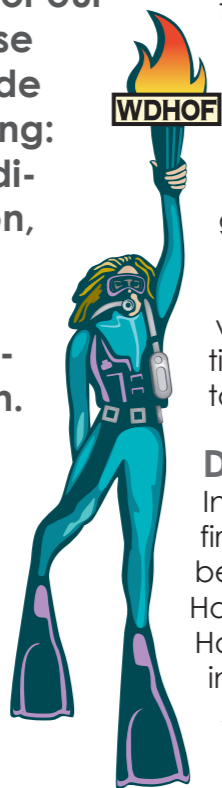


# WDHOF announces new DAN / R.W. "Bill" Hamilton Research Grant

Text and images by Rosemary E. Lunn

**Women Divers Hall of Fame was founded in 1999 to recognise and raise awareness of elite leaders who have significantly contributed to exploring, greater understanding, safety and enjoyment of our underwater world. These endeavours span a wide variety of fields including: the arts, sciences, medicine, sports, exploration, archaeology, media, safety, education, service, business, environment and conservation.**



## WOMEN DIVERS HALL OF FAME

Women Divers Hall of Fame members are nominated and selected on an annual basis every autumn, and inducted the following spring at the Beneath the Sea exposition in New York. To date, the membership comprises 168 noted women from 12 countries.

The Women Divers Hall of Fame (WDHOF) has a secondary mission. That of developing and educating tomorrow's world-class diving leaders by providing educational, mentorship, financial and career opportunities to the diving community throughout the world. Each year, WDHOF fundraises to award 28 scholarships and training grants to individuals of all ages, particularly those who are preparing for professional careers that involve diving.

These scholarships aim to support tuition and fees, independent research, and/or internship programs at accredited universities and are offered in dive medicine, marine conservation, marine biology, underwater archaeology, marine education, journalism, graphic arts and photography.

### Dr Bill Hamilton

In recent weeks, it has been confirmed that a new scholarship has been launched in honor of Dr 'Bill' Hamilton. For more than 40 years, Hamilton conducted research on diving physiology, including decompression modeling, mixed gasses and the treatment of injured divers.

Hamilton worked extensively with commercial diving companies, the partner

navies and the recreational training agencies in the development of mixed gas diving procedures. During his career, he authored numerous papers, reports, workshop proceedings, books and magazine articles.

Hamilton was instrumental in the development of technical diving. Without Hamilton's work on nitrox and trimix, decompression tables and procedures, free-swimming divers would have remained in the shallows.

### New research

The Divers Alert Network has established an exciting and generous new US\$10,000 research grant to support new or continuing research in areas that were critically important to Hamilton. The grant is restricted for use to the following areas:

- Development of decompression procedure techniques for commercial, military, technical and/or recreational divers
- Development of new decompression models
- Probability of risk or probabilistic



Dr Neal W Pollock, DAN's Research Director, conducting decompression research. He is pictured here using two-dimensional ultrasound to look for bubbles in the heart (a measure of decompression stress).

- modelling
- Multi-gas dive simulation
- Dive computer procedure, protocol and testing
- Treatment of incomplete decompression and resulting incidents

### Application

Applications will be reviewed by a panel of experts from Divers Alert Network and the Women Divers Hall of Fame. Full details of this DAN grant and other WDHOF scholarships can be found at [www.wdhof.org/scholarships/scholarships.shtml](http://www.wdhof.org/scholarships/scholarships.shtml).

The deadline for receipt of online submission applications is Friday 20th November 2015 (midnight EST). Applicants will be notified of award status by 1st February 2016. ■



Still image from the transthoracic echo imaging (TTE) scan of a subject's heart. You can clearly see bubbles resulting from decompression stress in the right heart (they look like bright white rice grains on the left side of the image). Blood in the right heart is sent to the lungs where bubbles can be filtered out of the circulation.



*The Prince of Gases*

# Who was Dr R.W. 'Bill' Hamilton?

Text by Joel Silverstein

**Born in Midland, Texas, Hamilton would always explore things on the edge of the envelope. He first expanded his youthful mind with liberal arts at the University of Texas, then went on to earn a master's degree in animal breeding at Texas A&M University. He finished up his formal education by earning his doctorate in physiology and biophysics at the University of Minnesota.**

Along the way Hamilton joined the US Air Force earning the rank of Major and served as a jet fighter pilot during the Korean War and again in Vietnam, where he earned the Distinguished Flying Cross, Air Medal and other decorations.

As a Life Support Officer, Hamilton helped solve equipment problems on unsuccessful bail-outs, which earned him a recommendation by the National Academy of Sciences to NASA as a Scientist Astronaut. Eventually, Bill left the Air Force with his wife and four children and headed to

Buffalo, New York, in 1964 where he met Heinz Schreiner and began his work in the undersea world.

### A decade of exploration

The 1960s was a decade of change and exploration—some with art, music, politics and war protests—but for Hamilton, it was working as a scientist and director of a leading environmental physiology and diving research lab called Ocean Systems (a division of Union Carbide) based in Tarrytown, New York.

Hamilton and his staff conducted extensive research on the effects of gases both under increased pressure and in hyperbaric environments. This work led to the development of decompression modeling tools and operational procedures for divers,

astronauts, hyperbaric chambers, and tunnel and caisson workers.

One of the early projects, in which Hamilton was both the physiologist and test subject, led in 1965 to the first manned laboratory saturation “dive” to the continental shelf pressure of 200m (656ft, 12 atmospheres) of sea water. All of this was just the beginning.

During his time at Ocean Systems and after the death of his first wife, Beverly, in 1970, Hamilton met Kathryn Faulkner (aka “Ruby Lips”) on an Eastern Airlines shuttle. That chance meeting turned into a 40-year marriage, which has created an international family of friends and colleagues.

Ruby played a pivotal role in Hamilton's life, becoming a mother to his children and then grandmother to their children. Not

satisfied to simply play a side role, however, Ruby also managed the business aspects of Hamilton Research, including finance, contracts, calendar, travel and social events, and served as Hamilton's sounding board for difficult decisions. It was rare that Hamilton would be at an event without her close by.

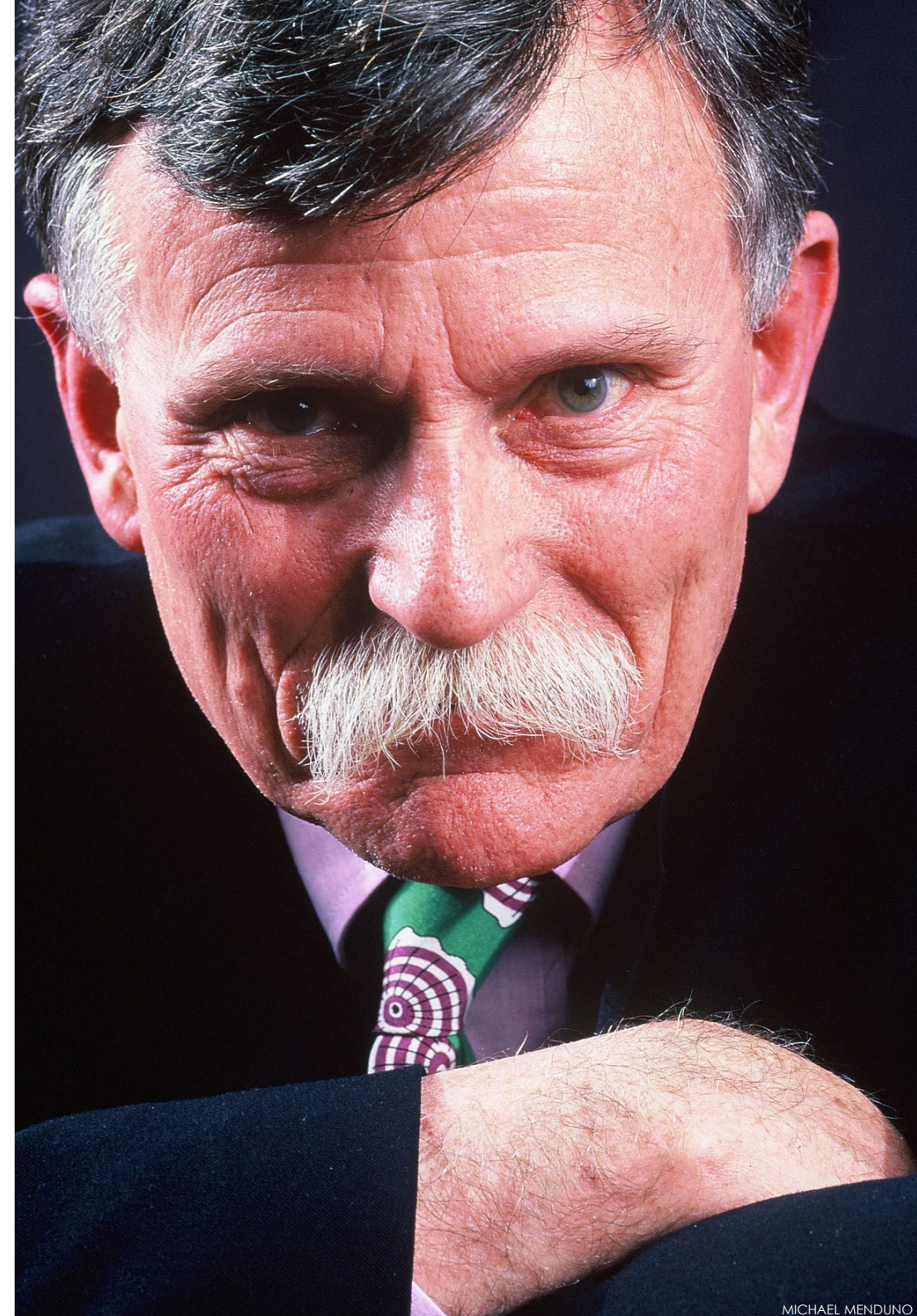
### Setting up shop

By 1976, Hamilton took one of the biggest risks an academic could ever take—he set out to create his own physiology consulting firm, Hamilton Research, Ltd. Tucked away in a room in his house overlooking the Hudson River, Hamilton Research became the premier organization for decompression and hyperbaric research.

Hamilton was often sought for consultation and collaboration. He worked extensively with oil companies, the military and others in developing procedures and techniques to mitigate the effects of High Pressure Neurological Syndrome (HPNS) while compressing to depths of 300 to 600m (984 to 1,969ft).

### Decompression procedures

The big project from Hamilton Research that has had an inestimable impact on decompression research was the development of

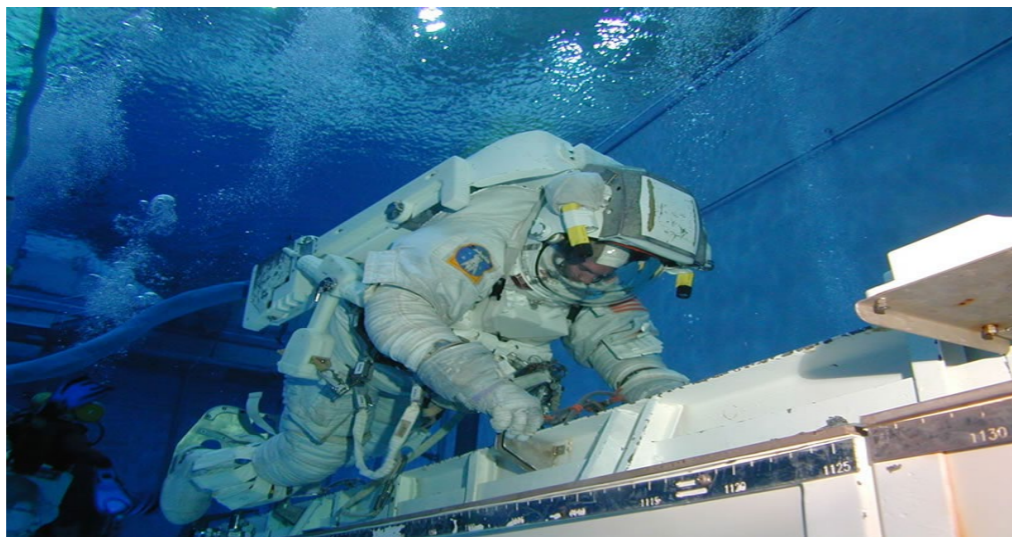


MICHAEL MENDUNO

the Diving Computational Analysis Program (DCAP). DCAP was co-developed with David J. Kenyon and is a comprehensive computer program that could analyze and develop decompression procedures and schedules for a wide variety of exposures to pressure, including submarine escape, space travel, deep commercial diving, caisson and tunnel work,

and free-swimming technical diving.

The program did nothing short of revolutionizing the way decompression analysis was done. Hamilton Research, armed with DCAP, began working with British, Swedish, Japanese, Finnish, Israeli, Italian and US navies; Canadian and German research centers; the Norwegian Underwater





Call It "High-Tech Diving", in the first issue, January, 1990



Institute; and countless other organizations around the world. In addition to DCAP, Hamilton was also the principal investigator and scientist in the creation of the NOAA Repex Oxygen Exposure table—the basis for most every oxygen exposure calculation method used today for saturation and repetitive exposures to oxygen in breathing mixtures. His work continued to evolve and he was consulted by attorneys and diving equipment companies on topics including dive computers, rebreathers and expert witness testimony. He was even consulted by food companies on packaging foods in pressurized environments. His reach was endless.

**Entry into sport diving**  
In the late 1980s, his love for the edge of the envelope came into view with extreme recreational divers. For decades, only commercial and military divers had access to mixed gases for diving operations. But now cave divers and wreck divers wanted to go deeper and farther than air would allow them to go safely. In an unprecedented move, Hamilton stepped out of his traditional role with commercial and military clients and stepped into the world of "sport divers."

He created a custom set of decompression tables for extreme cave dives into the Wakulla system for dives to 100m (328ft) on open circuit scuba, with man-

aged oxygen exposures and minimal nitrogen narcosis. The project was a success, and soon the "underground" was abuzz.

**Under fire**  
While some of his colleagues criticized him for these efforts, Hamilton believed that if he did not help these divers, they would do the dives anyway and possibly get hurt. His humanity was exemplified in his desire to help them and, as such, he opened up a whole new world of underwater exploration by the free-swimming un-tethered diver. This was the birth of "technical diving." News of Hamilton's tables got out, and practicing deep divers from all over the world began contacting him for help.

Along came Capt. Billy Deans from Key West, who had been doing deep dives for years but wanted a better and safer way to do it. He and Hamilton became fast friends and Hamilton helped Deans to create the first training program for open ocean trimix diving.

He was also a key contributor and advisor to *aquaCORPS Journal*, beginning with his seminal article, "Call It High-Tech Diving," in the first issue in January, 1990, which sought to explain the technological changes taking place in sport diving. This second part of an already accomplished career was shining brightly.

The friendship further led in part to the creation of the Key West Consortium—a group of divers who hired Hamilton Research, Ltd., to create a universal set of trimix decompression tables that would be used for open-ocean dives in the 180-250 fsw range.

**Trimix and tech**  
This opened up access to wrecks all over the world. The success of these tables with thousands upon thousands of dives led to Hamilton creating trimix tables for NOAA, for use on the USS *Monitor* research projects.

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Hamilton was on everyone's invite list for conferences and workshops all over the world. He was a principal contributor to the 1992 aquaCorps Nitrox Workshop in Houston, which helped make nitrox diving mainstream in the

recreational diving world. Hamilton then went on to write nitrox training manuals and programs for many of the certification agencies and was a major contributor to the original *NOAA Diving Manual*. He worked with many manufacturers on their dive computers and algorithms and was a regular consultant to the US Navy on matters of decompression and decompression illness treatment.

Hamilton was generous with his time and advice, and he served by volunteering wherever he could. Often times, this meant anything from repairing lights in his church to sitting on boards for the Divers Alert Network (DAN), the Undersea and Hyperbaric Medical Society (UHMS), the National Oceanic and Atmospheric Administration (NOAA), and the National Fire Protection Association (NFPA).

Hamilton volunteered to lead conferences as a keynote speaker as well as serving in the Air National Guard. He was never more than a phone call or email away to help those who needed it. That was his nature.

**Over 100 honors**  
Over the years, Hamilton was recipient of more than a hundred

honors and awards from almost every diving and science organization. From keynote speaker to Diver-of-the-Year, someplace in the world, he and Ruby Lips would often be featured at the party.

Hamilton would often slip off for a little nap or find a laptop, or a cocktail napkin, and have serious discussions with serious people about things that mattered, like life support.

Hamilton's accomplishments in life go deeper than the bottom of the sea and higher than Mount

Everest. They delve into the hearts and minds of friends, family and colleagues. He instilled the desire to be better at what we do into each and every one of us.

His contributions to the world of diving are unmatched, and his forward thinking of how divers would survive underwater is arguably the basis for all extreme

exposure diving today. His modus operandi was to get the job done right and then have a good time with the people around him. Everybody he met, if only for a moment, was a better person for it. Hamilton's ability to examine and explore ways to make something or someone better was his way. A little nap along the way and he was recharged and ready to take on the next task. ■



Would you like to have Air or Nitrox? Bill Hamilton's work was instrumental in bringing Nitrox to recreational divers