they had inadvertently damaged the screen, requiring the entire unit to be replaced. But addressing the matter one unit at a time still left others at risk.

On April 22, 1996, Marshall and another Uwatec employee, Sean Griffin, wrote Uwatec president Heinz Ruchti, "As mentioned in my letter of April 9, 1996, we need to know when the surface interval calculation changes were made to the software of the Air X Nitrox computers. We still recommend that it would be a good idea to replace these first generation units immediately as we feel an obligation to our customers' safety."

Later that same month, Dougherty and Marshall took the extraordinary step of drafting a recall notice for the product. "In America," says Dougherty, "we are used to being honest about things. We just felt full disclosure was necessary. The degree of danger may have been slim but nonetheless, it should have been disclosed." The draft recall notice read: "Uwatec USA, Inc. announces the mandatory recall of all Aladin Air X Nitrox dive computers made on or before December 1995. All owners of these units are hereby advised to return these units immediately to their dive retailer or directly to Uwatec USA, Inc. . . . The unit will be replaced at no charge and returned within one week. Thank you for your kind cooperation."

They had the notice copied at a Kinko's, but the notice was not distributed. Soon after, they were fired. Dougherty and Marshall were convinced that they had been let go because they wanted to recall the device and issue a public warning. Instead, the bill for the unsent notices was presented to Uwatec USA's new CEO, Bret Gilliam, a legendary diver. Gilliam was persuaded that the recall notices were nothing more than an attempt to embarrass the company by employees facing their own imminent dismissal. (Marshall and Dougherty would go on to cast themselves as whistle-blowers and win a million-dollar verdict against the company for wrongful termination.)

Meanwhile, divers continued to rely upon the Uwatec computer. In November 1997, Maurice Coutts, an experienced diver and an eminent engineer at Princeton Materials Institute, died after diving in Bonaire. On his wrist he wore the Uwatec computer. At the time the device was not implicated, though his son, Lewis Coutts, now wonders whether it could have been at least partially responsible for his father's death.

On June 1, 1998, the body of 45-year-old Dr. Wesley C. Gradin, an Oregon physician, was found in 67 feet of water at the edge of a kelp bed near Friday Harbor, Washington. An autopsy ruled out preexisting medical conditions. An experienced underwater photographer and diver, he too wore the Uwatec computer. It was speculated that Gradin's accident was related to his rebreather apparatus. The conclusion was "diver error"—he had not properly maintained the rebreather. At the time, the Uwatec computer's alleged defect was not publicly known, and once again, it was not implicated in the fatality.

But other divers say their reliance on the device was responsible for

their suffering the bends. In late 1998, former Uwatec employee Frank Marshall alerted the Consumer Product Safety Commission, which conducted an examination of the computer but did not order a recall.

On March 19, 1999, Mitch Skaggs and Rezvan Iazdi were diving off the wreck of the *Deep Freeze* near Miami. The next day, the two were flying over the United States when, they say, the bends struck. They became nauseated. At a layover in North Carolina they were rushed to Durham, where they were placed inside recompression chambers. Both men had been relying on their Uwatec computer—in fact, Skaggs was a former Uwatec employee.

Bret Gilliam had left the company in 1998. Still, no warning had been issued regarding the Uwatec device. Sometime after leaving the company, Gilliam apparently remained concerned about the safety of the computer. By chance, he met a diver who was preparing to board a boat for a dive and noticed that he was wearing the 1995 Uwatec device. In an effort to protect the diver from the potentially defective unit, Gilliam repeatedly offered to purchase the device or trade it for his own newer model, but the diver resisted.

Gilliam apparently felt unable to come right out and voice his concerns. Ultimately, he boarded the boat himself and pretended to stumble and knock over a tank that crushed the face of the man's device, rendering it useless. He then gave the diver his own computer and some $500 with an apology. He was walking a fine line, attempting to protect a stranger without publicly acknowledging the existence of a defect.

But divers elsewhere continued to use the device, unaware of the potential risk. In September 2000, David Sipperly was hit with the bends while diving off Rhode Island. He too used the Uwatec device.

On October 12, 2001, Stewart Esposito suffered the bends while diving off the Cayman Islands. The Uwatec was on his wrist.

On January 27, 2003—six years after the recall notices were copied at a South Carolina Kinko's—Robert Raimo's attorney, David G. Concannon, says he urged attorneys for Johnson Outdoors to seek an immediate recall. On February 5, Raimo sued the company, adding his name to the list of injured and disabled divers. One of the attorneys for Johnson Outdoors' insurance company threatened to sue Concannon for slander and mocked his spelling, grammar, and lack of understanding of the litigation process.

But that same day, February 5, 2003, the Consumer Product Safety

Commission issued an immediate recall of the device. The problem? Johnson Outdoors called it a "software glitch," the very problem that had led Marshall and Dougherty six years earlier to seek a recall. In a press release, the company pointed out that it was a voluntary recall and a company spokeswoman, Cynthia Georgeson, said the timing, on the very eve of the filing of the Raimo case, was "a pure coincidence." The company had indeed notified the CPSC months earlier of suspected problems with the device.

Johnson Outdoors' recall announcement stated that "software in the dive computers may inaccurately calculate desaturation times, resulting in possible decompression sickness under aggressive dive conditions. . . . Consumers should stop using these dive computers immediately and contact Uwatec for a free replacement." The recall eerily echoed the word of the notice printed by the two former Uwatec employees years earlier.

Cynthia Georgeson says the company acted promptly to recall the product as soon as solid evidence surfaced of its defect and that any suggestion that the firm attempted to conceal a dangerous flaw in the device is utterly unfounded.

Today, Raimo remains a shadow of his former self. The after-effects of his decompression sickness have ended his diving, affected his memory, altered his personality, and put a burden on his marriage. A friend says damage to his central nervous system is so severe that Raimo can barely wield a hammer.

In time, the company settled with divers Skaggs, Iazdi, Sipperly, Esposito, and Raimo. Former employees Marshall and Dougherty believe the injuries could have been averted if only their recall notice had been sent out. Several of those who say they were hurt by the device, as well as some former Uwatec and Johnson employees, say confidentiality agreements still limit what can be said about the matter. Even today, while admitting there was a defect in the device, Johnson Outdoors will not acknowledge that anyone was injured by it and will not discuss any details of its settlements with the divers beyond saying that all parties agreed to its confidentiality provisions.

Johnson Outdoors never actually sold the defective devices and says that when it acquired Uwatec in 1997 it was completely unaware of any defect. According to Georgeson, Uwatec signed warranties assuring the acquiring company that its product was defect-free. Even though the

two fired employees, Dougherty and Marshall, sued Uwatec, alleging that they were whistle-blowers, Johnson Outdoors says Uwatec told them there were no problems with the computer and that it was simply "disgruntled employees" trying to make trouble for the company.

"People kept the facts from us by both omission and commission and that prevented us from doing what we would have done and what we did when we had all those facts—which was doing the right thing [the recall]," says Georgeson. "We are a victim of secrecy." And there is yet another secret surrounding the matter. Georgeson says she is forbidden from discussing what, if any, settlement Uwatec may have made with Johnson Outdoors over the matter of the former's nondisclosure.

• • •

The District of Columbia Water and Sewer Authority is hardly a place that conjures up images of heroism, which is why, perhaps, some of those who run WASA, as it is called, felt emboldened to treat James J. Bobreski as they did. In 1999, Bobreski, who worked for a WASA contractor, became concerned about conditions at the Blue Plains Wastewater Treatment Plant in southwest Washington, D.C., specifically the sensors and alarms designed to alert employees of a leak of potentially deadly chlorine. Bobreski discovered that sensors designed to pick up even trace amounts of leaking chlorine were not functioning. Nor were the alarms. To Bobreski it appeared they had been deliberately disabled. He recognized the potential for disaster. Chlorine gas was used as a weapon by the Germans in World War I. In the worst case, the chemical chlorine used at Blue Plains could leak as a gas that could spread at ground level across many miles, reaching even the U.S. Capitol and bringing with it death to thousands.

Bobreski brought the matter to his superiors, but to no avail. Finally, he contacted the *Washington Post*. The resulting front-page story brought swift attention to the problem. The story's third paragraph got much of the city's attention: "At least 180 tons of chlorine is stored at Blue Plains—some days there is as much as 630 tons—in a liquid form so toxic that even if only a portion of it were accidentally released, it could kill plant workers in seconds and create a poisonous plume more than 30 miles long."

lease of 2/14/05, "Wal-Mart Agrees to Pay Fine for Violating Child Labor Laws."

250 **The elaborate ends to which the corporate giant Hewlett-Packard went** "Ex-Chairwoman Among 5 Charged in Hewlett Case," *New York Times*, 10/5/06.

250 **"FDA Official Alleges Pressure to Suppress Vioxx Findings"** *Washington Post*, 10/8/04, p. A23.

250 **In June 2005, Guidant Corporation recalled some 29,000 heart devices** Barry Meier, "Citing Flaws, Maker Recalls Heart Devices," *New York Times*, 6/18/05.

251 **Rowley had tried to sound the alarm within the FBI** Rowley letter to FBI director Robert Mueller, 2/26/03; and Rowley's letter to Mueller, 3/6/03.

252 **On June 13, 2003, Zepetella pulled a car over in the parking lot** *San Diego Union-Tribune*, 1/28/04; *Detroit Free Press*, 11/21/05 and 11/22/05.

253 **Those questions were raised by the company's own head of research** Author's interviews with Aaron Westrick.

255 **On September 7, 2006, a Vista Superior Court jury in California** *San Diego Union-Tribune*, 9/8/06.

255 **On April 18, 2002, 41-year-old Robert Raimo** Author's interviews with Robert Raimo's attorney, David Concannon; court documents: *Robert Raimo, Plaintiff, v. Uwatec, Inc., Undersea Industries, Inc., d/b/a/Scubapro, and Johnson Outdoors, Inc., Defendants*, U.S. District Court, Northern District of California, Case No. C 03–0513 WDB.

256 **Uwatec employees Frank H. Marshall and Patricia Dougherty** Author's interview with Patricia Dougherty, 10/4/06.

257 **Later that same month, Dougherty and Marshall took the extraordinary step** Ibid.

257 **In November 1997, Maurice Coutts, an experienced diver** Author's interview with Coutts's son, Lewis.

257 **On June 1, 1998, the body of 45-year-old Dr. Wesley C. Gradin** Author's interview with San Juan County (Washington) Sheriff William Cumming; *Tacoma News Tribune*, 6/1/98.

258 **On March 19, 1999, Mitch Skaggs and Rezvan Iazdi were diving** See *Skaggs v. Uwatec, Inc., et al.*, Case No. 4:01–cv–03303–wdb, filed 8/29/01, and *Iazdi v. Uwatec, Inc., et al.*, filed 12/10/01, both in U.S. District Court, Northern District of California (Oakland); also see

Milwaukee Journal Sentinel, 9/21/03, and *San Francisco Chronicle*, 5/25/03.

259 **Johnson Outdoors called it a "software glitch"** Author's interviews with Johnson Outdoors' spokeswoman, Cynthia Georgeson, 10/11/06, etc.

259 **Johnson Outdoors' recall announcement stated that** Recall from Consumer Product Safety Commission, 2/5/03.

260 **In 1999, Bobreski, who worked for a WASA contractor** See *James J. Bobreski, Complainant, v. District of Columbia Water and Sewer Authority, Respondent*, U.S. Department of Labor, Office of Administrative Law Judges, Case No. 2001–CAA–6; and *James Bobreski, Plaintiff, v. U.S. Environmental Protection Agency, Defendant*, U.S. District Court for the District of Columbia, Civil Action No. 02–0732 (RMU).

260 **The resulting front-page story** Eric Lipton (reporter), *Washington Post*, 11/5/99, p. A1.

"On the following pages is the Undercurrent" newsletter report on the recall process + Johnson Outdoor's first law firm was forced to resign the defense by the Judge for violation of ethics standards.

hor's interview

Washington Post,

Investigation

umbia Water and Sewer Authority," conducte under direction of Eric H. Holder, 7/16/04.

263 **In November 2005, Bhat got the vindication** Decision of the U.S. Department of Labor Administrative Law Judge Stuart A. Levin, *Seema Bhat v. District of Columbia Water and Sewer Authority*, Case No. 2003 CAA 00017.

263 **When someone like Doug Park raises a question** Author's interviews with Douglass K. Parker 9/9/06, etc.

265 **For 31 years Bob Jackson has be n a seasonal Park Service ranger** Author's interviews with Bob Jackson.

265 **When his comments began to appear in area newspapers** An Associated Press story in which Jackson was critical of salt-baiting appeared in the *Billings (Mont.) Gazette* and elsewhere.

267 **He was a 24-year-old political appointee named George C. Deutsch** "A Young Bush Appointee Resigns His Post at NASA," *New York Times*, 2/8/06.

miting. The reefs I dived didn't show damage, but it's not a good sign for the future in this still primitive society. Wherever we stopped, local residents paddled out in their outriggers to trade produce for rice, sugar, or salt. Their lifestyle is basically the same as it's always been, and they seem no more worried about the future — unfortunately — than they do the past. We tourists passed out a few trinkets — pens, pencils, combs, hair scrunchies, and balloons — and they rewarded us with big smiles and thank you's in pidgin or English.

As for the diving, each time I got wet I saw more fish than I would see in the Caribbean in a week! But this itinerary didn't have spectacular shows such as those in the currents of Palau's Blue Corner and Peleliu Cut, the walls of jacks and barracudas as in the Solomons, or the squadrons of eagle rays in the Maldives. Because all the diving was on coral gardens and bommies, they were all similar. Nonetheless, the reefs were beautiful, the fish plentiful, and the boat superb. Two back-to-back weeks were too much; next time, I'd take one here and take another of the many boats (see sidebar) that travel elsewhere in PNG. After all, there is a lot of ocean here.

-- K.I.

Diver's Compass: We made all arrangements through Reef & Rainforest in Sausalito, Calif., www.reefrainfrst.com ... Peter Hughes' website for the Dancer Fleet is www.peterhughes.com ... Rates for our cabin in 2002 were $2195 + $65 port charges, per week, with a 10% discount for back-to-back weeks ... Nitrox is available at extra charge ... the nearest chamber is Australia, a long and painful haul ... The price for 2003 is listed as $1895 for the same room — quite a difference ... We used frequent flyer miles to fly to Sydney, then Cairns, from where we hopped to PNG on Air Niugini ... At the Cairns Colonial Club, our Superior Room was $105 per night, including transfers, www.rihgacolonialclub.com.

April 2003 edition of *"Undercurrent"* newsletter

Aladin Air X Nitrox Computers Recalled

at last

UWATEC AG, of Switzerland, is recalling about 390 Aladin Air X Nitrox dive computers manufactured in 1995. The software "may inaccurately calculate desaturation times, resulting in possible decompression sickness under aggressive dive conditions."

UWATEC has received five reports of DCS "allegedly associated with use of the 1995 dive computers." UWATEC has stated, "For safety reasons, we ask that you stop using the 1995 dive computer immediately."

To which we can only reply, "What took you so long?"

It turns out that problems with the Aladin Air X had already surfaced by 1996. We learned of the computer's long, sorry history by reviewing public documents filed in product liability lawsuits by customers who claim they got bent while using the computer. These records allege a pattern of problems either being ignored or denied, in the face of mounting evidence of a dangerous "air-switching" defect. In its Nitrox mode, the user-programmable computer allegedly assumes that the user is still breathing Nitrox during surface intervals. By not switching to an air table, the software underestimates the buildup of residual nitrogen during repetitive dives. The greater the number of repetitive dives — and the longer the surface intervals — the greater the danger.

Was a 1996 Recall Stifled?

Bret Gilliam, who today owns International Training Inc. (TDI and SDI) and Fathoms Magazine, is the ex-vice president and CEO of UWATEC U.S.A. He stated in a May 2002 deposition that on his first day of work at UWATEC U.S.A. in April 1996, he found a recall notice drafted by his predecessor, Sean Griffin. Gilliam, who has testified

that he had no prior knowledge of either a defect or a recall, asked UWATEC's owners in Switzerland for an explanation. But, he has stated, Heinz Ruchti, UWATEC's founder and owner, convinced him the recall notice was bogus, merely an attempt by former employees who had been discharged to get back at the company. Ruchti was preparing to sell the company to Johnson Worldwide Associates — now Johnson Outdoor International, which also owns Scubapro — and they finalized the sale in late 1996. It took effect in July 1997.

According to documents filed in the product liability lawsuit, two ex-employees, who had been discharged before Gilliam's arrival, sued for wrongful termination in South Carolina in 1996 claiming, among other things, that they had been "fired because of their attempts to publicize the very air-switching defect." An expert witness at the wrongful termination trial even testified about the defect. The jury in that trial handed down a $2 million verdict in favor of the ex-employees, which UWATEC then appealed. By then, however, Johnson owned UWATEC and allowed the suspect computers to remain in service.

Another Recall Turned Down

Gilliam, now CEO of UWATEC U.S.A., had dived with the Aladin Air X himself and said he had no problems. So he testified that the defect might just have been a mechanical flaw in one or perhaps only a few units. As part of the strategy for appealing the wrongful termination suit, Gilliam suggested that dealers be asked to return '95 Aladin Air X's for testing, hopefully to disprove the allegations of defects. According to Gilliam's deposition, he was instructed by senior executives at Johnson's and at UWATEC's main office in Switzerland not to do so — that such an action would only produce bad publicity for the company.

Questionable Safety Commission Finding

The wrongful termination case was eventually settled out of court, but publicity about the possible defect triggered a 1998 Consumer Product Safety Commission (CPSC) investigation into the '95 Aladin Air X. In September 1998, Gilliam had begun a limited recall of the unit on his own initiative. After approximately 25 computers were returned, he testified in his deposition, he was instructed to send them to Switzerland, where the UWATEC facility would ostensibly make battery changes and return them to the U.S. Two months later, Gilliam said, he was instructed to provide a few of these returned computers to Johnson's attorneys, who then forwarded them to the Consumer Products Safety Commission for their testing. The results of those tests produced no defects. When asked in his deposition whether this sequence of events now suggested to him that the computers had been "tampered with or altered in some fashion by the time they were returned" from Switzerland, Gilliam replied, "Apparently so."

Gilliam stepped down as vice president and CEO of UWATEC U.S.A. in November 1998 when Johnson merged UWATEC U.S.A. with Scubapro and relocated both to El Cajon, Calif. He remained under contract as a consultant until July 2000.

An Even Earlier Warning

In March 1999, Mitchell Skaggs and Resvan Iazdi, each using the 1995 UWATEC, developed serious DCS following a series of repetitive dives on Nitrox. Court filings allege that both men were treated at Duke University in North Carolina and released with continuing neurological deficits and other injuries. Gilliam testified that two months later a copy of a January 1996 document from a Swiss company called Dynatron, which had developed the proprietary software for the Aladin Air X Nitrox, was anonymously mailed to him and to Skaggs. The document referred to the very air-switching defect and included instructions on how to work around it until new units could be supplied. According to Gilliam's testimony, this document confirmed to him that the defect was, in fact, real and had been covered up since at least early January 1996.

In March 1999, two divers each using the 1995 UWATEC Aladin Air X Nitrox computer, developed serious DCS following a series of repetitive dives.

Product Liability Suits

Skaggs and Iazdi sued UWATEC, Scubapro, and Johnson in July 2001, claiming product liability, negligent manufacture, breach of warranty, and material nondisclosure. They claimed

that the defendants had committed "fraud, malice, and oppression" for specifically concealing a known defect from users. Ironically, Gilliam testified that he had personally heard Ruchti tell Skaggs —UWATEC's sales manager at the time — during the 1996 wrongful termination trial that there was absolutely no defect in the product and that it could be used with confidence. So much for insider knowledge.

Later, Skaggs and Iazdi were joined in their lawsuit by two other divers who claim they got DCS while using the Aladin Air X Nitrox. These plaintiffs allege that Johnson must have known about the defect long before Skaggs and Iazdi got bent. If Johnson's management hadn't discovered warnings of a defect during the due diligence phase of the UWATEC acquisition, they certainly should have known about it after the trial.

In his suit, Skaggs claims he suffered "permanently disabling systemic injuries arising from serious Type II, central nervous system decompression sickness." He has given up his lucrative diving career and recently told *Undercurrent*, "The thing that irritates me most is I believe [Johnson, Scubapro, and UWATEC] knew about this and acted like they didn't. I tried to get them to notify the public that something was wrong, and they never did anything, even after more people got injured. I feel sorry for those other divers, and I'd like to see some justice."

After Gilliam's May 2002 deposition, the legal proceedings seemed to bog down, with lawyers for the defense trying to keep him from testifying about the company's attempts to cover up the defect, based upon various claims of "privilege." Later in 2002, the presiding judge in the case ruled that Gilliam's deposition would be reopened. They deposed Gilliam again in October 2002, when he offered additional evidence from his files that included correspondence, internal memoranda, and faxes chronicling his lengthy dialog with senior executives about the allegations of defect dating all the way back to his initial hiring in April 1996.

The 15-foot octopus is alive and well

If you thrill over those little eight-legged, three-foot wide creatures you might discover in the Caribbean, you ought to try diving Puget Sound in Washington State. There you'll find the largest octopuses in the world — the Giant Pacific octopuses whose heads can be as big as watermelons and can measure 15 feet long and weigh as much as 100 pounds.

To detect whether the population is healthy, divers sponsored by the Seattle Aquarium hit the water in February to see how many they could find. Roland Anderson, Puget Sound curator at the Seattle Aquarium, told the Associated Press that 136 divers counted 73 octopuses, concentrated in three areas — Admiralty Inlet near Port Townsend and Keystone, the Tacoma Narrows Bridge, and Hood Canal.

One goal was to see if octopuses were back in Hood Canal, which has been suffering from low dissolved oxygen for several years. Two years ago, they saw no octopuses in the canal. "They are definitely back," Anderson said. Oxygen levels were particularly low last fall, causing fish to flee or move to shallow water.

Divers reported seeing two dying or dead octopuses. Both were in their dens guarding a clutch of eggs, which was probably why they died. Female octopuses lay one clutch of 70,000 eggs during their lifetime of two to three years. The female will barricade herself in her den with the eggs for six months without eating, losing up to half her body weight. When the eggs hatch, she dies.

Recall III: At Last

Then came the surprise "voluntary" recall announcement in February, two months ago. At least it was a surprise to the public. It seems that a fifth diver, Bob Raimo, had been injured in April 2002, while diving in Bonaire with an Aladin Air X Nitrox. In his complaint, Raimo was described as a highly trained diver with more than 2,500 dives in his log, including several on the 220-foot-deep Andrea Doria. As the owner of two New York dive shops in the '80s and '90s, he had also been an authorized UWATEC reseller. Like Skaggs, Raimo claims he continues to suffer from lingering and debilitating injuries.

Raimo's attorney, David Concannon — whose website www.davidconcannon.com opens to a photo of a great white with the slogan "Is your lawyer a shark or a guppy?" — wrote to Johnson last January threatening to file a class action lawsuit calling for a mandatory recall of the 1995 computers unless the com-

pany initiated a voluntary recall first. Johnson's lawyers responded by threatening a counter suit. Concannon then filed his class action, prompting a letter from a Johnson attorney that claimed that the demand for a recall on such short notice was "asinine." Yet even as the legal fists were shaking, the company was apparently working with the CPSC on a recall, which they announced on February 5.

By then, seven years had passed since a recall had first been attempted and in those seven years at least five divers got bent, though less than 400 computers were in service.

Concannon has withdrawn his class action suit and instead filed an amended claim on behalf of Raimo, adding charges of fraudulent concealment and deceptive advertising on top of the other plaintiffs' claims of material nondisclosure. Another plaintiff, David Sipperly, has reached a confidential settlement for an undisclosed sum.

The defendants UWATEC, Scubapro, and Johnson Outdoors are vigorously defending the remaining claims, and no liability has yet been determined. Matthew Monroe, attorney for the defendants, declined to comment on the merits of the case, telling *Undercurrent*, "I am not inclined to try my cases in print. We do that in court where we have rules of evidence and sworn testimony." A trial is scheduled in November. And, we should note, depositions are sworn testimony.

Meanwhile, if you have a 95 Aladin Air X Nitrox computer, stop using it and contact UWATEC for a free replacement — the $900 Air Z Nitrox. Complete instructions are on the firm's website at www.UWATEC.com,or you can call 800/806-0640.

April 2003 edition of *"Undercurrent"* newsletter

Legal Diving in Cuba

Salty Dog Adventures (High Ridge, Mo.) is promoting dive trips to Cuba for Americans. Salty Dog's proprietor, Captain Robert I. "Rib" Bolton, has obtained a general license from the Treasury Dept.'s Office of Foreign Assets Control (OFAC) authorizing marine research there using the fish survey methods of the Reef Environment & Education Foundation (REEF). Bolton claims that divers can now travel to the forbidden land as volunteer researchers for REEF.

In Bolton's words, "Not only are these expeditions to Cuba legal, in most cases, they are also tax deductible due to REEF's nonprofit status ... since the research expeditions are under the auspices of OFAC, the research divers are allowed to not only spend money in Cuba, but also to return to the U.S. with up to $100 of Cuban goods — including cigars!"

Well, slow down divers. Remember our reports on Scubacan? Several *Undercurrent* subscribers reported traveling to Cuba with the Toronto travel wholesaler, believing that they were free from OFAC travel restrictions. Turned out that OFAC had a different idea, and what looked like a loophole turned into a noose. Some of these travelers are now facing major fines.

Bolton told *Undercurrent* he had run two trips on the live-aboard *Oceanus* from Cancun. The trips included time ashore in Havana. Apparently none of his clients have been challenged by either OFAC or the IRS. But that only leaves the matter up to further interpretation.

We checked Bolton's claims about the legality and the tax deductibility of these trips with both agencies, and the best we could come up with is a qualified "maybe."

Another fish story?

The most sure-fire way to get into Cuba legally is to apply for a specific license from the Treasury Department, which is granted only to certain categories of applicants meeting stiff standards, such as the news media, researchers, teachers, and exchange students. What Bolton offers is an opportunity for paying volunteers to tag along under his general license.

According to OFAC's website (www.treas.gov/offices/enforcement/ofac/sanctions/cuba_res.pdf), certain categories of travelers "are permitted to spend money for Cuban travel ... under a general license without the need to obtain special permission from the U.S. Treasury Department." One of those categories is "full-time professionals whose travel transactions are directly related to professional research in their professional areas, provided that their research (1) is of a noncommercial, academic nature; (2) com-

rules galore. And that "Galapagos of the Caribbean"? Too good to be true. For what turned out to be rugged Caribbean diving without critter surprises, the Hughes, Aggressor, and Caribbean Explorer boats and Caribbean itineraries are far better options.

-- G.S.

Diver's Compass: My week on the Nekton Rorqual cost $1,575, including the roundtrip shuttle. ... The Rorqual offered replacement parts and rental gear, although the camera and video rentals were "under repair." ... Tips were recommend at 15% to 20%. ... Nitrox, or "geezer gas" as they call it, was an additional $150. ... The boat departs out of Mayaguez, a port city on the western coast of the island, a 2.5 hour drive from San Juan. ... If you're an early arrival at the airport, you wait so the van driver can pick up everyone. I waited three hours. ... Nekton's description of a "two-hour picturesque ride" turned out to be almost three hours on a toll road crammed with traffic. ... A nice touch was a Polaroid photo of everyone on the bulletin board with our room number, making it easier for the crew and divers to know who's who. ... Make sure to visit Old San Juan El Morro Fortress and San Juan Cemetery and wander the narrow streets crammed with tourists shopping in the many curio-type stores. ... The average temperature year round is 82 F. ... Luis Munoz Marin International Airport is 1,000 miles southeast of Miami. ... This is a winter trip for the Nekton Rorqual and is planned for next winter; the Puerto Rico government is concerned about the moorings they are installing and has stopped it for the time being; the two parties are discussing the issue.

"Undercurrent" newsletter April 2004:

The New Wave of Dive Computers

tests find some more readable – and conservative

Individual features aside, all dive computers perform the same basic functions. The problem, as the editors of Britain's *Diver Magazine* put it in their December issue, is that "all decompression theory is exactly that — theory!" In fact, Divers Alert Network has reported that two out of three divers who had to be recompressed for DCS in the year 2000 had followed no-decompression guidelines and were diving within recommended safety limits. Nearly 75 percent were using computers.

Clearly, some folks are more susceptible to DCS than others. Factors believed to increase DCS susceptibility include age, weight, dehydration, an abnormality of the heart called Patent Foramen Ovale (PFO), and certain dive practices such as repetitive multilevel profiles.

If you want to be cautious, seek out a conservative computer. Diver editors ganged together 11 different computers to make side-by-side comparisons. Taking them beyond the limit of no-stop diving, they could detect differences in their algorithms (mathematical calculations that attempt to keep divers safe from the ill-effects of breathing nitrogen under pressure). They focused just on the decompression information displayed during a dive — a comparison that can't be determined in a dive shop.

Some computers today call for deepwater stops to reduce the chances of microbubbles forming. The theory is that by reducing the build-up of symptom-free microbubbles during an ascent, less deco time is required in the shallows. Deepwater stops are a relatively new procedure for square-profile divers. However, multilevel divers have been using this approach for years, by making natural progressions up a coral reef, for example. With the test computers ganged side by side, the divers performed the deepwater stops required by some and the long hangs in the shallows required by others, to avoid bending any of them.

The recently introduced Suunto Gekko (similar to the Stinger and Mosquito) and the Dive Rite NiTek He multiple-mix computer proved the most conservative. In most cases the testers felt confident that the mandatory deco requirements displayed were sensible, and they never triggered fast-ascent warnings on any of the computers. "That said," they point-

ed out, "no one can tell you how close you come to getting decompression sickness or, even more likely, sub-clinical DCS.

"Those computers that seem less cautious might in fact be telling the truth about your decompression status, while the others might just be keeping you in the water for longer than necessary. Or some might simply be more cavalier with your health. We have no real way of knowing." All the more reason to err on the side of caution.

Computer Comparisons

Buddy Nexus: A Finnish model mainly used with the closed-circuit AP Inspiration rebreather, it can also serve as an open-circuit two-gas-mix Nitrox computer. The testers set it for less-cautious "normal" rather than "harsh" conditions. In its "normal" setting it proved slightly more conservative than most of the other computers, but the information it displayed was generally in line with the mainstream. The testers found much of its display too small and too hard to read for serious open-circuit diving. (from $600)

Cochran Commander: The testers set up this model with a maximum 50 percent safety factor to align it with the other contenders. The Commander had a large and clear display and went into deco-stop diving mode almost as soon as, if not before, any of its rivals. But it would often rack up stops at ever-deepening depths, rather than lengthening stop-time at one depth. It then shed those stops on the way up, sometimes prematurely. It permitted "masses of no-stop time available" when most other computers were still insisting on deco stops of five minutes at 10 feet (plus a safety stop in some cases). The testers found it "rather more suited to those who love tinkering with electronic animals" than those who want to get into the water with marine ones. (from $600)

Cressi Archimede: The test computer was faulty and went into "error" mode under water.

Dacor Darwin: Made in Italy by Mares, this computer is bulky. Apart from information being arranged in a slightly different layout on its LCD and slight casing differences, it should perform similarly to the Mares M1 computer. The testers found it necessary to press the mode button much longer than the two seconds mentioned in the instruction book to activate the Darwin. It performed in line with the mainstream, adding a safety stop only after the testers ascended past the 15-foot-depth mark — which was often after it had returned to no-stop diving mode. "We would be confident to use this computer, whether Darwin or Mares M1, to monitor our deco for this type of diving, with the proviso that we treated the safety stops as mandatory." (from $300)

Delta P VR3: The testers found the display hard to read "because there is, quite simply, too much information available." The VR3 allows the user to choose the depth of the shallowest stop computed for. To bring it in line with the other computers the testers chose 10 feet. It requires deepwater stops, some as deep as 90 feet on the 160+ foot dives. When the editors missed one of these stops, the VR3 displayed a large downward arrow and counted down 60 seconds to get there. "If you're not quick enough getting back down to the stop you have passed, the VR3 sulks and will display the words 'Use Tables.'" But even then the VR3 still allowed the tester to use it fully on the next dive. Stops are displayed with the additional graphic of a diver passing up a line to reveal the possibility of continuous decompression within a certain depth range: "quite fun to watch." The deepwater stops properly undertaken meant that the VR3 presented shorter mandatory deco-stop times than some of the other computers once in the shallows. A "good choice of computer if you have the money to buy it and the time to get to know it." (from $950)

Some computers today call for deepwater stops to reduce the chances of microbubbles forming. By reducing microbubbles during an ascent, less deco time is required in the shallows.

Dive Rite Nitek He: This Japanese-made Nitrox and trimix computer "aims squarely at the technical diving fraternity." But the testers used it with an air setting and "obtained results we might have got with its much cheaper little brother, the Nitek." Its display was not the biggest but clear enough. In past comparison tests, the testers found the Nitek to be the most cautious of computers, because it doesn't seem to shed the final minute of a displayed 10-foot stop until the diver actually reaches that depth. In these tests, its algorithm "seemed to be either the first or second most cautious." "A sensible choice for this type of diving." (from $1,100)

No Touching the Reef?

In our February issue, we had a story about Cayman's Conch Club Divers policy of not permitting divers to touch any part of the reef, dead or alive. The policy was supported by comments from marine biologist Bill Alevizon. Some of our readers thought the approach was overzealous. Here are two comments.

"Naturally, no one wants to damage the reef, but it appears that Conch Club Divers is of a zero tolerance frame of mind, to the extent that even dead coral is untouchable. (This reminds me of schools that eject little girls for having butter knives in their lunch pails.) There might be a coral cell on the dead spot trying to regenerate the colony, it was said, but it can be observed that most dead coral stays dead for a long time. The argument is a stretch. The photographer exercised good judgment in steadying himself with only two fingers on apparently dead coral. There is nearly always a current or surge requiring some stabilization effort if good pictures are to be obtained. It isn't the apparently dead coral that is paying Conch Club's bills, but divers including the photographer. Nothing was said of an alternate means of helping the photographer.

"It could be argued that the reef would be 'healthier' without divers at all, but Conch Club's bank account wouldn't be. It's hard to achieve a perfect world. Given major calamities like storms, parrotfish and crowns-of-thorn that destroy coral, and coral diseases, just how bad can it be that a photographer put two fingers on apparently dead coral? Zealotry allows no sense of proportion."

— Nick Ferris
Arvada, CO

"What about marine biologists when they are doing scientific studies on the reefs? They don't touch anything? There are many divers who have learned through diving with marine biologists how to explore the reefs without damaging things.

"I've been diving for 30 years and practice neutral buoyancy, and all my hoses are hooked onto my BC so they don't drag on anything. If I find an interesting macro critter to photograph, but I can't get close without harming something, I won't take the picture. I wonder how many of those great macro photos we all see in the dive magazines taken by the pros were done without anything being touched?

"Regarding Conch Club Divers, with whom I have dived, I find it interesting that with this strict policy, they still lead divers through tunnels and ledges where I see air tanks hitting the reef and divers using their hands to help themselves along."

— Wayne Joseph
San Mateo, CA

Mares M1 RGBM: Identical in every other way to the Dacor Darwin and Mares M1, the new Italian-made Mares M1 RGBM uses a modified Mares algorithm to put in optional deepwater stops, and thereby credits the diver with less time required in the shallows. The M1 RGBM returned to no-stop diving mode a couple of minutes before its more traditional sibling, the Dacor Darwin, on every dive. (from $330)

Oceanic Veo 250 (also Versa and Versa Pro): This new U.S.-made computer proved easy to read and simple to set up by means of its two-button menu-system. It offered information on necessary deco-stops completely unlike the other computers. It went into deco-stop diving only below 160 feet, some time after all the other units sitting alongside it and was generally back into no-stop diving as soon as the testers reached 30 feet. The amount of no-stop time then offered seemed "enormous" in comparison to the others. The editors found that the Veo 250 "revealed a Jekyll and Hyde character in that at times it seemed to be working with two entirely different algorithms." They concluded: "We cannot say that it was either too cautious or incautious because we could never anticipate which of the two it was going to be." (from $350)

Scubapro Uwatec Smart Pro (also Smart Com): This Swiss-made computer was the subject of a recent recall, reported in the August *Undercurrent*. The instruction manual offers little in the way of guidance as to which of five levels of microbubble suppression anyone should use, so the testers activated the setting "Micro-Bubble Suppression Level 1." The display gives lots of information, laid out in a very easy-to-read way. What the manufacturer calls "level-stops" were always called for at 20 or 10 feet, which seemed no different than extended deco stops. The testers suggested that new users set it at micro-bubble suppression level 2, where level-stops might be displayed at more obviously deeper depths. "Setting up the computer needed a little intuition, not to say dexterity, as it had rather old-fashioned wet-finger contacts, and

the important setting-up icons were very small." Unlike the other computers tested, the Smart Pro does not have a user-changeable battery. (from $500)

Suunto Gekko: The Gekko uses the same Suunto RGBM 100 algorithm as the Stinger, Mosquito, and Vyper. The editors found it "probably the most conventionally conservative of all the computers tested here, with long stops at 10 feet consistently indicated on every dive." They set the Gekko for its least cautious mode or "personal setting," and its clearly designed display indicated total-ascent time and stop-ceiling depth when in deco-mode. It also adds in a three-minute safety stop in the shallows, once up past 20 feet (included in the total ascent time). (from $350)

Suunto Vytec: This top-of-the-line Suunto offers computations using three different Nitrox mixes which are easily changed during a dive. It can gas-integrate, with Mix 1 giving tank-pressure display and calculated remaining air-time with the aid of an optional high-pressure transmitter on the regulator first stage. It also gives the option of both Suunto RGBM 100 and the less cautious Suunto RGBM 50 algorithm, which the editors used for their comparison. Still, they found, "there seemed to be little difference to the decompression required by its similarly set sibling Gekko (RGBM 100), with only about one minute in 10 being shed from total deco-times even after a long series of dives in the 160+-foot range." The testers found all Suunto computers "very user-friendly, with easy-to-set-up and clearly understood displays." (from $850)

Note: U.S. prices listed here are approximate starting points. Options such as PC interfaces can increase prices considerably. Most are distributed in the U.S. but may not be in your local dive shop. In such cases, you'll have to order them through international mail-order catalogs or through e-tailers.

"Undercurrent" newsletter April 2004:

Divers and Home Aquariums

if you want to conserve reefs, why do you have that aquarium?

"We who dive along the Kona Coast have seen a drastic and definite reduction in our tropical fish populations over the past few years, due in part, at least, to the tropical fish collectors' increasing numbers." So says Dick Dresie, aka "Dick the Diver," who conducts shore dives at Hawaii's most popular sites. His concerns are being echoed by divers and conservationists worldwide.

Rene Umberger of Octopus Reef says "the entire southern Maui coastline has been impacted by fish collecting (and run off), including Ulua Beach, Makena Landing, and 5 Graves."

In Vanuatu in the South Pacific, reefs are over-exploited for the lucrative trade. A spokesman for tourism companies, Peter Whitelaw, told ABC Net News: "There are particular reefs that they've targeted and a lot of them are the very reefs to which we take snorkelers and divers." At Hat Island, dive operators told the *Manchester Guardian*, 38,000 fish were taken within one month last year.

Near Bali's Barat National Park, the Wildlife Conservation Society has seen a considerable decline in aquarium species. Prompted by cyanide fishing at Helen Reef in Palau and Komodo National Park in Indonesia, The Nature Conservancy is working to prevent the long-term effects of this practice. Collectors squirt cyanide into crevices where fish hide. The poison stuns the fish, making them easier to catch. But large numbers of the weakened fish die in transit, so far more fish are collected than necessary, to allow for a "fatality margin." The poisons destroy reef ecosystems by killing nontarget animals including coral and invertebrates. In the Philippines, 70 percent of ornamental reef fish are caught with cyanide.

Most coral reefs are located in developing countries. While fish collecting is a source of income for the people, the aquarium trade has been heavily criticized for damaging techniques occasionally used to collect the animals, overharvesting some species, and the high mortality from inadequate handling and transport of sensitive living organisms. Improper collection and shipping practices can introduce alien species, result in overharvesting, and threaten the extinction of target species.

The roster of nations exporting marine ornamentals reads like a diver's wish list. Besides those already mentioned, divers in Florida, Australia, the Caribbean, Tonga, the Solomon Islands, Fiji, the Maldives, the Marshall Islands, Samoa, Micronesia, the Dominican Republic, Mexico, Sulawesi, and Kenya all collect marine organisms for export. Many work the same reefs that we

application of viscous lotion or petroleum jelly can do the trick.'

And If You Do Get the Barb?

Start by immediately applying a mixture of isopropyl alcohol and vinegar. Lacking that, try pure vinegar or even Windex. Next, apply a hydrocortisone cream/lotion twice a day. Calamine lotion can also be helpful in reducing the itch. As with most allergic skin reactions, a dose of oral antihistamine (e.g., Benadryl, Claritin, Tavist) can help, but factor in how side effects like drowsiness could affect your activities.

Readers were equally creative about devising remedies and weeding out the ones that didn't work very well. Etola Zinni (Villa Park, IL), who had a sea lice encounter on Bimini when she swam through some bands of floating seaweed to get to deep water, said she was given Right Guard (yes...spray deodorant applied directly to the itchy welts only served to burn like heck), udder balm, an aloe salve, and mouthwash. Nothing worked. At the island's medical center, she was given a cortisone shot, cortisone pills, and cortisone cream. These did work. Etola now stocks her own dive first-aid kit with prescribed prednisone pills.

Reader Mary Chipman (Singer Island, FL), who is sea-lice-savvy because she lives and deals with them annually in south Florida, says "Safe Sea works as well as anything as a preventive measure. However, the best relief is Tend Skin, which is basically salicylic acid. When you put it on the sea lice sore, there is an intense burning sensation that lasts for a minute or two. Then the itching and pain goes away for hours."

No matter what remedy you try, remember that home remedies only address mild to moderate reactions. Some reactions to the stings can be severe, and, if nothing is helping, it's time to find a physician.

"Undercurrent" newsletter May 2005:

UWATEC Settles Over Dive Computer

— the final calculations of the Aladin Air X Nitrox

Five divers who got bent while using UWATEC Aladin Air X Nitrox computers have settled lawsuits against UWATEC and its parent company, Johnson Outdoor International. The divers complained of permanent neurological damage, including paralysis in some cases, after diving with faulty computers manufactured in 1995. In its Nitrox mode, the user-programmable computer assumed that divers were still breathing Nitrox during surface intervals. By not switching to an air table, the software underestimated the buildup of residual nitrogen during repetitive dives. The greater the number of repetitive dives — and the longer the surface intervals — the greater the danger of suffering from decompression sickness.

Public records filed in the lawsuits also alleged a pattern of problems either being ignored or denied in the face of mounting evidence of the dangerous "air-switching" defect. According to a deposition by Bret Gilliam, the ex-vice president and CEO of UWATEC U.S.A., repeated attempts to recall the computers were stifled as early as 1996 by Heinz Ruchti, UWATEC's founder and owner. Gilliam, who went on to found International Training Inc. (TDI and SDI) and *Fathoms Magazine*, testified that after Ruchti sold the company to Johnson Worldwide Associates — now Johnson Outdoor International, which also owns Scubapro — Johnson execs continued the cover-ups, even after Mitchell Skaggs and Resvan Iazdi developed serious DCS following a series of repetitive Nitrox dives with Aladin Air X computers in 1999. Although Skaggs, Iazdi and two more bent divers sued, the company still refused to acknowledge a problem with the computer, according to Gilliam's deposition.

Finally a fifth defendant sued in 2003. Bob Raimo, who had been an authorized UWATEC dealer, said he was injured while diving in Bonaire with an Aladin Air X Nitrox in 2002. Raimo's attorney, David Concannon, filed a class action lawsuit in early 2003 calling for a mandatory recall of the 1995 computers unless the company initiated a voluntary recall first. Despite claims from a Johnson attorney that the recall demand was "asinine" on such short notice, the company did,

in fact, recall the 1995 Aladin a short time later. "About time," as *Undercurrent* stated in our April, 2003, article on the case.

Some of the legal wrangling in these proceedings got downright ugly. The first plaintiff to settle, in February 2003, was David Sipperly. According to Concannon, "Sipperly's private investigator, Donald Snelling, uncovered a lot of dirt on the defendants. The defendants subsequently hired Sipperly's private investigator to work for them, but when the judge found out, he issued an opinion disqualifying the investigator and almost disqualifying Johnson's corporate counsel for hiring him." Snelling was disqualified after Johnson's first law firm, Monroe & Shapiro, and partner Matt Monroe, were disqualified for unethical misconduct in March, 2003. The court's scathing opinions disqualifying both Snelling and Monroe are a matter of public record.

Three of the other cases settled in the fall of 2004. The final suit, brought by Raimo, was scheduled to go to trial this past February. However, at the eleventh hour Johnson requested mediation, which led to a settlement. Says Concannon, "There is an ironclad confidentiality agreement in place," so details of the settlement are unknown.

"Undercurrent" newsletter May 2005:

Comparing Dive Computers

— identifying the liberals and the conservatives

By reading the depth and recalculating every few seconds, dive computers have enabled dive times to be extended well beyond those permitted by tables on most dives, especially on multi-level dive profiles. However, while over the past few years many of the current computers have been re-programmed to increase conservatism, reducing no-stop times and increasing decompression requirements (even to the extent that parameters such as temperature and gas consumption are factored in), there still remains concern about dive computers' efficacy in minimizing the incidence of decompression sickness (DCS).

Some of these concerns come from statistics, such as DAN's data indicating that in 2002, 72% of the divers who were treated for DCS had been using a dive computer. DAN's data from a 1997 study also indicate that in a very high proportion (93.7%) of similar cases, divers reported diving "within the limits" of their computers. DAN acknowledges that the high proportion of divers using computers could certainly impact the proportion of DCS cases arising from within this group. (Look around the dive boat sometime and count the number of divers seen checking a dive table between dives.) However, there's also significant variation in the conservatism of dive computer algorithms themselves, and diving "within the limits" of a 'liberal' computer may well be riskier than diving "within the limits" of a more conservative model.

Current dive computers vary greatly in the bottom times they allow and decompression stops required. Assessing the level of risk actually being assumed starts with assessing how liberal or conservative the computer itself is. That sounds simple enough, but unfortunately there are few studies actually comparing such variances.

In 2004, John Lippmann, Executive Director of DAN, Southeast Asia-Pacific, and Mark Wellard, a research fellow at the Brain Research Institute, Melbourne, Australia, undertook a comparison of the dive profiles for five common dive computers. The study compared the Suunto Solution, Suunto Vytec, Uwatec Aladin Pro, Uwatec Aladin Smart, and Oceanic Versa over several dive series. The Suunto Solution preceded the Suunto Vytec, and the Uwatec Aladin Pro preceded the Aladin Smart. The earlier models were tested because they are still commonly used and can help determine differences in the updated decompression algorithms incorporated into the newer models. All computers were set in the standard mode with no "safety" or altitude time reductions implemented.

This group of computers was subjected to several series of pressure exposures in a small, Perspex compression chamber filled with fresh water. Although some of these exposures were undesirable from the perspective of DCS risk, the profiles were designed to simulate as closely as possible actual depth-time diving profiles that might commonly occur in actual use. Computers were allowed sufficient time

to reset between each series of profiles.

The no-stop times allowed and the decompression requirements indicated by the computers were then compared with those generated by the Canadian Forces' (DCIEM) tables. The DCIEM tables are a widely accepted benchmark for determining decompression risk.

Of all the computers tested, the Vytec times more closely paralleled those of the DCIEM table model. The Vytec was consistently more conservative than its predecessor, the Solution.

The Aladin Pro and Aladin Smart models generated similar no- stop times and decompression times on the rectangular profiles tested. However, the Aladin Smart was considerably more conservative on the multi-level profiles than the Aladin Pro and all the other units tested.

The Oceanic Versa was consistently less conservative than the other dive computers and the DCIEM tables except on a series of deep, repetitive "bounce" dives. In this case, it required decompression times well in excess of the other dive computers and the DCIEM table model. The decompression times indicated in these cases appear to be excessive when compared with other decompression tables.

On occasions, the five models of dive computer tested in this study varied widely on their decompression advice, with up to 25 minutes variation on decompression stop time and up to 38 minutes of allowable no-stop time on some profiles.

Lippmann and findings suggest that it would be prudent for divers to research and choose a dive computer that is relatively conservative on the types of profiles they dive most frequently. The complete abstract of this study, along with charts of the specific profiles, can be found in *South Pacific Underwater Medicine Society Journal* Vol. 34, No. 3. Since this study, more computer models have been tested. Those results have yet to be published.

For more information on SPUMS, see www.spums.org.au

Who Gets Bent More?

During 1998 and 2002, Dan's Project Dive Exploration tracked the incidence of decompression sickness (DCS) in four different recreational diving populations: live-aboards, shore/day boats, Cozumel dive guides, and Scapa Flow wreck divers (Britain's Orkney Islands). Each group has certain inherent risks: Cozumel dive guides dive most frequently; shore/day boats attract more novice divers; live-aboards host gorilla divers who do multiple dives for seven to ten-day stretches; Scapa Flow wreck divers endure cold water and dive square profiles. Try hazarding a guess as to how these risk factors translate into actual bends rates for each different population; then compare your prediction to the actual rates shown in the table below.

For the study, 4,255 divers conducted 6,397 dive series (each series with between one and 88 dives) involving 41,294 air and 7,254 Nitrox dives. Out of these, there were 26 DCS cases (9 Type I, 17 Type II). The table below shows the DCS rate per 10,000 dives and the DCS rate per 100 divers.

DCS Rates for Live-aboard Divers, Shore/Day Boat Divers, Scapa Flow Divers, and Cozumel Guides

	Number of DCS Cases	Number of Dives	Number of Divers	Dives Per Diver	No. of DCS Cases Per 10,000 Dives	No. of DCS Cases Per 100 Divers
Live-aboards	2	19,882	1,187	14.5	1.0	0.1
Shore & day boats	5	15,695	2,330	6.6	3.2	0.2
Scapa Flow	14	4,987	462	10.5	28.1	3.1
Cozumel Guides	5	5,050	42	87.8	8.6	9.8

As you can see from the table, live-aboard divers came out on the low end with one case of DCS per 10,000 dives (0.1%). Scapa Flow divers and Cozumel dive guides were on the high end in rates per 10,000 dives. While numerous variables affect the different dive groups studied, the results are interesting and should encourage more study as to the reasons for the wide variance.