The NEWSLETTER

International Hydrofoil Society
P.O. Box 8911 Reston, VA. 20195
SPECIAL 50th Anniversary of IHS

JANUARY 2020
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REPORT ON

"FLYING ON WATER"

BADDECK, NOVA SCOTIA

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ANNOUNCEMENT: VOTE ON SITE FOR 2020 CELEBRATION OF THE 50TH ANNIVERSARY OF THE INTERNATIONAL HYDROFOIL SOCIETY

By Mark Bebar

USS Aries docked on the Missouri River

The July 2019 issue of the Newsletter included an email message from Martin Grimm with some initial thoughts on the upcoming 50th Anniversary of IHS in 2020. Martin suggested that a sensible venue may be in proximity to the USS Aries museum in Gasconade, Missouri (https://www.ussaries.org). This would give those attending the chance to visit the PHM and other hydrofoils in the collection. The nearby town of Hermann, Missouri has an annual Octoberfest celebration, which offers an added incentive to attend.

Since July, a small planning group has been formed that includes Ray Vellinga, Mark Bebar, Martin Grimm, Chuck Shannon, Joel Roberts, Joel Billingsley Dave Patch and Eliot James, Director of the USS ARIES museum.

Further discussion has surfaced two other alternatives for the 50th Anniversary celebration:

- A 'virtual' gathering, but still centered in a suitable location, probably in the Washington, DC area. This would be along the lines of the 25th Anniversary celebration held in 1995, which was series of technical and historical papers on hydrofoils. But rather than everyone travel to Washington, presentations would be via video conference/webinar arrangement. This approach could also include a virtual tour of the USS ARIES museum with a walk-through of ex-PHM 5 by Eliot James.

- A combined 50th Anniversary/PHM Reunion in Key West, Florida. This venue has been the site of several reunions of former PHM Squadron/Mobile Logistics Support Group (MLSG) personnel over the years, the most recent in 2016.

We are seeking feedback on preferences from the IHS membership and all former PHM Squadron/MLSG personnel.

Your vote on the three alternatives for the 50th Anniversary celebration is requested. VOTE HERE

USS Aries from the water

IHS PARTICIPATES IN "FLYING ON WATER", BADDECK, NOVA SCOTIA

By Mark Bebar

In July 2019, we published a special edition of the IHS Newsletter in which we reviewed plans to travel to Baddeck, Cape Breton Island, Nova Scotia for the September 9–11 100th anniversary celebration of the record-breaking flight of the HD-4 hydrofoil of Alexander Graham Bell and Casey Baldwin. On September 9, 1919, Baldwin flew the HD-4 at 70.86 miles per hour (114 km per hour) to set a new world water speed record!

The Flying on Water celebration was organized by the Alexander Graham Bell Foundation (AGBF) CLICK HERE and Alexander Graham Bell National Historic Site (AGBNHS)/Parks Canada CLICK HERE, the location for the event.

Ms. Leslie Wright of AGBF and Ms. Madeline Harvey of Parks Canada provided outstanding support to IHS in preparing for the event and during the three days in Baddeck.

The Flying on Water celebration was widely publicized, and funding partners included:

- Municipality of the County of Victoria - with an emphasis on the engagement and participation of children and youth across the County
- Events Nova Scotia, Department of Communities, Culture and Heritage
- Parks Canada – Alexander Graham Bell National Site (AGBNS)
- Penguin Random House
- Innovacorp
- Cape Breton Partnership
- Local Media – *The Victoria Standard* newspaper

Just getting to the Bell / Baldwin celebration was an adventure for many. Hurricane Dorian, originally a Category 5, moved up the U.S. East Coast and directly over Halifax, Nova Scotia after virtually destroying much of the Bahamas.

Most of the IHS members drove up the coast from the Washington, DC area. More difficulty faced the West Coast people. Ray and Pat Vellinga checked into Sea-Tac Airport at 6 a.m and still arrived very late after having two flights cancelled and having to fly to Vancouver to catch the last flight to Halifax. Around Baddeck there were power failures, and some attendees relocated to luckier hotels still showing lights. Below you see a downed tree and one of the four boats lost or damaged locally.

Downed tree and one of the four boats lost or damaged

The location of the celebration was the Alexander Graham Bell National Historic Site (NHS)

We were well represented, with five IHS members and their wives attending.

Left to Right: Ray & Pat Vellinga, Bill & Joanne Hockberger, Mark Bebar, Joan Sullivan, Sean Baldwin, Joel & Ann Billingsley, Martin Grimm

Mark Bebar, Mary, Sophia, Raphael, & Martin Grimm (travelled from Australia), Ann & Joel Billingsley

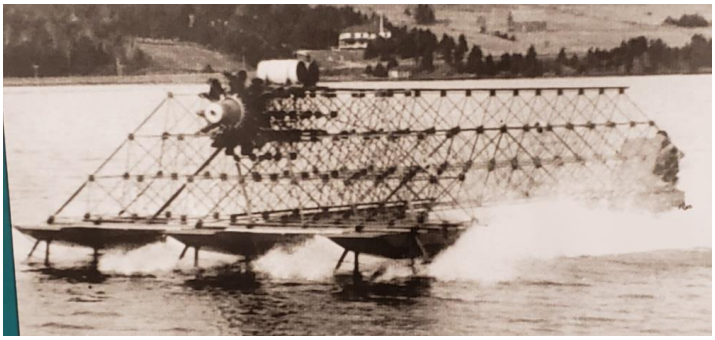
Professor Bernard Carlson, Chair, Department of Engineering & Society at the University of Virginia, gave an excellent presentation: "Understanding the Minds of Inventors and What it Means to Entrepreneurs Today"

During the three-day event, there was ample time for us to visit the museum exhibits. The NHS has an incredible array of exhibits and models that document the achievements of Bell and Baldwin.

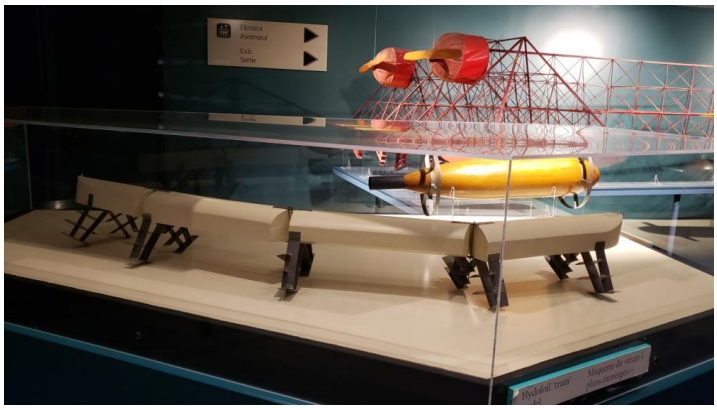
A major headline on the AGBF website (https://agbfoundation.ca/) says, "**It's About So Much More than the Telephone,"** and a short time in the museum makes that crystal clear! Dr. Bell began as a speech researcher and therapist, which explains his early inventive focus on devices and techniques to aid in that. The exhibits include numerous telephone devices, optical concepts including his "photophone" (not practical until recent times), even competitor devices to Edison's for recording sound and the human voice. His income from telephone-related businesses freed him to investigate whatever he became interested in, which from about 1891 included heavier-than-air flying concepts and subsequently heavier-than-water watercraft. He and his team were competitors to the Wright brothers and built the first heavier-than-air craft to fly in Canada and in fact anywhere in the British Empire. A full-scale replica of that aircraft, "Silver Dart," hangs in the same display hall as the HD-4 hydrofoil.

Besides HD-4, models and photos of a variety of other hydrofoils are also on display there:

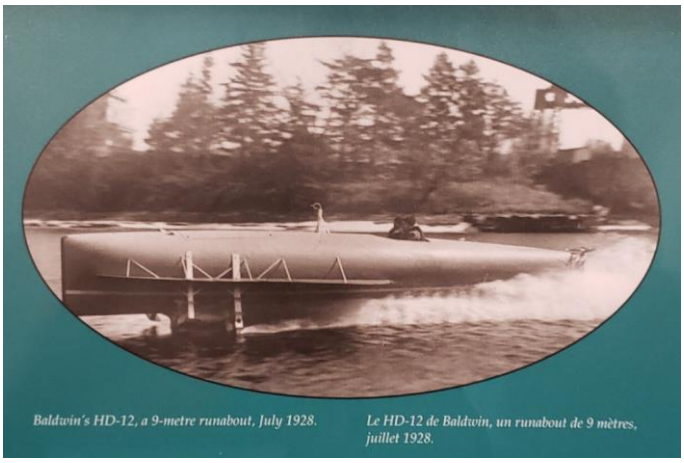
High-speed target for aircraft, for Canadian and U.S. militaries



High-speed target being tested in 1942



Train of hydrofoil units, patented by Baldwin in 1923



Baldwin's HD-12 9-meter runabout in 1928

Several presentations were made by Martin, Ray and Mark, including

- World Water Speed Record in the wake of Bell and Baldwin, by Martin Grimm CLICK HERE
- U.S. Navy Hydrofoil Development, by Mark R. Bebar CLICK HERE
- U.S. Navy Hydrofoil Patrol - Missile (PHM) Program, by Mark R. Bebar CLICK HERE
- Commercial Hydrofoil Ferries, by Mark Bebar CLICK HERE

In addition to our presentations, Professor Bernard Carlson, Chair, Department of Engineering & Society at the University of Virginia, gave an excellent presentation: "Understanding the Minds of Inventors & What it Means to Entrepreneurs Today".

Martin Grimm and family came all the way from Canberra, Australia! Martin was able to coordinate beforehand with Defense Research Development Canada (DRDC), Atlantic Research Centre (formerly Defense Research Establishment Atlantic [DREA], who were heavily involved in the Canadian navy research program). Dr. Liam Gannon and Dr. Kevin McTaggart from DRDC attended and set up a poster on Canadian hydrofoil activities for display in the Water Hall adjacent to the IHS table and display, shown here

We were also fortunate to be hosted at private visits/tours of Beinn Bhreagh Hall (the Bell mansion) and The Lodge, where the Bells lived before building Beinn Bhreagh.

The IHS exhibit (above) and with Bebar, Billingsley, Vellinga, Hockberger and Grimm (below)

Beinn Bhreagh Hall, The Bell Mansion

The Lodge

The organizers also provided complimentary tickets for us to attend a staged reading of *"The Hydrofoil Mystery"*, presented by Theatre Baddeck at the National Historic Site and also at a local theater, hosted by the author, Eric Walters. Eric Walters is a well-known young adult fiction writer of almost 100 novels. "*The Hydrofoil Mystery"* is a work of historical fiction that tells the story of fictional teenaged Billy McCracken who is sent to work for the great inventor Alexander Graham Bell in Baddeck, Nova Scotia in the summer of 1917. All agreed it was an excellent and very professional production.

In addition, the program included a book signing for John G. Langley's book *"Casey – The Remarkable, Untold Story of Frederick Walker "Casey" Baldwin".* The book provides significant information about the development of aircraft and hydrofoils by Bell and his team of younger colleagues including Baldwin who continued with hydrofoils long after Dr. Bell's death.

In recognition of the importance of the event and the privilege of being invited to participate, Mark Bebar presented plaques from IHS to the Alexander Graham Bell Foundation (AGBF), and to the Bell and Baldwin families.

Joan Sullivan, a Bell great grand-daughter, and Sean Baldwin, grandson of Casey Baldwin, holding the IHS plaque presented by Mark Bebar.

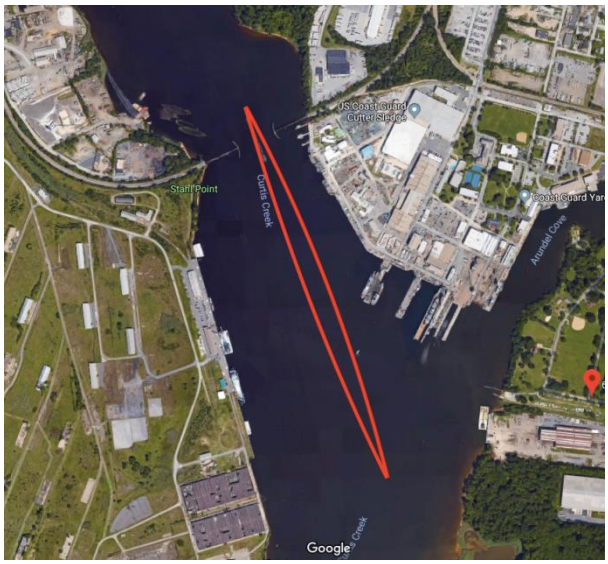
We were honored to be invited to participate in this significant celebration and had a memorable experience meeting the professionals who organized the event as well as members of the Bell and Baldwin families.

Alexander Graham Bell Museum Association

SMALL CRAFT ELECTRIC PROPULSION COMPETITION, U.S. COAST GUARD YARD BALTIMORE, MD, JULY 15, 2020

The 2020 MACC (Multi-Agency Craft Conference) will again be sponsored by the American Society of Naval Engineers and held on the grounds of the United States Coast Guard Yard in Baltimore, MD, on July 15-16. For the second time it will include a PEP

(Promoting Electric Propulsion) competition to help foster development of electric boats in the U.S.



The competition course, Baltimore USCG Yard

Each boat must complete five laps (less than one mile per lap) on a course defined by a buoy at one end and a railroad bridge at the other (see above). This short course will allow for maximum visibility by MACC attendees and safety of those competing. Participants must not approach within 100 yards of USCG docked assets.

The competition is open to both manned and unmanned craft, but manned and unmanned craft will race separately for safety reasons.

The top three finishers in each class will be awarded $3,000, $2,000, and $1,000.

Full details can be seen at: http://www.navalengineers.org/Education/Promoting-Electric-Propulsion-PEP.

U.S. NAVY TAKES ANOTHER LOOK AT HYDROFOILS?

The PHM Pegasus Class hydrofoil missile boats were decommissioned 25 years ago. But perhaps the Navy hasn't given up on hydrofoils entirely, if the one in a recent video from the Naval Surface Warfare Center (NSWC) Carderock Division is an indication. No official information has been provided, but the hull is similar to an existing VT Halter high speed planing craft.

Hydrofoil craft in recent U.S. Navy video

The video can be seen at https://youtu.be/gL1ZEfkqP40. It lasts 2 minutes and 45 seconds, and the hydrofoil is only shown for about three seconds starting at 2:27, but that's enough to capture the attention of hydrofoil fans throughout the world. We will try to obtain information on it for our July issue.

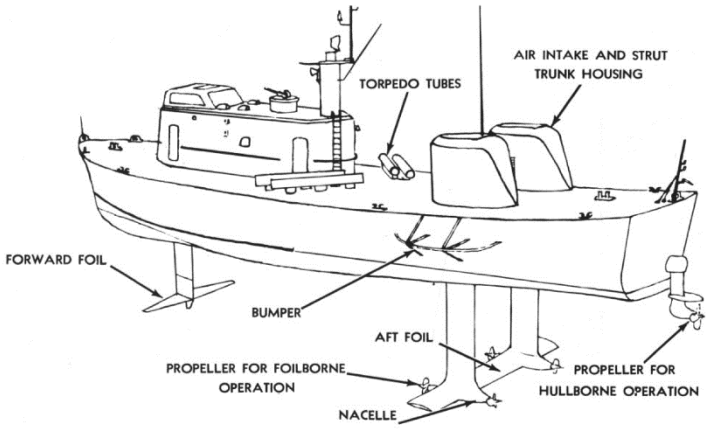
FOR SALE: THE NAVY'S FIRST OPERATIONAL HYDROFOIL, USS HIGH POINT

By Ray Vellinga

Seldom is there the opportunity to own a piece of history, a military fighting ship, a collection of advanced engineering, and a flying machine all wrapped up into one package, but today is your lucky day. The USS High Point PCH-1 is for sale!

High Point takes its name after the North Carolina city. It was launched August 17, 1962 and placed in service August 15, 1963, and was first based at the Puget Sound Naval Shipyard.

Mark Bebar and Terry Orme Jr. beside USS High Point (PCH-1) in 2012. Terry is the son of the owner, Terence Sr. Mark was previously on High Point as an engineer-in-training in 1971 on a transit up the U.S. West Coast.



From U.S. Department of Defense - U.S. Navy All Hands magazine June 1964, p. 19., CLICK HERE

This ship, originally designed to find, pursue, and destroy enemy submarines, was built by the J. M. Martinac Shipbuilding Corporation, Tacoma, Washington under a sub-contract from Boeing Corp.

Displacement: 120 Tons

Length:	115 ft (35 m)
Beam:	32 ft (9.8 m)
Draft:	17 ft (5.2 m) with foils down
Propulsion:	Bristol Siddeley marine Proteus gas turbines (foil-borne)
Speed:	Maximum 48 knots (foil-borne)

Its original cost was $2,080,000. For Sale at $69,000

Following High Point, the Navy went on to build the PGH-1 Flagstaff, PGH-2 Tucumcari, and the Pegasus PHM-1 class. During its 20 years of active duty High Point was stationed with the Navy in Puget Sound.

One example of its high-performance was in 1973 when it traversed the Columbia River Bar, flying through 27-foot breakers at 40 knots while conventional traffic was forced to wait for smoother waters.

High Point is owned by Terence Orme DDS, long-time IHS member. After purchasing the craft in a 2005 lien sale he and his associates had the intention of starting a hydrofoil museum in the years following.

Today, USS High Point sits at the North Tongue Point Pier in Astoria, Oregon, near the mouth of the Columbia River

For in-depth information go to Amazon.com and get a copy William Ellsworth's book, "Twenty Foilborne Years, The U.S. Navy Hydrofoil High Point (PCH-1)" CLICK HERE.

Many hydrofoil enthusiasts want to know why the Navy did not further develop the PCH-1 design into an operational class of hydrofoils. Ellsworth had an answer when he wrote, “first, and most importantly, the PCH experience amply demonstrated the fallacy of considering a first-of-a-kind, one-of-a-kind, complex hardware system to be ready for deployment as a fleet asset before it has been thoroughly rung out, modified, and redesigned. Further growth pains may be expected upon its first introduction to the actual operating environment.”

Hydrofoils tend to cost more than equivalent displacement hulls and have higher maintenance costs. This raised the question how much was the Navy willing to pay for an extra 10 or 20 knots of top speed? An additional problem was the high noise level at pursuit speed made operation of the sonar and other listening equipment impossible. So, the craft would fly rapidly to where they thought a submarine was but would then have to come to rest to get additional sound information, which of course complicated weapons deployment.

In addition, the Navy soon discovered that helicopters could get there quicker and drop a sonar buoy in the water, find the submarine, and deploy weapons.

See News of High Point Flying in 1963: CLICK HERE

IHS MEMBER FEATURED PUBLICATION

The Economic Challenges of High Speed Long Range Sea Transport, by Roger Schaffer, presented at FAST ’99 in Seattle, WA CLICK HERE

PRESIDENT'S REPORT

We all have experienced zooming down the freeway at 70 miles an hour in a modern SUV surrounded by airbags and strapped in with a safety belt. But what's it like to go 70 miles an hour in a 100-year-old hydrofoil prototype powered by two Liberty engines totaling 700 horsepower swinging huge wooden propellers and roaring like rockets to Mars?

To find out I take a seat in the virtual reality flight simulator in the Alexander Graham Bell National Historic Museum. It is programmed to simulate the experience of piloting the HD-4 Hydrodome (their term for a hydrofoil).

No seatbelt, no helmet. Simply strap on the 3D virtual reality headset and have a seat.

Ray in pilot’s seat

To take off, I depress the accelerator to the floor. Maximum power is required to get past the “drag hump” where both the foils and the hull are creating high resistance prior to take-off. Through the corner of the eye, I see the dock and nearby shoreline retreat faster and faster. Then the hull rises above the surface,

and there is a sudden surge of speed. Now the accelerator can be let up slightly, but the game is to complete a twisty course faster than the others have.

Approaching the first buoy at 70mph, I briskly turn the wheel to the extreme right. The Hydrodome yaws, but doesn't turn much. We crash into several obstacles before sinking. Not to worry, with a press of a button the boat is afloat once more and poised to re-advance to the first turn. This time the wheel is thrown over far in advance of the turn and I make it past the buoy and race toward the next turn, next crash.

It quickly becomes understood that the HD-4 is designed for speed, not maneuvering. There is very little keel or rudder and the craft does not bank much when turning despite the wings' dihedral. It impressed me just how tricky and improbable such a flight is today or was 100 years ago. If Bell saw me abusing his Hydrodome like this, he'd take back my telephone.

Here's a brief clip of the real HD-4 underway:
CLICK HERE

HD-4 before and after Ray's virtual piloting

FEATURED YOUTUBE HYDROFOIL VIDEOS

Must See -- 27 Miles -- Human Powered Hydrofoil wins Hawaii Race CLICK HERE

SeaBubbles testing the fly-by-wire control system CLICK HERE

9 Awesome Watercraft and Hydrofoil Boats CLICK HERE

Best Electric Hydrofoils 2019 - Top 10 eFoils CLICK HERE

Lift eFoil, Miami CLICK HERE

Hydrofoil Motorboat in Bremerhaven CLICK HERE

ALISCAFO hydrofoil luxury yacht CLICK HERE

Solarboat ROC Friese Poort Sneek CLICK HERE

The flying Quadrofoil Q2S Electric Limited Edition in action. CLICK HERE

MANDLES PRIZE FOR HYDROFOIL EXCELLENCE. DEADLINE MAY 1st

By Mark Bebar

Once again, we thank Martinn and Connie Mandles for sponsoring the Mandles Prize for Hydrofoil Excellence competition. The competition is now in its seventh year and awards up to $4,500 annually in IHS hydrofoil achievement prizes for students, with a $2,500 First Prize and up to two $1,000 Honorable Mention awards.

In order to open the competition to a wider spectrum of qualified entries, submissions based on work completed since 2014 will be eligible for the IHS

Mandles Prize for Hydrofoil Excellence. Significant contest dates are as follows:

Competition Application Form: due not later than May 1, 2020. Entry (student report submission): due not later than June 28, 2020

Awards announced: on or before August 30, 2020

Awards presented: on or before September 27, 2020

This is an outstanding opportunity for the next generation of hydrofoil developers to be acknowledged for their efforts to advance the state of the art in hydrofoil and hydrofoil-assisted craft design, engineering and construction. Background on the Mandles Prize and Rules for the competition can be downloaded from the IHS website (www.foils.org)

Based on the 2019 entries and award winners, we anticipate a very exciting competition and look forward to receiving many high-quality entries. Questions on the Mandles Prize can be emailed to:

Mark Bebar at: mark.bebar@juno.com and/or

Ray Vellinga at: IHSpresident2016@gmail.com

JOINT DINNER MEETING OF IHS AND SNAME SD-5 PANEL

On November 20, 2019 Michael Bosworth, Director of the Navy's Center for Innovation in Ship Design (CISD), was the speaker at a dinner meeting hosted by IHS and the SD-5 Panel (Adanced Ships and Craft) of SNAME. The Chesapeake Section of SNAME and Flagship Section of ASNE also joined with us. CISD's purpose is to give young designers and engineers (including college interns, to stimulate interest in our field) exposure to Navy ships and the processes and techniques and information used in designing them.

Mike described the CISD methodology and teaming, then presented a selection of projects, showing quad summaries for some and taking a deeper dive into a few others of particular current interest, including the UxV Mission Ship, the Arctic Multi-Mission Ship, and the EURECA autonomous re-fueler.

He wrapped up with observations on current trends in ship/sub/craft/UV design, both U.S. and foreign, including thoughts on where advanced marine vehicles may fit. The latter included two medium-sized unmanned surface vessels for DARPA and ONR for which a range of AMV hullforms will be explored.

Michael Bosworth is a retired naval officer (1972-1996), naval architect and marine engineer who has held positions in R&D program management and ship concept design and R&D. He was S&T Director in NAVSEA's PEO Unmanned & Small Combatants prior to his present assignment as director of CISD

INTERNATIONAL HYDROFOIL SOCIETY PURPOSES AND OBJECTIVES

• Foster advancement of hydrofoil technology.

• Serve as a source of expert knowledge on hydrofoils and hydrofoil technology.

• Provide an international forum for interchange of information and ideas on hydrofoil technology, design, construction, and operation.

• Build and maintain a library of information and data on hydrofoils and hydrofoil technology and disseminate to interested persons and organizations.

• Foster and participate in conferences and exhibitions related to hydrofoil technology

• Promote commercial, military and recreational application of hydrofoils.

• Foster educational activities about hydrofoils and related technologies.

• Act as a spokesman for the world hydrofoil community.

https://foils.org/ihs-purposes-and-objectives/

NEWSLETTER

The newsletter can be viewed and downloaded for free from the IHS website, www.foils.org

Membership is free: Contact IHSpresident2016@gmail.com

P.O. Box 8911
Reston, VA 20195

Founded in 1970, IHS is a nonprofit tax-exempt organization.

GET IN PRINT

Do you or your company have a story to tell, a product to show to the hydrofoil community, etc.? Send a copy to IHSpresident2016@gmail.com and if it is appropriate, we will give you some publicity or otherwise help share your ideas. No cost to you.

DISCLAIMER

IHS chooses articles and photos for potential interest to IHS members but does not endorse products or necessarily agree with the authors' opinions or claims.

DUES ARE HISTORY

As a key part of this administration, annual dues have been eliminated. The new program is to rely on Sustaining Members and donations. Please inquire with IHSpresident2016@gmail.com to place an ad.

TAX DEDUCTIBLE DONATIONS INVITED

The International Hydrofoil Society does not charge a membership fee. Its financial operation is dependent on the generous contributions of our corporate sponsors and individual donors. The IHS is recognized by the Internal Revenue Service as a 501(c) (3) charity. As such, donations to the IHS are tax deductible. Recent changes to the tax laws have made itemized deductions generally less attractive, however, there are circumstances where itemizing rather than taking the standard deduction still make sense. The following article describes one of those circumstances that is advantageous for retirement age members: CLICK HERE

If you would like to make a tax-deductible donation to the IHS, the mailing address is:

International Hydrofoil Society
P.O. Box 8911
Reston, VA 20195

TOO MUCH EMAIL?

You may email IHSpresident2016@gmail.com and request to be removed from our 2,500 member list, however we have a staff of zero, so a big favor to us is for you to simply use your browser to ignore or block our incoming newsletter. Of course, we hope you choose to enjoy our free news report twice a year.