The NEWSLETTER

International Hydrofoil Society

P. O. Box 51, Cabin John MD 20818 USA

Editor: John R. Meyer Spring 1999

FOILS CONTINUE COMEBACK

RIDE CONTROL TECHNOLOGY ADVANCES STEADILY

From an Article by Paul Hynds in "Speed at Sea", January 1999

Maritime Dynamics Inc. (MDI) is a familiar name in the commercial high speed craft industry, but the company has been developing and supplying ride control systems since 1980. Throughout this period MDI equipment has been fitted to just about every type of fast ferry to enhance levels of passenger comfort in a seaway. Different systems have been developed to suit the markedly different forms of high speed ferry technology encompassing catamarans, monohulls, surface effect ships and SWATH vessels.

In 1996 MDI was acquired by UK-based Vosper Thornycroft, which had already worked closely with the US company on fast ferry ride control systems for several years, providing hydraulic equipment and fin stabilisers while MDI supplied electronic ride controllers, T-foil stabilisers, and active stern flaps.

MDI has installed more than 140 ride control systems to a wide variety of commercial vessels operating throughout the world. Each system is uniquely configured as a specific application to the particular vessel, taking into account its design and the prevailing sea conditions of the intended or most likely operational profile. The most recent ride control system installations include Incat's first 96m wave- piercer (Hull 050), TRICO Marine's SWATH crewboat *Stillwater*

Forward T-Foil on Austal 48m Ferry

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WHERE ARE YOU IN CYBERSPACE?!

IHS relies on electronic communication with the membership to improve timeliness and reduce mailing costs. If you are a member with email, **let us know your email address!** Thank you.

1999 DUES ARE DUE

IHS Membership is still only US$20 per calendar year (US$2.50 for students). Your renewal or new membership is critical. Please remit 1999 dues as soon as possible. We regret that high bank fees make it impractical for IHS to accept payment by credit card or a check drawn on a non-US bank, or by other than US funds. Overseas members with no easy way to send US funds, are advised to send money order to IHS or US Dollars cash.

INSIDE THIS ISSUE

PRESIDENT'S COLUMN

It is an appropriate time to provide all members with an update on the "State of the IHS". I am pleased to report that the State of the IHS is sound. Due to the hard work and many hours of devoted effort by Barney Black, our Web Master, and many of the Board Members, we are seeing progress on several fronts.

One, which is of great importance to us, is our membership. The IHS continues to reach out to the hydrofoil world via the "Net"; we are pulling in members from all over the globe. From this and other newsletters you can see, under the "Welcome New Members" column, that the addition of new members is holding at a very high level. These new members represent a wide variety of interests in the hydrofoil arena, and this is good for the Society.

I would like to bring you up to date on several initiatives. For sometime we have been pursuing the possibility of producing a Hydrofoil Video. Several attempts with a number of organizations have failed, but we are persistently and stubbornly seeking a solution. The latest is a promising contact through the Discovery Channel. We will keep you posted regarding any progress along this line. Secondly, a long-term effort is to produce a Hydrofoil Technology textbook. Our latest approach is a cooperative effort with the University of Michigan Dept of Naval Architecture and Marine Engineering. While on the subject of "publications", Ken Spaulding, along with representatives of the U.S. Hovercraft Society and the SNAME SD-5 Panel on Advanced Marine Vehicles, is pursuing the scanning and electronic release of about 500 reports and technical papers on high performance marine vehicles. This will be accomplished with the cooperation of and through the Naval Surface Warfare Center, Carderock Division in Maryland, outside of Washington, D.C.

All of you had an opportunity to comment on a proposal to hold a Celebration and Meeting to commemorate the 30th Anniversary of the IHS in the Year 2000. Some of you responded, and although the response was not overwhelming, the Board of Directors has decided to pursue this event. Board Member Jerry Gore evaluated and summarized the questionnaires. In part, he recommended a one-day afternoon and evening meeting. As a result we have issued a "Call for Papers" which can be found on page 12 of this Newsletter. I have also sent out this "Call" by e-mail to all members who have provided us with an e-mail address.

Again we were saddened to hear of the death of two more members of the hydrofoil community: Bill Schultz and Tom Ray. Both of them were deeply involved for many years in the hydrofoil program at Boeing. Sumi Arima and Bill Ellsworth were kind enough to provide some background on these two fine and highly respected hydrofoilers. (See pages 11 and 12.)

John R. Meyer
President

WELCOME NEW MEMBERS

Robert W. Holland, Jr. joined the staff of Maritime Applied Physics Corp. in Annapolis, MD in 1993. He has worked on a variety of projects including QUEST, a HYSWAS demonstrator craft built for the U.S. Navy. Rob provides the expertise for the companies' CAD capability.

Daniel C. Leggett obtained a BSME from Clarkson University in 1989. He subsequently earned a Masters degree in ME from Johns Hopkins University. He recently joined Maritime Applied Physics Corp. in Annapolis, MD where he is involved in structural and mechanical systems design.

Jonathan E. Morley is currently studying at Plymouth University, Plymouth, England for a BEng Marine Systems Technology. He has become increasingly interested in hydrofoil design and is currently researching ideas for his dissertation. At present Jonathan is interested in modeling hydrofoil dynamics; proving the validity of such comparative methods. This is likely to involve experimental testing on a scaled craft, and attempts to characterize scaling effects.

Andrew Padgett is a student at Ashville College, Harrogate, North Yorkshire, England. He is taking Advanced Level Design and Technology, and he has chosen a design project to make a device which will increase the size of the wake of a speedboat when wake- boarding behind it. This allows one to do more tricks. He hopes to get some information on this subject with the help of fellow hydrofoilers.

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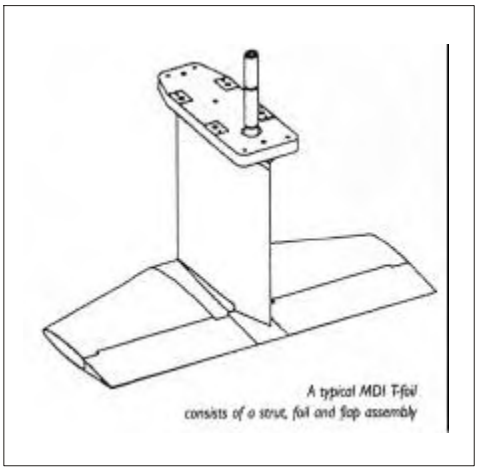
River, the 45m Derecktor-built catamaran *Patricia Oliva II*, the 100m Fincantieri-built monohulls *SuperSeaCat III* and *SuperSeaCat IV*, and CFI's 120m Pacificat 1000-series catamaran in Canada.

For catamaran applications an MDI ride control system will typically consist of hydraulically operated inverted T-foils fitted to the bow of each hull and usually, but not always, operated in conjunction with trim tabs mounted on each transom. Original ride control systems for catamarans relied only on the stern trim tabs, but the advent of the inverted T-foil made considerable advances in measurable motion reduction.

For large catamarans the T-foil itself is constructed using high strength steel material and is designed for continued operations at high speeds under both symmetric and asymmetric slamming conditions. All surfaces that bear on thrust bearings are plasma-arc-coated with stainless material, MDI says. The configuration of the foil can provide both incidence and flap control, or flap control only, to create positive or negative lift as required to counter the vessel's hull motion. This reduces the accelerations caused by vessel pitch, heave and roll which are instrumental in causing passenger discomfort and seasickness. The controllable surfaces are automatically positioned by an electronic controller that feeds on input from motion recording sensors. Custom software installed in the controller calculates the angle on the foils due to hull motion and foil rotation.

The system also continually and automatically limits the angles of incidence to minimise cavitation. The mounting interface between the T-foil assembly and the hull structure can incorporate a protective feature that enables the T-foil to break away if subjected to abnormal loading or impact.

In a typical contemporary fast ferry fitted with a full MDI ride control system the installation would comprise: trim tab and T-foil assemblies; hydraulic pack; motion sensor system package; T-foil actuator assembly; T-foil servo assembly; trim tab actuator assembly; trim tab servo assembly; local control service junctions; electronics control unit; systems control and display panels and hydraulics 'start' and stop' alarm panel.



A typical MDI T-foil consists of a strut, foil and flap assembly

MDI first installed a bow-mounted inverted T-foil ride control system on a large catamaran in cooperation with UK-based operator Condor. With a three-hour open-sea Western Channel route linking mainland UK to the Channel Islands, passenger comfort was, and continues to be, a key priority for Condor. The ride control system comprises a full installation of active inverted T-foils forward on each hull and active trim tabs aft, and made dramatic improvements to *Condor 10's* ride quality. Evaluation during tests with wave heights in excess of 2m recorded a reduction in the standard deviation of pitch and roll by 70 per cent.

High speed monohull vessels require a different methodology to control trim, list, steering and coordinated turning, pitch, roll and yaw and automatic heading. In 1993 MDI introduced a ride control system specifically designed for monohulls. This system combines the steering function and the damping of hull accelerations to provide enhanced levels of passenger comfort during high speed operations in both calm and rough water conditions. This is achieved through the integrated control of the vessel's rudders, or alternative steering mechanism, and active stern-mounted flaps in response to vessel hull motions and helm commands.

Typical of this MDI ride control application are the systems fitted to the Australian-built WaveMaster International monohull high speed passenger ferries such as the 40m *SuperFlyte*. During operations in 1m to 2m bow seas the system has consistently demonstrated a 60 per cent reduction in roll motions and a 30 per cent reduction in pitch.

Surface effect ships require a completely different method of ride control based on venting pressurised air from within the sealed air cushion chamber. Passenger craft of the type built by Ulstein International in Norway between 1984 and 1992 predominately employ a three-vent system supported by boost air into the stern seal. The fleet of Kvaerner Mandal-built mine counter-measures surface effect ships delivered to the Royal Norwegian Navy also use this system

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but allied to the additional benefit of a lift pressure control device.

SWATH vessels with twin fully submerged cylindrical or similar form hulls generally use an active fin-based ride control system similar to that found on monohull high speed ferries. This can also be integrated to operate in conjunction with a vessel's steering system and autopilot.

As speeds and payload demands from operators continue to increase so there is an added impetus to reduce the weight of fittings and machinery components on board fast ferries. Ride control is no exception to this trend and MDI has been engaged on an extensive process of product assessment with the specific aim of reducing the weight of its installed components. As a result of this study several weight-saving features are to be incorporated into the company's ride control systems during the course of the next year.

Planned for release in the summer of 1999 is MDI's first commercial computer-based ride control system incorporating an embedded Microsoft Windows operating system. This new system will offer touch-screen operation, improved diagnostic capabilities, easy integration with alarm and monitoring systems, and redundant back-up controls. The system will be interconnected via fibre-optic cables. MDI's own estimates reveal that switching from conventional copper-based cables to the new fibre-optics will generate a weight saving in the order of 40 per cent.

While stern-mounted trim tabs are a proven method for controlling pitch and roll motions and will continue to be used, a problem arises with the increasing size of new generation high speed ferries. As the vessels become larger, so does the need for increasing the reactive surface area of the trim tabs to control the relevant motions. This of course has an adverse weight implication.

In seeking a solution to this problem MDI instigated an intensive research and development programme that led to the development of a composite trim tab option. This development included extensive stress investigation using finite element analysis which has resulted in a preliminary prediction of a weight saving amounting to 70 per cent over an equivalent steel material trim tab. A system of interceptors that will perform the same function as trim tabs but with less drag penalty is also under evaluation.

MDI has developed a healthy market position in supplying ride control technology to shipbuilders. Other yards have opted to develop their own in-house ride control technology, and notable in this category are Austal Ships in Australia, Kvaerner Fjellstrand in Norway, and Rodriquez Cantieri Navali in Italy. The Kvaerner Fjellstrand solution is known as the Motion Dampening System, developed first for the company's fast passenger catamarans built in Norway and Singapore. More recently the system has been applied to the larger FlyingCat and JumboCat catamaran car ferries.

The system comprises computer-controlled active trim tabs aft and inverted T-foils forward to counter hull motion. The forward location of the T-foil mounting is determined by the point of maximum dampening effect depending on the particular vessel.

For the FlyingCat 40 passenger catamarans the foil surface area is equal to $2m^2$ under each hull. The system was first fitted to the 38.8m Advanced Slender Catamaran *Victoria Clipper*, operated by Clipper Navigation of Seattle, where assessment of the system revealed a reduction in bow accelerations of 36 per cent in wave heights of 2m, and up to 46 per cent in wave heights up to 1m. Another benefit was that the operator was able to continue using the autopilot in following seas for the first time with the Motion Dampening System engaged. The system can be retrofitted to earlier Kvaerner Fjellstrand deliveries and more than 40 shipsets have been supplied worldwide.

The recently announced US$42 million order for a 114m Aquastrada stabilised high speed monohull car ferry placed by Canary Islands operator Armas Group has focused attention on the vessel's integrated ride control and steering system *(Speed at Sea*, August 1998). Developed by Rodriquez Engineering, the technical arm of the Italian shipyard, the system is designated the navigation and seaworthiness management system (NSMS).

Unlike previous monohull ride control systems the Rodriquez solution utilises two fully submerged foils mounted on struts, supplemented by two pairs of stabilising fins. At the bow a single inverted T-foil of $6.7m^2$ surface area is fitted. Two struts aft support a $9.24m^2$ foil, the design of which is based on the company's long experience of hydrofoil development.

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As well as providing the ride control function these foils will also generate up to 300 tonnes of positive lift to reduce hull resistance and improve operating performance. In addition to these control surfaces trim tabs are also fitted on the transom, all of which is designed to allow continued operations in wave heights up to 5m. As part of the integrated ride control and navigation package the vertical struts that support the foils incorporate rudder flaps. Rodriquez says that this arrangement will provide a more efficient control over steering requirements and prevent the common problem of an oscillating course common on vessels fitted with waterjet deflectors.

Yard predictions are for less than 2 per cent occurrence of sea sickness within 2 hours at 38 knots operating into head seas with wave heights up to 3m, and up to 5 per cent occurrence of sea sickness in any other conditions. All the stabilising systems of the 114m Aquastrada will be controlled from a bridge-mounted console by means of monitors and command panel. The monitors will display both visually and digitally the ship motions (roll angle, pitch angle and vertical and transverse accelerations) as well as the angles of incidence of the control surfaces. The system is also able to receive the relevant data from the onboard motion sensors and control surface monitors, so as to analyse it in the frequency domain and compare it with the standard comfort curves, Rodriquez Engineering says.

Austal Ships developed its Ocean Leveller ride control system in 1992 after evaluating existing ride control systems on the market. At that time Austal considered existing commercially available systems to have shortcomings, and that overall they were not optimum for use in its craft.

Development of the Ocean Leveller system was undertaken in cooperation with Curtin University in Western Australia and paralleled the yard's ongoing development of Semi-SWATH hullforms. Austal's research indicated that an active motion control system could reduce ship motions by as much as 50 per cent in even the best designed hull.

For catamarans the worst condition for seakeeping is a head sea and hull resistance increases significantly in such a case. According to Austal, increased resistance due to hull motions is essentially a large 'bank' of lost energy which can be tapped using a ride control system. Such systems do increase resistance - but nothing like the energy loss caused by excessive hull motions. The overall effect of the system is therefore to reduce resistance, thereby either increasing speed or reducing fuel consumption and engine maintenance due to lower power requirements. Not least, Austal adds, it ensures greater passenger comfort.

A typical system comprises motion sensors coupled to a computer controller, which in turn commands underwater foil sections, flaps or interceptors to move the ship in such a way as to counter wave-induced motions. Austal has developed a range of control surfaces to provide the optimum solutions for specific vessel types and route applications. Austal's portfolio includes flaps, various T-foil and fin arrangements as well as its newly developed interceptor concept.

The active interceptor is Austal's latest development. Essentially it is a vertical plate which can be raised and lowered at the transom to provide more lift with less resistance than an equivalent flap.

The interceptor concept was proved by fitting fixed plates on the stern flaps of the 79m catamaran hull No. 37 *(Catlink III)* during trials in 1995. Subsequently several fixed plates were used on 40m vessels. The first fully active system was fitted to the 35m catamaran *Marine View* which was sold to Japan in June 1997.

The interceptor has subsequently been used as standard on all Austal's ships fitted with ride control systems. To date some 14 interceptor systems are in service on seven vessels.

In addition to installing Ocean Leveller systems to its own newbuildings, Austal has also retrofitted the system to vessels built at other yards and is quoting for the supply of its systems to several newbuildings.

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As a result of recent communications with representatives of MDI, IHS has been informed that they currently offer 2, 4, 8, 11.5, and 13.5 m^2 T-foils. They are fabricated in aluminum, plain steel, and specialty steels depending on the application. Several of the foils are offered in standard and high-speed variants to best trade-off lift, drag, and cavitation inception. All of MDI's T-foils have active flaps. The larger foils will also pivot to optimize angle of attack. MDI is currently working on super-high-speed variants for operation in the 60 knot speed region.

(As a point of reference, the largest, 13.5m^2 foil is approximately the same size as the forward foil on the PHM hydrofoils). Editor

1998 DELIVERIES AND ORDERS

(*Extracted from Fast Ferries International, January-February, 1999)*

Deliveries and orders placed during 1998 were not as bad as many within the fast ferry industry seem to believe. The figures compare reasonably well with the 67 deliveries and 69 outstanding orders at the end of 1997.

As usual, some of the vessels listed last year as outstanding orders for delivery during 1998 remain with the yards or have failed to materialize due to lapsed contracts or financing difficulties. Unless they have been sold to another operator, those that have been built are regarded as stock vessels and are not counted. This year there are four. One of which, a 43m catamaran ordered by Phillips Cruises & Tours from Falcon Marine, will definitely not be appearing as the yard closed at the beginning of last year. One of the other vessels, Marinteknik Shipbuilders 32m Superfast catamaran Auto Jet, has been completed and is currently for sale.

Hydrofoils built for stock remain available at yards around the former Soviet Union and the appearance in 1998 of five of these on services in Europe and North America explains the minor boom in hydrofoil deliveries during the year.

One of the more interesting resale contracts also involved hydrofoils. A pair of Boeing Marine Systems Jetfoil 929-115s operated by RTM/ Oostende Lines between 1981 and 1997 have been sold to a German company for a proposed service to Denmark.

As always, a fast ferry is regarded as a vessel, delivered to or ordered by a commercial company, capable of carrying at least 50 passengers, or an equivalent amount of passengers plus cargo, and having a minimum service speed of 25 knots.

	Deliveries	Orders	Total
Catamarans	34	37	71
Foil assisted catamarans	2	-	2
Hovercraft	-	-	-
Hydrofoils	6	-	6
Hydrofoil catamarans	-	1	1
Monohulls	15	19	34
Surf Eff Ships	-	-	-
SWATHs	-	1	1
Wavepiercing catamarans	6	1	7
Totals	63	59	122
Passenger ferries			
50-99 seats	5	1	6
100- 149 seats	2	7	9
150-199 seats	10	3	13
200-249 seats	8	1	9
250-299 seats	2	2	4
300-349 seats	8	4	12
350-399 seats	5	11	16
400-449 seats	-	1	1
450 + seats	7	8	15
Totals	47	38	85
Passenger/Vehicle ferries			
10-49 cars	2	1	3
50-99 cars	4	6	10
100- 149 cars	-	-	-
150-199 cars	2	5	7
200-249 cars	5	4	9
250-299 cars	1	3	4
300-349 cars	-	-	-
350-399 cars	-	-	-
400-449 cars	-	-	-
450-499 cars	2	2	4
Totals	16	21	37

WELCOME TO NEW MEMBERS

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Theodore Spillers is from Breaux Ridge, Louisiana.

Chris Tietjen is from Guilford, CT and his interest is in sailing hydrofoils where seakeeping vice all-out speed is the primary goal.

Jeanne E. Waldner - A naval architect graduate of Web Institute in 1993, Jeanne recently joined the design staff of Maritime Applied Physics Corp. in Annapolis, MD. Previously she was employed by Glosten Associates in Seattle, Designers and Planners in Arlington, VA, and J.J. McMullen in New York. She also holds a MS degree in Ocean Technology and Commerce from Web.

William N. White recently retired having served as the Deputy Director of the Naval Sea Systems Command's (NAVSEA's) Corporate R&D Division which oversees NAVSEA's involvement in many R&D programs. He has over 37 years of Naval Architecture, Naval Shipyard, Naval Labs and Navy Headquarters experience in all phases of ship research, development, construction, operation and overhaul. His primary areas of interest have always been Advanced Naval Vehicles such as hydrofoils, surface effect ships, air cushion vehicles, and SWATH. In the early 70's, Bill created the original Advanced Vehicle computer simulations for the PHMs, AALC JEFF A&B, and SES 100 A&B R&D programs. He has published papers on the design of Advanced Naval Vehicles and is a member of IHS, USHS, SNAME, ASNE and the International Marine Transit Association.

HYDROFOIL SYSTEM RETROFIT TO RAISE K55'S TOP SPEED

(From Speed at Sea, January 1999)

A fixed hydrofoil system to be fitted to Buquebus's 70.4m K55 car/passenger catamaran *Juan Patricio* will raise its present top speed of around 48 knots to close to 55 knots, according to the system's designer. After the completion of a series of tank tests at the Institute for Thermodynamics & Mechanics at the University of Stellenbosch in South Africa, Cape Town-based Hydrospeed has been contracted to supply a HYSUCAT hydrofoil system for *Juan Patricio*, delivered by Incat Australia in 1995, which operates across the River Plate between Buenos Aires and Montevideo.

Incat and Advanced Multihull Designs joined forces to design and build the K55, and AMD will supervise the installation of the foils in South America expected to be around the middle of this year - with Det Norske Veritas. The foils themselves are being fabricated in Cape Town by Hydrospeed's local subcontractor Dowson & Dobson.

The Hydrofoil Supported Catamaran (HYSUCAT) hydrofoil system can increase the top speed of fast catamaran ferries by between 15 to 40 per cent depending on the size of the vessel and the speed range, according to its designer, and *Juan Patricio's* installed power of 21,600 kW would need to be increased by more than 50 per cent to reach 55 knots without the foil system fitted.

The HYSUCAT hydrofoil system was developed by naval architect Karl-Gunter Hoppe in South Africa at the University of Stellenbosch, which is located around 50km from Cape Town. The university owns various international patents on the system, which are administered by its wholly-owned technology company, Unistel Technologies (Pty) Ltd. The HYSUCAT hydrofoil system is supplied and marketed internationally by Hydrospeed.

Professor Hoppe has spent over 15 years developing the shape and the positioning of the hydrofoil system and during this period around 200 systems have been installed. The largest so far is on the 36m composite-construction catamaran yacht *Chief Flying Sun*, designed by Nigel Gee & Associates and built by T-Craft in South Africa in 1992. A recent reference is Prout Catamarans' 20m-long 44-knot *Panther 64* leisure powerboat (*Speed at Sea*, June 1998).

A HYSUCAT system normally consists of one main wing-shaped hydrofoil fixed between the keels of a catamaran, close to the centre of gravity of the vessel, and two stern hydrofoils mounted in the tunnel near the transom under the waterline. As the catamaran increases speed the hydrofoil system produces forces which partially lift the boat out of the water and thereby reduce the wetted area of the hull.

The system was originally designed on asymmetrical catamaran hull designs but has subsequently been adapted to work on the majority of symmetrical catamaran hull shapes. For some large passenger and car ferries with symmetrical hulls the system becomes a tandem foil system with two main foils.

The latter type of HYSUCAT system has been specified for Juan Patricio, and comprises a 16m-span main foil with a chord length of around 2m, and an aft foil spanning the 9m between the hulls which acts as a counterbalance and ensures that the vessel always runs at the correct trim. The foils are fabricated from high tensile steel, and their combined weight is in the region of 12-14 tonnes.

The HYSUCAT system is most suited to catamarans with a specified minimum speed for their size range, which in the case of vessels over 50m long is 38 knots or more. Systems for larger catamarans and ferries are developed and perfected by model tests both with and without scaled foils.

Benefits of fitting the system cited by the designer include an increased top speed of between 20-40 per cent with existing engines, or installation of smaller engines to achieve the same top speed; improved seakeeping in rough seas because of the dampening effect of the submerged foils; faster acceleration; reduced wake height at speed; better response when turning at speed - most catamarans fitted with the system bank at speed more like a monohull; and low maintenance because there are no moving parts.

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Interested in hydrofoil history, pioneers, photographs? Visit the history and photo gallery pages of the IHS website. http://www.erols.com/foiler.

FUTURE NAVY MAY HAVE SMALL, TOUGH SHIPS TO SUPPORT MARINES

(From Defense Daily, February 25, 1999 - By Vago Muradian)

The Navy in the future could have a fleet of small, stealthy 2,000-ton ships packed with a potent array of strike weaponry that would be devoted to operating close to enemy coasts and supporting Marines ashore, a senior official said yesterday.

ADM. Donald Pilling, the vice chief of naval operations, disclosed the concept—which he termed as the naval equivalent of a "street-fighter"—yesterday during an American Shipbuilding Association seminar in Washington, D.C.

The idea of such a small, fast, heavily-armed ship that would be devoted to in-shore, or littoral, operations was broached last week by Vice Adm. Arthur Cebrowski, the commandant of the Naval War College. Cebrowski raised the idea with Pilling and other senior Navy leaders during a high-level meeting, sources said.

Pilling added that the development of such a small, modular warship would have not only strong export potential but also could serve the needs of the U.S. Coast Guard which is in the early stages of a comprehensive effort to modernize its cutters, aircraft and command and control systems.

One senior Navy official yesterday explained that the concept is in its embryonic stages and that no funding has been identified for even development of the program.

"Cebrowski will conduct battle experiments on the concept from a number of different perspectives to see whether we should crank this into our future planning," the senior official told Defense Daily. "Cebrowski's our idea man; this is exactly what we pay him to do. But this is way, way out there."

The concept needs to be studied closely given the Navy expects that the bulk of its future battles will be fought not on the high seas, but in the coastal waters of the world. But industry executives expressed skepticism that the vessel was needed, adding that the development of an entirely new class of ships could distract funding, and political attention, from ongoing major efforts, particularly the DD-21 future destroyer.

The Navy last year launched a competition between two teams for the DD-21 that would replace existing destroyers. Two teams are vying for the effort, one led by Bath Iron Works [GD] and Lockheed Martin [LMT] and the other led by Ingalls Shipbuilding and Raytheon [RTNA/RTNB].

Pilling indicated, however, that the new class of ships, if ever built, could compose a portion of the bare- minimum of 300 ships that will constitute the total number of the Navy's future force of combat and combat support ships. In fact, Pilling stressed that "300 [ships] is the absolute minimum we can live with" to support projected missions.

Pilling added that the Navy's 300-ship force does not include such support vessels as hospital ships or the USS Constitution frigate that is moored in Boston. The 300-ship total would be composed of aircraft carriers, amphibious ships, cruisers, destroyers, ballistic and attack submarines, as well as command and replenishment ships, and tenders.

That will mean a far greater strain on the overall force which will be 24 ships smaller than it is today.

The trouble is that the service is barely building ships fast enough to ensure that there are enough ships to constitute the future 300-ship fleet.

Pilling said that the 248 ships of the future 300-ship fleet would be composed of: 12 operational carriers; 36 amphibious ships in 12 Amphibious Ready Groups; 14 ballistic missile submarines, down from 18 today with congressional approval; 50 nuclear attack submarines down from 60 today; four command ships, one for each fleet; and 16 mine countermeasures ships. The remaining 52 vessels would be support ships, he said.

Rep. John Murtha (D-Pa.), the ranking minority member of the House Appropriations Committee's defense subcommittee, told Defense Daily that to ensure prospects for the 300-ship fleet, the service must be given enough funding to purchase at least nine ships each year.

"I think we're at 325 or so now, and it's going to go down to 300," Murtha said. "We have to sustain a building rate that will keep us at 300 if we are going to sustain our tempo of operations. The key is to either slow down the operations or build the number of ships you need." This year, the Navy will build six ships, although the service's proposed FY '01 budget includes enough funding for eight ships.

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The yearly total would rise to nine ships annually by FY '05. "We're starting to get there to sustain the fleet, but what we need is more like 10 or 12" a year, Murtha said. Pilling in his address indicated he would prefer a rate of about 10 ships per year.

Murtha added that to sustain the defense budget increase called for by the Clinton administration, defense spending caps must be lifted to allow a spending rise of as much as $5 billion in FY '01.

Rep. Gene Taylor (D-Miss.), who represents Ingalls' district, told the audience that the salvation of the U.S. shipbuilding industry will be found in a political solution, not in any short-term budget remedies. Taylor added that the blame for the industry's erosion over the past decades lies squarely with politicians, industry executives, and even workers, who have failed to lobby lawmakers and taxpayers as effectively as other groups to ensure their survival.

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CERES AND MINOAN MERGE FAST FERRY OPERATIONS
(From Fast Ferry International December 1998)

Ceres Hydrofoil Joint Venture and Minoan Lines Highspeed Ferries have announced that they are to merge their fast ferry operations in Greece. The new company is to be known as Minoan Flying Dolphins and will adopt C&M as its trademark. Invested capital, it reports, will be well over US$100 million. The total includes 33 vessels, infrastructure and working capital.

Ceres will contribute 22 Kometa hydrofoils, four Kolkhida hydrofoils, three Rodriquez RHS 160F hydrofoils, a Kvaerner Fjellstrand Flying Cat 40m catamaran and an Austal 48m catamaran to the fleet. Minoan Lines Highspeed Ferries' contribution will be its single Royal Schelde CAT 70HL catamaran and a conventional ferry.

Minoan Lines, the Greek ferry operator that is the parent company of Minoan Lines Highspeed Ferries, has acquired a 70% holding in Minoan Flying Dolphins. However, Ceres, which is a subsidiary of Ceres Hellenic Shipping, will manage the operation of the vessels.

Referring to its future operation, the new company says, "Minoan Flying Dolphins enjoys significant competitive advantages since it operates with the most user friendly computer reservation and ticketing system, offers the largest network by calling at 62 ports with 100,000 departures per year, and has the largest passenger volume in the Greek domestic market (1998: 2,350,000).

"The company's target is to enhance and continuously improve its services; to further expand its current network (Cyclades Islands, Saronikos Gulf, Northern Sporades) to new destinations, including the Ionian Islands; and gradually upgrade and renew the existing fleet with new tonnage."

Minoan Flying Dolphins has also confirmed that it intends to apply for a listing on the Athens Stock Exchange in late 1999. The application is to be supported by the National Bank of Greece, Eurobank, the Alpha Credit Bank and Citibank.

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PASSENGER-ONLY FAST FERRY
(From MarineNews, January 25, 1999)

Besides the vehicle-carrying fast ferries, BC Ferries has been studying the authorization of a separate passenger-only fast-ferry service that would operate between downtown Vancouver and Swartz Bay on Vancouver Island.

A joint venture put together by Hong Kong's Far East Hydrofoil Co. Ltd. and Seattle's Clipper Navigation has proposed operating two 240- passenger Boeing 929 Jetfoils on this route, but the BC government has since backed away from putting the service into operation this year because of the ferry corporation's current financial position.

Nevertheless, Darrell Bryan, manager of Seattle-based Clipper Navigation, says ridership on the proposed high speed route could go as high as 600,000 per year. Bryan said Clipper currently carries about 400,000 passengers a year between Seattle and Vancouver Island using its fleet of fast, passenger-only catamarans and a single auto/passenger ferry.

Two previous high-speed services between Vancouver and Victoria have failed, one in 1986 using Boeing Jetfoils and one in 1992/93 using Kvaerner Fjellstrand-supplied catamarans. Bryan said the key to the success of the proposed Jetfoil service would be putting the vessels in at Swartz Bay rather than Victoria as the latter's approach is open to heavy seas during the winter months while Swartz Bay is protected year-around.

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TEKNICRAFT CATAMARAN DELIVERED IN NEW ZEALAND

(From Fast Ferry International, January 1999)

A New Zealand operator, Dolphin Discoveries, has taken delivery of a 17.7m foil assisted catamaran for operation on dolphin and whale watching excursions in New Zealand's Bay of Islands. The vessel, *Discovery IV,* was designed by Nic de Waal of Teknicraft Design and built by Q-West of New Zealand. Construction started in July 1998 and the boat was launched in November.

Teknicraft reports that the structural design of *Discovery IV* was carried out in accordance with Lloyd's Register's Special Craft Rules for aluminum vessels and meets the standards of the Maritime Safety Association of New Zealand. Construction was independently surveyed and approved on commissioning.

The hull form is a semi-planing type catamaran employing a combination of symmetrical and asymmetrical sponson shapes which, says Nic de Waal, combine the attributes of both shapes in one hull. He points out that the symmetrical bow section ensures directional stability in short swell conditions and following seas while the asymmetrical midships and aft sections ensure softness of ride and reduced wetted area to enhance comfort and economy.

The hull has a high tunnel ceiling with a large opening between the sponsons which allows free movement of wind and waves, and eliminates any slamming on the wet deck. Horizontal steps on the inside of the tunnel walls act as chines, both to deflect green water from the hull surface and break up solid water into spray.

According to Nic de Waal, "The hull is particularly soft riding in choppy water, mainly due to the vertical inside shape of the sponsons which reduces the planing area, thereby reducing the vertical acceleration forces. However, a further important feature in enhancing passenger comfort, is the action of the longitudinal chines on the inside of the tunnel walls.

"As solid green water is broken up into spray whilst being deflected from the hull, it mixes with air streaming down the opening between the sponsons. This mixture of spray and air creates a high density medium inside the tunnel, which causes a dampening effect each time the hull moves through a trough of a wave.

"Since the vertical accelerations caused by wave action on this type of hull is lower than most other types of craft, the vessel can maintain high speeds in relatively rough conditions without compromising on the comfort of its passengers."

Discovery IV is fitted with a hydrofoil support system consisting of a main foil spanning the tunnel at approximately midship position and two cantilever type trim foils near the stem. These reduce the power needed to maintain high speeds and also contribute to ride quality.

Teknicraft reports that the system is fixed and needs no maintenance apart from occasional cleaning when the hulls are scrubbed. The foils are fabricated in aluminum and, as they are fixed above the keels of the sponsons, they are no more vulnerable to damage than the hulls.

The wake characteristics of the vessel were considered to be very important as it is running on a regular service in a nature reserve area. The low wake achieved is due to a combination of the reduced wave making resistance of the long, slender sponsons and the action of the hydrofoil system, which reduces the draught and, therefore, the amount of water displaced by the underwater sections of the hulls. Wake reportedly remains virtually constant over the 20-40 knot speed range, with a mean significant height of less than 200 mm.

The main deck saloon, fitted out with seating for 74 passengers in addition

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TEKNICRAFT 18m foil assisted catamaran Discovery IV on pre-delivery trials in New Zealand

TEKNICRAFT
(Continued From Previous Page)

to a kiosk, has large windows along the sides and across the front to give passengers maximum visibility. The raised helm area is also open, allowing passengers to see through the upper windows as well.

Additionally, an external upper deck, foredeck and aft deck provide unobstructed views of marine life. Facilities on board include eight canoes stowed on the upper deck that can be deployed over swim platforms, enabling passengers to row amongst the dolphins when conditions allow.

Teknicraft 18m Foil Assisted Catamaran Discovery IV Characteristics:

Length overall	17.70m
Length waterline	15.40m
Beam moulded	6.40m
Draught	0.76m
Displ. at Full load	26.5 tonnes
Fuel Capacity	2,100 litres
Passengers	74
Crew	2
Maximum Speed	38 kts
Serv. Speed, Full Ld	32 kts
Fuel Consumption	
-At 38 knots	258 litres/hr
-At 28 knots	174 litres/hr
Range at 28 knots	300 nmi
Main Engines	2 x Caterpillar 3406E 515 kW at 2,200 rpm
Waterjets	2 x Hamilton 362

Teknicraft reports that speeds of over 40 knots were achieved during lightship sea trials. The vessel, which is powered by twin Caterpillar 3406E diesels and Hamilton 362 waterjets, is expected to maintain 35 knots with a full fuel load and 30% passenger load.

Maximum full load speed is 32 knots, although *Discovery IV* is designed for a service speed of 28 knots when the engines are running at a 70% MCR/1,950 rpm rating. Fuel consumption at 70% MCR is 174 litres/hour or 6.2 litres/nautical mile, giving a cruising range of 300 nautical miles.

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WEIGHT SAVING FEATURES FOR RIDE CONTROL SYSTEM
(From MarineNews. January 25, 1999)

With faster speeds and lighter hulls, ship builders and owners require lightweight equipment. Maritime Dynamics will be incorporating weigh saving features into its ride control systems. The first measure has been to design the ride control hydraulics system to operate other onboard equipment. Maritime Dynamics offers hydraulic packs, which, in addition to the ride control system, operate the propulsion waterjet steering, and reversing system. During docking maneuvers, the power packs can operate car ramps, capstans and anchor winches.

This summer, Maritime Dynamics will install its first commercial computerbased ride control system with an embedded Microsoft Windows operating system. The new system will offer touch screen operation, improved diagnostic capabilities, easy integration with alarm and monitoring systems and redundant backup controls. System interconnection will be via fiberoptic cable. Preliminary estimates show the switch from conventional copper cable to fiberoptic cable will result in. a 40 percent weight savings.

The company's recent ride control System installations include Incat's Hull 050, Trico Marine's *Stillwater River*, Derecktor Shipyard's *Patricia Olivia*, IT Fincantieri's *SuperSeaCat III and. IV*, and Catamaran Ferries International's *Pacificat.* These installations increase the number of vessels commissioned with a Maritime Dynamics ride control system to more than 140.

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IN MEMORIAM
C. THOMAS RAY

We are deeply saddened to learn that Tom Ray, a long time member of the exclusive band of hydrofoil pioneers, died at his home on Mercer Island outside Seattle, WA, on 28 December 1998.

During WWII, Tom served in the Navy's Bureau of Ships as officer-in-charge of design and performance of seaplane patrol bombers. He later worked for 20 years with the Glenn L. Martin Co. as Chief Project Engineer for numerous seaplane programs including Seamaster. In the early 1960s, Martin decided to get into hydrofoil development and bid on the Navy's PCH-1 program. However, Boeing won the contract and Tom decided to go with them in 1962. He worked for the Boeing Company for the next 20 years and became the Manager of Advanced Ships & Technology. He was a charter member of the Navy's R&D team and provided invaluable support to the David Taylor Research Center Hydrofoil Specials Trials Unit based in the Puget Sound Naval Shipyard in Bremerton, Washington. He was a key member of the team involved in development and trials of the hydrofoils *High Point* (PCH-1); the 320-ton *Plainview* (AGEH-1), at the time the largest in the world; the HTS high speed test

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INTERNATIONAL HYDROFOIL SOCIETY

30th ANNIVERSARY MEETING

ANNOUNCEMENT AND CALL FOR PAPERS

The International Hydrofoil Society will hold its 30th Anniversary meeting in May 2000 in the Washington, DC area. The event will consist of an afternoon technical session comprising 3 to 4 technical papers, followed by a social hour, dinner, and a Speaker or a Panel Discussion on future commercial and military applications of hydrofoil and hydrofoil-hybrid marine vehicles. Technical papers related to hydrofoil and hydrofoil-hybrid marine vehicles are solicited in, but not limited to, the following areas:

- Engineering and Applications
- Market Analyses with Cost and Intermodal Issues Highlighted
- User Experiences, Lessons Learned, and Future Perspectives

Please submit an Abstract, of 250 words or less, to the International Hydrofoil Society, P.O. Box 51, Cabin John, MD 20818, USA, (or by e-mail to: foiler@erols.com) not later than 1 July 1999. Authors will be notified of acceptance of their paper by 1 September 1999. Draft papers, in hard copy, will be required by 1 February 2000. This will provide adequate time for review, suggestions, and modifications by the author prior to submittal of the final copy for reproduction and dissemination at the meeting.

The IHS 30th Anniversary Meeting will be held in conjunction with a joint meeting of the IHS, the U.S. Hovercraft Society (USHS) and the Society of Naval Architects and Marine Engineers (SNAME) SD-5 Panel. IHS welcomes your participation in this event. Questions regarding technical papers may be addressed to members of the Technical Papers Committee: Mark Bebar, and Jim King, Frank Peterson who may be contacted via the IHS e-mail address: foiler@erols.com

Please note: Authors preparing an abstract should bear in mind that the IHS does not endorse individual or Company products.

WILLIAM (BILL) R. SCHULTZ

Born May 21, 1917 in Marble, Minnesota, Bill passed away January 29, 1999. He moved to Seattle as a child and was a resident of Renton since 1967. He was preceded in death by his wife Frances Faye Schultz. Bill was a retired military veteran and had served both In the, U.S. Navy and Army. He retired from Boeing where he was Program Manager of the JETFOIL program, and principally its application to the Indonesian hydrofoil project.

NEW BENEFIT

IHS provides a free link from the IHS website to members' personal and/or corporate site. To request your link, contact Barney C. Black, IHS Home Page Editor at foiler@erols.com.

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Mark Bebar	Vice President
George Jenkins	Treasurer
Ken Spaulding	Secretary

TOM RAY

(Continued From Previous Page)

craft; and the water-jet propelled *Little Squirt*, a forerunner of Boeing's Patrol Hydrofoil missile ship PHM.

Tom retired in 1982, and devoted his attention to Kitty and the building of beautiful handmade furniture. He will be sorely missed and we express our deepest sympathy to Kitty and his two sons for their loss.

IHS BOARD OF DIRECTORS

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LETTERS TO THE EDITOR

Wake Problem

I suppose the wave damage from the *MV CHINOOK* of the Washington State Ferries is probably not news. It is a 34 knot boat and much superior to the previous fast ferries, but puts out a very long wave length/high velocity wave that really tears up the shale bedrock, bulkheads, sea life, and a few boats and boat houses, too. It is turning into quite a donnybrook because now that the ferry run is down to 30 minutes for pedestrians, it is a political issue, and the Washington State Ferry System had advised us that they will keep up the current speed until we take them to court. We are now only days away from that. The ultimate fix, as Chief Naval Architect (!) Stan Stumbo of the WSF acknowledges, is to place a supplemental foil span on Chinook and its forthcoming sister ferry. I have given them Dennis Clark as a point of contact at David Taylor Research Center or whatever it is called now-a-days *[it is called Naval Surface Warfare Center, Carderock Division - Ed.]*. If any of you want to volunteer to help Stan and the WSF out of a box, you should contact him at (206) 464-7496. It might also be news to some that I've become even more politically active and am now chairman of my county's Republican Party. Please prepare a hydrofoil for a fast get-a-way! For background, *MV CHINOOK* is a catamaran... about 350 tons, and it moves right along, too. At 34 knots, it's the fastest Rich Passage has seen since the glory days of hydrofoils. I'll look up the specs, propulsion horsepower, etc. and send some of that along later when I find it. It is an off-shoot of the *VICTORIA CLIPPER II* class, which succeeded in reducing wake considerably, but of course all that horsepower has to go somewhere, and we're experiencing some real high-period, low-wavelength waves that are creating damage. Say! Does anyone there know how to derive the wave energy equation, $E = 1961H^2T^2$? In words, Energy (in joules per linear meter of wave) equals 1961 times wave height (in meters) squared times wave period (in seconds) squared. I can't find it in my fluid and wave mechanics books, and I need to understand the whole field of wave energy better. Have you a reference or a short primer paper you could provide?

Karl Duff
kduff@linknet.kitsap.lib.wa.us

Who Designs Hydrofoils?

We are seeking a company / designer to provide design / plans for a 20/25 meter hydrofoil… hull, deck, superstructure, and propulsion system. Do you have any recommendations?

Mike Scott
bluewatercharter@compuserve.com

Engine Installation Design

I am a student at the University of New Orleans working on my senior design project. I am interested in knowing more information about the LM6000 Gas Turbine. We are trying to build a fast sealift with the dimensions of: L=950 ft, D=65, T= 27, B=110, V= 36 knots. I chose the LM6000 to be my engine but I have to go from this to sizing the intake and the outtake system for the engine and all the auxiliaries for the ship. I looked all over to see or to have a look at a ship with the LM6000 in it but there was no luck. GE Marine was not that helpful. Please provide me with the information needed to design my machinery.

Hamad A.
SmQQthxyz@aol.com

Response...

Since you are in New Orleans, how about contacting the public relations departments at Avondale Shipbuilding and also Ingalls Shipbuilding (in Pascagoula MS) to see if they can get one of their engineers to spend a few minutes on the phone with you to help: Avondale Industries, Inc.; 5100 River Rd.; Avondale, LA 70094; http://www.avondale.com; Phone: 504-436-2121; Fax: 504-436-5304; Litton Ingalls, P.O. Box 149, Pascagoula, MS USA 39568-0149; Physical address: 1000 Access Road, Pascagoula, MS USA 39567; http://www.ingalls.com; Telephone: 228-935-1122; Fax: 228-935-1126

Barney C. Black
foiler@erols.com

Student Needs Advice

I am a student of Enschede University in the Netherlands, and I am currently doing a market research for hydrofoils on (sailing)-catamarans and trimarans. In my search for hydrofoils on the market I only found the Hobie *TRIFOILER* and the Windrider *RAVE*. Can anybody tell me how many people sail these crafts in the USA (and worldwide)? Are there other manufacturers, because I find two models in a whole world to be very few! From a Duth catamaran-importer I heard that most catamaran-sailors are not too keen on the cockpit-style Trifoiler and Windrider because they don't have to "work so hard." Could this be the reason why so few hydrofoils are on the market? Surely, the higher speeds will make up for a lot! Browsing through the IHS-pages I stumbled on the add-on-hydrofoil kits like the DAK- Hydrofoils. I asked myself whether maybe manufacturers of catamarans offer add-ons themselves, for the types of catamarans they sell. Can somebody help me with an answer to this question? I know some people are making great efforts to construct hydrofoils themselves (Of course for some people constructing hydrofoils may be as much fun as sailing them) but I can imagine that many more people just want to click

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them onto their catamarans and sail away. Would there be many people who are interested in this? Now for a more technical note: Going through some patents I saw some interesting hydrofoils, mostly they are surface-piercing or otherwise surface-bound (floater to control pitch of hydrofoil). Just a few patents had manual pitch-control; for example patent US 4,027,614 by Jones Clyde. I can imagine that with manual pitch, drag can be lower because for lower speeds you can choose the pitch to be zero (low drag). When a sufficiently high speed has been achieved the pitch can be altered manually, triggering the lift-working of the hydrofoil. Much better than surface-bound hydrofoils which have more trouble coming to speed before the hydrofoils work as they are meant to work! Are there some drawbacks to the use of these manually-controlled hydrofoils so that not everybody is using this system! Please help me out with any information!

Piet Kamma
edward@e-co.nl

Sailing Hydrofoil Design Data

FYI, Here's a new link for your "Websites of IHS Members" section of the HIS Home Page: http://home1.gte.net/tspeer. I've put up some information on hydrofoil sections that might be of interest.

Tom Speer
tspeer@gte.net

Plans For *BRAS d'OR*

Do you know where I can get a set of plans of the *BRAS d'OR*?. I would like to build a model of her. Growing up in Nova Scotia, I got to see her in action. Quite a sight!

Ron Schofield
sco@hfx.andara.com
http://users.andara.com/~rschofie

Need Help With Project

I need pictures and drawings of water, wind, and human powered hydrofoils as I have to improve on existing designs and then make a model. Is it possible to make a functional model because I am already a model aircraft enthusiast and am very interested in hydrofoils. I would like to know about how a hydrofoil works and how the density of the water affects the size of the foils. I would like to concentrate on smaller designs of hydrofoils as my main interest is to use hydrofoils for recreation purposes. I have already found the drawings on the *Decavitator* and have found them very interesting.

Mark Manley in Zimbabwe
jamanley@usa.net

[Suggest you explore the IHS website thoroughly... there is quite a bit of information there. Specifically, try the photo gallery for pictures, especially the model section. Also, try the links page to other sites for models, for hydrofoils you can build yourself, and for hydrofoil tutorials. Also, IHS has a tutorial on basics. Multihull Magazine and the Amateur Yacht Racing Society publish technical articles on hydrofoil design, and back issues are available. IHS has a link to them. Also, the IHS site has lists of popular and technical references, books, journal and magazine articles about hydrofoils. Finally, look through the posted messages section to find people with similar interests as well as answers to frequently (and not-so-frequently) asked questions. –Ed.]

Latvian Catri Sailing Hydrofoil

I received some further information from Aldis Eglais in Latvia (Lettland), the designer of the Catri 26R MicroFoiler. At the moment I'm still in the planning phase of my project but I intend to build the boat this summer here in Switzerland. Aldis is offering the plans for a very good price (US$ 1,300), and I'm very close to ordering them. I'm waiting now for his study plans. I will keep you informed. His E-Mail address: aldis@catri.apollo.lv.

Phil Schlund
106641.71@compuserve.com

[There is a short article about the Catri 26 Trimaran on page 48 of Multihulls Magazine Mar/April 1998 edition. The address given is Aldis Eglajs; Maskavas 291/5-26; Riga LV-1063, Latvia; Tel/fax : +371 7258427. –ed.]

Response...

In Winter 1997-98 I did a project for a Dutch company called PJPC Multihulls. They wanted to build the Catri 26 for the European market to sell for about US$50,000. There were complete plans for making the (eastern European) ship suitable (more comfortable) for the rest of Europe, which was part of my study (I was asked to design a mechanical device to lift the two swords). Unfortunately the Dutch company stopped their activities due to health problems of the owner, so I am at the moment looking for other tri-builders who could use my design. If you want to know more, contact me.

Maarten de Jong
m.t.dejong@wbmt.tudelft.nl

2nd Response...

We are working out two types of Catri Foilers — trailerable cabin boat range (22' 26' 30') and offshore cruising & racing range (35' 39' 45'). After very successful prototype tests in the Netherlands there are two shipyards in Latvia started with 22' and 26' and one in San Francisco starting with 26'. The first boats will be delivered this Summer. The 30' will be started in March for delivery beginning 2000. There are some home-builders in Australia and elsewhere. Contact me for a copy of our presentation and description of Catri 22, 26R, 30 as well as the draft price list.

Aldis Eglajs, Catri Marine
aldis@catri.apollo.lv

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Experimenter on Foil Sections

As a new IHS'er, I recently purchased Dave Keiper's notes and 3" foil & strut stock. After reading his notes, however, I feel I need to get started in this fascinating world of hydrofoils at a little more basic level, and tackle my 1982 Nacra 5.2 hydrofoil project a little later...after I successfully build a more basic hydrofoil project (I'm a marketing type, not an engineer)! I wish to construct a stable towed hydrofoil platform, utilizing 4 ea. 6" surface-piercing foils in a split-tandem configuration. I'm guessing that each foil would be angled out 55 deg. from the vertical strut. I would like to carry a loaded vessel weight of 800-900 lbs., at speeds up to est. 45 mph. What foil section would be best suited for this application, and who can I purchase 6" foil and strut stock from? I recall reading that Alcoa offered foils, but don't know what to ask for! Do you have any suppliers you could recommend that make such foil stock? Any suggestions / recommendations for this towed contraption?

Brian Ballou
cslh32@lmpsil02.comm.mot.com

Response...

I attended the Dusseldorf Boat show and remember having seen symmetrical foils of a very high surface quality, weldable and with two internal struts for stiffening. Chord length was about 6-8", thickness was about 1 inch, wall thickness was some 1/6 inch. Comes in lengths of 6 m (20') If this is of any interest to you, please let me know with details, such as required section, total length and max length for shipping. I already discussed the matter with the manufacturer, so sending you an offer shouldn't take very long. My offer for the 3" chord length NACA 16-008 and Clark-Y remain valid.

Claus-Chris Plaass
plaass@ki.comcity.de

Hydrofoil Lessons Learned

I don't know if there has been any discussion lately on the simplicity of using hydrofoils on the same routes that the smaller commuter catamarans are running on. These routes are mainly lakes, bays and sounds. There are very few open-ocean routes. Hydrofoils are more expensive to build due to the complexity of the things, something that the naval architects and engineers have built into the systems. [By contrast], the basic offshore aluminum crewboat is a reliable, lightweight, fast, and durable machine. No one has ever set a usable life on the things. There are 30+ years old boats out there running every day. It is a vessel that has evolved to carry out its mission. As far as I know, there are no hydrofoils operating in US waters. I believe in submerged hydrofoils with automatic control systems. Retractable foils have always been a joke. Mainly because the vessels with retractable foils were built to go anyplace. If a ferry vessel's route normally has a maximum of 2'-3' chop, there is no need for a 6' gap between the keel and the water surface. If the water depth is sufficient over the entire ferry route there is no reason for retractable foils. The price of the boat can be reduced significantly. Short distance ferry routes don't call for a Boeing 737 interior in the cabin. Commercial quality would do just fine. Get rid of the carpeting and plush seating. Concentrate on maintainability, speed and maneuverability. Too much high class, expensive, unproven machinery has been installed in the past that has given the American built hydrofoils a "bad rap." *PLAINVIEW* and *HIGH POINT* are classic examples. I have often wondered if anybody ever sat down and figured out how much it cost per foilborne hour for the life of these vessels. Only a government could afford it. The *PEGASUS* class PHM was another boondoggle that cost the taxpayer a fortune to build, operate, and maintain. They were truly vessels without a mission. If some of that money could have been channeled into the private sector with an objective of building a hydrofoil passenger boat that would make money instead of spending money, we would have covered the world with USA-built hydrofoils today. I hope you understand where I am coming from. Hydrofoils were my life for over ten years. I hate to see them die because of the bad reputation and the high cost of building one. Somebody will one day sit back and take a long look at where we have been and the knowledge that has been gained and come up with a viable, economical design. I hope so. I would hate to see everything that we have done in the past go down the tube.

Ken Plyler
Kfppfk@aol.com

First Response...

I must reply in defense of *HIGH POINT* and *PLAINVIEW*. When *HIGH POINT* was designed, there was limited knowledge of hydrofoils. It was originally built as an active patrol craft, but the Navy soon realized that it should be in a prototype category. With the original intent, many systems were designed light weight yet meeting the military specifications. In addition, since the concept was new, American Bureau of Shipping (ABS) and the US Coast Guard had inputs on safety considerations, etc. I recall considerable communications with the different groups which even included the sanitary features of the galley. As for the foils, struts, and foilborne propulsion, tests in the tow tank provided data which was not correlated to any actual data. The

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Letters To the Editor allows hydrofoilers to ask for or provide information, to exchange ideas, and to inform the readership of interesting developments. **More correspondence is published in the Posted Messages and Frequently Asked Questions (FAQ) section of the IHS internet web site at http://www.erols.com/foiler.** All are invited to participate. Opinions expressed are those of the authors, not of IHS.

engineers used conservatism and thus had designs that later proved more than adequate. Meanwhile, with limited operations (you should recall all the time sitting at the pier during your duty on the ship), many operational problems were detected, and redesigned and rebuilt to provide in many cases a safe operation. Other things learned were when the foils and pods were strain gauged to determine load paths, revised fairings to try to reduce erosions, although the foilborne transmission system was bathed in sea water frequently, it turned out that the gears were very reliable. Mod I changed the seal system which helped. Toward the end, no gearbox problems were noted for a period of about 3 years. As for the *PLAINVIEW*, the increased size required another set of design solutions that pushed into unknown territory. The hydraulic system required a couple thousand horsepower for the operation of the foils. Industrial hydraulic pumps did not have the continuous rating which proved to be a nemeses and subsequent redesign. Again, many areas of research and development in improving *HIGH POINT* and *PLAINVIEW* and now used in other naval ships. In defense of the Jetfoil, I know that Boeing spent considerable time getting ABS and Coast Guard to accept alternatives in meeting their requirements. Some of the items that looks like frills in actually is based on ABS or Coast Guard requirements. For example, the seats need to be strong enough to withstand the g forces in crash landing. The cheapest was to use aircraft qualified seats. Coast Guard originally wanted a three man Pilot House crew, which Boeing successfully got Coast Guard to agree to two. For operations in other countries, Boeing had to certify that their requirements were also met. In summary, I hope I have changed your views on the earlier hydrofoils. The data collected has provided both engineering and operational information which are considered in new designs of all craft, not just the hydrofoil ships. Meanwhile, with the experience, the regulatory agencies have changed their requirements. I'm sure the aluminum crew boats you talk of have benefitted from the *HIGH POINT* and *PLAINVIEW* trials.

Sumi Arima
arimas1@juno.com

More About Lessons Learned

I spent 3 ½ years on *HIGH POINT*. Most of my time was watching from the sidelines while various engineers, the Supervisor of Shipbuilding (SUPSHIP), Puget Sound Naval Shipyard (PSNSY), Boeing, and many more people than I care to think about turned the boat into a lifetime project. I was the Chief Engineer when we sprang the first gearbox salt water leak off Neah Bay and motored home hullborne. I was also the guy that turned the propellers by hand until the bearings finally froze while waiting for someone to make a decision to tear it down or not. I also watched as the powers-that-be installed the new spade rudder below the forward foil using 1/4-20 bolts that failed the first time we tried it foilborne. The new spade rudder was installed because the trailing edge rudder did not work due to severe ventilation of the forward strut. I watched as the stellite cladding for the after foil and struts was hand formed by a blacksmith using an anvil, a rosebud torch and a hammer. The cladding was installed using 1/4-20 nylon screws. This was an engineered fix to eliminate the severe erosion of the HY-80 steel caused by the propeller tip vortices. I was onboard during the testing of this installation. I was also under the boat, in drydock, during the inspection to determine why the cladding fell off. I was onboard when we tested the new stainless steel, five bladed propellers with paper thin blades. I was also under the boat, in drydock, to find out why they folded up like rose buds after only a few minutes of foilborne time. I could go on and on but will not. I was assigned to *HIGH POINT* during construction, outfitting and trials. Our Type Commander was to be Commander, Amphibious Force Pacific. Our home port was to be San Diego. We never made it. I left the boat sitting on the barge under the Hammerhead Crane with gearboxes locked up. It had not run in months. Phase One was "in the mill," and HYSTU was on the verge of being formed. I went away probably in disgust and returned as the Chief Engineer on *TUCUMCARI* 18 months later. *TUCUMCARI* was the ship that I had dreamed *HIGH POINT* was going to be. It was the vessel that proved that there was life after *HIGH POINT*. *TUCUMCARI* never belonged to HYSTU. *TUCUMCARI* unfortunately died doing what it was designed to do. It "died with it's boots on," so to speak. It never ended up intact at a DOD Surplus Sale. I wish I could be more positive when talking about *HIGH POINT* and *PLAINVIEW*. Sorry. One good thing about the development of the *HIGH POINT* was the extruded aluminum panels that made up the hull plating. Unfortunately, no one is using the panel that I know of.

Ken Plyler
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Response...

If you read my original comments, I recognized your participation in the growing pains of *HIGH POINT*. You have precisely backed up my original comments. If it were not for all the engineering solutions of the various problems on *HIGH POINT*, the operational aspects of hydrofoils would still be floundering. In some cases, the solutions were cost constrained and were not approached in the manner that an engineer would really like to do. The trials on *HIGH POINT* provided proven design concepts which were incorporated in the design of an operational hydrofoil such as the *TUCUMCARI* and PHM series. This shows that the things learned from *HIGH POINT* did benefit the design of hydrofoil ships. How well I remember *HIGH POINT* being assigned to Amphibious Force Pacific. When Admiral

James came to see the construction of *HIGH POINT*, Lt Billerbeck questioned the Admiral of various aspects of Navy requirements. The reply from the Admiral was "Son, if I were you, I would throw away the book and do what you think needs to be done." As I originally stated, *HIGH POINT* was reassigned since it became apparent to the Navy that this new concept required work to make it reliable. I know that a new class of destroyers has been put in the same category to resolve engineering and operational problems. The Navy has been building destroyers for years, yet finds that a new class requires engineering evaluations to make it operationally feasible. For a new concept such as a hydrofoil ship, I feel that we did very well. I do not feel that you should compare the Ford Model T with the Ford Thunderbird other than they are both automobiles.

Sumi Arima
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The NEWSLETTER

International Hydrofoil Society

P. O. Box 51, Cabin John MD 20818 USA

Editor: John R. Meyer **SUMMER 1999**

WESTAMARIN FOILCAT FLIES AGAIN

The following Notice, dated April 20, 1999, was received from Michael Schmicker

NAVATEK RELAUNCHES WESTAMARAN FOILCAT WILL MARKET TECHNOLOGY IN U.S.A.

Navatek Ships, Ltd. of Honolulu Hawaii recently relaunched the 45-knot, 149 passenger vessel Westamaran Foilcat 2900, originally developed by a Norwegian company specializing in high-speed hydrofoils, and will offer the design for construction in the United States.

"It's an outstanding design. It can maintain 45-knots speed in 6-foot seas and still deliver a very comfortable ride for passengers," says Navatek president Steven C.H. Loui. The Westamaran Foilcat 2900 vessel has been reflagged American for use in Hawaii as part of a commuter ferry demonstration sponsored by the State of Hawaii

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Westamarin Foilcat 2900 Courtesy Navatek Ships

WHERE ARE YOU IN CYBERSPACE?!

IHS relies on electronic communication with the membership to improve timeliness and reduce mailing costs. If you are a member with email, **let us know your email address!** Thank you.

1999 DUES ARE DUE

IHS Membership is still only US$20 per calendar year (US$2.50 for students). Your renewal or new membership is critical. Please remit 1999 dues as soon as possible. We regret that high bank fees make it impractical for IHS to accept payment by credit card or a check drawn on a non-US bank, or by other than US funds. Overseas members with no easy way to send US funds, are advised to send money order to IHS or US Dollars cash.

IN SIDE THIS IS SUE

PRESIDENT'S COLUMN

I believe that all IHS members will agree that this is sue of the Newsletter be dedicated to Robert Johnston. I sent an announcement to all members having e-mail within hours of hearing of his untimely death. For those who did not receive it, I said: "It is with great sadness that I send you word that I received from David Johnston this weekend. Robert (Bob) Johnston passed away on Friday morning, April 16, after a long bout with skin cancer. To say that we will miss Bob is an understatement. He was a close personal friend to many of us, a highly respected colleague for those who had the opportunity to work with him, and one for which there is no replacement.

For those in the IHS who did not know Bob, he was a major player in the hydrofoil world which made him well known and respected worldwide. Working closely with our colleagues in England, he led the transition of the Society in its transfer to the US in the 1980s. He served as President and provided leadership of the Society for many years and received a special IHS Award. He had the unique capability of spinning a yarn about his hydrofoil related experiences-mixing humor and technical details in just the right amounts. For those who haven't logged onto the IHS Home Page recently, Bob's Award Citation and his stories are there for posterity."

Jean Buhler was thoughtful enough to send us a copy of the Eulogy by Bob's son David. I've asked Barney Black to post this on the IHS Home Page. I recommend that all of you log on and read this very touching tribute to a father from a son.

If not mentioned here or elsewhere, it should be noted that Bob played a major role in the IHS as its Newsletter Editor for many years. During that time the Newsletter grew and became, in itself, an historical document on the subject of hydrofoils. For this, we are all very grateful.

Along a different vein, you may remember that I mentioned an effort on the part of the IHS to promote the generation of a Hydrofoil Video. Although this has been slow in coming, I recently had a meeting with the Production Manager at the Discovery Channel to discuss the content of such a video. Also I showed and left with her several hydrofoil videos that I have collected over the years. A good impression was made and I was encouraged to submit a proposal.

I ask all of you to keep in mind that the Board has decided to proceed with a celebration of the 30th anniversary of the founding of the IHS. An announcement and Call for Papers was in the Spring Newsletter. Your participation is needed to make this a successful event. We expect to receive abstracts of papers soon at which time the Papers Committee will encourage authors to proceed with first drafts. We will keep you posted on progress and detailed plans as they develop.

John R. Meyer, President

IN MEMORIAM - CAPT. ROBERT J. JOHNSTON, USNR (RET)

by Bill Ellsworth

The past several months have seen the loss of several members of that select, albeit small, group of Hydrofoil Pioneers. We are deeply saddened to report the loss of another of the members of this special group of hydrofoilers. On 16 April, Bob Johnston died of cancer at his home in Daytona Beach, Fla., just nine days before his 81st birthday. He is survived by his dear wife, Marcia, his son, David Johnston of Washington, DC, two step-children, Cynthia Redick, also of Washington, DC, Alicia Stickel of Toronto, Canada, and seven grandchildren. His first wife Dixie died in 1976. Another son of his first marriage, Robert J. Johnston, Jr., died in 1996.

Bob was born in Sheboygan, Michigan. He graduated with an engineering degree from Purdue University and received Masters Degrees in Naval Architecture and Marine Engineering from Massachusetts Institute of Technology.

He began a career in the US Navy in World War II and was assigned to Navy yards in Boston and New York. After the war, he was transferred to the Navy's Bureau of Ships in Washington, DC as an EDO Commander. In 1952, he moved to the Office of Naval Research as Hydrofoil Program Officer where he continued to be deeply involved in the Navy's Hydrofoil Research & Development Programs.

In 1953, the Navy's focus shifted to the application of hydrofoils to

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Robert J. Johnston
(Con tinued From Page 2)

landing craft. This was motivated by funds be com ing avail able to design and build a number of new LCVPs.

In 1954, Bob left the Navy and joined Mi ami Ship build ing Corp. in Florida. They designed and built *HALOBATES* (LCVP(H)), which was completed in 1957. Also, during this period, the Army became in ter ested in the po ten tial of foils to in crease the speed of their am phib ious *DUKW*. Miami Ship, working with AVCO Lycoming, was given a contract in 1957 to demonstrate a *"FLYING" DUKW*.

In 1960, Boeing won the com pe tition for the Hydrofoil Patrol Craft PCH-1. As a re sult, the Mi ami Ship Board of Directors decided the company should not remain in the hydrofoil business. In view of this decision, Bob Johnston, who had become President of Miami Ship, decided to resign and join Grumman as head of Ma rine Op er ations. Dur ing this pe riod, Grumman laid the keel for the hydrofoil *DENISON* under contract with the Maritime Administration. In 1961, they were given a contract by the Navy to do the guidance design of the 320-ton hydrofoil ship, *PLAINVIEW (AGEH-1)*, the world's larg est at that time.

DENISON was launched in June 1962 and a month later achieved a speed of 72 knots on a trial run. Later in 1968, Grumman com pleted a Navy contract for the design and construction of the hydrofoil gunboat *FLAGSTAFF (PGH-1)* de livered to the Navy on 14 September. Some time later they re ceived a contract from Is rael to de sign and build *SHIMRIT*, a 100-ton hy dro foil gunboat sim i lar to *FLAGSTAFF*.

In the early 70s, Bill Ellsworth, head of the Systems Development Department in the Naval Ship Research & Development Center, asked Bob Johnston to con sider becoming the Technical Manager of the Hy dro foil De vel op ment Pro ject Office (Code 115) at Carderock, MD. Bob agreed to make the change and reported aboard on 9 April 1973. In this ca pac ity, he con tin ued to be a major force in hydrofoil R&D for the next nine years. He man aged the Navy's hy dro foil tech nol ogy de vel op ment pro gram. This included operations of the Hy dro foil Spe cial Trials Unit at the Puget Sound Na val Ship yard, con duct ing tri als of the ex per i men tal hy dro foil ships *HIGH POINT* and *PLAINVIEW*. This laid the foun da tion for the de sign and pro cure ment of six Pa trol Hy dro foil Mis sile ships (PHMs) which the Navy acquired from Boe ing.

Bob re tired from fed eral ser vice on 1 July 1982 and formed a small R&D firm called Ad vanced Ma rine Systems Associates (AMSA). He and his as so ci ates car ried out an important task for the Urban Mass Transportation Agency of the Department of Transportation. In August 1984 they completed a 6-volume world-wide Study of High Speed Waterborne Transportation Sys tems.

This brief review of Bob's many con tri bu tions to the de vel op ment of hydrofoil ships and other waterborne craft is am ple sup port for his hav ing been rec og nized as a true hydrofoil pioneer. He demonstrated the high est level of pro fes sional and moral in teg rity. He also was an exceptionally skilled manager with a gentle but firm touch who com manded the re spect and af fec tion of all who worked for and with him. He will be sorely missed by his many friends and associates and will always be remembered as a never-failing sup porter of the IHS.

We ex tend to Bob's wife Mar cia and the members of their family our deep est sym pa thy and pray that they will be com forted in their loss.

CONVERSATION WITH BOB JOHNSTON

by Neil Lien

On March 6, 1999 my wife, Joann, and I had the privilege of visiting with Bob Johnston and his wife Marcia and enjoyed with them a dinner at the country club. The visit was about his ca reer and the times spent together at Baker Manufacturing Co. on the various hydrofoil contracts. Bob was very beneficial in promoting hy dro foils and we owe a great deal to him for it.

We talked about the *MONITOR* hydrofoil sailboat and the interest of many whom wanted to know more about it. We also dis cussed *HIGH POCKETS* and how it helped demonstrate the advantages of hy dro foils to so many whose first indoctrination to hydrofoils was with a ride. *HIGH TAIL, HIGH LANDER*, and the LVH proposals, the var i ous hy dro foil con fig u rations tested at Patuxent Naval Air Test Sta tion and the twisted foil pro posal were all subjects covered in our short en joy able visit.

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FOILCAT
(Con tinued From Page 1)

Dept. of Transportation. It will also serve as a demonstration craft, providing test rides for customers interested in evaluating the design.

A hydrofoil-assisted catamaran, the *Westamaran Foilcat 2900* combines the best properties of a slender hull catamaran with the speed capability of hydrofoil craft fitted with fully submerged foils. The vessel originally entered commercial service in 1992 between Sweden and Denmark and subsequently ran in commercial service in Indonesia. In 1997, Navatek acquired the vessel and rights to the design and construction technology from the original builder, Westamarin A/S of Mandal Norway.

"We are now adding further improvements of our own to the existing design, incorporating knowledge gained from our ongoing advanced hull design research and development program for the U.S. Navy and the Dept. of Defense," Loui says. Navatek expects to eventually license both the original and the improved design to U.S. shipbuilders. Navatek teamed with Lockheed-Martin to design and build the 105-foot, 30 knot fast SWATH vessel *SLICE* for the U.S. Office of Naval Research. It is currently researching and developing a series of advanced hull designs, including lifting bodies, for which it has U.S. patents, patents pending or patent applications.

Navatek Ships, Ltd. parent company Pacific Marine, founded in 1944, is a diversified, privately-held corporation with annual sales of $54 million and operations in shipbuilding and ship repair, specialty contracting, tour boats, and environmental services. Among its 13 subsidiaries are Royal Hawaiian Cruises, which owns and operates the SWATH tour boats *Navatek I* and *Navatek II*, and Honolulu Shipyard Inc., Hawaii's largest commercial ship repair company.

Further information: Michael Schmicker,(808) 531-7001 Ext. 18

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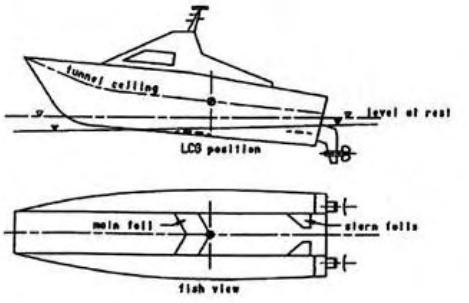
HYSUCAT

In the Spring 1999 IHS Newsletter, an article entitled "Ride Control Technology Advances Steadily" referred to a foil assisted vehicle concept know as Hydrofoil Supported Catamaran (HYSUCAT). Space did not allow for a picture or illustration of the concept. However, a picture did appear in the Naval Institute Proceedings of date in an article by Dr. K-G.W. Hoppe in connection with an article by J.R. Meyer, entitled: "Hybrids - Variations On A Theme". The picture is reproduced here.

Additionally a paper entitled: "Hydrofoil Catamaran Developments in South Africa" by Dr Hoppe was recently presented at the HIPER '99 Conference in South Africa in April 1999. The abstract from the paper is provided below.

Abstract

Hydrofoil assistance on a catamaran model was tried twenty years ago and an unexpected resistance improvement of 40% initiated the creation of a research project to investigate the effect. Today the research project is still active in spite of designs and model tests resulting in the construction of over 160 Hysucats. Theoretical efforts to determine the hydrodynamics of the Hysucat principle resulted in a numerical model for design analysis of planing type Hysucats which allows further design optimization.



Typical HYSUCAT Arrangement

The milestones in the Hysucat Development are mentioned and the three most recent applications explained. The smallest Hysucat, a 6 5m Semi-Rigid Inflatable Hysucat, a 12m Fast Patrol Boat by Stingray Marine, Cape Town and the Panther 64 Hysucat by Prout Catamarans, UK are described and the Performance evaluation is given in some detail. The request for hydrofoil assistance on large

Continued on Next Page

HYSUCAT
(Continued From Previous Page)

ferry catamarans and the desire for higher speeds in the Ferry Industry have lead to an extension of the Hysucat research project to include semi-displacement catamarans. A number of model test series have been completed already with different type hulls and various foil systems which are different from the original Hysucat foil system and the most important learning and basic results are discussed.

Considerable improvement due to foil assistance at the higher Froude numbers are possible, but at lower Froude numbers most hull-foil systems tested so far showed slightly increased resistance. The slower ferries, which operate at the lower Freud numbers, can hardly be improved and only increased power for higher speeds brings the foil advantage. A new foil system for improvements at the lower Froude numbers is being developed at present and model tests have already shown good results. A 72m car ferry designed by AMD Australia is being retrofitted with such a foil system which has to deliver the final prove of the suitability of foil assistance for these large craft. Some power ratios are given to allow physical performance comparisons of hydrofoil assisted Semi-Displacement Catamarans with today's craft. The indication is given that most efficient ferries at higher speeds can be improved by optimized hull-foil design.

Prof. Dr-Ing K-G. W. Hoppe, Pr-Ing, SAIMENA, Division of Marine Engineering, Dept of Mechanical Engineering, University of Stellenbosch, Republic of South Africa.

WASHINGTON STATE FERRIES ISSUES FAST FERRY FLEET RFP

(*From Fast Ferry International, March 1999*)

Washington State Ferries has issued a request for proposals (RFP) for the construction of as many as six fast ferries. The initial contract will be for one vessel plus two options for up to five more.

Delivery will be within 14 months of confirmation of order and "WSF intends to exercise the option [for three vessels] within 60 days following successful delivery and acceptance of the first ferry."

The operator has specified a design using proven technology that has a waterline length of up to 38.5m, beam of 13.8m to 14.2m, minimum service speed of 34 knots at full load displacement and 85% mcr engine power, interior seating for a minimum of 350 passengers and stowage areas for 30-40 bicycles.

Wake wash characteristics must include a maximum 28 centimetre height from crest to trough at a distance of 300 metres from the vessel when operating at all speeds above 30 knots in a water depth of at least 22 metres.

Additionally, the wake wash energy must be equal to or less than 2,450 Joules/metre of wave front of the largest wave in the wave train and wave power of 15,400 watts for the largest wave in the wave train.

The formal RFP package was issued in the middle of February and responses must be submitted by April 8. The newest fast ferry introduced by WSF, just under a year ago, *CHINOOK*, is an Advanced Multi- hull Design AMD 385 built in Washington by Dakota Creek Industries. A sister vessel to the 44m catamaran, *SNOHOMISH*, is currently nearing completion at the same yard.

[Editor's Note: See Letters To Editor section of this NL by K Duff and W. Buckley on this subject.]

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Conversation with Bob Johnston
(Continued From Page 3)

Specifically talked about was how we were testing *HIGH POCKETS* on an endurance run, which had never been done before, between Miami Shipbuilding and Fort Lauderdale.

As noon approached we decided to stop over at a restaurant called Baker's Haulover. Interestingly, in this obviously rather upscale restaurant, they allowed us to take off our wet rough weather gear by our table to enjoy a deep sea turtle steak. Also we talked about some of the experiments and testing performed on *HIGH POCKETS* while operating out of Miami Shipbuilding and Patuxent Naval Air Test Station. Also discussed was how he convinced the Navy to fund the hydrofoil fabrication for the *MONITOR* to learn more about the procedures of manufacturing. The Navy subsequently required their name on the boat even though the entire design and construction, other than the hydrofoils, was funded by Baker Manufacturing Co.

Bob passed away shortly after our visit. He was a special person and a pioneer who the hydrofoil community owes a great deal of respect.

WELCOME NEW MEMBERS

Grant Calverley - Grant is from Friday Harbor, Washington State. His interests in hydrofoils started when he had a ride on a 1970 Rus sian Volga out of Roche Har bor on San Juan Island. One ride and he was hooked. Grant has currently started a project to con vert his 14' run about into a hydro foil. He is con sid er ing us ing a submerged foil de sign us ing air con trols (ventilation) for altitude control. He would greatly appreciate any in formation on the sub ject.

Christopher Edgar - Christopher just completed his studies in Maritime subjects at Liverpool John Moore Uni ver sity, UK. He plans to do a dissertation on sail-powered multi-hulls.

Neil C. Lien - Neil be gan work ing on hydrofoils in December, 1949 when he joined Baker Man u fac turing Co. in Ev ans ville, Wis con sin, USA to work for J. Gordon Baker. He conducted welding experiments on hydrofoil fabrication in Baker's lab. Interspersed with several hydrofoil sailboat projects, in clud ing *MONITOR*, he par tic i pated in High Pockets, High Tail. High Lander, LVH pro pos als in addition to twisted foil and other hydro foil concepts. Neil joined the scientific staff at the Physical Sciences Lab at the University of Wisconsin Graduate School. When Mr. Baker became ill, Neil was asked to take a one year leave of ab sence to help run Baker Man u fac turing. Upon Baker's death in 1975, Neil became the vice pres i dent, di rec tor of re search, de sign and development until retirement on Dec. 1, 1990. To day, he con tin ues to do engineering consulting work and en joys re tire ment at his home in Evansville, Wis con sin.

Jeffrey C. Menoher - Jeffrey is from Norwalk, Connecticut. He indicated that he has an in ter est in boats and in particular, hydrofoils, because of their speed and ef fi ciency over wa ter.

Robert O. Miller - Bob mentioned that when the NY World's Fair opened in 1964, the "AL BA TROSS" was joined by her sis ter ships on runs be tween the Bat tery and the Flushing Bay Marina. In the mid '80s, while look ing for some thing that would be suitable for a floating houseboat, Robert responded to an ad that read "36' alu mi num hull". In a coal yard in Northport, N.Y., he found two hy drofoils, both stripped and vandalized, one of which turned out to be the "ALBATROSS", America's first com mer cial hy dro foil. He of fered her to a number of museums, including the Smithsonian and the Mariner's Museum. Apparently, these in sti tutions didn't share his opinion of the his toric na ture of such a ves sel so she cur rently sits in his son's drive way in Centereach, N.Y.

Michael C. Y. Niu - Michael is the pres i dent of AD Air frame Con sulting Company and is a metallic and composite airframe consultant. He was a Senior Research and Development Engineer, Lockheed Aeronautical Systems Co. He was lead engineer responsible for the L1011 wide body derivative aircraft wing and em pennage stress anal y sis. Dur ing 1966 and 1968, he served as stress en gi neer for the B727 and B747 at The Boeing Company. He has been an honorary ad viser in struc tures and air plane design to the Aero Industry De vel opment Cen ter (AIDC), China (Tai wan) since 1973. He is a Con sulting pro fessor in Beijing Uni ver sity of Aero nautics and As tro nau tics.

Stanislav Pav lov - Dur ing his en tire pro fes sional ca reer, Stanislav was involved and will be in volved in de sign and development of hydrofoil craft. He wrote that therefore he is quite keen to be a mem ber of IHS. He is Director of MTD Marine Technology Development Ltd., Branch Office in Saint Pe ters burg, Rus sia. More in formation is seen in the Let ters To The Ed i tor sec tion of this NL.

Serge Pelentsov-Serge is Vice- President of Akula Cruise Lines Ltd., Vancouver, British Columbia, Canada. His in ter est in hy dro foils started when working in Russia in 1994. Hav ing seen a Raketa ves sel fly ing by on the river Yartish, he took a ride, and was very impressed. In the early seventies he lived in Australia and a big thrill was to see a hy dro foil ves sel operating in Sydney. Serge's company recently purchased Russian built hydrofoil (Voskhod/Sunrise) to operate as a tour-ferry boat in Saint Lawrence sea-way system around Montreal.

Philip Schlund - Philip is from Zurich, Switzerland. His pri mary in terest in hydrofoils is application to multihull sail ing boats. He in tends to build a hy dro foil as sisted tri ma ran or cat a ma ran. He be lieves that car bon fibers are the ul ti mate ma te rial to build hy dro foils and is look ing for the right de signer who can help him fur ther in his endeavors for sailing fast and safely.

Thomas Young - Tom be came in terested in hy dro foils in Jan u ary of this year at the Hous ton Boat Show when he was introduced to the Windrider Rave. He bought one on the spot, trad ing in his 1964, 24 ft. Bahama Islander. Tom will be build ing the foils designed by Dave Keiper and offering them for sale.

JETFOIL ACCIDENT
(From the Internet)

More than 110 passengers and five crew members were injured when a Jetfoil hit an underwater object near Tai O Saturday, 2 May 1998.

The accident occurred about one mile off Tai O (near Hong Kong) at 12:25 PM when the Jetfoil "Flores" was on its way to Macao. There were eight crew members and 236 passengers on board. Several fire services and police launches and Marine Department vessels were dispatched to the scene immediately after the report was received. All the casualties were taken to hospitals for treatment.

The Police has made arrangement for the other passengers to return to town. The damaged Jetfoil will be towed back to a dockyard in Cheung Sha Wan.

Passengers were urged to offer information on vessel collision. A report said that a total of 117 passengers and five crew men on board were injured. The Director of Marine has ordered a preliminary inquiry into the incident, and a surveyor of the department has been appointed to take charge of the inquiry.

BOEING JETFOIL RETURNS TO ENGLISH CHANNEL

From Fast Ferry International April 1999)

Jersey based operator Channel Hoppers is to introduce Boeing Jetfoil 929-115 *Adler Blizzard* on a new route across the English Channel between Southampton, Alderney, Jersey and St. Malo. First services are scheduled for April 28.

Delivered to Belgian operator RTM in 1981 as *Princesse Clementine*, the fully submerged hydrofoil was operated from Ostend to Dover, and later Ramsgate, until it was withdrawn early in 1997. Having been laid up for 18 months, it was purchased, along with sistervessel *Princess Stephanie*, by Adler Blizzard for a planned route off the north coast of Germany.

Between May and October last year Channel Hoppers leased Fjellstrand 38.8m catamaran *Varangerfjord* from Finnmark Fylkesrederi to Rutesselskap for a service between Portsmouth and the Channel Islands of Alderney and Jersey.

According to Channel Hoppers, "The Jetfoil is configured for 255 passengers and will complete the Southampton to Jersey sector direct in 3 hours 45 minutes, and Jersey to St. Malo will take just one hour. Southampton to Alderney non-stop will be achieved in 2 hours 30 minutes.

"Agreement has been reached with Associated British Ports to use the former Stena terminal in Southampton Docks. This will vastly improve the conditions in which is landbound passengers are handled. We have also applied for permission from HM Customs to open a duty free shop in the terminal.

Channel Hoppers is also planning to transfer *Varangerfjord* to a new English port this summer. From May 21, the catamaran is to be operated from Torquay on a daily return service to the Channel Islands. The destination will be Jersey on Mondays, Wednesdays and Saturdays; Guernsey on Tuesdays and Thursdays; and Alderney and Cherbourg on Fridays and Sundays. Scheduled journey times are 3 hours 30 minutes for Torquay-Jersey, 3 hours for Torquay- Guernsey, 2 hours 30 minutes for Torquay-Alderney and 1 hour 45 minutes for Alderney-Cherbourg.

Guernsey was briefly included in last summer's timetable but this is "the first time that Channel Hoppers will have regularly served that island". Explaining the background, the company says, "A constructive meeting was held with the Guernsey Transport Board on March 9. Channel Hoppers hopes that Guernsey will now feature more prominently in future operations.

"Since the Jersey Transport Authority and Guernsey Transport Board obliged Condor to become signatories to a binding Service Level Agreement, Channel Hoppers has always indicated its willingness to voluntarily enter into a similar agreement with the States of Jersey and ultimately, it is hoped, with the States of Guernsey. This Service Level Agreement is, in effect, a statement of policy outlining guarantees of minimum service levels that we shall extend at all times to our passengers in times of operational problems."

Interested in hydrofoil history, pioneers, photographs? Visit the history and photo gallery pages of the IHS website. http://www.erols.com/foiler.

IN MEMORY OF LEOPOLDO RODRIQUEZ

By Diego Mazzeo & Dino Di Blasi

Several months ago we had been asked by Bob Johnston to write a few lines on Leopoldo Rodriquez who passed away not so long ago. This is always a difficult task and in this in stance it is much more dif fi cult as the writ ers of these lines are two of his highest admirer and closest friends. It could be said that we are not the most suit able ones to re member to all of you Leopoldo, as many others who had the venture to cross his path could have done it in a better way.

Writing on Leopoldo is as writing about the history the high-speed de-vel op ment at sea. As a mat ter of fact Rodriquez and the Rodriquez Ship-yard has al ways been closely re lated to hydrofoils and thus on the fastest ves sel ply ing the seas up to the point that Rodriquez and their products were synonymous of achievement and eco nomic speed.

His death leaves a sense of emp ti ness that is reaching not only those, who were close to him, but also the en tire hydrofoiler com mu nity. We, be liever of the power and never end ing va lid-ity of the hydrofoil, should grim his de par ture.

Leopoldo has been for many years, the glo ri ous ones, Man aging Di rec tor of the Rodriquez Shipyard lo cated in Messina, It aly. He took this re spon si-bil ity shortly af ter grad u ated from the Genoa Uni ver sity as Na val Ar chi tect in the year 1952. Having always thought that one day he would have been involved into the family busi-ness, as his un cle was the owner of the then small Rodriquez shipyard, he started his ed u ca tion as ship's mas ter.

The year 1954 was a start ing point for the small outfit at Messina, as Carlo Rodriquez started discussion with Supramar on a license agreement to build the PT20 pas sen gers hy dro foil, which was still on the draw ing board.

The first vessel built at Messina, the Freccia del Sole or Sun Ar row left its nest during 1956 and Leopoldo was among the design and why not the construction team of it. At that time the Yard was not more than a small workshop with limited tools and al-most unlimited man power. It aly was just try ing to for get the de struc tion of the Second World War and op por tu-nity to work was very scarce.

Not because he was the owner's nephew but only because Leopoldo was a very determined person, he climbed all the way into the yard or-ga ni za tion from as sis tant to the Man-ager to Tech ni cal Man ager in charge for the construction of the two very first hy dro foils.

Dur ing 1957 he was given the post of Gen eral Man ager of the yard. Un der his management the yard manpower went from the orig i nal 85 to over 350, but more importantly the quality of manpower improved to a level that was un com mon for that time and for the geo graph ical area where the Yard was lo cated.

He was a traveler at a time when trav-eling was not as easy as now a days. He was al ways on the move to open new' markets and to spread all over the world the idea of high speed at sea. It was not an easy task, as Rodriquez was pioneering this field and it was al ways a chal lenge to con vince tra di-tional op er a tors to switch from tra di-tional means of transportation to the ad vanced one.

The yard was known for its edge tech-nology making use of X-ray, strain gauge tech nique, plasma cut ting, nu-merical control machines, all of which were familiar at Rodriquez ship yard.

Dur ing his man age ment, co op er a tion started with a number of prestigious in ter na tional com pa nies. just to name a few, Ham il ton Stan dard, a di vi sion of United Technology, SMA, Flor-ence with whom a novel fam ily of hy-drofoils were designed, the Towing Tank in Rome, the In sti tute for Na val Automation of Genoa University, CETENA, the Ital ian Cen ter for Na-val research, The Institute of Sound and Vi bra tion at Co pen ha gen.

At a time when in di vid u al ity was the norm, he was so clever to re al ize that only a finely tuned team was the win-ning so lu tion, so that he set up a very fine team, able to com pete with soon to be fierce in ter na tional com pe ti tion.

In spite of this co op er a tive mood, he al ways wanted to stay ahead of all the oth ers and to achieve this task he used to work al ways long hours. At night, his of fice win dows were lit, and lit er-ally moun tains of files were cov er ing his working desk. Next morning, as his team reached their yard's offices, they surely would find on their desk the rel e vant file with the ter ri fy ing re-quest "please tell me' He made sure not to sign a sin gle or der or telex (yes, it was still the telex era) un less he was fully convinced and sure that it was fair for all concerned. On the other hand, he never escaped from taking

Con tinued on Next Page

LEOPOLDO
(Continued From Previous Page)

on the responsibility for all actions and decisions regarding the Company's activity. Nothing was too complicated for him; even when matters were completely out of his education and studies-, he listened to the explanations given by his advisors. We are sure that he was only able to grasp the head lines of it, but he then had the capability to explain the matter to others so clearly, as if he had perfectly mastered the matter.

Under his brilliant management, some time against the will of his uncle Carlo, the Yard participated to shows and conferences were he always gave ample space to his colleagues, as he used to called his employees.

Tough but incredibly gentle and full of humanity. He made sure that night workers (Sometime the yard was working round the clock) had good food and he even drove himself downtown to fetch coffee and cigarettes to pamper his workers.

Leopoldo's maniacal working habits have been very costly to him but more to his family. He was seldom at home. Traveling in Italy and abroad, when in Messina, he spent most of his time at his office; he was unable to spare enough time for his children and his wife.

Alda, his wife, was never complaining even when without any notice he jumped at home with some guest for a late dinner. His home was always open to clients and friends who enjoyed his very Sicilian sense of warm hospitality.

It is worth reminding all of us of the Yard's achievement during his managing life. From the small PT20, production went to the larger PT50. When the marriage between Rodriquez and Supramar went sour, Rodriquez promptly put on the market a modified version of their the RHS series well out of the license brackets.

It was the time when discussions with Hamilton Standard were developing and the acronym RHS stood for Rodriquez-Hamilton-Standard, later changed to Rodriquez—High-Speed.

Leopoldo was the father of the RHS110 series and more importantly the RHS200, a vessel too advanced for the time, plus the highly successful series of RHS160, then modified into the RHS 160/F and now FOILMASTER series. All those hydrofoils were sporting an Electronic Seakeeping Augmentation system that was adopted at a later stage by almost all the other fast ferry builders.

Another ahead of time project, vigorously supported by Leopoldo, was the *ALIMAIUNO*, developed by Rodriquez in the 70's, a forerunner of both the hybrid advanced naval vehicles, successively in vestigated in the US and the current day foil supported catamarans; the project did not go beyond the design stage only because the market was not yet prepared to accept that kind of novelty.

In an era when all Navies were in search for a fast economical and reliable naval unit, Leopoldo came with the idea of the MAFIUS class of hydrofoil (Missile Armed First Italian Unsinkable Ship). Lacking support from the Italian Navy, at that time already committed with the Sparviero class, this brilliant idea was shortly aborted but a huge fallout benefit came to the Yard.

Leopoldo was active not only in the pure shipyard industry. He was, for a relevant lapse of time, manager at a Hotel resort owned by Carlo. He managed to contract North European tour operators, who chartered flights to Catania and then toured tourist to Messina and to the Eolian Islands, from were his ancestors had come.

The hotel was the homeport and it was even sporting a private mooring point, aimed at embarking tourists to the Islands. Cinema festivals and important events were held at the premises that was very flourishing.

He was founder of the International Hydrofoil Society, at the time of the Countess Juanita Kalerghi, Commander M. Thornton and Leopoldo's close friend Peter Dorey. Fellow of the Royal Institution of Naval Architects, member of the Society of Naval Architects and Naval Engineers, member of ATENA he contributed to all of them with a number of articles and papers.

He had been President of APRO (Association of Organ Recipient), very active in this highly humanitarian association to whom he donated money, time and efforts.

A Rotarian since 1960, he served Rotary Club of Messina as President during 1973-1974. He received the Paul Harris Fellowship for his efforts towards the Rotarian culture. Leopoldo served the Rotary until his departure as Commission President and he guided his commission as a leader.

We can only cry his departure, the fast ferry world has to cry his departure but his figure will always remain in our mind as a pioneer of the Fast Ferry market.

RUSSIAN HYDROFOILS

(By Stanislav P. Pavlov, Director of MTD Marine Technology Development Ltd., Branch Office in Saint Petersburg, Russia)

The organization, MTD-SP was established in 1995 by its parent company, MTD Marine Technology Development Ltd., which is located in the UK. The company was formed to provide scientific and engineering services for preliminary studies, conceptual design, model tests, design and development of advanced high speed craft of different types such as hydrofoils, monohulls, catamarans, foil-assisted catamarans and monohulls, SWATH and semi-SWATH vessels, multihull vessels, etc.

MTD-SP has established a relatively large (12 persons) and talented engineering organisation, where the best specialists were collected from different design offices and R&D centres in Saint-Petersburg. Since 1995, they have established quite an interesting list of new developments, including so-called Foil & Interceptor Conception, which has recently been patented in all major countries, including the USA. The prototype vessel, built based on such conception and known as Marinteknikís Superfast Cat, has been successfully tested in 1998 in Singapore. Foil & Interceptor Conception was proven of being extremely efficient in terms of speed and power (weight-to-drag ratio is about 12 at volumetric Froude number 4), while seakeeping performances in terms of accelerations were several times better, than those typical for conventional craft.

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BOOK ON HYDROFOIL HYDRODYNAMICS PUBLISHED

One of our members, Dr. Frans van Walree, has recently completed a book as a thesis on the subject of theoretical hydrofoil hydrodynamics in partial fulfillment of his doctorate degree from the Technical University of Delft. The book is entitled "Computational Methods for Hydrofoil Craft in Steady and Unsteady Flow". It will be available to the public at a cost of NLG 100 (approx. US$ 50), and can be obtained by sending a request to: Maritime Research Institute Netherlands, Attn: Ms. R. Jurriens, Librarian., P.O. Box 28, 6700 AA Wageningen, Netherlands;

Tel: +31-317-493417;
Fax: +31-317-493245;
E-mail: Rjurriens@marin.nl>

[Ed Note: When this book was received, I sent a message to Dr. van Walree stating: "I was very much impressed with the quality of your work and beautiful presentation of the material. It is indeed a very scholarly work, and you should be very proud."]

THE ALBATROSS I AND THE COMMERCIAL HYDROFOIL ERA IN AMERICA

By Paul Miller

The concept of the surface skimming hydrofoil had spent most of the 20th Century as a designer's dream or an inventor's toy. By the early 1960s, it appeared that the hydrofoil was an idea whose time had come. It was more than just the development of light-weight hull materials and power plants that made the early 1960s bode so well. It was also the economic prosperity and social and technological optimism that pervaded society in those halcyon days. These trends found a single focus and outlet in a great event of the decade that, fortunately, was ideally suited for the introduction of the USA's first commercial hydrofoil: the New York World's Fair.

ALBATROSS I Flying by UN

The market for commercial hydrofoils in the USA was seen as commuter service. It was noted at the time that 23 of the USA's 25 largest cities were on or near navigable waterways that were mostly under-utilized and could carry hydrofoil traffic with none of the huge outlay required to increase the capacity of highways and commuter railroads. All that was needed to unite the technology with this market was the construction of a fleet of hydrofoils. One firm that was ready to accept the challenge was a subsidiary of C.I.T., Wilson Shipyard Inc. of Delaware, and its entry was the hydrofoil *ALBATROSS I* and her sisters.

ALBATROSS I was designed by the noted hydrofoil designer Helmut Koch *(an IHS member - Ed)*, who moved to the USA from his native Chile in 1955. The original construc-

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THE SAILORS PAGE

CATRI FOILERS - TRAILERABLE, HY DRO FOIL - STABILIZED TRIMARANS

by Aldis Eglajs

[IHS has received several inquiries about the CATRI hydrofoil sail boats, which range in size from 22 to 30 ft length and can be built as a kit if desired. Accordingly, we present without recommendation or endorsement the concept and design description of these vessels in their designer's own words. For further information, contact the author directly: CATRI, attn: Aldis Eglajs; Box 120, Riga, LV 1063, LATVIA; TEL./FAX + 371 7258427; E-mail: aldis@catri.apollo.lv - Editor]

THE CONCEPT OF CATRI FOILERS

Catri Foilers are not meant only for hydrofoil enthusiasts. The use of this recently patented hydrofoil system opens a new level of high-speed sailing to any contemporary amateur sailor. It is applicable to a wide range of vessels, from small day-sailers and micro-cruisers to 60-feet offshore racing machines in all weather conditions.

Why hydrofoils?

Even though a sail-boat does not easily associate with speed records, the modern wing-like sails are very effective at high speed. The hydrofoil can also be very effective at high speed. As compared to the popular gliding principle (glider), it allows to reduce water resistance by three times.

A combination of sails and hydrofoil is therefore very effective - both scientists and designers agree that the future of the speed sailboat is after the hydrofoil.

What is the problem?

A greater speed of a sail boat can only be achieved by ensuring a higher level of stability, which cannot be guaranteed by traditional types of boats. Multihulls offer a solution to this problem.

The problem of a hydrofoil sailboat stability is even more complicated. Up until now technical solutions have been found only for still water and uniform wind conditions. Under these conditions the speed of a hydrofoil sail boat exceeds 40 kt (74 km/h). Still, to this moment no appropriate hydrofoil sailboat has been developed for open sea and real weather conditions. Catri Foilers offer the first feasible solution to this problem.

Why Latvia?

The French have been more active than others in the field of sail- hydrofoil research. Very expensive hydrofoil projects take place regularly in France.

On the other hand, despite years of isolation from the international community, Latvia has made use of a number of stimulating factors,— namely, the results of Russian research in the field of hydrofoil application. A group of talented students in Riga started yachting-research as a hobby, but understood soon enough, that their only hope to compete with the outer world was attempting to break the speed records.

The Latvian solution

If we compare a hydrofoil with an arrow, it is remarkable that up till now attempts have been made to stabilize it by attaching the regulating mechanism (feathers) at the wrong end! All patents, issued in this field in the last years, have to do with moving hydrofoil stabilization mechanisms, whereas the Catri Foiler solution simply attaches the "feathers" at the end of the arrow, thus making all kinds of regulating mechanisms irrelevant. Tests have been carried out to control the working and interaction of sails, hydrofoil and wind, and an optimal solution has been found.

[The full story on Catri Foilers can be found on the IHS Home page. We recommend that you log on. - Ed]

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HYDROFOIL TRIMARAN SAILBOAT

The EIFO is a 25 ft racing hydrofoil trimaran. The boat was designed by Walter Schurtenberger, and the hydrofoils were designed by Prof. Sam Bradfield. Mr. Schurtenberger, the president and founder of Multihull Technologies in Key West FL, has accumulated over 18 years of experience in the field of design and construction of Hi-Tech composite boat structures. His company has been successfully building catamarans and trimarans since 1993. EIFO is entirely constructed out of carbon fiber and is capable of speeds up to 30 knots.

Principle characteristics are: LOA - 25'; BOA - 24'; Displ. - 500 kg.; Sail - 45 sq. m. The prototype is currently for sale. See the EIFO web page: http://multihulltechnologies.com/eifo.htm or send an email to wsmti@ibm.net for more information.

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INTERNATIONAL HYDROFOIL SOCIETY

30th ANNIVERSARY MEETING

AN NOUNCE MENT AND CALL FOR PA PERS

The International Hydrofoil Society will hold its 30th Anniversary meet ing in May 2000 in the Wash ing ton, DC area. The event will consist of an af ter noon tech ni cal ses sion com pris ing 3 to 4 tech ni cal papers, fol lowed by a so cial hour, din ner, and a Speaker or a Panel Dis cus sion on future commercial and military applications of hydrofoil and hy drofoil-hybrid ma rine ve hi cles. Tech ni cal pa pers re lated to hy dro foil and hydrofoil-hybrid marine vehicles are solicited in, but not limited to, the fol low ing ar eas:

- En gi neering and Ap pli ca tions
- Mar ket Anal y ses with Cost and Intermodal Is sues High lighted
- User Ex pe ri ences, Les sons Learned, and Fu ture Per spec tives

Please sub mit an Ab stract, of 250 words or less, to the In ter na tional Hy drofoil So ci ety, P.O. Box 51, Cabin John, MD 20818, USA, (or by e-mail to: foiler@erols.com) not later than 1 August 1999. Au thors will be no ti fied of ac cep tance of their pa per by 1 Sep tem ber 1999. Draft pa pers, in hard copy, will be re quired by 1 Feb ru ary 2000. This will pro vide ad e quate time for review, sug ges tions, and mod i fi ca tions by the au thor prior to submittal of the fi nal copy for re pro duc tion and dis sem i na tion at the meet ing.

The IHS 30th An ni ver sary Meet ing will be held in con junc tion with a joint meet ing of the IHS, the U.S. Hov er craft So ci ety (USHS) and the So ci ety of Na val Ar chi tects and Ma rine En gi neers (SNAME) SD-5 Panel. IHS welcomes your participation in this event. Ques tions re gard ing tech ni cal papers may be addressed to members of the Technical Papers Committee: Mark Bebar, Jim King, and Frank Pe ter son who may be con tacted via the IHS e-mail ad dress: foiler@erols.com

Please note: Au thors pre par ing an ab stract should bear in mind that the IHS does not en dorse in di vid ual or Com pany prod ucts.

ALBATROSS
(Con tinued From Page 10)

tion and test ing was done in 1961-62 by Hydro-Capital, Inc., of Newport Beach CA and involved 180,000 man-hours of work. The California tests were very successful, and foilborne speeds up to 40 mph were achieved with a full load of 24 peo ple. On the basis of these tests, *AL BATROSS I* received United States Coast Guard certification to carry passengers commercially, the first U.S. hydrofoil to do so.
[The rest of the story is posted on the Home Page. We rec om mend that you tune in. - Ed]

AL BA TROSS I Today

NEW BENEFIT

IHS pro vides a free link from the IHS website to members' personal and/or corporate site. To request your link, contact Barney C. Black, IHS Home Page Editor at foiler@erols.com.

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LETTERS TO THE EDITOR

WASHCHARACTERISTICS

Referring to the article from Fast Ferry International re Washington State Ferries RFP, this is good in forma tion to pub lish, but it will mis lead many if you do not also ad vise that the criteria being applied are extremely questionable from several standpoints:

(1) It deals only with an "average" wave, constructed with arithmetic sums of a series of individual wave measurements, (centered upon the waves with greatest wave height). Hence, the "wave" upon which energy cal cu la tions are made is an ar ti ficial wave that has extensive arith me tic "can cel la tion" of much of the energy actually involved ahead and be hind the wave of high est wave height.

(2) In the high speed wake world, the waves ahead of the highest wave height have much lon ger pe ri ods and hence, correspondingly higher wave en ergy to com pen sate for lower wave height. (The Chinook's appear to all have about the same wave en ergy all the way out to waves of only four or five inches of wave height, mov ing at very high speed!)

(3) There is no deal ing at all with the true de struc tive dam age cause by the entire wave train, be cause the whole wave sys tem is not an a lyzed.

(4) There is a tre men dous law suit going on between property owners whose beaches, bulkheads, marine life, etc. are being destroyed by the Chi nook. Hence, it ap pears Wash ington State Ferries could be fur ther li able for proceeding with follow-on boat procurement using criteria known to be in ad e quate and un der legal challenge. How many potential responders to the WSF RFP have been so ad vised? I think you should include these thoughts in the IHS news let ter, don't you? Karl Duff

MORE ON WASH CHARACTERISTICS

Wil liam H. Buckley wrote:

Dear Karl,

John Meyer cop ied to me your e-mail mes sages re gard ing wave en ergy and related matters and suggested I re-spond to your in quiry if I had the info you wanted. Re gard ing wave en ergy, Vol. I of the Army Corp of En gi neers "Shore Pro tec tion Man ual" (p. 2-27) gives the following total (P+ K) energy equa tion:

E = (rho)g(H squared) di vided by 8; where H = trough to crest wave height

The en ergy flux for waves of uni form height = ½ EC where C is the phase ve loc ity of the waves, which is given by C = gT/2(pi) with T = the wave period.

A bit of information regarding wake prob lems of high speed fer ries is contained in a Dan ish Mar i time Au thority re port Chap ter 1 of which has been translated into English and can be down loaded at the fol low ing web address: sname.org/com mittees/tech_ops/044/highspeed.html. You can track the SNAME high speed ferries initiative which leads to this report at the following address: www.sname.org/committees/tech ops/044/home.html. Incidentally, Stan Stumbo is a Corresponding Member of the 044 Panel.

A second bit of info is that Gabor Karafiath at the Center (301-227-7005) is the person to talk to about ship wakes. He is ac quainted with the wake problems of the M/V Chinook and in di cates that with a set of lines he could investigate the benefit of bow and stern mod i fi ca tions which might lead to wake and con cur rent drag reduc tions. He has not heard from Stan Stumbo.

Re gards, Bill Buckley

RUSSIANHYDROFOILS

MTD-SP was es tab lished in 1995 by its parent company, MTD Marine Technology Development Ltd., which is lo cated in the UK. The company was formed to pro vide sci en tific and en gi neer ing ser vices for pre lim inary studies, conceptual design, model tests, de sign and de vel op ment of advanced high speed craft of different types such as hydrofoils, monohulls, catamarans, foil-assisted catamarans and monohulls, SWATH and semi-SWATH vessels, multihull ves sels, etc. I was grad u ated from Leningrad Ship build ing In sti tute (State Marine University now) in 1975 as na val ar chi tect and re search en gi neer in hydrodynamics and mechanics. Since then I have worked in a big naval de sign of fice in Saint-Petersburg, as a research engineer, senior engineer, head of pro pul sion de part ment. From 1975 to 1991, we have de veloped several interesting projects, including the big gest (more than 400 t) and fast est in the world so far (more than 60 kn.) hy dro foil craft with fully submerged automatically controlled foils. In MTD-SP we had es tab lished a rel a tively large (12 per sons) and tal-

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ented engineering organisation, where best specialists were collected from different design offices and R&D centres in Saint-Petersburg. Since 1995, we've got quite an interesting list of new developments, including so-called Foil & Interceptor Conception, which has recently been patented in all major countries, inc. the USA. The prototype vessel, built based on such conception and known as Marinteknikís Superfast Cat, has been successfully tested in 1998 in Singapore. Foil & Interceptor Conception was proven of being extremely efficient in terms of speed and power (weight-to-drag ratio is about 12 at volumetric Froude number 4), while seakeeping performances in terms of accelerations were several times better, than those typical for conventional craft.

Stanislav P. Pavlov - Director of MTD Marine Technology Development Ltd., Branch Office in Saint-Petersburg, Russia (MTD-SP)

HIGH POINT

I was on the west coast last month where I met up with Will Knuth who is at this time tending High Point until a buyer can be found. I was able to get aboard and take an extensive tour. She is in very restorable condition. The layout is very usable as a live-aboard and with very little work the main deck could accommodate large windows and seating for sight seeing. The hullborne propulsion including engine and outdrive is intact and with one Detroit turning a prop I would guess very affordable to operate. the only thing that appears missing for foilborne operation are the turbines and I understand that these can be found reasonably compared to the LM2500. I know that this ship can be bought very cheap! I believe it would take less work to make her seaworthy enough to ferry than what it took us on Pegasus. It would be a shame to see this fine ship scrapped!

Eliot James

HYDROSAIL

Sam Bradfield reported that the 16.5 foot RAVE offered by HydroSail, Inc. is in production now. Their 25 footer (EIFO) has been sold (Netherlands) and will be racing in Europe this coming season. HydroSail is doing preliminary design work on a 60 footer now.

BOB JOHNSTON MEMORIES

Bob was a special person and even though I worked for him only for 2 ½ years, he had a profound effect and influence on my life and later career. As far as I can tell, mostly positive and constructive things happened from any interactions with Bob. I still remember quite clearly the day that Bob asked me to help him organize what was then the IHS-NAA (a subsidiary of the London group). Bob explained that he'd like for me to get the group incorporated and then to get tax-exempt, charitable status from the IRS. When I told Bob I'd never done any thing like that before, he just leaned back in his chair and did his customary little "chuckle/gurgle" and informed me that it (my inexperience) didn't bother him.....and before long, it was done...and IHS-NAA was a New York not-for-profit corporation with 501(c)(3) status.

William C. Stolgitis

GRUMMAN REMINISCES

I enjoy the News letter. One of these days I will have to go through my collection of hydrofoil pictures and send scanned copies to you....if you want them. I have about a dozen boxes of material that I brought home over the years, and have been meaning to see what I had accumulated. I saw Dennis (Clark) a year or so ago at a marine work boat show in New York. He was there drumming up business for the model basin. Times have certainly changed. I see Jack Murphy in town from time to time. He and his wife moved east after he retired. Last time I talked to him he was recovering nicely from a heart attack. He also said Larry Bauer was doing the same recovery. Hear from Ed Hermanns occasionally and always get a nice note from Ray Wright at Christmas time. Same with Frank Otto, who is the big man (in more ways than size) at Edo these days. Nice to hear he is doing well. Best regards, Charlie Pieroth.

FOIL DESIGN GUIDANCE NEEDED

I am writing to ask for assistance in locating specific design information on underwater foils. I am doing a concept design of a twin keeled sail boat for which I would like to find lift and drag coefficients for a symmetrical cross section foil. I am a retired Livermoore engineer moderately capable in stress and vibration but weak in hydrodynamics. I am, e.g., ignorant as to how the shape of such symmetrical foils are characterized, i.e., by tabular values, by equation, or even perhaps by a NACA airfoil identification number. Of particular interest is the effect of aspect ratio, i.e., how the lift and drag parameters of a single keel compare to the ones for a double keel of half the chord and proportionally reduced cross section but of the same span or draft. That is, of double keel of the same wetted area as

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a con ven tional sin gle one. Re gard ing the lift and drag coefficients, I have assumed that for the probable small angle of attack of a keel, the lift to drag ra tio re mains rel a tively con stant for small changes in the an gle. Here again how ever, un like to an gle of attack assumption, my ignorance is large. In think ing about the prob lem I have won dered if per haps rel e vant information on the design parameters of the foils used for lift ing high speed power or sail ing craft out of the wa ter might ap ply. Per haps the such un derwa ter hor i zon tal foils are un sym metri cal as might also be the case for the self leveling vee-type. But maybe their pa ram e ters are suf fi ciently close to those of sym met ri cal ones that this might be a good place for me to start. In the off chance that there might be a textbook in print on foil design, I would be happy to pur chase it if you know of such. Published papers, or perhaps Master or Doctors theses might also be available. Or even Internet items of your Association. Or, as is likely, something that I am un aware of. Thank you in ad vance for what ever help you can pro vide without being too much of a demand on your time of patience. If the math e mat ics of my pipe dream are en courag ing, I would be happy to share the idea with you. If at even greater odds there might come to be a prototype, I'd in vite you for a sail some where in the San Fran cisco Bay area if it were not for the fact that I am semi- in valided with rheumatoid arthritis and oc cupy my spare mo ments now with think ing about sail ing rather than actually doing it. — Jerry B. Cain (jerrybonline@thegrid.net)

A SMALL, FUN, CHEAP HYDROFOIL

I 'm the "webmaster" of a lit tle site : "PK hydroptere de loisirs" (with alta vista, key word: hydroptere) I have designed and built a little hydrofoil boat for only $800! This is not a boat for speed record but for "the plea - sure" ! — Frédéric Monsonnec (monsonnec@multimania.com)

HY DRO FOIL SAILBOARD DE SIGN PROB LEM

I'm a student in my first year in the Ecole Nationale Supérieure des Mines de Paris, And I'm just be ginning to work on a pro ject : I'd like to try to make a windsurf board with hydro foils. I know this is not very orig inal, and I have seen the links to " Miller hydrofoil," but I don't know how to con tact him. More over, I don't know which solution I am going to chose (num ber and type of foils). I'd like to have some ad vice on this is sue. I already have some contact with Hugues de Turckeim, a French shaper who is working on the TECHNIQUES AVANCÉES, the cata maran of Ensta, also a French engineering school. — Yannig-François le Roux, PARIS. (98leroux@paris.ensmp.fr)

Letters To the Editor allows hydrofoilers to ask for or pro vide in formation, to ex change ideas, and to in form the readership of interesting de vel opments. **More correspondence is pub - lished in the Posted Messages and Frequently Asked Questions (FAQ) sec tion of the IHS Internet web site at http://www.erols.com/foiler.** All are in - vited to par tic i pate. Opin ions ex pressed are those of the au thors, not of IHS.

ANOTHER HYDROFOIL SAILBOARD DE SIGN PROBLEM

I'm working in the design of a windsurf board with the hydrofoil con cept. Do you have some in for mation regarding this idea? — Juan Carlos Santilli (jcsantilli@email.msn.com)

Response...

There is an on-line magazine article that describes the Miller hydrofoil wind surfer in detail... this de scription will give you plenty of ideas for your pro ject. Please note that Miller's design is patented and may not be cop ied for profit! — Bar ney C. Black (foiler@erols.com)

RUS SIAN VES SELS FOR SALE

We have for sale two Rus sian hy drofoils type KOLKHIDA, 140 pas sengers, 1985, 1989 year, engine MTU, Russian Register of shipping Class documents (A2) 4 years, excellent condition (just after repair), location Black Sea, US$ 520 000/each. — G. Kasyanenko(anna@farlep.net)

THE RACE

We are currently designing three 9' horizontal foils for my 60' long and 59' wide 15.000# tri ma ran with 3,000 sq. ft. of sail. (ex Ker Kadelac) They are be ing de signed to swing aft and up in case of col li sion. Would ap pre ci ate info from anyone experienced with this type of application. Also, in terview ing am bi tious stu dents will ing to get their hands dirty. — Pe ter Murray tel.1.561.708.7008; fax..219.2270; (therace2000@ hotmail.com)

JET FOIL POSTERS

I am in need of any Boeing Jetfoil posters or pictures for our company

Con tinued on Next Page

office. Where can I find any? (We are interested in the Far East's Hydrofoils.) Please advise. — Kelly Anderson (kelly@pacsky.com)

RUSSIAN HYDROFOIL FOR SALE

Volga 275 Russian Hydrofoil Aquaflite — Previously in Spain, this vessel is now located on the Hamble at Ancasta Marine Port, Hamble. Seriously for sale please contact the owner c/o Henthorn@cwcom.net. Guide price - in region of £20000.

RACING BOAT DESIGN SOURCE

Does any one know where you can get designs for jet boats (sport/racing versions - not fishing/commercial)? Please email me. — Mathew Davies (porsche@porsche-enthusiasts-club.freeserve.co.uk)

Response...

The following groups run both propeller boats and JET (impeller) boats in various classes. The prop boats are quicker but both achieve speeds in excess of 200 mph regularly. Contacts (Hope the phone numbers are current.): Liquid Quarter Mile magazine (909) 989-1169; IHBA International Hot Boat Assoc. (714) 634-4422; ADBA American Drag Boat Assoc. (216) 543-9647; NJBA National Jet Boat Assoc. (714) 993-2664; Southern Drag Boat Assoc. (817) 662-0774 — Ken Cook (kencook@hydrofoil.com)

STUDENT NEEDS ADVICE ON WAKE CHARACTERISTICS

I wakeboard a lot (like snow boarding but being towed by a boat) and use the wake to perform tricks, using it as a ramp. For the project that I am making in my Design and Technology course at Ashville College, I have decided to make a device which will attach to the back of a speed boat which will increase the size of the wake to allow me to perform more tricks due to the increased size of the ramp. At the moment I am thinking about using a hydrofoil with the blade angled downwards to pull the back of the boat down into the water which will increase the size of the wake because of the greater displacement of the boat. I am hoping to be able to use the water to make the size of the wake bigger instead of just increasing the water displaced by the boat to make the wake bigger. I am hoping to be able to find a way to channel the water that would be wasted, make the wake of the boat bigger. For example, smaller wakes are generated by a speed boat during speeds of around 18 mph and I want to be able to get rid of these smaller wakes, using them to make the main wake bigger. I am trying to find a diagram showing where each component of the boat wake comes from in order that I might be able to develop a way of using the smaller wakes in a different way. — Andy Padgett (Padgett@btinternet.com)

Response...

Andy, I am not a hydrodynamicist nor a boat designer so I may not use the proper terms in my reply to you. My background is in the construction and evaluation of hydrofoil ships and systems for the US Navy's research center. The problem you present is not necessarily a hydrofoil related solution. Mainly, a wake is a product of a pressure wave caused by the hull or in case of the hydrofoils, the foils carrying the weight of the ship. My understanding is that the more harder the chine and flatter the bottom, generally you get larger wakes. But then so much is involved especially since you apparently want to place this wake at a distance from the boat for the wakeboard. I don't know what type of hull your boat has, but I am not sure that adding a foil section to pull the hull down will do much to ward your goals. I feel that adding weight on the stern would accomplish the same thing. Before we go any further, lets look at other considerations. Are you going to accept the increased drag which relates to requiring more speed to plane the boat? This will also decrease the top speed. Does your engine have the additional horsepower to overcome the increased load? Are you willing to play with the propeller i.e. diameter and pitch to obtain optimal performance? Handling characteristics would also change, most likely contributing to wandering condition. Many I/O boats exhibit this characteristic before coming up on plane due to the heavy weight of the engine at the stern. Boat designers take all of these factors into consideration when designing boats, especially when they try to reduce the wake for water skiing, which is opposite of what you would like to do. I don't think you will find an easy fix. It could be that a new hull form would give you the most gain. — Sumi Arima (arimas1@juno.com)

2nd Response....

Andy, Have you seen the April 1999 issue of Trailer Boats? on page 64, they report on a test of a Correct Craft Pro Air Nautique, which is a modified Nautique to induce wake for wakeboarders. They also mentioned installing a bladder to carry water for ballast to enhance the wake. Checking the magazine, subscription/back issues manager can be contacted at "tbmcirc@aol.com". — Sumi Arima (arimas1@juno.com)

EXTRA FOR THE ELECTRONIC EDITION

LET TERS TO THE EDITOR
(Con tinued From Pre vi ous Page)

De ter mining Foil Size and Pro file

Hi, I am a mem ber of the IHS and am in ter ested in build ing a small, fast hydrofoil sailboat. My question is: What is the av er age load ing per SQ. foot (or in.) for a hydrofoil expected to go about 25kts? Is there a quick formula for determining the size of the hy dro foil based on the weight of the craft and speed? Jim Wolbert (wolbert@att.net)

Response....

I am afraid there is no quick and simple for mu la to set tle ques tions of hydro foil size and con fig u ra tion. There is a great book with many de sign examples called the Aero-Hy dro dynamics of Sailing. You can probably find existing boats in the same class as yours in the book and it will gives you the good and bad aspects of the ex ist ing de signs. Hope this helps. — Marc Schafer (spaceboy@sgi.com)

Who De signs Hy dro foils?

We are seek ing a com pany / de signer to pro vide de sign / plans for a 20/25 Mtr Hydrofoil, Hull / Deck / Su perstruc ture / Pro pul sion sys tem. Do you have any rec om men da tions? — Mike Scott
(bluewatercharter@compuserve.com)

Sailing Hy dro foil De sign Data...

FYI, Here's a new link for your "Websites of IHS Mem bers" sec tion. I've put up some information on hydro foil sec tions that might be of in terest. — Tom Speer (tspeer@gte.net)

Plans For BRAS d'OR...

Do you know where I can get a set of plans of the BRAS d'OR?. I would like to build a model of her. Growing up in Nova Sco tia, I got to see her in action. Quite a sight. — Ron Schofield (sco@hfx.andara.com). Website: users.andara.com/~rschofie

Ex per i menter Needs Ad vice on Foil Sec tions...

As a new IHS'er, I re cently pur chased Dave Keiper's notes and 3" foil & strut stock. After reading his notes, how ever, I feel I need to get started in this fas ci nat ing world of hy dro foils at a little more basic level, and tackle my 1982 Nacra 5.2 hy dro foil pro ject a little later... after I successfully build a more basic hydrofoil project (I'm a marketing type, not an en gineer)! I wish to construct a stable towed hy dro foil plat form, uti liz ing 4 ea. 6" surface piercing foils in a split-tandem configuration. I'm guessing that each foil would be angled out 55 deg. from the vertical strut. I would like to carry a loaded vessel weight of 800-900 lbs., at speeds up to est. 45 mph. What foil section would be best suited for this application, and who can I purchase 6" foil and strut stock from? I recall reading that Alcoa offered foils, but don't know what to ask for ! Do you have any sup pli ers you could rec ommend that make such foil stock? Any suggestions / recommendations for this towed contraption? — Brian Ballou

Response...

Recently I attended the Dusseldorf Boat show - known as the World's larg est. I re mem ber hav ing seen symmetrical foils of a very high surface qual ity, weldable and with two in ternal struts for stiff en ing. Chord length was about 6-8", thick ness was about 1 inch, wall thickness was some 1/6 inch. Comes in lengths of 6 m (20') If this is of any in ter est to you, please let me know with details, such as required section, total length and max length for shipping. I already discussed the matter with the man u facturer, so sending you an offer should n't take very long. My of fer for the 3" chord length NACA 16-008 and Clark-y remain valid. — Claus-Chris Plaass
(plaass@ki.comcity.de)

Hy dro foils For Sale...

We have for sale two Rus sian hy dro foils type KOLKHIDA, 140 pas sengers, 1985, 1989 year, engine MTU, Russian Register of shipping Class documents (A2) 4 years, exellent conditon (just after repair), location Black Sea, US$ 520 000/each. -- G. Kasyanenko (anna@farlep.net)

The NEWSLETTER

International Hydrofoil Society

P. O. Box 51, Cabin John MD 20818 USA

Editor: John R. Meyer **AUTUMN 1999**

PHM-5 SURVIVES

By John Monk

Deep within the heartland of the United States, is the Grand River, tributary of the Missouri River. Just about one mile up stream from that great river, the Grand flows past the small hamlet of Brunswick Missouri, which by water is approximately 2,630 miles from the Naval Base at Little Creek Virginia.

The distinguishing feature of the Grand River and the little town of Brunswick, over all other rivers and places in the plains states, is that they have become the home of the last remaining ship of the US Navy's Hydrofoil Squadron (COMPHMRON TWO). Here the USS ARIES (Ret) or better know to some, as the PHM-5 will be restored to it's original condition by Eliot James, B.J. (Bill John) Meinhardt, and his brother B.J. (Bobby Joe) Meinhardt.

Eliot, BJ, and BJ ran the PHM-5 all the way from the East Coast to Brunswick on its hullborne propulsion system. It took them 49 days and 14,000 gallons of diesel fuel to make the trip.

The ship was "slop painted" in salvage gray and has a few dents in the hull from rough handling at the salvage pier, but all in all, it's in pretty

(Continued on Page 3)

Former U.S. Navy Hydrofoil PHM-5 Photo By John Monk

WHERE ARE YOU IN CYBERSPACE?!

Email communication improves timeliness and reduces mailing costs. Please keep us updated with your current your email address!

'99 DUES ARE PAST DUE

IHS Membership is still only US$20 per calendar year (US$2.50 for students), and a few of our valued members have not yet renewed for 1999. Your renewal or new membership is critical. Please remit 1999 dues as soon as possible. Overseas members with no easy way to send US funds, are advised to send money order to IHS or US Dollars cash.

INSIDE THIS ISSUE

PRESIDENT'S COLUMN

Again I regret to report on the untimely passing of another of our long-time hydrofoilers, Dale Calkins. Sumi Arima has been alert to news of our west coast members and sent me Dale's obituary from a Seattle newspaper (see column three on this page).

For some time Barney Black and I have discussed the need to have an editor for the Newsletter who would handle the news related to Hydrofoil Sailors. The Society is attracting more and more members who have a strong interest in this aspect of hydrofoil technology. We need to keep them up to date on what is going on world wide in this interesting area. I am pleased to announce that Dr. Sam Bradfield, President of HydroSail Inc., has consented to take on this task. Although we do not have a "Sailor's Page" in this issue, Sam has assured me that he will have some interesting news for the Winter 1999 Newsletter issue.

You may remember I mentioned in previous Newsletters that the IHS has made an effort to promote the production of a Hydrofoil Video. Following a meeting with the Production Manager at the Discovery Channel in Bethesda, MD, a proposal was prepared and submitted in July. Just recently we received a letter from the Discovery Channel informing the IHS that although our proposal was appreciated, and had received the full attention of their development group, but it was rejected. It was explained that they have a limited number of new programs that can be commissioned each year; therefore the Discovery Channel is very selective among the thousands of proposals received.

Although the Board decided several months ago to proceed with a 30th Anniversary Celebration of the founding of the IHS with a special meeting, the Board of Directors voted to cancel plans for next May. Instead, an evening dinner meeting in combination with the U.S. Hovercraft Society and the SNAME SD-5 Panel will be planned for June 2000. It has been suggested that it would be particularly appropriate to have a hydrofoil related paper or address the "State of the Art in Hydrofoils in the Year 2000" at such a meeting. The Papers Committee had received three candidate papers for the Celebration. It has been proposed that the authors be invited to summarize their material which will be featured in future IHS Newsletters.

During the last year, one of our members, Stephen Chorney, has been busy putting together a complete listing of all IHS members. This may be thought of as a simple task, however, the requirements were to include e-mail, telephone and FAX numbers, and other membership related data in addition to addresses. We are pleased to announce that, after several trial lists, a file has been generated and has recently been sent out electronically to all IHS members with e-mail. **For those who do not have email, a copy can be obtained by request. Please write a note to me at the IHS address**.

John R. Meyer, President

IN MEMORIAM - DALE CALKINS

Submitted by Sumi Arima

Dale Eugene Calkins, a resident of Bellevue (Washington) for 20 years, died June 29th, 1999, in Ann Arbor, Michigan. He was 61 years of age.

Dale was born in Detroit, Michigan of June 5th, 1938, to Eugene and Longena Calkins. He graduated from the University of Detroit in 1961 with his first degree, a BS in Aeronautical Engineering. After graduation he packed up his convertible and headed west to Seattle to work for Boeing. Eventually Dale ended up in California, where he spent the next several years earning his MS in Aerospace Engineering from San Diego State and his Doctorate in Naval Architecture from the University of California, Berkeley.

He took his first education job as a visiting professor in 1978 in Rio de Janeiro. He spent the last 20 years of his life teaching at the University of Washington, where he made an indelible mark with his work in Computer-Aided Design Engineering and Knowledge Based Engineering. He developed an advanced vehicle concept called Hydrofoil Catamaran (HYCAT) and published several papers on the subject.

Sumi Arima remembers that his initial contact with Dale was when the Navy towed his Variable Depth Sonar with *HIGH POINT,* while he worked for Naval Ocean Systems Command, San Diego. They continued to cross paths over the years.

PHM-5 SURVIVES

(Continued From Page 1)

good shape. The mast is gone, as are the weapons and their control systems. But all the wiring still remains, but must be removed. The HYCATS and Navigation consoles remain but are gutted. However, the very costly radar height sensors are in place and intact. The galley, along with the head are in splendid condition. The foilborne pump is operational and only waiting for a gas turbine engine to bring it back to life. A new 60hz ships power source is being sought and new air conditioning needs to be developed. There are miles of wire to be pulled and other lesser systems to be found and installed.

The main missing equipments are the automatic control system (ACS) and the main foilborne propulsion gas turbine (LM2500). Both will be expensive to come by. However, with all of the advances in computers and the global positioning systems it will be possible to design and develop an ACS and navigation system that will fit totally in the bridge.

With the weapons and their control systems removed, they will have the ability to take advantage of the weight loss and distribution to enhance the performance and speed, while having lots of space for a practical and possibly, a profitable payload.

At this time the most needed item is the technical documentation Ship Systems Operation and Maintenance Manual (SSOMM) which is currently in the hands of the US Navy.

As for Public Relations, they are already getting some outside interest in their project; namely, from an ABC Television affiliate, channel 17 in Columbia, MO.

When these three young men began this project they had no idea what a hydrofoil was. They just saw the advertisement for it in the government salvage catalog and so they made a bid for it. Within weeks they were the proud owners of a hydrofoil. After going back east to claim their new toy, they found that it did not have foils, so they traded their PHM for the only remaining one with foils, PHM-5.

Eliot James owns and operates Custom Composites, which manufactures composite material tools and parts, mostly for the heavy truck industry. BJ and BJ's company is simply called "BJ" and deals with the purchase of large surplus equipment. They purchase them for 20¢ on the dollar and then rent and sell them. The bigger the equipment the better.

BJ (both of them) and Eliot are 50/50 partners in rebuilding the PHM. They have not formed an official corporation or partnership yet, as they are not sure which way to go. Eliot has used "The Pegasus Project dedicated to the restoration and preservation of the ex-navy hydrofoil ARIES PHM-5" in some correspondence to date but nothing is chiseled in stone.

When approached by Mr. Widman of channel 17, Eliot was asked two questions. What is it? And what are you going to do with it? The first was easy to answer (now that they have become hydrofoil experts). The second one, however, was answered simply by using his two-year response: "I don't know". They want to maintain control of the ship and hope that they can find ways and means to operate it as a "non-profit" company capable of supporting itself.

So there you have it! The one of three remaining U.S. Navy Hydrofoils in existence (together with *HIGH POINT* and *FLAGSTAFF*), and three young men with a dream. I believe that all of us in the IHS have an interest in making this dream come true. They need a lot of help, possibly from Boeing, the US Navy and maybe the Navy League. Therefore, it would be great if some of us in the IHS could find the time and energy to provide the leads and contacts that may be useful in getting the necessary ship equipment, funds and ideas to put this very fast lady back into operation.

Eliot S. James can be contacted by e-mail (esjames@cvalley.net) or phone at (660) 261-4500. His company is located in Cliffton Hill, MO, and the PHM-5 is docked at Brunswick, MO, just northeast of Kansas City, Missouri.

Added Note by Eliot James: "I have also confirmed that there are other PHMs still floating and that the scrapping company has been closed down. They had PHM-1 nearly gone and started on PHM-6 when we left Charleston so I am not sure of the rest but all other ships had their foils cut off by the Naval Inactive Shipyard in Norfolk so I guess we have the last PHM to retain her foils."

****

A TRIBUTE TO BOB JOHNSTON

By IHS Member, Don Wight

I had the Privilege of first meeting Bob and his wife, Marcia, some 23 years ago when I joined his Hydrofoil Development Project Office as the first Canadian Navy Exchange Officer at DTNSRDC (David Taylor Naval Ship Research and Development Center). From the beginning, Bob, along with the rest of the office staff, made me and my wife, Pat, feel right at home. I can readily say that I look back on working at the Center as the most enjoyable two years in my military and civilian careers. There is no doubt that this feeling is a direct result of the professionalism and cordiality throughout the Hydrofoil Office spurred by Bob's leadership.

Pat and I have kept in touch with Bob and Marcia over the years, attending several Hydrofoil Society Conferences and Bob and I have "teed it up" a few times! We last saw Bob in February when we visited him and Marcia in their Daytona Beach home. Characteristically, Bob was in the best of spirits, and we spent the day reminiscing about advanced ships, good times and, of course, golf matches! I have recently spoken to the two Canadian Naval Officers who followed me to Carderock - Bob Starchuk and Don Hussey - and they ask that I express their appreciation for Bob's humanity and guidance during their postings to the Center. The three of us have often spoken of the good times and career enhancement we all experienced at DTNSRDC. I will Profoundly miss Bob's continued optimism, cheerfulness, wisdom and love of life.

USTICA LINES INTRODUCES SECOND RODRIQUEZ FOILMASTER

(From Fast Ferry International, May 1999)

The latest Rodriquez Foilmaster to be delivered to Ustica Lines, *Adriana M,* may be an historical vessel. It is likely to be the last hydrofoil built at the company's yard in Messina, marking the end of an era that has seen 151 launched since 1956.

The total comprises 48 PT.20s, 29 PT.50s, 10 RHS 70s, five RHS 110s, 13 RHS 140s, six RHS 150s, six RHS 150Fs, eight RHS 160s, 20 RHS 160Fs, two RHS 200s, a single MEC I and three Foilmasters. Apart from two PT.20s which were fitted out as naval patrol craft, all the hydrofoils have been ferries and more than 50% are still operational.

Rodriquez Foilmaster *Eduardo M*

The first of the three Foilmasters was built for Siremar. *Adriana M,* the second to be delivered to Ustica Lines, entered service last month off the northwest tip of Sicily, linking the Egadi islands of Favignana, Marettimo and Levanzo with Trapani.

The vessel combines features of the first two. Ustica Lines has opted for a similar 240 passenger capacity as Siremar's *Tiziano* with the more powerful propulsion package of its first Foilmaster, *Eduardo M,* which is fitted out for 224 passengers.

Both of Ustica Lines' vessels have a pair of MTU 16V 396 TE74L diesels rated at 2,000 kW at 2,000 rpm in place of the two MTU 16V 396 TE74 units rated at 1,550 kW at 2,000 rpm installed in *Tiziano.* The result is an increase in full load service speed of some 5 knots.

Ustica Lines

The Foilmaster is Ustica Lines' fifth hydrofoil and its introduction will allow peak frequencies on its Trapani-Egadi islands service to be increased from 8 to 14 round trips a day. The route is the only one of the four operated by the company to have two vessels allocated to it and to be operated throughout the year. The other three are limited to June 1 -September 30.

Ustica Lines was established in 1993 and the following year introduced a Rodriquez RHS 160, *Fast Blu,* leased

Continued on Next Page

USTICA FOILMASTER

(Continued From Previous Page)

from Aliscafi Snav, on two very long routes pioneered by Snav itself.

Based in Trapani, the vessel completed round trips to Favignana, Ustica and Naples; and to Pantelleria and Kelibia, Tunisia, on alternate days.

In 1995, the operation was repeated and the company purchased a Rodriquez RHS 140, *Spargi,* from another Italian operator after being awarded a license from the Sicilian Regional Council to run a route southwest of Sicily linking the islands of Lampedusa and Linosa off the coast of Tunisia.

The next year, the Egadi islands route was added and Ustica Lines acquired three more hydrofoils. RHS 160s *Linosa* and *Calarossa* were purchased from another operator while Foilmaster *Eduardo M* was the first newbuilding ordered by the company.

Between June 15 and September 15, *Eduardo M* will also be operated between Trapani and Pantelleria with a journey time of 2 hours 30 minutes, 10 minutes faster than that of RHS 160 Calarossa.

HONG KONG-MACAU OPERATORS MERGE SERVICES

(From Fast Ferry International, July-August 1999)

Shun Tak Holdings and China Travel International Investment HK have finalized plans to merge their Hong Kong based fast ferry fleets into a new company, Shun Tak-China Travel Shipping Investments. First services, which are to be marketed as TurboJET, were scheduled for July 13. Shun Tak will own 71 % of the joint venture, CTII will own 29%.

A change of colours awaits Far East Hydrofoil's fleet of Boeing Jetfoils

TurboJET's fleet will comprise 18 Boeing Jetfoils and two Kvaerner Fjellstrand FoilCats previously operated by Far East Hydrofoil Company plus eight FBM TriCat 45m catamarans and four Kvaerner Fjellstrand Flying Cat 40m catamarans operated by CTS-Parkview Ferry Services until the end of last year.

The Hong Kong Parkview Group's desire to divest itself of its local fast ferry interests resulted in its partner, CTII, and Shun Tak agreeing in December "to join forces in acquiring 100% of CTS-Parkview Holdings and ultimately merging forces with the shipping operation of Shun Tak to form a new joint venture for operation and development of ferry services in the Hong Kong waters of the PRC."

Shun Tak and CTII initially acquired Parkview's 50% holding in CTS-Parkview Ferry Services for HK$330 million and have since added their own ferry interests to form Shun Tak-China Travel Shipping Investments. Dr. Stanley Ho has been appointed chairman, Zhu Yuening is deputy chairman and Pansy Ho is chief executive officer.

Commenting on the merger, Dr. Ho said, "Shun Tak has been in the passenger shipping business for nearly 40 years while CTII has vast experience in the travel and transportation business. I truly believe that the combined strengths and experience from both companies will help Shin Tak-China Travel Shipping Investments to build a better business with expansion into new ferry routes and ferry related services."

TurboJET will initially operate on the Hong Kong-Macau route, where it will have a virtual monopoly, plus Hong Kong-Guangzhou, Hong Kong-Shenzhen and a local route from Central to Tuen Mun, Sha Lo Wan and Tai O. According to the operator, "Currently, Far East Jetfoils and TurboCats together carry close to 10 million passengers annually. After the merger TurboJET will have a fleet of 32 vessels capable of carrying well over 20 million passengers."

WELCOME NEW MEMBERS

Robert Dewar - Robert has always tried to follow hydrofoil technology after purchasing a copy of "JANE'S SURFACE SKIMMERS" in the mid 70s, and often read "MULTIHULL" and equivalent, magazines. He wrote to David Keiper back then and is still interested in his WILLIWAW. He purchased a copy of his book HYDROFOIL VOYAGER and his video of the WILLIWAW. He reported that "the boat is doing about 15+ knots in whitecaps, the ride looks very smooth, but the cameraman unfortunately is bouncing around in the chase boat like a jumping bean".

Georges Kokkinos - Georges is from Greece and has an interest in acquiring a kit to add foils to a small run about. He would be interested in obtaining information about such kits and has been referred to Tom Lang.

Martinn H. Mandles - In 1967 at age 27, Lieutenant Martinn H. (for Hydrofoil?) Mandles became the first officer-in-charge of the U.S. Navy's first fleet-operational hydrofoil, the Boeing-built Tucumcari (PGH-2). But Martinn's hydrofoil days go back long before Tucumcari. During a 21-month sabbatical between his junior and senior years as a Stanford engineer, he was employed by Boeing as a co-pilot (alongside George Adams, Bruce Bryant and Vern Salisbury) of Boeing's Little Squirt hydrofoil, HTS hydroplane, and FRESH-1 hydrofoil. Martinn is also an ex-aviator, Vietnam veteran, and a recent graduate of Russia's Cosmonaut Basic Training Course at Star City near Moscow. Today, at age 58, Martinn serves as Chairman of the Board of ABM Industries, Inc. (NYSE:ABM), where he has been employed for the past 27 years. With annual sales in excess of $1.5 billion and more than 55,000 employees, ABM provides janitorial, parking, security and other facility services to thousands of commercial, industrial and institutional facilities in hundreds of cities nationwide. The ABM Family of Services includes American Building Maintenance, Ampco System Parking and American Commercial Security. Martinn and his wife Connie reside in Los Angeles. His private e-mail address is mhmandles@aol.com.

Richard T. Miller - Richard reported "that looking back, he had been most happy as student of, and frequently as a particle in, fluid motion". He sailed since his early teens, mostly in small racing dinghies. During the past nine years, he designed and piloted hydrofoil sailboards. None of this paid, however, and so he worked, at first as an academic mathematician specializing in topology and then changing over into fluid dynamics and turbulence, and more recently as a programmer and computer modeler in problems related to vision and perception. For a wonderful time he was a violinmaker, but that never put much food on the table.

Peter Murray - Peter, a hydrofoil sailor, is from Stuart, Florida. He is a close associate of fellow Hydrofoil Sailor, and IHS member, Sam Bradfield. Peter has raced many sailboats without hydrofoils, but is more recently an enthusiast of those with foils, having a 33 ft, 1,000 lb. boat capable of 35 knots, and now a 60 footer capable of 40 knots. He has plans to enter the "Round the World" race starting on New Year's Eve 2001 with a hydrofoil sailboat. We all wish him lots of luck.

Glenn S. Nesbitt - Glen's background is in mechanical engineering, business development and management, mathematics, and computer science. He has been a journeyman pipefitter, journeyman welder/fabricator, an owner/operator of a small business for 12 years. He has an AA degree in mathematics from Fullerton College, and is currently working on a degree in computer science from the University of California at Santa Barbara. Glen is the promoter of American Hydrofoil with two partners. He holds a patent pending on a new hydrofoil design, and expects to begin marketing several hydrofoil vessels in the next 12 to 24 months, which he expects will attain top speeds between 75 mph and 130 mph.

Frederick Rodolf - Frederick is with a boats and salvage company in Whitter, Alaska. They are expanding into the high speed taxi market and are looking for bids from qualified persons or company's to retrofit an existing boat with hydrofoils. They will add a page to our website (www.quicktow.com) with more information on request for bids on adapting hydrofoils.

John F. Rodrigues - John is President of Yacht Boutique in Boca Raton, Florida, specializing in the sale of Megayachts to the clientele who can afford them. He has realized that these yachts have advanced considerably in their jazzy interiors and elaborate appointments, even in the pilot house, but everything under the deck is the same as it was decades ago. He therefore sees an opportunity to advance the below- decks features by introducing foils to the Megayacht World. He is anxious to pursue this idea. His company's website is: www.Yachtboutique.com

TEA-21

Federal Funding Available Until 2003 Will Help States Remedy Transportation Ills

(by John Snyder, Senior editor, Marine Log, June 1999)

Some teas are known for their restorative powers. While it may not go well with scones, TEA-21 is certainly one of those. Not really a brisk cup of brew, TEA-21 stands for the Transportation Equity Act for the 21st Century. Passed in 1998, it makes available some $200 billion to states to do everything from create new bike paths to pave new stretches of highway to slap a new coat of paint on aging bridges. And to get cars and commuters off of those congested city roads and bridges, TEA-21 provides plenty of funding for ferries.

"TEA-21 probably has more ferry funding than any other legislation, state or federal, that preceded it," said Edmund B. Welch, legislative director of the Passenger Vessel Association (PVA). "A reasonable estimate is that the law will pump somewhere between $450 to $500 million into ferry systems over the next six years."

Speaking at MARINE LOG's Ferries '98 last November, Welch explained TEA-21 contains $220 million in funding over a six year period for the construction of ferries and ferry terminals under the Ferry Grant program. This funding is broken into two portions; one is discretionary or the competitive portion; the other is the set-aside portion for marine highway systems that are part of the National Highway System (NHS). Of the $220 million, $100 million is allotted under NHS set asides for Alaska ($50 million), New Jersey ($25 million), and Washington state ($25 million) over five years starting in Fiscal Year '99. Grants can provide for up to 80% of the construction costs. The program was begun in 1991 under the Intermodal Surface Transportation Efficiency Act (ISTEA). From 1991 to 1997, some $95 million was awarded for the construction of publicly owned *and* operated ferryboats and ferry terminals under the ferry grant program.

Thanks to the efforts of the Passenger Vessel Association (PVA), the ferry grant program was not only extended under TEA-21, but also made more flexible. Qualified applicants now include publicly owned or operated ferries or majority publicly owned.

"PVA asked Congress to make the eligibility criteria more flexible, because the old language precluded private operators from taking advantage of the grant program,"said Welch. "Yet in many cases, private ferry operators are as much a part of the regional transportation network as their publicly owned counterparts."

Under TEA-21, pointed out Welch ' private operators now have the opportunity to enter into a working relationship with a city, state, or regional transportation authority and become eligible to apply for grant funds.

More For Ferries

Besides the ferry grant program, TEA-21 contains special allocations, for several ferry projects. These projects include: $60 million for the construction of new ferry terminals for the Staten Island ferry in Manhattan at the Battery and on Staten Island in St. George; $32 million towards the construction of as many as three new auto/passenger ferries to replace the aging Kennedy Class ferries currently operated by New York City on the Staten Island to Manhattan route; $16.3 million for the construction of a ferry terminal in Midtown on the West Side of Manhattan; another $70 million is reserved through the Federal Transit Authority for ferryboat systems in Alaska and Hawaii; and various sums and unspecified amounts are earmarked for additional projects.

More Demand Than Dollars

Despite the windfall of funding in TEA-21, there still appears to be more demand than dollars. Case in point is the response to the Federal Highway Administration's solicitation for proposals for Fiscal Years 1998 and 1999.

With only $39 million allocated under the ferryboat discretionary program, the Federal Highway Administration (FHWA) was only able to select 29 out of 86 candidate projects worth some $153 million. Applications for Fiscal Year 2000

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TEA-21

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ferry grants must be submitted to the FHWA by July 1, 1999 through a state transportation department.

Just a few of the things in the pipeline include: the implementation of a high-speed ferry service or "marine highway" that will link waterfront towns from Portland to Bar Harbor, Maine, a distance of *72* nautical miles; a new Hollis to Ketichikan, Alaska, ferry, replacing an existing one; and a new high-speed trans-Puget Sound ferry as part of an overall 20-year plan by the Washington State Department of Transportation.

COMMUTER ROUTES APPEAR IN THE NETHERLANDS

(From Fast Ferry International, May 1999)

For a country so closely associated with water, the Netherlands has been a late entrant on the fast ferry scene. Indeed, until three years ago, there were just two vessels in regular service in the entire country and one of those was operated on seasonal tourist excursions - and one of those was operated on seasonal tourist excursions.

However, the introduction of four hydrofoils by Fast Flying Ferries and a recent order for two NQEA River Runner 200 catamarans by High Speed Ferries, plus four medium speed River Runner 150s by associate company Waterbus, are strong indicators that the situation is changing.

There are currently more than half a dozen projects for commuter ferries underway in the Netherlands, including three in Amsterdam, two in Dordrecht and one in Vlissingen. More than a dozen fast ferries are currently based in the country with at least three more due to arrive before the end of the year. The catalyst is the Dutch government.

The reason was spelled out by Dick Zoutendijk of Traffic Test in a paper presented at the 12th Fast Ferry International Conference in 1996: "The use of private automobiles in the Netherlands is growing dramatically, from 68 billion kilometers in 1986 to 84 billion kilometers in 1994. This growth causes major problems: environmental pollution, traffic accidents and, especially in the western part of the Netherlands, congestion.

Fast Flying Ferries has been operating Voschod hydrofoils since last May

"To restrict these negative effects, the Dutch government has formulated a policy to reduce car use involving measures like road pricing, promoting car sharing and traffic demand management, raising fuel tax, etc.

"One of the measures that has contributed to a decline in car use is the provision of alternatives such as good public transport. The most important forms of public transport in the Netherlands are train, bus, tram and underground, which all have capacity problems in peak time. To improve the competitiveness of public transport in relation to the car, the Dutch government also wants to examine the possibilities of alternative forms." Although the government currently spends approximately three billion guilders each year subsidizing public transport, it was unable to contribute any funds to ferries until recently because the Dutch 'Wet Personenvervoer'' legislation applied only to trains, buses and trams. There had to be a change in the law before there could be a change in policy.

The first company to take advantage of the Dutch government's largesse with grants for start-up costs and operating subsidies was Fast Flying Ferries. In 1995 it purchased a Gorki Meteor hydrofoil in Latvia that had been delivered three years earlier and had hardly ever been operated.

Refitted with 128 seats and renamed *Prins Willem Alexander,* the vessel entered service for two months during the summer of 1996 on tourist excursions between the Flevo area of the Netherlands and Amsterdam.

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DUTCH OPERATORS

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Two round trips a day were operated from Kampen, Urk, Hoorn and Lelystad to the Dutch capital, a route of approximately 35 nautical miles. Scheduled trip time, however, was 2 hours 35 minutes because the Meteor had to pass through two canal locks.

Nor was that the only operational difficulty. Peter Venema the technical manager of Fast Flying Ferries, says that a series of problems were experienced with the two M-401A diesels in the vessel. Undaunted, the company returned to the route for 10 weeks the next summer.

By then, a project to introduce a commuter service between Velsen, near IJmuiden, and Amsterdam was well advanced. Fast Flying Ferries purchased two Morye Voschod hydrofoils in Kiev, Ukraine, and delivered them under their own power to the Netherlands at the end of 1997. A third from the same source followed last year.

The 71 seat hydrofoils, which were launched during 1979-1983, were completely rebuilt before entering service. According to Peter Venema, the only original items remaining are the hulls and part of the shafting. Major changes included the installation of MAN 2842 LE402 diesels rated at 1,100 hp at 2,300 rpm, Furuno navigation systems and refurbished passenger saloons.

The service between Velsen and Amsterdam was introduced last May on a three year trial basis, after which the government may issue a request for tenders from companies interested in operating the route. Voschods *Anne Marie, Prins Johan Friso* and *Kusnirov* are scheduled to make a total of 20 round trips a day on Monday-Friday at a 30 minute frequency during 0630-1000 and 1530-1930 and a 60 minute frequency during the middle of the day.

Apart from approximately 4 minutes of running at reduced speed in Amsterdam, the vessels are foilborne virtually from berth to berth. The Meteor was first used as back up but the popularity of some services is such that its higher capacity is now needed for these.

Only 14 people work at Fast Flying Ferries. Each Voschod is crewed by two captains, who alternate between the helm and the passenger saloons, except during periods of poor visibility when both remain in the wheelhouse. Crews work throughout the day on two or three days each week.

Peter Venema reports that traffic averaged 775 passengers per day last year, or approximately three times the number the company had estimated would be needed to break even financially after taking subsidies into account.

On particularly popular days, up to 1,200 passengers are now being carried and traffic is about to increase as the government has agreed to subsidize services on weekends.

Service availability of the Voschods is in the region of 80%. Peter Venema reports that the high operating speed of the engines has taken its toll and debris in the water is a problem. To date, two major impacts have caused foil damage. The only weather problem encountered is poor visibility, when speed is reduced from 33-35 knots to about 20-21 knots.

As some structural parts have proved difficult to obtain, Fast Flying Ferries decided to purchase a fourth Voschod as a source of spares. This was due to arrive in the Netherlands towards the end of 1998 but was first ice bound and has now been trapped in the Ukraine by blockages in the River Danube resulting from the war in the Balkans.

LET THE FORECASTER BEWARE

(From Fast Ferry International April 1999)

(This is from the section of the magazine entitled "30 Years Ago". Although it has ***nothing*** *to do with hydrofoils, we thought it may be of interest and amusing to our readers. Ed.)*

April 1969 was a month of significant leadership changes around the world. In Czechoslovakia, Alexander Dubcek was replaced as head of the Czechoslovakian Communist Party by Gustav Husak. In France, Charles de Gaulle resigned after losing a constitutional referendum, throwing the country into turmoil. In China, Lin Piao was voted Chairman Elect to follow Mao Tse-Tung on his retirement.

The second Concorde made its first flight early that month. It was, so the French and British aerospace industries hoped, the beginning of a new age of supersonic air travel and a lucrative market for the far sighted who had backed the idea to the tune of Pounds 360 million. The marketing men were certainly gung-ho about the prospects, with forecasts putting total sales by the middle of the 1980s at over 400 aircraft worth in the region of Pounds 4,000 million.

SEAJETS PALM BEACH -BAHAMAS ROUTE DEBUTS

(From THE HERALD (Miami), July 6,1999)

SeaJets, a Palm Beach firm, is bringing two Boeing JetFoils to the Port of Palm Beach that will travel regularly to Grand Bahama Island. Refurbished this year, the JetFoils accommodate 250 passengers and travel over the surface of the ocean. They will arrive in South Florida this week, with service beginning in early August.

SeaJets will travel between the Ports of Palm Beach and Grand Bahama Island in 99 minutes. The ships will leave from Palm Beach at 8:30 a.m. and 4 p.m. seven days a week. An adult round-trip ticket is $99, with arrival and departure taxes of $25.

Currently, there are 44 JetFoils in service throughout Europe and Asia. The JetFoils have not operated in the United States since 1982. SeaJets is headed by George Bradley, a former Rockefeller executive, and Sven Paulsen, whose father founded Adler Ships in 1949.

Contributed by Jean Buhler

RODRIQUEZ MARINE SYSTEM

(From Fast Ferry International, May 1999)

A new subsidiary of Rodriquez Engineering, Rodriquez Marine System, has recently been established to produce stabilizing systems for both its associates and external customers.

The company is targeting fast ferry and mega yacht builders with a range of Seaworthiness Management System combinations comprising fins, fins plus trim tabs, T-foils plus trim tabs, T-foils plus fins and trim tabs, and electronic systems with either analogue or digital instrumentation.

According to Rodriquez Marine System, "There are many different fins available, from 0.45 sq.m to 3.5 sq.m. The smaller fins are made of fibreglass, the larger ones of steel. For the whole range, a NACA 0015 profile is used, with high aspect ratio value aimed at improving lift per unit of area."

FASTSHIP COMES TO AGREEMENT WITH ROLLS ROYCE

(From MarineLink 2 Sept 1999)

FastShip has reached an understanding with Rolls Royce Plc for the supply of gas turbine engines that will power the company's revolutionary high speed Trans-Atlantic fleet, providing the approximate power equivalent to two 747 jet engines. The deal, worth $1 billion, represents the largest-ever single order for Rolls Royce for marine engines.

The agreement requires Rolls Royce to construct 25 marine Trent gas turbines - five in each of FastShip's initial four vessels, and five spares. Additionally, Rolls Royce will provide a 20-year support package throughout the life of each engine, as well as establish a maintenance facility in the Philadelphia region for the contract's management purposes.

The Rolls Royce Trent engines, which derivate from the company's Trent aero-engine and the most powerful gas turbine propulsion unit available, will drive Kamewa waterjets, delivering 335,000-hp. The propulsion package will allow the 860 ft. (262 m) vessels, carrying a payload of 10,000-tons to complete the journey from Philadelphia to Cherbourg in less than four days, while attaining speeds of up to 40 knots.

KAMEWA DEVELOPING LARGE WATERJET FOR FASTSHIP

(From Fast Ferry International, March 1999)

Kamewa has signed an agreement with FastShip to develop the largest waterjet ever designed. Twenty units are destined for four ships that FastShip is planning to introduce on a trans-Atlantic service offering a seven day door to door delivery between the United States and Europe for 'high value time sensitive goods'. The basic design of the vessels has recently been verified by Det Norske Veritas.

According to Kamewa, "The core of the FastShip system is a fleet of patented high speed ships representing a quantum leap in hull design and propulsion systems. The design synergy enables the ships to run at speeds of 36-40 knots and maintain those speeds in rough seas.

"With an inlet diameter of 3.25m, the waterjets will be twice the size and power output of the largest units currently in operation, and will provide 50 MW of propulsive power per unit. Each waterjet will be driven by aero-derivative, marinized jet engines."

The Swedish manufacturer has also revealed, "Kamewa is reviewing the possibility of constructing and assembling part of the waterjet systems in the Philadelphia/ Pennsylvania re-

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HALES TROPHY PRESENTED TO CAT-LINK

(From Fast Ferry International April 1999)

After eight years in the possession of Sea Containers, the Hales Trophy for the Blue Riband of the Atlantic, to give it its full title, was officially handed over to Scandlines in a ceremony held in London on March 25.

The owners of Incat 74m *Hoverspeed Great Britain* took the prize in June 1990 when the wavepiercing catamaran made a 2,741 nautical mile crossing of the Atlantic from Nantucket Light Buoy to Bishop Rock in 3 days 7 hours 54 minutes at an average speed of 36.966 knots.

Last July, *Cat-Link V,* an Incat 91m wavepiercer operated by Cat-Link, which was then jointly owned by Scandlines and Incat, completed a crossing between the same two points in 2 days 20 hours 9 minutes.

According to the trustees of the Hales Trophy, *"Cat-Link V* achieved an average speed of around 41.284 knots over a distance yet to be settled. Confirmation is deferred pending agreement on the distance covered during an emergency search and rescue diversion [lasting 2 hours 10 minutes] south of the Grand Banks to seek a light aircraft which had ditched in the sea."

Only a month before, Incat 91m *Catalonia,* owned by Buquebus Los Cipreses, had beaten the average speed of *Hoverspeed Great Britain* by achieving 38.841 knots when it covered the 2,972.5 nautical miles from Nantucket Light Buoy to Tarifa Point Lighthouse at the entrance to the Straits of Gibraltar in a time of 3 days 4 hours 32 minutes. However, as no representative of Buquebus was present at the ceremony, the Trophy was passed directly from Sea Containers to Scandlines.

Between 1952 and 1990, the record for the fastest crossing of the Atlantic had been held by *United States,* which completed its maiden commercial voyage at an average speed of 35.59 knots. Recording the history of the Hales Trophy itself during those years, the trustees note, "In 1952 it was presented to United States Lines and was displayed in the company' s New York offices, and eventually transferred to the American Merchant Marine Museum, Long Island, soon after the great ship was retired in 1969.

"The Trophy remained there until 1990. With generous assistance from Mr. James Sherwood, chairman of Sea Containers, the Trophy was recovered from the Museum and brought back to London. Since then it has been on display in the company's offices, following cleaning and renovation for the first time since 1935."

Mr. Sherwood was more forthcoming in his speech at the ceremony. Having indicated that there were several representatives of Sea Containers present to witness the handing over of the Trophy, he contrasted this with the behaviour of the American Merchant Museum, who initially refused to part with it. Having been informed that there was a legal requirement to return it to the trustees within 90 days, the Museum dispatched it to a representative in New York on the ninetieth day on the back seat of a taxi.

Telling the audience that he had at one time worked at United States Lines, he also gave a fascinating insight into the record attempt by *United States.* Because the hull was based on a US Navy aircraft carrier the government was reluctant to see the maximum speed capability of the ship publicly disclosed.

Consequently, the company was instructed to restrict the output of the engines. Had it not done so, it was estimated that the liner would have been capable of 42 knots. If it had averaged that speed, as Mr. Sherwood observed, the Trophy would still be in New York.

GAS TURBINES ORDERED FOR ALN CORSAIRE 13000

*(From Fast Ferry International April 1999***)**

GE Marine Engines has confirmed that it is to supply a pair of LM 2500+ 25 MW gas turbines to MTU. They are to be installed in the Alstom Leroux Naval Corsaire 13000 monohull scheduled to be delivered next April to Societe Nationale Corse M6diterran6e.

The engine manufacturer reports, "This marks the first selection of the 2500+ for commercial fast ferry service, and the first commercial marine operator in France to use GE aeroderivative gas turbines. The 2500+ is slated for use in another commercial marine arrangement aboard cruise ships being built for Royal Caribbean and Celebrity Cruises.

For the Corsaire 13000 application, each 2500+ will be used in a combined diesel and gas turbine arrangement with two MTU 20V 1163 TB73L engines. Total power output will be 63,000 kilowatts (84,500 HP).

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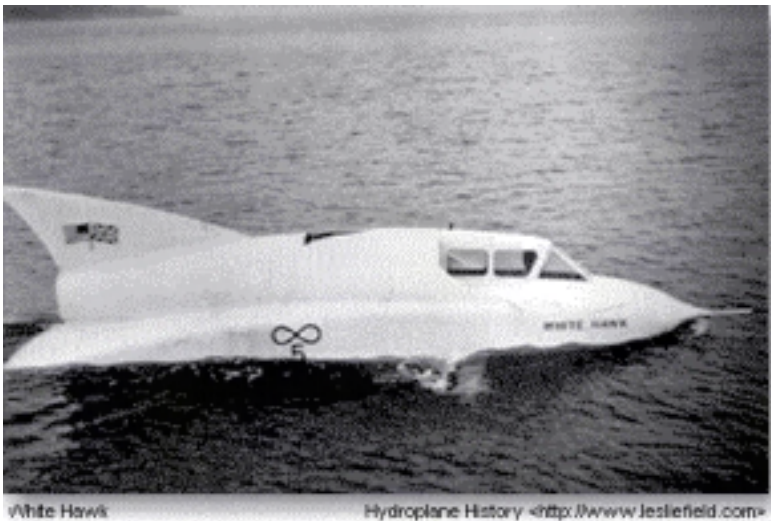
UPDATE ON WHITE HAWK

By Leslie Field

I maintain a large website in Vancouver, BC devoted to unlimited hydroplanes and other high-speed watercraft http://www.lesliefield.com. A few months ago I ran across a picture of the White Hawk in the New York Times November 4, 1952 and I have been intrigued about the boat and Frank and Stella Hanning-Lee ever since. I have put together a web page: The Hanning-Lees and White Hawk <http://www.lesliefield.com/other_history/hanninglees_and_the_white_hawk.htm>with several articles and photos from the British press, a piece by Kevin Desmond and a link to your own Bob Johnston's personal reminiscence of his experiences with the couple. (You can also navigate to this page by starting at the home page, choose "frames version" — What's New — New or Revised Pages). After Frank and Stella Hanning-Lee arrived in the U.S. in 1953 with the intention of testing White Hawk "on Lake Mead or perhaps a lake in Florida" they disappear from sight. Does anyone know anything at all about what became of Frank, Stella or the White Hawk? Any information at all would be most appreciated. Vancouver, BC, CANADA; e-mail: <leslie@lesliefield.com>

HydroplaneHistory<http://www.lesliefield.com>



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KAMEWA

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gion, where FastShip has its main office."

Commenting on the agreement, the chairman and chief executive officer of FastShip, Einar Pederson, said, "Our partnership with Kamewa will provide great support for this unprecedented venture in ocean transportation.

"Kamewa waterjet technology will be key in helping realize FastShip's vision of revolutionizing ocean cargo to provide customers with delivery speed and reliability which is comparable to airfreight, at a cost closer to conventional shipping rates."

FastShip reports that analysis has shown that "a substantial market" exists for the proposed service, which would attract cargo from both ships and aircraft. Following the introduction of the trans-Atlantic fleet, the company anticipates the construction over the next 5-10 years of a further 12 vessels for operation on routes across the Pacific and within Asia.

NEW BENEFIT

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LETTERS TO THE EDITOR

Sweet Sorrow

[Aug 12 1999] It is with pleasure that I acknowledge receipt of the Summer Newsletter for which I thank your goodselves.
Reflecting upon the fact that only the past is real, my mind recalls those special occasions that were so memorable and enjoyable.
I recall the satisfaction that Mark (Thorton) enjoyed upon being congratulated by the UK Minister for his IHS efforts during the time spent on our stand at the Rhys Centre in. Holland. Incidentally, that is where I met Mr. Hamilton-Walker's son our New Zealand member. Just as a matter of interest I pioneered that concept for a couple of years but the "Seacats" won the day.

The passing of dear Leopoldo (Rodriquez), together with. so many other stalwarts invokes that nostalgia of such "Sweet Sorrow". Rest In Peace" dear- friend. Now I know why I did not hear from you this Christmas after so many years. . . . .
Please allow me to say thank you for all the work you put in. As secretary for a few years and Chairman for one week, I know what is involved. I was with Mark 10 minutes before he died and a promise was made that somehow IHS would survive. Thanks to the wisdom of Countess Juanita (Kilerghi), Uncle Sam came to the rescue.
In all sincerity, Yours faithfully, Bill Witt; 6 Glen Court., Riverside Road, Staines, Middlesex TW18 2 LG, U.K.

Wakeboarding...

[25th Feb 99] As a newly joined student member of the society I was wondering if you could ask a question in the next newsletter for me. I wakeboard a lot (like snowboarding but being towed by a boat) and use the wake to perform tricks, using it as a ramp.

For the project that I am making in my Design and Technology course I have decided to make a device which will attach to the back of a speedboat which will increase the size of the wake to allow me to perform more tricks due to the increased size of the ramp.

At the moment I am thinking about using a hydrofoil with the blade angled downwards to pull the back of the boat down into the water which will increase the size of the wake because of the greater displacement of the boat.

I am hoping to be able to use the water to make the size of the wake bigger instead of just increasing the water displaced by the boat to make the wake bigger. I am hoping to be able to find a way to channel the water that would be wasted, make the wake of the boat bigger. For example, smaller wakes are generated by a speedboat during speeds of around 18 mph and I want to be able to get rid of these smaller wakes, using them to make the main wake bigger.

If you could ask your members if they could help with this I would be very grateful. I am trying to find a diagram showing where each component of the boat wake comes from in order that I might be able to develop a way of using the smaller wakes in a different way.

Andrew Padgett, Ashville College, Green Lane, Harrogate, North Yorkshire, HG2 9JP, UK

Wanted: Hydrofoil...

[30 Aug 99] We are looking to buy a passenger hydrofoil, capacity 100 to 150 tourists, to run in Lake Naser, south of Egypt, distance 270 km. We need it high speed. — GESCO (gesco@egyptonline.com)

Response... [30 Aug 99] There are links to some designers and manufacturers of hydrofoils on our links page at http://www.erols.com/foiler/linksout.com. We also have several messages with good cost and source information, as well as offerings of used hydrofoils for sale, right here in our FAQ page... read the new messages section, then jump to the section entitled "Where to Buy a Passenger Hydrofoil or Ferry." — Barney C. Black, foiler@erols.com)

Response... [30 Aug 99] We have designed a 149-passenger foil-supported catamaran. The vessel has not yet been built. The speed is 45 knots (83 kilometers per hour) in a 2- meter sea. If this is of interest, we can provide additional information. — Mark Rice (mrice@mapcorp.com)

HIGH POINT Questions...

[21 Aug 99] How is the HP steered when hullborne? I realize that the screw needs hydraulics to be let down into the water. Does the steering come as a function of the foils? Do the foils need to be let down for this? — William Knuth (wil@pacifier.com)

Response... [17 Aug 99] There is an emergency method of lowering the outdrive but at the present time, I cannot tell you exactly how. There is a book that I believe was given to Ronald on configuring various emergency conditions. This book use to occupy the bookshelf on the port rear of CIC. The hydraulic actuator that lowers the outdrive has a brake built into it, and cannot be seen. The brake needs pressure to release. A manual pin was installed after the brake failed and put a hole into the hull. The outdrive rotates 360 degrees when the unit is down. It needs to go 180 degrees to reverse. The propeller is a puller and the outdrive does not have bearings suitable for thrust in the opposite direction. The emergency steering is on the port side of the outdrive housing in the engine room transom. It is configured for a 3/4 drive socket. I don't remember the ratio but it takes many turns to move it a few degrees. We have used an air drive instead of the provided crank. At this same location, a gear train with a hydraulic motor that sits vertical when extended is the normal method of steering. It is syncho controlled with the helm in the pilothouse. The indicator in the pilothouse, right

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LETTERS TO THE EDITOR
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side of helmsman, shows the outdrive position. The power is fed from the 400 hz power supply. The hydraulic pumps were on the two ship service diesels. Both of the original diesels were removed. The hydraulic system used Skydrol as its hydraulic fluid. This is an aircraft, non inflammable, and highly toxic fluid and should be handled with care. I originally suggested to Ronald that he consider replacing the helm with a lever control system like on the tugs and adapting a commercial marine hydraulic system motor to the outdrive. The hullborne drive can propel the ship with either the struts up or down. For least resistance, the flaps should be in zero position (straight back). The hydraulics for the foils and strut steering came from a separate system, and is not tied in with the outdrive and strut retraction hydraulics. —Sumi Arima (arimas1@juno.com)

Propulsion System For Solar Powered Propulsion...

[19 Aug 99] I'm a Mechanical Engineering student at the College of New Jersey and I'm helping design and hopefully build a solar electric boat. My personal design is of the propulsion system. I'm looking into counter rotating propellors in a sleeve (a sort of jet propulsion system) but I'm not sure if this system would greatly increase efficiency at such low speeds. We (as a team) are at the primary stages of our design and would greatly appreciate any advice, brochures, technical documents, etc. That may help us in our project. — Oliver Cueff (cueff2@tcnj.edu)

Response... [23 Aug 99] The least expensive and most available CR propellers are available from Volvo Penta on their outdrive units. These are relatively simple designs that might be adapted for your application. You will need to look at the mechanical losses in such systems as they are designed for much higher powers than you will have in a solar application. You may not see a big gain in propulsive coefficient in this low power application since there is not much swirl in the wake of a relatively large diameter low speed propeller. Whatever gains may exist could be offset by mechanical losses in the CR drive. — Mark Rice (mrice@mapcorp.com)

Hydrofoil Surfboards...

[17 Aug 99] Do you know if anyone has worked on hydrofoil surfboards? For waves? I'm looking for info, as I surf, and spend way too much time on crazy ideas, so I don't want to duplicate someone else's work. — Doug (directaudio@surfside.net)

Attack of the Killer Logs...

[14 Aug 99] (The email to which this is a reply is unposted at the author's request - Editor) Drift and logs depending on the size of the hydrofoil can certainly be a problem. In the case of the Jetfoil, having been on the program at Boeing, I am not aware of a single case when a Jetfoil was made non-operational due to hitting a log. I was on a Jetfoil flying into Vancouver's inner harbor when a deadhead was hit by the starboard aft strut pod. Although the pod fairing was damaged, the boat continued on to Seattle without repairs; in fact the damage was not even realized until its arrival in Seattle. With the exception of jet pump powered craft, high speed craft of any type are put out of service when they hit something too large. Hydrofoils experience such damage as do other craft. However with hydrofoils the damage is more often not to the propulsive apendages, i.e. propeller. The struts usually encounter the drift or log first. The struts and foils of a hydrofoil are typically much stronger than a propeller and its shafting. (In smaller fast boats this gear is usually not protected by a keel.) In any case you're right: lakes e.g. Lake Washington, don't have much drift and they do, for small boats, due to boat traffic, have large waves. You might try answering your own question and I'm curious, why haven't you bought a hydrofoil? Your answer may be the reason that so few have bought them historically. — Harry Larsen (hlarsen0@gte.net)

Project Seascape, A Floating Mediterranean City...

[9 Aug 99] I am working on a large-scale project: Seascape, a floating city for the Mediterranean Sea. We anticipate that hotel and condominium guests would be ferried to and from Seascape, as it moves about under sail power, by both seaplanes and hydrofoil craft. We're hoping at this preliminary stage to interest designers, manufacturers, and visionaries to point us in the right direction as to size, speed, carrying capacity, and latest technology. We also welcome comments and criticisms of the project Seascape as a whole. — David Grassi (seascape1@jps.net)

Curious About TRIFOILER...

[8 Aug 99] I am very interested in the Hobie-Ketterman TRIFOILER. I would like to know if there is an off-the-shelf "J" style foil as used on the Trifoiler or are there plans available to construct them? The style of foil used in this craft is portrayed in some artist's renditions as a 90 degree foil, yet in some photos it appears to be at about 45 degrees. Multihull Jan/Feb 94 and Popular Mechanics June 96 are examples. Would you know if there is a racing version and a regular version? There are so many foil designs as with aircraft wings. Could you direct me to this specific foil for this specific craft, or is this a trade secret and thus the high ($1 Million) cost of development and six year trial and error period? If this particular part is patented does this mean that it cannot be copied or just that it cannot be copied for the intent of resale or profit? My interest is only for personal use. — Rob Dewar (flynn43@ibm.net)

Response... [8 Aug 99] Technical information, including copy of the patent application, is posted on Cliff Sojourner's website at www.employees.org/~cls/trifoiler. Unfortunately there is not much in the way of off-the-shelf foil extrusions available for hobbyists to experiment with. — Barney C. Black (webmaster@foils.org)

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Letters To The Editor
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New Hydrofoil Ships...

[8 Aug 99] No details are given, but in the latest Maritime Reporter there is a list of ships on order, and two hydrofoils are included. One is to have a gross tonnage of 344 and is being built by the Russian yard S. Ordzhonikidze Works, to be delivered this year. The other will be 200 gross tons and is being built by a yard called Seaspeed (with which I'm not familiar), also for delivery this year. Does anyone have more info on these vessels? — Bill Hockberger (hockberg@erols.com)

USS PLAINVIEW Final Resting Place...

[8 Aug 99] I went on vacation near the mouth of the Columbia River (Washington side), and I ran into the remains of the USS PLAINVIEW. It appears that someone is cutting it up for salvage and I was wondering if someone has more info on this hydrofoil. — Ed Bynon (EBynon3780@aol.com)

Response... [8 Aug 99] Can you give me more details on the PLAINVIEW's present condition? Your inspection might have given you the indication that a salvage operation is taking place, whereas it might just be the way it is stored. The foils and struts are removed, with only the foils sitting on the rear deck. Some openings were made to remove major machinery. The hull has what looks like cutouts where the struts pivoted. If you have any particular questions, feel free to ask. — Sumi Arima (arimas1@juno.com)

Flap Design...

[8 Aug 99] I am looking for methods or examples of how to design a flap system with the mechanism for adjusting the flap angle being part of the vertical center strut of the foil. The application would be for hydrofoil assisted catamarans. I am basically looking for conceptual ideas at present so that I have a good idea of what has been done before. The hydrofoil assisted catamarans are quite large and the foils are designed to carry 150t under dynamic load conditions so I need a system that is quite robust, and will not require much maintenance. (migeotte@icon.co.za) (editor's note: Congratulations to Gunther for winning the FAST'99 competition for the best student paper).

Response... [8 Aug 99] Originally on the HIGH POINT, the hydraulic actuators for the flaps were located in the propulsion pods at the strut and foil interface. The actuator moved a crank attached to the fixed pivot shaft for the flaps. This would be a possible system for a catamaran if the foils are spanning across the two hulls. On the HIGH POINT, the strut/foil retraction was to lift the assembly straight up. Access to the pod was by drydocking. Thus, during modification, the actuators were relocated to within the strut, with actuator pushing an extension rod to a bell crank and then to the flap. The original concept in design was to design the forces so that the rod was always in tension to avoid bending forces and excessive bearing wear. I know that forces on the strut measured by strain gages proved that the loads downward were as great as the lifting loads. I do not know how this affected the flap loads. Maybe Bill Buckley can elaborate in this area. As for the follow on ships using the flap system, the modified HIGH POINT system provided the flap actuation system. Not knowing your configuration, I shall provide one area of caution. Originally on the HIGH POINT, the outboard foil section flaps controlled the roll. The center section controlled lift. In certain conditions like a quartering wave, the flaps were working against each other. The automatic control system algorithms were changed to provide an aileron control. FLAGSTAFF and her sister ships and PLAINVIEW used incidence controlled foils. The actuators were located in or above the struts with a control rod down to the foil. Again, the design made sure that the attachment point was always forward of the hinge point and the cp was aft of the hinge point of the foil, to avoid rod bending. I do not know any of the details of construction nor the causes and effects on the USS HAYES, which is a catamaran hull with a foil across the two hulls. Original trials detected that the ship porpoised under most conditions. The problem was studied about 20 or more years ago by the Navy, and some solution was achieved. Someone might be able to enlighten us as to the cause and cure. — Sumi Arima (arimas1@juno.com)

Response... [8 Aug 99] Mr. Arima, Thank you for that information. This is exactly the type of information I am looking for concepts and what kind of problems I can expect. The idea of placing the hydraulic actuators in the hull with torque rods to the flaps is good, I am going to look into that further. I was thinking along the lines of some mechanism down the vertical strut, but this is more complicated. We usually use an incidence control system on the foils to vary the lift. The foils are connected to the hull via a bearing, and a hydraulic actuator is positioned at the end of the vertical strut, giving a nice lever arm. In this application it is not possible, so a flap system is required. The system is only for lift control and not for ride control at this stage, so a single flap on each side will suffice. Concerning the USS HAYES, the porpoising on these type of vessels is a combination of various parameters: foil configuration and positions, foil loading, LCG, and the shape of the hull also influences things quite a bit. We have encountered similar problems in our model tests, but by adjusting foil positions and angles of attack we have always managed to

Letters To the Editor allows hydrofoilers to ask for or provide information, to exchange ideas, and to inform the readership of interesting developments. **More correspondence is published in the Posted Messages and Frequently Asked Questions (FAQ) section of the IHS internet web site at http://www.erols.com/foiler.** All are invited to participate. Opinions expressed are those of the authors, not of IHS.

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Letters To The Editor
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solve the problem for the desired speed range. It is often a trade off between stability of some kind (porpoising, directional stability etc.) and resistance. The best resistance improvements with foils are usually located right at the stability limits of the vessel. So some trade off has to be made. Increased resistance for increased stability. — Guther Migeotte

Response... [8 Aug 99] First of all, flap actuation (i.e. fatigue) loads were a significant consideration in the design of flap actuation systems for Navy hydrofoil ships. This was not fully realized in the beginning and as a result several failures occurred in service. In hindsight there were two factors which lead to fatigue problems. The first was the generally poor high-cycle fatigue properties of the high strength materials involved. The second one, which was the real villain, was the large number of load cycles introduced at individual flap actuators by an autopilot which responded concurrently to a large number of sensors, i.e. height, pitch angle, roll angle, several accelerometers, etc. This was especially true during rough water operation. There were several unanticipated linkage failures during foilborne operation which got everyone's attention. Of a less critical nature were worn out control bearings that were a maintenance headache especially those on the AGEH-1. These particular bearings were very large and highly loaded because of the foil incidence control system involved. A wear problem occurred over time on other hydrofoil ships at the interface between the fixed and rotating elements of the spherical bearings employed. This was solved by using helicopter type bearings which had a ceramic coating at the interface (i.e. "Kamatic bearings"). With respect to the magnitude of steady and cyclic loads to be considered in designing a flap actuation system, I have only general suggestions to offer. The steady loads can be estimated (up to the point at which cavitation occurs) by the methodology given in " Theory of Wing Sections" by Abbott and Von Doenhoff, Section 8.8. I believe this old but classic book is still published in paperback form by Dover Publications, Inc. The cyclic loads are an other matter because they are a function of autopilot design, foil and flap configuration, and the characteristics of the rough water environments involved. If your vessel is small enough to employ solid foils and flaps in a material which has relatively good fatigue properties (such as used in marine propellers) you may only need to give special attention to the bearings and rod end fittings if used. — Bill Buckley (wbuckley@erols.com)

Height Sensors For Automatic Control System...[8 Aug 99] Have you heard about using pressure transducers as means of measuring flight height / foil depth? Wave spray problems would be eliminated, and the cost of even the most sensitive transducer would be a fraction of a radar setup or even the sonic system. As I understand, there is an increase in atmospheric pressure that provides lift at low altitude to an airfoil known as ground effect when the airfoil is within close proximity to the ground. Since air and water are both fluid wouldn't this also apply to a hydrofoil and if so, given the increase in density of water wouldn't the effective distance, or height, be greater if not enough to effect lift perhaps enough to effect a transducer sensitive enough to gauge the few psi difference between high flight and broaching? (is broaching the correct term for coming out of the water or just a good way to cook chicken?) — Eliot James (esjames@cvalley.net)

Response... [8 Aug 99] Various methods of sensing height have been tried, mostly as research projects at Boeing. Pressure transducers have been tried, as well as leading edge sensors. In all cases, it was determined that the reliability of data was lacking. Of course, over the years, improvements have been made on sensors and may warrent another study. A sensor reading the foil depth by measuring up to the water surface was also tried. The problem is when the ship broaches. A broach in boat terms is when the hull is out of the water. In a submerged hydrofoil foil, we considered a broach when the foil was in aerated water where loss of lift occurs. — Sumi Arima (arimas1@juno.com)

Response...[8 Aug 99] This is the system used on QUEST's Motion Controller as designed by Danny Jordan at MAPC who is the expert. It worked very well. — John Meyer (jmeyer@erols.com)

Hydrofoil Efficiency...[7 Aug 99] As a part of my engineering degree I am conducting a study into "greener" transportation. Do you have any information to support any claims that hydrofoil boats could be more efficient than a boat without hydrofoils? The type of information I would be interested would be power loadings and travelling speeds for the 2 types of boat with the same load so that a direct efficiency comparison can be made. It seems that most boats with hydrofoils are built for performance and not efficiency. I am wondering whether with the underside of the boat lifted out of the water it may be that drag could be reduced to use less fuel. — Martin Crotty (martin.crotty@balliol.oxford.ac.uk)

Response... [7 Aug 99] Sorry, but there is no free lunch. Best ship efficiency is a huge length-to-beam ratio... slo-o-o-w, make that VERY SLOW ship (e.g. supertanker). Although hull drag on a foilborne ship is low, foil drag (induced, friction, flow, wave, etc., is high). — Nat Kobitz (Hynat@aol.com)

Student Project - Foil Calculations...

[31 Jul 99] I am a senior at New Jersey Institute of Technology. I am trying to find equations for calculating the most efficient hydrofoil for my senior project, specifically for lifting forces and wave coefficients. Do you know of any book or publication that has these formulas? — Scott Spinoso (d.spinoso@worldnet.att.net)

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EXTRA FOR THE ELECTRONIC EDITION

LETTERS TO THE EDITOR
(Continued From Previous Page)

Where to Buy a Used Hydrofoil Ferry or Tour Boat...

[25 Jun 99] Could you forward any information concerning the hydrofoil FLOT 1, which is posted for sale on IHS webpage [in the Photo Gallery]. I am interested in the price, the nature of the damage (estimated cost of repair), and all other relevant information on this vessel if it is still available. — Kashawn Saunders (Kashawn_saunders@yahoo.com)

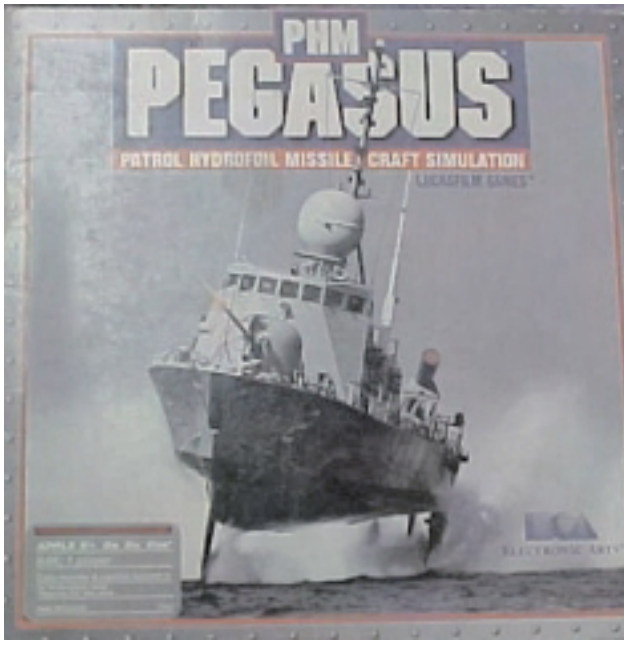
Response... [25 Jun 99] The photo in the hydrofoil gallery is of a Voshkod that was being sold by Henry Butcher, the auctioneers at http://www.henrybutcher.com. It was described as built in Russia in 1983, located in Albania. It had suffered considerable damage to the starboard side above the waterline. It had been run recently, and was flast oilborne at some time in 1998. Dimensions: 27.6 X 6.2m; Capacity: 70 Passengers; Engine: Single 1100hp Diesel Engine; Max Speed 35 Mph. I no longer see it on their site, so perhaps it has been sold. However, it does not hurt to contact them. As for additional sources of info: There are currently two points of contact for hydrofoils for sale in the Announcements section of the IHS web page. IHS has at least one link to a broker who has sold hydrofoils, as well as a couple of links to manufacturers on the links page. There is quite a bit of correspondence and good information on where to buy a hydrofoil new or used in the posted messages section of our site. Included is info describing types and costs. — Barney C. Black (foiler@erols.com)

Response... [28 Jun 99] We have the peasure to offer you together or alone 6 (six) passenger hydrofoil ships of the METEOR type, currently located in the Ukraine. Length: 31.7 - 34,6 m; breadth: 6.80 to 9,5 m; depth: 6,25 m; draught at berth, 1.60 - 2,35 m; Speed: 31, 7 - 32 knots; Main engine: M - 400 PS: 2 x 930/ 1100; Passengers: 123 Person; built: 1987 - 1990; Ukrainian Register of Shipping Class documents (O) 4 years, good condition; Discontinued regular service in 1994. Price range: 70000$ - 90000$ FOB Black Sea. Serious Inquiries only, please. If you know a good broker company please help us to contact him. We will assist you to transport the commodity to port of destination. — Mrs. Raisa Steinigk; RUHA GmbH; Erfurt/ Germany; Fax: 49361- 2261183 (steinigkB@t-online.de)

HYDROFOIL COLLECTIBLES ON THE WORLD WIDE WEB

The Photo Gallery section of the IHS website features a new page devoted to hydrofoil collectibles... stamps, first day covers, picture post cards, and squadron patches. Members are invited not only to visit this page, but to scan their own hoard of collectibles and send them in for possible inclusion on the page. If you have detailed info or a personal story about any of the items depicted, let us hear about it so we can share it with other hydrofoilers!

From the Computer Software History Files: The unique PHM (Patrol Hydrofoil Missile) Pegasus Craft Simulation Game (see below), designed by Lucasfilm Games, for the Apple and Commodore 64/128 computers. The cover reads: "The Patrol Hydrofoil Misslecraft is the Warship of the jet age. So agile, enemy radar mistakes it for a low-flying helicopter. So fast, the enemy only has minutes to react. So deadly, there is no second chance!" This game came with a two-sided 5 1/4" floppy disk, water vessel identification cards, and instructions. This game features eight real-life missions in "today's danger zones" like the Persian Gulf, Eastern Mediterranean, and the Gulf of Sidra. You are in full control of search helicopters and convoy ships.



The NEWSLETTER

International Hydrofoil Society

P. O. Box 51, Cabin John MD 20818 USA

Editor: John R. Meyer WINTER 1999 - 2000

MCM-X ASSESSMENT LOOKING AT NEW HULL FORMS

From Naval Systems Update, September 15, 1999

The Mine Warfare Ship program office (PMS-303) and OPNAV N852 expect by late October to complete requirements definition and concept development work in a mission-area assessment for a next generation mine-countermeasures ship (MCM-X). John Galloway, manager of MCM ship programs for PMS-303 and CDR Steve Lehr, mine warfare requirements action officer for N852, are leading the effort. The assessment aims at fleshing out operational concepts and ship alternatives based on input from fleet operators for a new MCM ship for the 2015 time frame.

The effort, which started last June, is supported by the Naval Surface Warfare Center (NSWC) Dahlgren Division's Coastal Systems Station, NSWCCarderock, and Naval Sea Systems Command (NAVSEA) 03D.

Galloway says that the effort is looking at a wide range of alternatives for hull form, size, payload, speed, and applicable MCM technologies. The study team is evaluating conventional hull shapes, as well as planing hulls, Hydrofoil Small Waterplane-Area Ship (HYSWAS), and other hull forms. Beyond October, the assessment team will examine specific ship concepts in terms of projected costs that could meet the mission requirements defined by the fleet.

QUEST Underway During Trials 1995

In-water testing will be carried out late this month at Annapolis, Maryland of a 12-ton HYSWAS demonstrator, QUEST. Designed and built by the Maritime Applied Physics Corporation (MAPC) under a US Navy small business innovative

See MCM-X HULLFORMS, Page 3

WHERE ARE YOU IN CYBERSPACE?!

IHS relies on electronic communication with the membership to improve timeliness and reduce mailing costs. So, please... **let us know your email address and keep us informed of any changes!**

2000 DUES ARE DUE

IHS Membership is still only US$20 per calendar year (US$2.50 for students). Your renewal or new membership is critical. Please remit 2000 dues as soon as possible. We regret that high bank fees make it impractical for IHS to accept payment by credit card or a check drawn on a non-US bank, or by other than US funds. Overseas members with no easy way to send US funds, are advised to send money order to IHS or US Dollars cash.

INSIDE THIS ISSUE

PRESIDENT'S COLUMN

By the time this issue of the IHS Newsletter is printed and put on the website, it will be after the Holidays, but, belatedly, I want to take this opportunity to wish all members a prosperous and rewarding New Year, and hope that the Holiday Season was a happy event for all of you.

I am pleased to announce that Dr. Sam Bradfield, President of HydroSail Inc., has reconstituted a "Sailor's Page" (see page 10) in this issue. We are grateful to have Sam as part of the team and look forward to his contributions.

Most of you have received the IHS Membership List by e-mail. For those who have not, or lost it in the Y2K crisis, please contact me at: jmeyer@erols.com or send a note in the mail to the IHS address: Box 51, Cabin John, MD 20818, USA.

Many of you may know that Admiral Elmo Zumwalt, Jr. (USN, Ret) died of cancer on January 2, 2000. He was an Honorary Life Member of the IHS, and gave the keynote speech at the 25th Anniversary meeting in June 1995. There will be more information about him in the next NL.

As mentioned previously, the Board of Directors found it necessary to cancel the 30th Anniversary meeting that was planned in 2000. This decision was made based on projected low participation by our membership living outside the Washington, DC metropolitan area. However, as a result of the "Call for Papers," the technical papers committee received three abstracts. For the information of all members, these have been reproduced on pages 8 and 9 of this issue.

Thanks to Malin Dixon, you can log onto the IHS website and view the "Collectibles" page. We encourage all members with patches, stamps, etc. to send in scans or photos.

In the Autumn Newsletter, I mentioned that the IHS has made an effort to promote the production of a Hydrofoil Video. Although we have been turned down by the Discovery Channel in Bethesda, MD, a proposal was prepared and submitted recently to the History Channel. This is still being evaluated.

I regret to report that one of our fellow hydrofoilers, John Altoonian, recently passed away. He was owner of Flagstaff, which he had purchased about 10 years ago. We had many conversations about the craft and his expectations for it. We are all sorry that these never came about. See page 12 for a notice about Flagstaff .

I am pleased to announce that 1999 has been a banner year for new members coming into the Society. Of the 33 new members, 11 are from countries outside the U.S. Thanks go to Barney Black, our Web Master, who through this medium made the Society a more accessible organization. Also, Secretary Ken Spaulding, through his personal letters to prospective hydrofoil enthusiasts, encouraged them to join. Our total membership at the end of December 1999 stands at 232 with 70 from countries outside the U.S.

John R. Meyer , President

WELCOME NEW MEMBERS

David Carlson - After 25 years of racing cats, David began to sail a Hobie Trifoiler, raced against the Bradfield NF2 and other creations, sailed a Bradfield HydroSail 16 kit boat at the Florida Institute of Technology. He then happened upon Dave Keiper's Hydrofoiling webpages. This led to Dave Keiper visiting his home in Florida in late 1997, and many fun but frustrating days with the DAK foil boat. Afterward, Keiper asked him to do his engineering and development work. This is covered in his article in the Multihulls Magazine article (Summer 1999), "Foiling with One of the Giants." David has been carrying on this work ever since zipping over the top of Florida waters under sail.

Joddy Chapman - Joddy is a Broadcast Engineer with the BBC, and also a part time research student at Exeter University working on a sail shape and performance measurement project. His particular interests are in instrumentation and videogrammetry. He sent some pictures of his 6 meter hydrofoil catamaran *Ceres* which he and his father (George Chapman) designed and built. [See Sailor's Page.] It is a larger version of their 4.9m *Calliope* which has been described in AYRS publications and magazines such as Multihulls and Multihull International and at the Australian Sailing Science Conference in Hobart, January 1999. The aim with *Ceres* was to see if a flying-capable catamaran can be competitive in racing against displacement cats of similar size.

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MCM-X HULLFORMS
(Continued From Page1)

research (SBIR) contract. The QUEST also is set for additional demonstrations off Little Creek, Va., in October. *[Ed Note: QUEST completed demonstration trials in the Annapolis area and then transited to Little Creek where additional demonstration runs were made. On Dec 11 while undergoing rough water trials, engine problems required QUEST to go hullborne back to port. The vessel has been returned to MAPC in Annapolis awaiting instructions from the Navy.]* The original HYSWAS design was developed in the 1970s by NSWC Carderock as part of an effort to examine ways of achieving greater speed, range, and endurance for hydrofoil-based craft.

The HYSWAS is an "innovative concept," Galloway says, but adds that at this point "it's not a given that it's the best technical solution for a next-generation MCM."

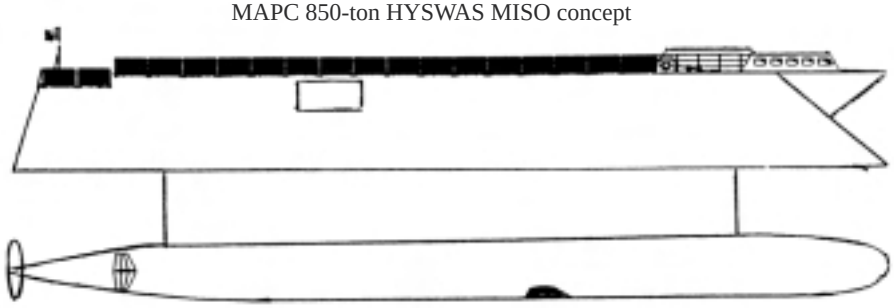
MAPC also is developing a modeling tool that Galloway says will be used in the MCM-X assessment to support top-level analyses of hull forms and technologies that could be considered for a 2,000 to 3,000 ton MCM vessel.

Galloway says that among the MCM-X concepts the study team is looking at are: a large mother ship that could launch and control a number of small autonomous MCM vehicles; a medium-size vessel that could deploy somewhat larger autonomous craft, and smaller craft that could be operated from surface combatants, aircraft carriers, or other battle-group ships. "The concept is wide open."

He says that it's too soon to know whether the effort will propose a ship to replace all or some of the Navy's current 26-ship fleet of Avenger-class (MCM- 1) and Osprey class (MHC-51) mine hunters, but that by 2015 it will be time to start phasing them out of service.

The assessment is set to be completed in September 2000. OPNAV's Expeditionary Warfare division (N85), which sponsors the work, then will decide whether to draft a mission need statement that could lead to the start of a formal acquisition program.

MAPC 850-ton HYSWAS MISO concept



MAPC, under a separate phase 2 SBIR contract expects to complete by December a design for a 140-foot-long 850-ton HYSWAS vessel, referred to as a mine-interdiction ship organic (MISO). The ship would be powered by a single LM2500 gas turbine engine, and be fitted with a main reduction gear, a dynamic control system, and a conventional propeller.

Mark Rice, president of the company, says that the MISO, which would be capable of 42 knots, conceivably could meet an evolving requirement for a high-speed ship that would serve with a battle group and provide most if not all the MCM services now carried out by the MCMs and MHCs. He says that the MISO would be a deep-draft vessel not optimized for shallow water and won't provide the speed of a pure hydrofoil. The vessel would not be efficient for transport of heavy cargo on its main deck.

Galloway says that the MISO design effort supports the Navy's shift (NSU Jan. 15, 1999) to greater emphasis on the use of organic battle-group MCM capabilities, made possible by the introduction of remote systems and sensors that can be operated from battle group ships. The MCMs and MHCs, which aren't fast enough to travel with battle groups, would in the new doctrine be assigned primarily to the clearing of minefields away from battle-group operations. The shift to organic battle-group MCM, he says, would exploit new fleet capabilities, such as the remote mine-hunting system being built by Lockheed Martin Ocean Radar & Sensor Sensors as well as new helicopterborne detection and clearing systems, including the airborne laser mine-detection system (ALMDS) developed by Kaman Aerospace.

Rice says that the HYSWAS MISO design effort demonstrates the application of commercial ship-systems technologies for a fast MCM ship. Galloway adds that a HYSWAS-type vessel, for example, would permit battle groups to employ a "lilypad" concept for MCM, wherein the HYSWAS vessel would operate at the

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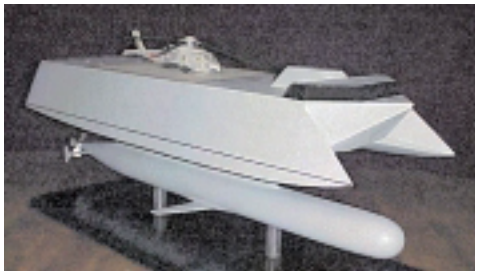
MCM-X HULLFORMS
(Continued From Page 3)

edge of a minefield and serve as a temporary support platform for carrier based MCM helicopters.



Scale Model of MISO (Courtesy of MAPC)

The Navy has no current plans to build a class of MISO-type ships. MAPC expects to market the design to commercial fast passenger ferry operators and hopes that the Navy will fund construction of an initial demonstrator. The company expects to offer the design for certain ferry routes, for example, northern Europe, Maine to Nova Scotia, and among the Hawaiian Islands.

WELCOME NEW MEMBERS
(Continued From Page 2)

Dr. Ing. Jorgen Heinig -Jorgen was born in 1940 in Dresden, Germany. He studied at the Technical University in Cottbus, Germany, and later at the Technical University in Leipzig, Germany where he studied Hydromechanics. He later served as Project manager in Gas and Mining Trust of Schwarze Pump near Cottbus, then as Chief of building science section in the Technical Institute in Cottbus. In 1989 he obtained a doctorate in construction studies. From 1990 he served in the Engineers Office for the design of steel and concrete construction and geological investigations, then the Office for Hard-and Software Developments, and currently, the Office for Development of Powerjets and high speed ships.

Michael Preis - Michael is a student at the George Washington University working toward a PhD in Marketing. He is interested in adding foils to a 40 to 50 foot boat. He wants to utilize foil dynamic lift to partially lift the boat out of the water and thereby reduce its drag.

Mark van Rijzen - Mark is from Holland, "the country beneath the Sea". He is therefore interested in transport on the water. But his interest is specifically in Hydrofoils because in July 1998 he became a captain on board of a Voskhod Hydrofoil, which has a regular service between Amsterdam and Umuiden. Before he started his career with that company, he was a sailor in 1990 on a liquid gas carrier on the Rhine, and several other rivers and channels throughout Europe. He was promoted in 1993 and became a sailor/engine operator. In April 1994 he stopped working for that company and started working for a passenger company in Holland, which made daily trips on the lakes between Amsterdam and Rotterdam, mostly nearby Leiden. The reason that he is a member of IHS is that I would like to learn more about hydrofoils, in Holland as well as other places in the world where they are used. He would like to exchange experiences with other people who are working with hydrofoils all around the world with the same interest.

John F. Rodrigues - We wrote only a short sketch about John in the Autumn NL. Here is more complete information. John is President of the Boca Raton, Florida based, Yacht Boutique, who speaks six languages and graduated as an international attorney, and has more than ten years experience in the marine field as a business consultant. In the past few years he has been more deeply involved in the yacht industry and is currently pioneering a project to build custom Megayachts based on advanced hull designs, such as surface and fully submerged hydrofoils, canted strut SWATH, SLICE, FOILCAT, Air Cavity Craft and HYSWAS. The project involves the participation of seven renowned international Yacht Designers who will be producing exclusive Yacht Designs to be marketed under the prestigious name of BUGATTI Yachts. The Designs are going to be presented in a series of international private events, called the Quatre Saisons Rendez-Vous ("Four Seasons") to take place in St. Moritz, Maui, Monaco and Palm Beach. For more information log onto: http://www.YachtBoutique.com

FOILCAT COMPLETES FIRST MONTH OF SERVICE

November 23, 1999; by Eric Schiff

HONOLULU — The Foilcat has completed her first month of service for the Hawaii State Department of Transportation Express Commuter Ferry Demonstration Project. Over 10,000 commuters have ridden the Foilcat, now called the Wiki Wiki Ferry. Feedback from riders has been extremely positive and many regular commuters are settling into a routine that includes relaxing and enjoying the scenery on the way to work. The route the vessel runs on connects Kalaeloa Barbers Point Harbor on the west side of Oahu with Honolulu Harbor disembarking commuters at the financial district in downtown Honolulu. It is a 23-mile leg that the vessel covers at 34 knots in 40 minutes.

The Foilcat is a hydrofoil-assisted catamaran capable of 45-knot service speeds in calm conditions. The vessel operates in Hawaii in sea state 3 or greater conditions five days per week. Foilcat is currently USCG certified to carry 136 passengers as a Hydrofoil Supported Craft (HSC). She is the only HSC certified vessel in the U. S. There are other HSC classed vessels in the US, but Foilcat is the only USCG HSC certified vessel.

The Foilcat will be available for sale at the completion of the demonstration project. The success of the vessel in the current demonstration indicates the potential for this and similar vessels serving in high-speed commuter markets. Contact Eric Schiff, Vice President, Navatek Ships, Ltd. 808 531-7001 ext. 25 for further information.

DUETZ ENGINES INSTALLED IN RUSSIAN HYDROFOILS

*(From Fast Ferry International, September 1999***)**

Deutz has received an order from Beijing Enterprises Development Corporation for four TBD 616 V16 diesels, rated at 936 kW at 2,165 rpm, that are to be installed in two Meteor 2000 hydrofoils due to be delivered later this year by Zavod in Gorikovo in Zelenodoljsk, Russia.

The German manufacturer delivered four identical engines to the same yard last year for another two Meteor 2000s that entered service with the Chongqing Shipping Company in the People's Republic of China at the beginning of 1999. The maximum speed of the vessels is 40 knots.

Just over two years ago, a Meteor owned by a Dutch company was re-engined with Deutz TBD 616 V 12 units. Rated at 830 kW, these give the hydrofoil a service speed of 32 knots, which is similar to the original specification with a pair of M-401 engines.

Built in the early 1970s, the Meteor was acquired by Jan Verkerk Ship Charters and introduced in June 1998 on a summer service on the River Lek between Wijk Bij Duurstede and Rotterdam.

Meteor hydrofoil has been operated in the Netherlands by Jan Verkerk Ship Charters during the past two summers.

BOEING JETFOILS RETURN TO THE UNITED STATES

(From Fast Ferry International, September 1999)

A newly established United States company, Seajets, has introduced a pair of Boeing Marine Systems Jetfoil 929-115 hydrofoils on a route between West Palm Beach, Florida, and Freeport, Bahamas.

Initially, one vessel is timetabled to operate two return crossings a day on Thursday -Monday, leaving Florida at 0900 and 1630 and the Bahamas at 1110 and 1840. Scheduled crossing time is 99 minutes, the return fare is $99 plus $25 departure taxes.

The Jetfoils, *Seajet Kara* and *Seajet Kristen,* were originally sold to Belgium company RTM in 1981 and were operated across the English Channel until 1997. The following year they were sold to Adler Blizzard for a projected service in northern Germany that failed to materialize.

One of the vessels was expected to return to the English Channel this year, Channel Hoppers announced that it was to be leased for service between Southampton, the Channel Islands and St. Malo, but the contract with Adler Blizzard was not confirmed.

As the Florida-Bahamas route is international, Jones Act restrictions do not apply - but they would if it was a domestic service, even though the Jetfoils were built in the USA, they were ordered by an overseas customer and became 'foreign bottoms' as soon as they were exported.

[Note: Fellow hydrofoiler, Ken Plyler, sent a note recently saying: "I am

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SEAJET
(Continued From Previous Page)

at the Ft. Lauderdale International Boat Show. Seajet, the new Jetfoils service is getting ready to startup on 6 November. The route is West Palm Beach to Freeport Grand Bahama. CAPT. Chris Rose, one of the old Hawaii Seaflite Captains, has the job of Crew training and temporary Operations Manager. Seajet has a booth at the show."

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PHMs FOR SALE

(It is the policy of IHS not to advertise, but we got wind of the following advertisement, and thought you'd like to know.)

UNIQUE OPPORTUNITY: OFFERING 4 - EX- U.S. NAVY HYDROFOIL PATROL VESSEL (PHM) ALUMINUM HULLS FOR SALE

Length 132' x 28 ' beam; design displacement 237 Lt; fully loaded with 7'6" draft. Advanced design by Boeing features high speed and maneuverability with long cruising range. Built for all-weather, high sea state operation. Max. speed 22 kts with 800 hp diesels (not incl.) and excess of 70 kts with LM 2500 GE turbine (not incl). Vessels have been demilitarized. Original hydrofoils are available. Information package available.

Priced to sell @ $250,000 each. Call E. Crews; 352-787-0608 or send email: escrews@fcsco.com

[Ed Note: The speeds advertised may be an exaggeration.]

HELMUT KOCK RECEIVES IHS AWARD

In November 1999, Helmut Kock was presented with an IHS award "for superior achievement in significantly advancing the development, application and support of hydrofoil technology for national and international maritime interests." Along with a plaque containing these words, a framed citation was prepared which read as follows:

The International Hydrofoil Society hereby honors Helmut Kock for his many contributions and innovations in the field of hydrofoils.

Over a forty year period, beginning in the 1950s, Helmut Kock has been a leader in the design, construction, operation and modification of commercial passenger hydrofoils in the United States and in South America. With often marginal financial backing, Mr. Kock developed and constructed a series of practical and affordable hydrofoils for commercial passenger operations. These craft were commercially viable in their day and some are still in operation. In terms of numbers of operating passenger hydrofoils in the United States, and in South America, Mr. Kock's craft represent a truly exceptional level of commercial hydrofoil operation.

Helmut Kock was born in Chile where boyhood experience building and using small craft inspired a lifelong devotion to boatbuilding. After four years working and studying in Germany he returned to Chile where he developed a lumbering operation in a remote area which required construction of a tug and lumber barges. In 1951 Mr. Kock met a German immigrant who had worked at the Schertel-Sachsenberg yard in Dessau-Rosslau and, as a prisoner of war, in the hydrofoil research program in Leningrad. Mr. Kock, with his German associate, began experiments with hydrofoil models and, in 1955, moved to Florida where they developed a 16 foot outboard hydrofoil. After his German partner returned to Germany Mr. Kock moved to California where he designed and built foils for a sightseeing boat.

The success of the sightseeing craft resulted in a contract for the 35 foot "Albatross." A New York firm acquired design rights for the Albatross and constructed 20 production craft, 14 of which were used for passenger service between New York City and the 1964 Worlds Fair in Flushing. Boats from the 20-craft production run eventually operated in Washington, DC, Alaska, Miami, the Virgin Islands, Lebanon and Bolivia. Mr. Kock trained a Bolivian crew on Lake Titicaca for operation and maintenance. Three more Albatrosses were subsequently purchased for the Bolivian operation. Mr. Kock was later contracted for the construction of a larger 50 foot, 40 passenger, craft. Materials for the "Bolivia Arrow" were brought together in Pennsylvania and shipped to Bolivia for assembly. This craft entered service in 1977.

In 1981 Mr. Kock redesigned the foils on the three hydrofoils operating at Sea World in San Diego. In 1984 an Albatross was stretched by six feet. Also in 1984 Mr. Kock repowered two "Albatrosses" in Miami for service in Paraguay.

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HELMUT KOCK AWARD

(Continued From Previous Page)

The International Hydrofoil Society takes great pleasure in presenting this award to Helmut Kock who has devoted the better part of his life to proving, through many applications and innovations, that hydrofoils *are* a practical and economical solution for high speed passenger service.

[Barney Black had later found some additional information which may be of interest: The following paragraph was found in Jane's "Surface Skimmers" of 1984: Helmut Kock, designer of the Honald Albatross hydrofoil, which operated New York's first commercial hydrofoil service, and former chief engineer of International Hydrolines, Inc., has designed and built a 47 ft. hydrofoil ferry for Crillon Tours of La Paz Bolivia. The craft, the Bolivia Arrow was built during 1976 at Huatajata, on the shore of Lake Titicaca (12,000 ft) and entered service in Feb. 1977. All materials, equipment, engines, tools, and machinery were imported form the USA. The entire craft is of welded aluminum and was built by Helmut Kock with the aid of a few Bolivian Indians, who, in order to undertake the work, were taught how to use modern hand and electric tools and automatic welding techniques."]

Two of Helmut Kock's Many Hydrofoils

MARCIA JOHNSTON BECOMES HONORARY LIFE MEMBER

At a recent Board of Directors meeting it was decided to pay special tribute to Marcia Johnston by making her an Honorary Life Member of the Society. As the wife of Robert Johnston, who had served the IHS in so many ways prior to his death this past year, she had stood by him and supported him wholeheartedly in connection with his contributions to the Society. A Membership Certificate was forwarded to Marcia along with a letter expressing our gratitude.

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HALES TROPHY PRESENTED TO CAT-LINK

(From Fast Ferry International April 1999)

After eight years in the possession of Sea Containers, the Hales Trophy for the Blue Riband of the Atlantic was officially handed over to Scandlines in a ceremony held in London on March 25, 1999.

The owners of Incat 74m *Hoverspeed Great Britain* took the prize in June 1990 when the wavepiercing catamaran made a 2,741 nautical mile crossing of the Atlantic from Nantucket Light Buoy to Bishop Rock in 3 days 7 hours 54 minutes at an average speed of 36.966 knots.

Last July, *Cat-Link V,* an Incat 91m wavepiercer operated by Cat-Link, which was then jointly owned by Scandlines and Incat, completed a crossing between the same two points in 2 days 20 hours 9 minutes.

According to the trustees of the Hales Trophy, *"Cat-Link V* achieved an average speed of around 41.284 knots over a distance yet to be settled. Confirmation is deferred pending agreement on the distance covered during an emergency search and rescue diversion [lasting 2 hours 10 minutes] south of the Grand Banks to seek a light aircraft which had ditched in the sea."

Only a month before, Incat 91m *Catalonia,* owned by Buquebus Los Cipreses, had beaten the average speed of *Hoverspeed Great Britain* by achieving 38.841 knots when it covered the 2,972.5 nautical miles from Nantucket Light Buoy to Tarifa Point Lighthouse at the entrance to the Straits of Gibraltar in a time of 3 days 4 hours 32 minutes. However, as no representative of Buquebus was present at the ceremony, the Trophy was passed directly from Sea Containers to Scandlines.

Between 1952 and 1990, the record for the fastest crossing of the Atlantic had been held by *United States,* which completed its maiden commercial voyage at an average speed

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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.

Interested in hydrofoil history, pioneers, photographs? Visit the history and photo gallery pages of the IHS website. http://www.erols.com/foiler.

PAPER ABSTRACTS

The following abstracts were submitted to the technical papers committee in connection with the planning of the 30th Anniversary Meeting.

Maintenance of Hydrofoil Systems by Konstantin I. Matveev (Graduate Student, California Institute of Technology Student Member of International Hydrofoil Society; Mail code 301-46, Caltech, Pasadena, CA 91125 E-mail address is: matveev@ca1techxdu) and Ivan Ivanovich Matveev (Chief Designer, Emeritus Central Hydrofoil Design Bureau, High-Speed Ships Bureau Nizhniy Novgorod, Russia)

The peculiarities of technological servicing of hydrofoil crafts are caused by their specific structure, such as light-weighted alloy hulls, powerful engines, hydrofoils, propellers with complex geometry, inclined shaft lines, etc. This report considers questions related to the foils installed on Russian hydrofoils (such as Katran/Kolhida and Olympia).

During operations, hydrofoil systems can be subjected to impacts with sea beds and floating objects, vibrations from shaft line and propellers (when they are not in good working order). Foil-strut and strut-hull connections also sustain sharp wave loads in rough seas. These factors lead to formations of dents, bends, cracks, breakage, or changes in the geometry of the hydrofoils. We shall discuss the technological specifications of foils, allowed geometrical deviations, order of inspections, the repair process.

Mostly common hydrofoil deformations, namely deviations of mounted attack angles and cross-section profiles, can be treated by the original method developed by the authors. This method has become widespread in Russia and Mediterranean countries.

Profile characteristics, curvature of the mean line and profile thickness, determine the attack angle corresponding to zero lift and the correction to this angle due to water free surface. Hydrofoil lift coefficient is:

$$C_y = C_y / (_{ycm} + _{o} - _{o}) \quad (1)$$

The condition of the conservation of the initial lift coefficient for the deformed cross-section can be presented in the following way:

$$d(_{ycm}) + d(_{o}) = 0 \quad (2)$$

From the geometrical consideration, the expression for the second item in (2) can be found. Taking into account the influence of water free surface we get the final value for the deformation of the zero lift attack angle. The obtained expressions and measurement process are discussed in the report.

Measurements are carried out in several cross-sections of each foil in the system. The condition of the conservation of the lift coefficient requires the sum (2) for each cross-section to be equal to zero. For the local character of the distribution of these deviations, it is not possible to compensate them by remounting a foil. In such cases we recommend applying the geometric profile correction by controlled bending of the foil aft edge. Besides the change of the mean line curvature, the increment of the mounted attack angle also takes place. Obtained increments have the same sign, which makes the bending correction effective. The technology of bending will be briefly described, and the formula for the necessary value of bending will be given in a convenient form.

The effect of foil 'singing', sometimes appearing on hydrofoils, can be the reason for loud tonal sounds. In order to fulfill noise level requirements, the method patented by the authors is applied. Physical aspects of this phenomenon are given in the report.

Sail-Powered Inverted T-foil Applications by W. S. Bradfield

Successful HydroSail, Inc. applications of inverted flapped T-foils to sailboats ranging in size from radio controlled model trimarans at sailing waterline (SWL) = 6 ft to a crewed 25 foot coastal racing trimaran are discussed. Twenty five years of experimentation with sail powered ladder foil and surface piercing dihedral foil systems led to the final acceptance of the inherently unstable inverted T configuration for sailboat applications. Performance simulator software developed during this period provided loading information for structural design hullborne and in flight as well as delineating the probable boundaries of the flight window of the sail powered vehicles. Development of a simple mechanical Flight Control System was key to the success of the T-fail system for small boats. The result was the 16 ½ ft RAVE: a successful low cost production line roto-molded trimaran.

Feasibility studies of boats larger than the 25 ft coastal racer (up to SWL = 60 ft) indicate practical payoff advantages for lifting foil equipped ocean

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PAPER ABSTRACTS

(Continued From Previous Page)

going sail boats. However, suitably sophisticated Flight Control System (FCS) for both hullborne and foilborne modes of performance will be required. Design modifications of the present FCS to facilitate the jump in boat size (and including comfort control and powering) are discussed.

Performance, Reliability and Cost Effectiveness of Foil-Assisted Monohull High-Speed Craft by Chung Chen Shaw, HYSWAS International Enterprises; 7318 Fairchild Drive, Alexandria, VA 22306; Tel: (703) 765-3304, Fax: (703) 765-7732 Email: hyswas@aol.com

Background - It is well known the dual hull property of catamarans minimizes crucial wave resistance to improve fuel efficiency at high speeds. Hydrofoil crafts produce better performance but have high fabrication and operational costs. In recent decades, the hybrid of foil-assisted- catamaran has shown 30% improvements in speed or fuel consumption.

The author believes the performance and costs can be further improved by using hydrofoil and monohull combination. At high speeds, present single hull crafts have the advantage over dual hull crafts from lower speed-length ratio, the combination of wave-making resistance and wetted-area resistance. In addition, single hull craft have lower fabrication cost and reduced weight.

Brief Description - Different from a conventional monohull, the hull form design of present technology is taking account a trimming angle of the hull at flying, in addition to hydrodynamic consideration. The principles, primary configurations and performance were described in the article presented in 1998 by the author. The advantages in fuel efficiency and performance are obvious. Compared to a catamaran with the same payload, for a 50-m. ship at the speed of 45 knot, a 40 % improvement in fuel efficiency can be predicated by calculation. In Norway, a 4-m. model is being tank tested. The result is very encouraging. This presentation will further make discussion on the safety issues, methods of minimizing fabrication, and operational costs of the hull and foil systems.

Hull and Foil Systems, and Safety - The most cost-effective way of utilizing present technology is to fly just above the water at the desired speeds, using an appropriate hull and foil system. The foil/strut systems will be used as a device of directional stabilizer and motion damper, in additional to a mass lifter.

The performance, reliability and cost-effectiveness of systems for speeds from 30 to 70 knots, and weights up to 1000 tons will be discussed. The applications to the foiled warship/ferry will be addressed.

The comfort and safety concerns in the waves and speeds will be discussed. Also the floating log/debris issues will be considered. A retractable foil system for the speeds of 50 knots or above, which when hit, can retract quickly and sustain little damage will be disclosed. A forward pitching control system, which also diminishes the log/debris problems, will be disclosed. At the speed of 50 knots and above, the aerodynamics will be considered in the systems design. Drawings will be provided, and the details will be discussed in the paper.

HALES TROPHY

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of 35.59 knots. Recording the history of the Hales Trophy itself during those years, the trustees note, "In 1952 it was presented to United States Lines and was displayed in the company's New York offices, and eventually transferred to the American Merchant Marine Museum, Long Island, soon after the great ship was retired in 1969.

"The Trophy remained there until 1990. With generous assistance from Mr. James Sherwood, chairman of Sea Containers, the Trophy was recovered from the Museum and brought back to London. Since then it has been on display in the company's offices."

Mr. Sherwood was more forthcoming in his speech at the ceremony. Having indicated that there were several representatives of Sea Containers present to witness the handing over of the Trophy, he contrasted this with the behaviour of the American Merchant Museum, who initially refused to part with it. Having been informed that there was a legal requirement to return it to the trustees within 90 days, the Museum dispatched it to a representative in New York on the ninetieth day on the back seat of a taxi.

Telling the audience that he had at one time worked at United States Lines, he also gave a fascinating insight into the record attempt by *United States.* Because the hull was based on a US Navy aircraft carrier, the government was reluctant to see

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SAILORS PAGE

SAILING HYDROFOIL NEWS

Introduction - I'm Sam Bradfield and John Meyer and Barney Black have asked me if I would try to edit a "Sailing Page" for the IHS Newsletter. Over the past 35 years as an engineering professor I've supervised a number of sailing hydrofoil student design projects, several of which were fairly successful. In the process I naturally became fairly familiar with what's been going on world wide with sailing hydrofoil developments. I hope that this experience qualifies me for the job of collecting news of current hydrofoil sailing activities and presenting them to you readers. I intend to rely heavily on news inputs from hydrofoil sailors currently engaged in this remaining frontier activity in sailing.

Here at Florida Tech since 1987, with my associates Tom Haman and Mike McGarry and assorted students, we've produced what we see as a prototype practical sailing hydrofoil. We were lucky enough to be able to get it into production a year ago last August. The manufacturer has named it...RAVE. And its acceptance to date convinces us that we're finally on the right track. The only other production sailing hydrofoil that I know of is the Ketterman Trifoiler. For more information on these two vehicles, see (http//www.hydrosail.com) or (http//www.hobiecat.com).

RAVE Nationals - Although RAVE was designed as a recreational vehicle rather than as a racing boat, owners have decreed it a race boat and it is being raced in class (which satisfies us designers very well). Following is a Mike McGarry account of The United States First Ever National Championships For a Fleet of Hydrofoil Sailboats.

Ft. Walton Beach, FL (Oct. 31, 1999) - Thirteen WindRider Rave hydrofoils joined a fleet of the original WindRider 16' trimarans for a weekend of around-the-buoys racing at the WindRider National Championships. The Raves sailed in the Unites States first ever national championships for a fleet of hydrofoil sailboats. "These Raves are really exciting boats to watch race!", said Randy Smyth who had come out to see the new boats sail. Close finishes, and high sailing speeds and outstanding maneuverability made for great fun on the water.

Competitors all agreed that Ft. Walton Beach was a great place to race and decided to meet here again next year. Spectators (some of whom were professional sailors who came to see the Raves) couldn't say enough about how exciting the Raves were to watch. The excitement of boats that fly, combined with constant lead changes caused by the fast acceleration of the boats, made a great show for those who came out to watch. The race committee suggested that next year they would try to arrange more spectator boats so more people could enjoy the show close up. It was an exciting event and we expect the numbers to double next year! For more details see ...Mike McGarry email hydrosail@aol.com

Final Results:
Rave w/ Reacher

1st	Mike McGarry (NC)
2nd	Ira Heller (MA)
3rd	Keith Zwart (NC)

Rave (main & jib only class)

1st	Jeff Lynn (TX)
2nd	Ueli Walchli (FL)
3rd	Tom Young (TX)

For class information e-mail raveclass@windride.com

Clipping along at 25 mph

Speedweek '99 - The annual challenge to sail over 500m as fast as possible was hosted by the Weymouth (UK) Sailing Centre between 2nd and 8th October 1999. Organized by Rob-

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SAILING HYDROFOIL NEWS

(Continued From Previous Page)

ert Downhill, the event attracted a diverse range of boats which, as well as the sailboards, enjoyed good weather conditions to make it one of the best Speedweeks in recent years. For hydrofoil enthusiasts the event offered the prospect of a contest between John Lindley's 22ft Hobie Trifoiler, Chris Heil's 16ft Windrider Rave and Robert Dates Dart 15 equipped with Keiper foils.

Photos Provided by Joddy Chapman

The strong winds at the beginning of the week enabled the Rave to put in a best speed of 24.4 knots (in around 17 knots of true wind), while the Trifoiler achieved 30.6 knots (~19 knots true wind) on the penultimate day when the next low pressure system rolled in.

Of interest to this author was the performance of these craft in the light winds midweek. Traditionally the Achilles heel of sailing hydrofoils, both Rave and Trifoiler faired poorly, allowing the Cart 15 to take fastest-boat-of the-day prize two days running, probably sailing with foils retracted. The Dart's best speed of the week was 15.7 knots (~16 knots true wind). Full details are at www.speedsailing.com. by E.J.C. Chapman (joddy.chapman@bbc.co.uk)

Some Big Boat News The (so far as I know) largest currently operating sail powered *flying* hydrofoil is the 25 footer, Eifo (http//www.hydrosail.com). She was active in Florida coastal racing from 1995 through 1998. She's now in the Netherlands (Walter van Varik; http//www.anutosh@compuserve.com). A very interesting current Latvian activity is the Catri hydrofoil stabilized trimarans project (http://users.erols.catri.pdf). Several large (and well known) ocean racing trimarans have successfully employed foil assist in the recent past but, up to now, only for stabilization. Obvious exceptions are Paul Ricard, the ocean cruiser Williwaw, and Hydroptere (the latter still in development). The French are fortunate to have strong corporate and national financial and technical backing. We know of several efforts in this country to get backing for a Hydroptere scale flying hydrofoil effort...but, so far, no news of financial support. We get frequent enquiries for racer/cruiser foil systems information. The interest is there. We'll try to get this paragraph more up to date for future issues. by Tom Haman (hydrosail@aol.com(Tom))

Foiling With The Best

A summary of an article by Dave Carlson

One of our newer IHS members is Dave Carlson, the author of an article that appeared in the May/June 1999 issue of MULTI- HULLS Magazine. He relates the time when he saw Dave Keiper pull up in his driveway some years ago with an elderly red-stripe Hobie 18 with weird aluminum pieces bolted all over the sides and stern. "It flies," Keiper had e-mailed from his home in Missouri. He goes on to synopsize Dave's foiling philosophy for beachcats, combined with some practical foiling descriptions. Cats have power and speed, and make an excellent platform for surface-piercing foils. Two triangular-shaped foils are mounted at the front crossbar, producing both lifting and righting force, which prevents the rig from capsizing in puffs while lifting and allowing tremendous drag reduction and high speed.

For the complete story, it is recommended that you seek out Carlson's 2-page article.

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30 YEARS AGO - HYDROFOILS MAKE THE NEWS IN THE USA

(*From Fast Ferry International, October 1999)*

Even *Hovering Craft & Hydrofoil* made reference to the war. "Well pleased with the performance of the *PGH-1 Flagstaff* in the heat and high humidity of the tropics, Irv Palmer and Frank Caracci returned in mid-September from a stay in Da Nang, Vietnam. They had flown there to be on hand while the Navy reactivated Grumman's hydrofoil gunboat, built at Plant 77, the Stuart facility, in 1966-67, and launched there on January 9, 1968.

"As it turned out, the navy crew was eager to get 'flying' again after a slow, 30 day trans-Pacific voyage, and they had *Flagstaff* 'flying' within 24 hours of unloading. 'She doesn't loaf around; she just gets up and goes like a scared jackrabbit', Palmer commented. The *Flagstaff* speed is officially quoted as 'in excess of 40 knots in open water' and Palmer says the gunboat is 'extremely stable'. She is on coastal patrol duty out of Da Nang Harbour."

Meanwhile, back in the USA, away from the military, progress was also being made by commercial operators in the USA. "Hydroflite, a Virgin Island corporation owned by Patmar Investment of Long Beach, California, has announced the inauguration of a hydrofoil service between downtown St. Thomas and downtown St. Croix starting October 17, 1969. The company will start the service with a Grumman Dolphin - an 88 passenger air-conditioned luxury craft. A second Dolphin is planned to augment the service in mid-1970. "The schedule calls for two round trips per day from Monday to Saturday, with Sundays reserved for special charters. The fare is $9.00 one-way, which is 10% less than the current airline rate. The Dolphin's cruise speed of 48 knots should provide a welcome addition to the inter island surface transportation facilities. The Dolphin is fully certificated by the American Bureau of Shipping, US Coast Guard, and Germanischer Lloyd, and operates under Panamanian registry."

PGH-1 FOILS FOR SALE

I currently have Flagstaff PGH-1 in my possession. I am looking for someone that would be interested in purchasing the hydrofoil to save it from the cutting torch. The ship is 85% complete. My father, John R. Altoonian, recently passed away and I, his son can not afford to complete the restoration and would not want to see the hydrofoil cut up. For more info I may be contacted at 954-444- 0820; John Altoonian.

NEW BENEFIT

IHS provides a free link from the IHS website to members' personal and/or corporate site. To request your link, contact Barney C. Black, IHS Home Page Editor at foiler@erols.com.

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George Jenkins	Treasurer
Ken Spaulding	Secretary

HALES TROPHY

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the maximum speed capability of the ship publicly disclosed. Consequently, the company was instructed to *restrict the output of the engines*. Had it not done so, it was estimated that the liner would have been capable of 42 knots. If it had averaged that speed, as Mr. Sherwood observed, the Trophy would still be in New York!

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LETTERS TO THE EDITOR

News From The US Fleet...

[30 Dec 99]Thanks for the IHS Membership update and hope your holidays were happy.

Life here on *USS HOPPER* goes well as we get ready to go to San Diego next month and deploy to the Arabian Gulf in April — still pretty busy out here. My commodore CAPT Pete Daly is an old *HERCULES* XO — just never know where a hydrofoiler is going to show up. Sadly my command tour is coming to an end this summer as I take off to Newport to Surface Warfare Officers School to become the Director of the Division Officer Course (SWOSDOC — the SWO Ensign "finishing school"). I'm in-zone next month for captain — I'm pretty hopeful — this seagoing life continues to agree with me.

Hope all's well with you.

Very Respectfully, CDR John W. Peterson

Student Project...

[24 Dec 99] I am a student of Naval Architecture at the University of Strathclyde in Glasgow, Scotland. My current final year project involves the design of a detachable hydrofoil kit for the Hobie 16. I wondered whether you currently have overseas members, and also whether I would be able to gain anything toward this project by joining the International Hydrofoil Society? Furthermore, I wondered if there may be any opportunities opened up by joining the society, for work as a trainee naval architect when I graduate, with any companies currently involved in the design and/or production of sailing hydrofoils? I also hope to be able to offer a new invention as an addition to the aeroplane configuration, which I am currently developing, which I hope will further smooth out the wave interaction characteristics of the aeroplane configuration. I feel that the IHS would be a good starting point to look for some partnership from an experienced foil designer, who may be able to aid me in the development of this device as a saleable product. — Michael Mirfield (michael@mmirfield.freeserve.co.uk)

Wanted: Small Hydrofoil Sailboat Design

[4 Dec 99] I am very interested in Frederic Monsonnec's sailing mini-foil, but he has not answered repeated requests for more information. Has anyone else built something like his trimaran? Specifically, a sailing hydrofoil that holds one person, and can be built cheaply? It looks like the outer foils pivot. Is this the case? I would appreciate information about cheap, car-toppable (if possible), home-built hydrofoiling one-or two- person sailing multihulls.

Response...

[4 Dec 99] David Keiper's 14 ft STORMY PETREL (now owned by Buck Trippel) and Donald Nigg's FLYING FISH (contact AYRS for info) come to mind. It couldn't hurt to contact Dave Carlson, who successfully installed Dave Keiper's hydrofoil kit to his catamaran. Also, take a look at the TRIAK with hydrofoil option. Suggest you also visit the IHS Photo Gallery page devoted to sailing craft, though admittedly this needs a lot of expansion (member and visitor contributions are solicited and appreciated... send them in!) — Barney C. Black (foiler@erols.com)

95-Foot Foilcat For Sale...

[24 Nov 99] 95 foot FOILCAT for sale: 150 passenger hydrofoil assisted catamaran; L=95', B=27', D=12'; Speed 50 knots max, 45 knots service speed in calm water, 38 knot service speed in SS4; 2 each MTU 16-396 2000kw engines with recent W-5 overhaul; Vessel in service in Hawaii; Contact Eric Schiff, Navatek Ships, Ltd., phone: 808 531-7001 ext. 25, email: eschiff@pixi.com.

More ex-Foilers Surface...

[30 Nov 99] I spent 4 ½ years (1982-1986) working in the MLSG. As an Engineering Technician (ET), I was responsible for maintaining all the Communications, radar, nav aids, and HYCATS (High speed collision avoidance and tracking system) on all 6 ships. Most of my time was in Key West, but I spent a few months in Bremerton before making the transit with USS ARIES (PHM-5). Maybe if a few more of us stumble in to this site we can start making plans for a reunion in Key West (I can hear Durty Harry's calling). — Chuck Shannon, Engine Co. 68 FDNY (ChuckE68@aol.com)

[24 Nov 99] Interesting web site. I spent 2 years (1990-1992) aboard USS GEMINI PHM-6. I was the ET (Electronics Technician) and spent most of my time taking care of the communications gear, navigation, electronic warfare (EW) and nearly anything with electronics! We did one overhaul during those 2 years at Bender Shipbuilding in Mobile AL. Otherwise we were always underway in support of Fleet exercises and counter-narcotics operations. I only have 2 pictures one is of the GEMINI flying high, and one of all 6 PHMs flying. I left as the Navy was starting to downsize and just prior to decommissioning. — Todd Spates (tspates@keysdigital.com)

Watch Out For Logs...

[18 Nov 99] We are looking for a "log identifying equipment" to install on a hydrofoil operating in waters polluted with debris. We have spoken with many companies carrying radar/sonar equipment, but none seem to have anything suitable for our purposes. — Alyona (novocan@direct.ca)

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LETTERS TO THE EDITOR
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Response...

[21 Nov 99] Of all the work that was done by Boeing trying to develop a suitable sensor to detect the logs, deadheads (vertically floating submerged logs.), whales, etc., some were more successful in some situations but not all conditions. I was not privy to all the data, but only got comments now and then about the progress of their tests. Generally, in rough water conditions, the log and deadheads were covered up by the waves. In addition, even when the units were modified to use the higher frequencies, most sensors were overcome with flow noise of the foil/strut and sensor itself at well below the foilborne speeds. The other problem, the mammals, generally can sense the pressure wave of the bow of the ship and stay away from danger. With the hydrofoil, the mammal cannot sense the pressure wave of the forward foil early enough to escape. Jetfoil did hit a Manta Ray and did considerable damage.

It is my opinion, in daylite operations, the helmsman can see most of the logs and mammals. It is the deadhead that cannot be seen. Most of the damage to the foil/strut/foundations that I can remember were caused by logs because when striking them broadside, the hydrofoil is trying to accelerate the floating log from zero to ship's speed. Striking the top end of the deadhead with the foil causes the deadhead to deflect at some angle which is considerably less force than the broadside hit of a log. I can recall being on HIGH POINT when strikes of deadheads were encountered, with only a mark on the paint to confirm that the noise we heard was a strike. I believe some work was done on USS PEGASUS with an infra-red camera. The video tapes shown to me looked like most floating objects were visible. Of course, it will not pick up deadheads. Sumi Arima (arimas1@juno.com)

Response...

[21 Nov 99] I recall a nice photo in an old Supramar brochure that showed a picture of a moderately-sized log which had been neatly sliced in half by one of the hydrofoils of their design. Apparently, that had caused minimal damage to the foil surface. So perhaps that is the most expedient solution - build the foils solidly enough to deal with the 'average' floating debris! I know this is not much help to an operator like Alyona who is apparently encountering problems with an existing design. — Martin Grimm

Response...

[21 Nov 99] The only log finder that is currently available is the human eye. When Boeing was testing hydrofoils in Puget Sound, they were faced with the problem all the time. All of the hydrofoils took a hit. Good eyes in the day, and at night... it's a real problem. — John Monk (JMonkx@aol.com)

Warbird Engine...

[31 Dec 99] I am looking for information about the gas turbine engines made in the USA by Avco Lycoming that were used on the Grumman OV1 Mohawk airplanes. These engines are the turboprop version of the famous Huey helicopter engine. I am looking for a engine specification list, installation drawings, and an operations manual. If anybody out there knows how to get these documents, please contact me. You are probably wondering why I am asking: I have an idea that these engines will suit a Russian Voskhod hydrofoil perfectly as a main propulsion engine. The light weight and small dimensions will suit ideally for this application. I know that in the USA, Unlimited hydroplane race boats also use the bigger version T55 as main engine. — Peter Venema (venem107@wxs.nl)

Response...

[31 Oct 98] There is a web-based bulletin board for buying and selling Mohawk aircraft and parts. This would be a source of people with whom to correspond about the engine. — Barney C. Black (foiler@erols.com)

2nd Response...

[7 Nov 99] Check out our website at www.ssturbine.com. We would love to supply technical information regarding LM-1500 and LM-2500 power plants, as well as potentially supplying engines. If there is any interest, please contact us. — Robin C. Sipe (rsipe@solarwinds.com)

Mobile Logistics Support Group Memories...

[29 Oct 99] I kind of stumbled across a web site devoted to the old Key West PHMs and was surprised to see that folks still talked about 'em. I was in the MLSG (Mobile Logistics Support Group) in Key West FL from 1983 to 1987, spending time in the 51A & G electrical shops, and 31T turbine shop. I also did a couple of stints on USS PEGASUS, USS HERCULES, and USS TAURUS. In 1991, I went back as a crewman on TAURUS, but left because of surgery. If anyone wants to talk foils, I'm teaching at Surface Warfare Officer's School. — John R. Andersen, Master Training Specialist, Surface Warfare Officer's School Command; Newport, RI 02841-1209 (andersen@swos.navy.mil)

Hydrofoil Archeology

[26 Oct 99] I have found a gutted hydrofoil speed boat that looks as if it is from the 1940s. I am trying to find out more information on it too see if it is possible to restore it. And if so how to go about finding out more information about it. It is about 30ft long and I have been told that it originally came from Russia, but I do not know if that is reliable or not. Also the current owner (a goat herder) is asking quite a lot of money for it $1500, so I need to know if it is going to be worth it in the long run. I have seen a photo of Al Spani's Volga 70 and must say it looks similar, yet different in some ways? If there is any way you could help me or steer me in the right direction I

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LETTERS TO THE EDITOR
(Continued From Previous Page)

would deeply appreciate it. Frank Boering, United Arab Emirates (franky@emirates.net.ae)

Response...

[26 Oct 99] There is not much description to go on other than length and current location. I will send a copy of this reply to several IHS members, some of whom which may have an idea. Also, here are some suggestions: There is some correspondence on Volga hydrofoils on our FAQ and Posted Messages web page. You should feel free to contact any of the people who wrote on this subject to ask for help identifying the craft, tips on restoration, etc. You might also take a look at the Helmut Kock biography; it is possible that one of his vessels ended up in the Emirates. Finally, the reference book Janes Surface Skimmers, Hydrofoils, and Hovercraft is a good source of photos and technical description that could help you identify that vessel. You would need to find an old edition in a library or used bookstore. I have the seventh edition (1973-74), so I looked under USSR for hydrofoils of about 30 ft in length. One candidate vessel mentioned is the Molnia, a popular six-seat hydrofoil derived from Alexeyev's original test craft. The Volga 70 is the improved, export version of that vessel. At that time many hundreds were available for hire on Russian lakes. The overall length is 27 ft 121 in (8.5 m), bean 6 ft 5 in (1.95m), max speed 32 knots (60 km/hr). Another craft was the Nevka, 35 ft 11 in long, only a prototype at that time. It is not likely that the vessel. You found dates back to as early as the 1940s, but if it does, then that then it is news! As to what it is worth, I don't have a clue. One thing is certain though, you will pay much more for the restoration than you paid for the vessel itself. As a possible alternative, it is very possible I believe to get a Volga that is still in working condition to start with. There are also new craft of this size being marketed. There are links to them on our links page. — Barney C. Black (foiler@erols.com)

2nd Response...

[26 Oct 99] I have sketches of the first hydrofoils of Rostislav Evgenievich Alekseev dating back to the 1940s. Perhaps it is one of them?! —Konstantine Matveev (matveev@its.caltech.edu)

American Hydrofoils For Sale or Lease...

[23 Oct 99] American Hydrofoil: 49 Passenger, 40 knots, Detroit Diesel services 2000, Low Wake Wash, Complete electronics package, 4 month delivery . Leasing terms also available. For details, visit Quick Tow and Salvage Website or send email.— Fred Rodolf

Porpoising Question...

[23 Oct 99] I am a Spanish student, and I have read something about porpoising, but I would like to know something more about this effect. Could you give me some information regarding porpoising phenomena? F. Blasco (rbl00003@teleline.es)

Response...

[9 Nov 99] To answer your request on information about porpoising. I assume you are interested in porpoising of planing hulls and the possible effects of hydrofoils. Porpoising of any high speed vessel usually takes place when the trim of the vessel is too high in relation to the amount of lift being generated. There are some papers available which give porpoising limits or planing hulls. A good start would be "Hydrodynamic Design of Planing Hulls" by Daniel Savitsky Marine Technology, Oct. 1964. I will have to look through my literature for more references. Hydrofoils can aggravate or improve the porpoising limits of a hull depending mainly on the position and the amount of lift carried by the foils. A foil carrying a large fraction of the displacement placed quite far forward will likely result in an increase in trim for the vessel and result in earlier porpoising. A foil placed aft will improve the porpoising limits of the hull. There does not seem to be any easy way to determine what the exact effect of specific hydrofoil design will be on porpoising. Model testing remains the best way to find this out. If you can give me more information on the details of your problem, or if you have specific questions, I can be of more help. —Gunther Migeotte (migeotte@icon.co.za)

[24 Dec 99] Payne and Martin did reasonably definitive analyses of porpoising in the late 70s and early 80s. Their work was published in the Journal of Ship Research. www.sname.org — C. D. Barry (cdbarry@hotmail.com)

Hydrofoil Ferry For Sale...

[13 Oct 99] We have for sale Russian built hydrofoil type KOLKHIDA for 120-140 passengers. All equipment made in Germany. 2 Engines 12 V MTU 396 TC. Actual working speed 35 knots, GMDSS equipment A2 installed, ISM code. The vessel is in good condition, built 1984 passed class repair in August 1999. Russian Register class documents till 2004 At this time vessel works at Mediterranean Sea, can be inspected any time. The price USD 499 000 — G. Kasyanenko (anna@farlep.net)

Wake Problems of Fast Ferries...

[11 Oct 99] I have been asked to supply documented support demonstrating hydrofoils produce far less wake when foilborne compared to other hull designs. Do you know of

Continued on Next Page

Letters To the Editor allows hydrofoilers to ask for or provide information, to exchange ideas, and to inform the readership of interesting developments. **More correspondence is published in the Posted Messages and Frequently Asked Questions (FAQ) section of the IHS Internet web site at http://www.erols.com/foiler.** All are invited to participate. Opinions expressed are those of the authors, not of IHS.

LETTERS TO THE EDITOR
(Continued From Previous Page

any studies supporting this? — Robin Beasse (ROYALPACIFIC@bc.sympatico.ca)

Response...

[12 Oct 99] First off, are you interested in surface wake or the overall effect? I do not know of any measurements made of the surface wakes from hydrofoil ships. Displacement of the ship's weight, regardless of whether it is hull or foil supported produces a pressure wave. Trials were conducted by PLAINVIEW, HIGH POINT, Jetfoil, and PHM to make specific measurements under a highly classified project. Naval Coastal Systems Center, Panama City, Florida was the primary laboratory in making the measurements and reporting the results. I do not have any of the data available to me. Maybe someone at NAVSEA or the Navy laboratories could advise me as to present classification and availability of the report. — Sumi Arima (arimas1@juno.com)

Another PHM Restoration...

[10 Oct 99] We consider to convert one of the last 4 PHM's in a mini cruise vessel. Unfortunately are no lines plans and others available by the seller, and the reason that we contact you is the question, if you know where and how we can get such information! — Volker Gries, Naval Architect, Charlotte NC (grivotec@sprynet.com)

Response...

[10 Oct 99] The following comments are offered in response to your interesting inquiry. — Barney C. Black (foiler@erols.com)

Before buying one of the remaining PHMs, please be sure that you can get the foils. My understanding is that these were removed from all but one of the PHMs, and that vessel has been bought by one of our members B.J. Meinhardt. Although the ship's are aluminum hulled, the foils are a 17-4ph precipitation hardened steel... impossible to recreate if they do not exist... also tricky to weld-repair if they still do exist (you would need to get a copy of the weld repair procedure). The ships were also stripped of their LM2500 gas turbine main propulsion engines. However, the Navy must have many of these stockpiled now due to mass decommissioning of ships, so it should be possible to get one surplus for a reasonable price. IHS could possibly give you some leads to follow up on there, if you are seriously interested. You should read about the efforts of BJ Meinhardt and Eliot James to restore the PHM they bought. This includes technical discussions of various types and discussions of where to get documentation. Look at both the new /uncategorized section as well as the PHM section of these posted messages. You may want to collaborate with these two individuals, or at least "pick their brains" for lessons learned from their efforts to date. Technical data and drawings are hard to come by. Both Boeing and the NAVSEA Project Office turned their data over to the government for storage, and probably some or all of it has been routinely purged by now. However, it is not hopeless, and there are IHS members who can help you track down data. Also there is the method of submitting Freedom of Information Act requests. It is quite possible to buy a used commercial hydrofoil vessel. Just a few of the many for sale from Russia and elsewhere are listed on our website in the announcements section, and you should also look at the posted messages in this section concerning how to buy a hydrofoil tour boat or ferry. Most or all of the used vessels for sale will be of the surface-piercing hydrofoil variety... less sophisticated and capable than a restored PHM would be, but this could have advantages (lower cost of conversion and less risk) to offset the disadvantages.

2nd Response...

[11 Oct 99] BOY, do I agree with you, Barney! PHM would not be a good cruise ship, anyway. Your suggestion of a surplus Russian boat also good. Another choice in that speed range might be the Navy's SES 200, which is very roomy and in operating shape. — Nat Kobitz (Hynat@aol.com)

3rd Response...

[18 Oct 99] Please note that since the PHMs were decomm'd in 1993, all of the technical information (Shipboard Operations and Maintenance Manual) has been purged. I was able to rescue some of this just before destruction and provide it to Mr. Meinhardt. To my knowledge, there is not a duplicate of this information available. You may want to follow up with John Monk to confirm this. — Mark Bebar, (BebarMR@navsea.navy.mil)

Calcs For Human Powered Hydrofoil...

[8 Oct 99] I am currently working on my master thesis. The aim is to develop a wing and ground and hydrofoil supported human powered waterbike. And here is my question! Do you know how to calculate the spray drag of surface piercing foils and struts? Or where could I find information about these topic. — Carsten Lehfeld (lehfeld@cadlab.tu-berlin.de)

Response...

[10 Oct 99] There was an excellent report on the subject of Spray Drag of Surface-Piercing Struts. It was written by R. B. Chapman many years ago, but it is a classic paper. I will send you a copy. — John Meyer (jmeyer@erols.com)

16 Pages... that's the limit for the print edition. But readers of the electronic version usually get more. The electronic version of this edition includes two additional pages of text and photos. Also... the electronic edition arrives earlier, and the color photos are in color! If you have Internet access and the free Adobe Acrobat Reader, why not switch your option from "print" to "electronic" now? just email your request to foiler@erols.com.

EXTRA FOR THE ELECTRONIC EDITION

LETTERS TO THE EDITOR

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Need Hydrofoil Extrusions...

Is there a source for small (4" to 6") hydrofoil extrusions for my pet project (6x6 amphibious hydrofoil)?

David Rauseo
rauseo@totalnetnh.net

[I don't know of anyone that offers foil extrusions for sale "off the shelf" for hobby purposes, but there are some potential sources. At least a few people have ordered spare foils for the Trampofoil water bike and have used them for other purposes. Evidently the price is reasonable. There were several articles in the handyman magazines back in the 1950s/60s on how to add hydrofoils made of wood and fiberglass to motorboats. You can find more info at www.erols.com/foiler/popmags.htm. This might be a workable approach for you, at least for a prototype - Ed]

Solar Hydrofoil, Student Project

We are mechanical engineering students at the College of New Jersey and are working on a hydrofoil design for a monohull solar powered boat (approx 16ft long, 2ft wide). We are starting the calculations but are a little confused on where to start. If we know the approx velocity, weight, and power, what calculations can we use to determine the size of the hydrofoils. Also are there any good software programs out there that might help us in our design?.

Gregg Bonstein and Mandy Newman
bonstei2@tcnj.edu and newman@tcnj.edu

Who Knows the Fate of the Hanning-Lees?

After Frank and Stella Hanning-Lee arrived in the U.S. in 1953 with the intention of testing *WHITE HAWK* "on Lake Mead or perhaps a lake in Florida" they disappear from sight. Does anyone know anything at all about what became of Frank, Stella or the *WHITE HAWK*? Any information at all would be most appreciated. I maintain a large website in Vancouver, BC devoted to unlimited hydroplanes and other high-speed watercraft. A few months ago I ran across a picture of the *WHITE HAWK* in the New York Times November 4, 1952 and I have been intrigued about the boat and Frank and Stella Hanning-Lee ever since. I have put together a web page (The Hanning-Lees and *WHITE HAWK*) with several articles and photos from the British press, a piece by Kevin Desmond, and a link to your own Bob Johnston's personal reminiscence of his experiences with the couple.

Leslie Field
Vancouver, BC, CANADA
leslie@lesliefield.com
www.lesliefield.com

[For info about this fascinating couple and their rocket-like vessel, visit www.erols.com/henning.htm. -Ed.]

WHITE HAWK in action

Foils for Motor-Driven Pontoon Boat

I would like information, plans or a kit for the following project I want to undertake. I want to build a pontoon boat hydrofoil combination. The boat will be 12' to 18' long, made to carry 2 to 4 people with gear. A rough estimate of the payload is 400 to 800 lbs. It will be for recreational use and powered by an outboard motor. As far as speed is concerned, I'm looking for around 40 mph or so. I plan on using aluminum sheeting for the pontoons, tubing for the platform structure and nylon webbing for the deck similar to the Hobies. Everything will be done to minimize weight as I would like to use as small a power plant as possible. Building the pontoon boat will be no problem, but when it comes to the foils...I'm pretty clueless. I know I want surface piercing as they are inherently stable. I want the foils to be retracable for beaching, or at least be able to remove a few pins for their removal. It seems like 4 independent foils (one at each corner) would be a good place to start for that capability. Here are just a few of the questions I have at this time:

Frank and Stella Hanning-Lee

- Is there an "airfoil" cross section that you would recommend for this?
- Is there any available premade anything for this?
- What kind of configuration would you recommend (the frontal view angles, dimensions, etc.)?

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LETTERS TO THE EDITOR

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- Is there anyone who could provide plans specific (or even general) to my application?

- Would it be possible for a sheet metal shop to bend the correct airfoils and weld a bead on the leading and trailing edge to "create" the foils I'd need?

- What engine horspower would I need to accomplish this?

I'm undecided on the actual size, etc of this boat as I'm not even sure what would be possible. An 18' version would be nice, but not if it needs 300 hp to operate. My goal is for a small day transport that could be used to sunbathe on, fish from, even camp on overnight. (I thought about being able to attach a small 4 person tent on the deck for inclement weather). It should be able to operate in 2' to 3' waves. Some of the info I've received has been rather technical in nature. I'm an average person with a good mechanical aptitude. "Reynolds numbers" mean nothing to me. I would appreciate practical advice for the layman if possible. I really need help on this as there seems to be no real source for anything ready made. Apparently, hydrofoils are still in the pioneering stage(?)

Jeff Mikkelsen
mikki@softcom.net

[There is nothing ready-made for what you want to do. IHS has been contacted a couple of times in the past few years by people who had a similar project in mind, but we never heard if anyone actually carried through. You should start by reading Tom Lang's article at www.erols.com/foiler/upright.htm. Maybe one of our engineer/designer members will comment on at least some of your questions. If you could get David Keiper's book Hydrofoil Voyager, it would help you even though his WILLIWAW was a sailing trimaran. He had a system of retractable, surface-piercing foils, and others have devised various ways of attaching foils to sailing catamarans and trimarans... this may be your best avenue of research. After Dave died, IHS reprinted his recent files on the subject of foil kits that he was preparing sell for catamarans; these may be of interest to you (details at www..erols.com/foiler/ihspubs.htm). As to whether hydrofoils are still in the pioneering stage, you can get a sample of what pioneers have done at www.erols.com/foiler/pioneers.htm. If you can pull this project off successfully, then maybe you can join their ranks! - Ed.]

Response...

Design guidance and a review of some of the sailing hydrofoil craft that had been built by the early 1970s are in the following book which is in an easy to read format: *Hydrofoil Sailing* by Alan J. Alexander, James L. Grogono and Donald J. Nigg; Published in Great Britain in 1972 by Juanita Kalerghi,ISBN 0 903238 00 4. One of the authors, James Grogono, designed and built a very neat surface-piercing hydrofoil based on a Tornado catamaran hull. From memory, this had a pair of inclined surface piercing hydrofoils forward supporting the greater portion of the weight of the boat. One was attached to the outboard side of each pontoon hull. I believe the aft foils were fully submerged and connected to the base of the rudders which were attached to the transom of each hull. In any case, the book describes the evolution of that sail boat design (named ICARUS) in some detail, and it is the nearest I can come up with to an 18' powered catamaran.By the way, I had a laugh when I read your belief that hydrofoils are in the pioneering stage... more like twilight if we don't do something about it!

Martin Grimm

Notice of Hydrofoils For Sale or Hydrofoils Wanted To Buy are posted in the announcements section of the IHS Website.

CLASSIC FAST FERRIES

A web-based "cyberzine" dedicated to classic fast ferries made its debut with the January 2000 issue. According to editor Tim Timoleon, "Like any journal, CFF needs input from the the reader/visitor. If you have a story or photos to share, this is a great place to do it. We would welcome stories and photographs of hydrofoils, catamarans, air cushion vehicles, and other classic fast ferries to go into our collection and subsequently be used for the joy of fellow enthusiasts.

"From my visits to numerous hydrofoil ports I have found that it isn't always easy to get within range to photograph hydrofoils while foilborne, even with a 300mm telephoto lens. In many a horbor there willbe speed restrictions, meaning that the hydrofoil has come off foils by the time it is close enough to get captured on film. And not all ports offer piers or breakwaters where you would want them to be... or you can't access them for pne reason or another."

The premier issue is filled with beautiful photos. It is accessible to anyone free of charge at the following site: http://classicfast-f.homepage.dk. Editor Tim Timoleon's email address is: classicfast-f@email.dk.

THE ULTIMATE???

IHS Member Hanno Smits writes that he has updated his hydrofoil photos page to include pictures and movies of the "ultimate" personal sailing hydrofoil: Cory Roeseler on an airchair hydrofoil waterski with his kiteski kite for traction! This is definitely not the preferred mode of transportation for the luxury market. For much interesting info on sailing hydrofoils and other non-motorized vehicles, visit Hanno's website: http://home-1.worldonline.nl/~hbsmits/

The NEWSLETTER

International Hydrofoil Society

P. O. Box 51, Cabin John MD 20818 USA

Editor: John R. Meyer **SUMMER 1999**

WESTAMARIN FOILCAT FLIES AGAIN

The following Notice, dated April 20, 1999, was received from Michael Schmicker

* * * * * * * * * * * * * * *

NAVATEK RELAUNCHES WESTAMARAN FOILCAT WILL MARKET TECHNOLOGY IN U.S.A.

Navatek Ships, Ltd. of Honolulu Hawaii recently relaunched the 45-knot, 149 passenger vessel Westamaran Foilcat 2900, originally developed by a Norwegian company specializing in high-speed hydrofoils, and will offer the design for construction in the United States.

"It's an outstanding design. It can maintain 45-knots speed in 6-foot seas and still deliver a very comfortable ride for passengers," says Navatek president Steven C.H. Loui. The Westamaran Foilcat 2900 vessel has been reflagged American for use in Hawaii as part of a commuter ferry demonstration sponsored by the State of Hawaii

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Westamarin Foilcat 2900 Courtesy Navatek Ships

WHERE ARE YOU IN CYBERSPACE?!

IHS relies on electronic communication with the membership to improve timeliness and reduce mailing costs. If you are a member with email, **let us know your email address!** Thank you.

1999 DUES ARE DUE

IHS Membership is still only US$20 per calendar year (US$2.50 for students). Your renewal or new membership is critical. Please remit 1999 dues as soon as possible. We regret that high bank fees make it impractical for IHS to accept payment by credit card or a check drawn on a non-US bank, or by other than US funds. Overseas members with no easy way to send US funds, are advised to send money order to IHS or US Dollars cash.

INSIDE THIS ISSUE

PRESIDENT'S COLUMN

I believe that all IHS members will agree that this issue of the Newsletter be dedicated to Robert Johnston. I sent an announcement to all members having e-mail within hours of hearing of his untimely death. For those who did not receive it, I said: "It is with great sadness that I send you word that I received from David Johnston this weekend. Robert (Bob) Johnston passed away on Friday morning, April 16, after a long bout with skin cancer. To say that we will miss Bob is an understatement. He was a close personal friend to many of us, a highly respected colleague for those who had the opportunity to work with him, and one for which there is no replacement.

For those in the IHS who did not know Bob, he was a major player in the hydrofoil world which made him well known and respected worldwide. Working closely with our colleagues in England, he led the transition of the Society in its transfer to the US in the 1980s. He served as President and provided leadership of the Society for many years and received a special IHS Award. He had the unique capability of spinning a yarn about his hydrofoil related experiences-mixing humor and technical details in just the right amounts. For those who haven't logged onto the IHS Home Page recently, Bob's Award Citation and his stories are there for posterity."

Jean Buhler was thoughtful enough to send us a copy of the Eulogy by Bob's son David. I've asked Barney Black to post this on the IHS Home Page. I recommend that all of you log on and read this very touching tribute to a father from a son.

If not mentioned here or elsewhere, it should be noted that Bob played a major role in the IHS as its Newsletter Editor for many years. During that time the Newsletter grew and became, in itself, an historical document on the subject of hydrofoils. For this, we are all very grateful.

Along a different vein, you may remember that I mention an effort on the part of the IHS to promote the generation of a Hydrofoil Video. Although this has been slow in coming, I recently had a meeting with the Production Manager at the Discovery Channel to discuss the content of such a video. Also I showed and left with her several hydrofoil videos that I have collected over the years. A good impression was made and I was encouraged to submit a proposal.

I ask all of you to keep in mind that the Board has decided to proceed with a celebration of the 30th anniversary of the founding of the IHS. An announcement and Call for Papers was in the Spring Newsletter. Your participation is needed to make this a successful event. We expect to receive abstracts of papers soon at which time the Papers Committee will encourage authors to proceed with first drafts. We will keep you posted on progress and detailed plans as they develop.

John R. Meyer, President

IN MEMORIAM - CAPT. ROBERT J. JOHNSTON, USNR (RET)

by Bill Ellsworth

The past several months have seen the loss of several members of that select, albeit small, group of Hydrofoil Pioneers. We are deeply saddened to report the loss of another of the members of this special group of hydrofoilers. On 16 April, Bob Johnston died of cancer at his home in Daytona Beach, Fla., just nine days before his 81st birthday. He is survived by his dear wife, Marcia, his son, David Johnston of Washington, DC, two step-children, Cynthia Redick, also of Washington, DC, Alicia Stickel of Toronto, Canada, and seven grandchildren. His first wife Dixie died in 1976. Another son of his first marriage, Robert J. Johnston, Jr., died in 1996.

Bob was born in Sheboygan, Michigan. He graduated with an engineering degree from Purdue University and received Masters Degrees in Naval Architecture and Marine Engineering from Massachusetts Institute of Technology.

He began a career in the US Navy in World War II and was assigned to Navy yards in Boston and New York. After the war, he was transferred to the Navy's Bureau of Ships in Washington, DC as an EDO Commander. In 1952, he moved to the Office of Naval Research as Hydrofoil Program Officer where he continued to be deeply involved in the Navy's Hydrofoil Research & Development Programs .

In 1953, the Navy's focus shifted to the application of hydrofoils to

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Robert J. Johnston
(Continued From Page 2)

landing craft. This was motivated by funds becoming available to design and build a number of new LCVPs.

In 1954, Bob left the Navy and joined Miami Shipbuilding Corp. in Florida. They designed and built *HALOBATES* (LCVP(H)), which was completed in 1957. Also, during this period, the Army became interested in the potential of foils to increase the speed of their amphibious *DUKW*. Miami Ship, working with AVCO Lycoming, was given a contract in 1957 to demonstrate a *"FLYING" DUKW*.

In 1960, Boeing won the competition for the Hydrofoil Patrol Craft PCH-1. As a result, the Miami Ship Board of Directors decided the company should not remain in the hydrofoil business. In view of this decision, Bob Johnston, who had become President of Miami Ship, decided to resign and join Grumman as head of Marine Operations. During this period, Grumman laid the keel for the hydrofoil *DENISON* under contract with the Maritime Administration. In 1961, they were given a contract by the Navy to do the guidance design of the 320-ton hydrofoil ship, *PLAINVIEW (AGEH-1)*, the world's largest at that time.

DENISON was launched in June 1962 and a month later achieved a speed of 72 knots on a trial run. Later in 1968, Grumman completed a Navy contract for the design and construction of the hydrofoil gunboat *FLAGSTAFF (PGH-1)* delivered to the Navy on 14 September. Some time later they received a contract from Israel to design and build *SHIMRIT*, a 100-ton hydrofoil gunboat similar to *FLAGSTAFF*.

In the early 70s, Bill Ellsworth, head of the Systems Development Department in the Naval Ship Research & Development Center, asked Bob Johnston to consider becoming the Technical Manager of the Hydrofoil Development Project Office (Code 115) at Carderock, MD. Bob agreed to make the change and reported aboard on 9 April 1973. In this capacity, he continued to be a major force in hydrofoil R&D for the next nine years. He managed the Navy's hydrofoil technology development program. This included operations of the Hydrofoil Special Trials Unit at the Puget Sound Naval Shipyard, conducting trials of the experimental hydrofoil ships *HIGH POINT* and *PLAINVIEW*. This laid the foundation for the design and procurement of six Patrol Hydrofoil Missile ships (PHMs) which the Navy acquired from Boeing.

Bob retired from federal service on 1 July 1982 and formed a small R&D firm called Advanced Marine Systems Associates (AMSA). He and his associates carried out an important task for the Urban Mass Transportation Agency of the Department of Transportation. In August 1984 they completed a 6-volume world-wide Study of High Speed Waterborne Transportation Systems.

This brief review of Bob's many contributions to the development of hydrofoil ships and other waterborne craft is ample support for his having been recognized as a true hydrofoil pioneer. He demonstrated the highest level of professional and moral integrity. He also was an exceptionally skilled manager with a gentle but firm touch who commanded the respect and affection of all who worked for and with him. He will be sorely missed by his many friends and associates and will always be remembered as a never-failing supporter of the IHS.

We extend to Bob's wife Marcia and the members of their family our deepest sympathy and pray that they will be comforted in their loss.

CONVERSATION WITH BOB JOHNSTON

by Neil Lien

On March 6, 1999 my wife, Joann, and I had the privilege of visiting with Bob Johnston and his wife Marcia and enjoyed with them a dinner at the country club. The visit was about his career and the times spent together at Baker Manufacturing Co. on the various hydrofoil contracts. Bob was very beneficial in promoting hydrofoils and we owe a great deal to him for it.

We talked about the *MONITOR* hydrofoil sailboat and the interest of many whom wanted to know more about it. We also discussed *HIGH POCKETS* and how it helped demonstrate the advantages of hydrofoils to so many whose first indoctrination to hydrofoils was with a ride. *HIGH TAIL, HIGH LANDER*, and the LVH proposals, the various hydrofoil configurations tested at Patuxent Naval Air Test Station and the twisted foil proposal were all subjects covered in our short enjoyable visit.

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FOILCAT
(Continued From Page 1)

Dept. of Transportation. It will also serve as a demonstration craft, providing test rides for customers interested in evaluating the design.

A hydrofoil-assisted catamaran, the *Westamaran Foilcat 2900* combines the best properties of a slender hull catamaran with the speed capability of hydrofoil craft fitted with fully submerged foils. The vessel originally entered commercial service in 1992 between Sweden and Denmark and subsequently ran in commercial service in Indonesia. In 1997, Navatek acquired the vessel and rights to the design and construction technology from the original builder, Westamarin A/S of Mandal Norway.

" We are now adding further improvements of our own to the existing design, incorporating knowledge gained from our ongoing advanced hull design research and development program for the U.S. Navy and the Dept. of Defense," Loui says. Navatek expects to eventually license both the original and the improved design to U.S. shipbuilders. Navatek teamed with Lockheed-Martin to design and build the 105-foot, 30 knot fast SWATH vessel *SLICE* for the U.S. Office of Naval Research. It is currently researching and developing a series of advanced hull designs, including lifting bodies, for which it has U.S. patents, patents pending or patent applications.

Navatek Ships, Ltd. parent company Pacific Marine, founded in 1944, is a diversified, privately-held corporation with annual sales of $54 million and operations in shipbuilding and ship repair, specialty contracting, tour boats, and environmental services. Among its 13 subsidiaries are Royal Hawaiian Cruises, which owns and operates the SWATH tour boats *Navatek I* and *Navatek II*, and Honolulu Shipyard Inc., Hawaii's largest commercial ship repair company.

Further information: Michael Schmicker,(808) 531-7001 Ext. 18

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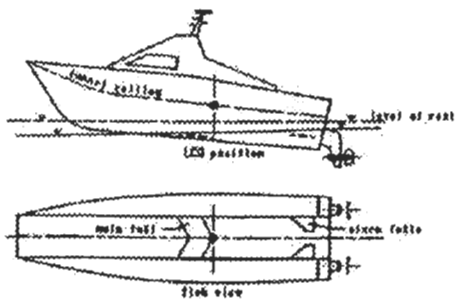
HYSUCAT

In the Spring 1999 IHS Newsletter, an article entitled "Ride Control Technology Advances Steadily" referred to a foil assisted vehicle concept know as Hydrofoil Supported Catamaran (HYSUCAT). Space did not allow for a picture or illustration of the concept. However, a picture did appear in the Naval Institute Proceedings of date in an article by Dr. K-G.W. Hoppe in connection with an article by J.R. Meyer, entitled: "Hybrids - Variations On A Theme". The picture is reproduced here.

Additionally a paper entitled: "Hydrofoil Catamaran Developments in South Africa" by Dr Hoppe was recently presented at the HIPER '99 Conference in South Africa in April 1999. The abstract from the paper is provided below.

Abstract

Hydrofoil assistance on a catamaran model was tried twenty years ago and an unexpected resistance improvement of 40% initiated the creation of a research project to investigate the effect. Today the research project is still active in spite of designs and model tests resulting in the construction of over 160 Hysucats. Theoretical efforts to determine the hydrodynamics of the Hysucat principle resulted in a numerical model for design analysis of planing type Hysucats which allows further design optimization.



Typical HYSUCAT Arrangement

The milestones in the Hysucat Development are mentioned and the three most recent applications explained. The smallest Hysucat, a 6 5m Semi-Rigid Inflatable Hysucat, a 12m Fast Patrol Boat by Stingray Marine, Cape Town and the Panther 64 Hysucat by Prout Catamarans, UK are described and the Performance evaluation is given in some detail. The request for hydrofoil assistance on large

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HYSUCAT
(Continued From Previous Page)

ferry catamarans and the desire for higher speeds in the Ferry Industry have lead to an extension of the Hysucat research project to include semi-displacement catamarans. A number of model test series have been completed already with different type hulls and various foil systems which are different from the original Hysucat foil system and the most important learning and basic results are discussed.

Considerable improvement due to foil assistance at the higher Froude numbers are possible, but at lower Froude numbers most hull-foil systems tested so far showed slightly increased resistance. The slower ferries, which operate at the lower Freud numbers, can hardly be improved and only increased power for higher speeds brings the foil advantage. A new foil system for improvements at the lower Froude numbers is being developed at present and model tests have already shown good results. A 72m car ferry designed by AMD Australia is being retrofitted with such a foil system which has to deliver the final prove of the suitability of foil assistance for these large craft. Some power ratios are given to allow physical performance comparisons of hydrofoil assisted Semi-Displacement Catamarans with today's craft. The indication is given that most efficient ferries at higher speeds can be improved by optimized hull-foil design.

Prof. Dr-Ing K-G. W. Hoppe, Pr-Ing, SAIMENA, Division of Marine Engineering, Dept of Mechanical Engineering, University of Stellenbosch, Republic of South Africa.

WASHINGTON STATE FERRIES ISSUES FAST FERRY FLEET RFP

(From Fast Ferry International, March 1999)

Washington State Ferries has issued a request for proposals (RFP) for the construction of as many as six fast ferries. The initial contract will be for one vessel plus two options for up to five more.

Delivery will be within 14 months of confirmation of order and "WSF intends to exercise the option [for three vessels] within 60 days following successful delivery and acceptance of the first ferry."

The operator has specified a design using proven technology that has a waterline length of up to 38.5m, beam of 13.8m to 14.2m, minimum service speed of 34 knots at full load displacement and 85% mcr engine power, interior seating for a minimum of 350 passengers and stowage areas for 30-40 bicycles.

Wake wash characteristics must include a maximum 28 centimetre height from crest to trough at a distance of 300 metres from the vessel when operating at all speeds above 30 knots in a water depth of at least 22 metres.

Additionally, the wake wash energy must be equal to or less than 2,450 Joules/metre of wave front of the largest wave in the wave train and wave power of 15,400 watts for the largest wave in the wave train.

The formal RFP package was issued in the middle of February and responses must be submitted by April 8. The newest fast ferry introduced by WSF, just under a year ago, *CHINOOK*, is an Advanced Multi- hull Design AMD 385 built in Washington by Dakota Creek Industries. A sister vessel to the 44m catamaran, *SNOHOMISH*, is currently nearing completion at the same yard.

[Editor's Note: See Letters To Editor section of this NL by K Duff and W. Buckley on this subject.]

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Conversation with Bob Johnston
(Continued From Page 3)

Specifically talked about was how we were testing *HIGH POCKETS* on an endurance run, which had never been done before, between Miami Shipbuilding and Fort Lauderdale.

As noon approached we decided to stop over at a restaurant called Baker's Haulover. Interestingly, in this obviously rather upscale restaurant, they allowed us to take off our wet rough weather gear by our table to enjoy a deep sea turtle steak. Also we talked about some of the experiments and testing performed on *HIGH POCKETS* while operating out of Miami Shipbuilding and Patuxent Naval Air Test Station. Also discussed was how he convinced the Navy to fund the hydrofoil fabrication for the *MONITOR* to learn more about the procedures of manufacturing. The Navy subsequently required their name on the boat even though the entire design and construction, other than the hydrofoils, was funded by Baker Manufacturing Co.

Bob passed away shortly after our visit. He was a special person and a pioneer who the hydrofoil community owes a great deal of respect.

WELCOME NEW MEMBERS

Grant Calverley - Grant is from Friday Harbor, Washington State. His interests in hydrofoils started when he had a ride on a 1970 Russian Volga out of Roche Harbor on San Juan Island. One ride and he was hooked. Grant has currently started a project to convert his 14' runabout into a hydrofoil. He is considering using a submerged foil design using air controls (ventilation) for altitude control. He would greatly appreciate any information on the subject.

Christopher Edgar - Christopher just completed his studies in Maritime subjects at Liverpool John Moore University, UK. He plans to do a dissertation on sail-powered multi-hulls.

Neil C. Lien - Neil began working on hydrofoils in December, 1949 when he joined Baker Manufacturing Co. in Evansville, Wisconsin, USA to work for J. Gordon Baker. He conducted welding experiments on hydrofoil fabrication in Baker's lab. Interspersed with several hydrofoil sailboat projects, including *MONITOR*, he participated in High Pockets, High Tail. High Lander, LVH proposals in addition to twisted foil and other hydrofoil concepts. Neil joined the scientific staff at the Physical Sciences Lab at the University of Wisconsin Graduate School. When Mr. Baker became ill, Neil was asked to take a one year leave of absence to help run Baker Manufacturing. Upon Baker's death in 1975, Neil became the vice president, director of research, design and development until retirement on Dec. 1, 1990. Today, he continues to do engineering consulting work and enjoys retirement at his home in Evansville, Wisconsin.

Jeffrey C. Menoher - Jeffrey is from Norwalk, Connecticut. He indicated that he has an interest in boats and in particular, hydrofoils, because of their speed and efficiency over water.

Robert O. Miller - Bob mentioned that when the NY World's Fair opened in 1964, the "ALBATROSS" was joined by her sister ships on runs between the Battery and the Flushing Bay Marina. In the mid '80s, while looking for something that would be suitable for a floating houseboat, Robert responded to an ad that read "36' aluminum hull". In a coal yard in Northport, N.Y., he found two hydrofoils, both stripped and vandalized, one of which turned out to be the "ALBATROSS", America's first commercial hydrofoil. He offered her to a number of museums, including the Smithsonian and the Mariner's Museum. Apparently, these institutions didn't share his opinion of the historic nature of such a vessel so she currently sits in his son's driveway in Centereach, N.Y.

Michael C. Y. Niu - Michael is the president of AD Airframe Consulting Company and is a metallic and composite airframe consultant. He was a Senior Research and Development Engineer, Lockheed Aeronautical Systems Co. He was lead engineer responsible for the L1011 wide body derivative aircraft wing and empennage stress analysis. During 1966 and 1968, he served as stress engineer for the B727 and B747 at The Boeing Company. He has been an honorary adviser in structures and airplane design to the Aero Industry Development Center (AIDC), China (Taiwan) since 1973. He is a Consulting professor in Beijing University of Aeronautics and Astronautics.

Stanislav Pavlov - During his entire professional career, Stanislav was involved and will be involved in design and development of hydrofoil craft. He wrote that therefore he is quite keen to be a member of IHS. He is Director of MTD Marine Technology Development Ltd., Branch Office in Saint Petersburg, Russia. More information is seen in the Letters To The Editor section of this NL.

Serge Pelentsov-Serge is Vice- President of Akula Cruise Lines Ltd., Vancouver, British Columbia, Canada. His interest in hydrofoils started when working in Russia in 1994. Having seen a Raketa vessel flying by on the river Yartish, he took a ride, and was very impressed. In the early seventies he lived in Australia and a big thrill was to see a hydrofoil vessel operating in Sydney. Serge's company recently purchased Russian built hydrofoil (Voskhod/Sunrise) to operate as a tour-ferry boat in Saint Lawrence sea-way system around Montreal.

Philip Schlund - Philip is from Zurich, Switzerland. His primary interest in hydrofoils is application to multihull sailing boats. He intends to build a hydrofoil assisted trimaran or catamaran. He believes that carbon fibers are the ultimate material to build hydrofoils and is looking for the right designer who can help him further in his endeavors for sailing fast and safely.

Thomas Young - Tom became interested in hydrofoils in January of this year at the Houston Boat Show when he was introduced to the Windrider Rave. He bought one on the spot, trading in his 1964, 24 ft. Bahama Islander. Tom will be building the foils designed by Dave Keiper and offering them for sale.

JETFOIL ACCIDENT
(From the Internet)

More than 110 passengers and five crew members were injured when a Jetfoil hit an underwater object near Tai O Saturday, 2 May 1998.

The accident occurred about one mile off Tai O (near Hong Kong) at 12:25 PM when the Jetfoil "Flores" was on its way to Macao. There were eight crew members and 236 passengers on board. Several fire services and police launches and Marine Department vessels were dispatched to the scene immediately after the report was received. All the casualties were taken to hospitals for treatment.

The Police has made arrangement for the other passengers to return to town. The damaged Jetfoil will be towed back to a dockyard in Cheung Sha Wan.

Passengers were urged to offer information on vessel collision. A report said that a total of 117 passengers and five crewmen on board were injured. The Director of Marine has ordered a preliminary inquiry into the incident, and a surveyor of the department has been appointed to take charge of the inquiry.

BOEING JETFOIL RETURNS TO ENGLISH CHANNEL

From Fast Ferry International April 1999)

Jersey based operator Channel Hoppers is to introduce Boeing Jetfoil 929-115 *Adler Blizzard* on a new route across the English Channel between Southampton, Alderney, Jersey and St. Malo. First services are scheduled for April 28.

Delivered to Belgian operator RTM in 1981 as *Princesse Clementine,* the fully submerged hydrofoil was operated from Ostend to Dover, and later Ramsgate, until it was withdrawn early in 1997. Having been laid up for 18 months, it was purchased, along with sister vessel *Princess Stephanie,* by Adler Blizzard for a planned route off the north coast of Germany.

Between May and October last year Channel Hoppers leased Fjellstrand 38.8m catamaran *Varangerfjord* from Finnmark Fylkesrederi to Ruteselskap for a service between Portsmouth and the Channel Islands of Alderney and Jersey.

According to Channel Hoppers, "The Jetfoil is configured for 255 passengers and will complete the Southampton to Jersey sector direct in 3 hours 45 minutes, and Jersey to St. Malo will take just one hour. Southampton to Alderney non-stop will be achieved in 2 hours 30 minutes.

"Agreement has been reached with Associated British Ports to use the former Stena terminal in Southampton Docks. This will vastly improve the conditions in which island bound passengers are handled. We have also applied for permission from HM Customs to open a duty free shop in the terminal.

Channel Hoppers is also planning to transfer *Varangerfjord* to a new English port this summer. From May 21, the catamaran is to be operated from Torquay on a daily return service to the Channel Islands. The destination will be Jersey on Mondays, Wednesdays and Saturdays; Guernsey on Tuesdays and Thursdays; and Alderney and Cherbourg on Fridays and Sundays. Scheduled journey times are 3 hours 30 minutes for Torquay-Jersey, 3 hours for Torquay- Guernsey, 2 hours 30 minutes for Torquay-Alderney and 1 hour 45 minutes for Alderney-Cherbourg.

Guernsey was briefly included in last summer's timetable but this is "the first time that Channel Hoppers will have regularly served that island". Explaining the background, the company says, "A constructive meeting was held with the Guernsey Transport Board on March 9. Channel Hoppers hopes that Guernsey will now feature more prominently in future operations.

"Since the Jersey Transport Authority and Guernsey Transport Board obliged Condor to become signatories to a binding Service Level Agreement, Channel Hoppers has always indicated its willingness to voluntarily enter into a similar agreement with the States of Jersey and ultimately, it is hoped, with the States of Guernsey. This Service Level Agreement is, in effect, a statement of policy outlining guarantees of minimum service levels that we shall extend at all times to our passengers in times of operational problems."

Interested in hydrofoil history, pioneers, photographs? Visit the history and photo gallery pages of the IHS website, http://www.erols.com/foiler.

IN MEMORY OF LEOPOLDO RODRIQUEZ

By Diego Mazzeo & Dino Di Blasi

Several months ago we had been asked by Bob Johnston to write a few lines on Leopoldo Rodriquez who passed away not so long ago. This is always a difficult task and in this instance it is much more difficult as the writers of these lines are two of his highest admirer and closest friends. It could be said that we are not the most suitable ones to remember to all of you Leopoldo, as many others who had the venture to cross his path could have done it in a better way.

Writing on Leopoldo is as writing about the history the high-speed development at sea. As a matter of fact Rodriquez and the Rodriquez Shipyard has always been closely related to hydrofoils and thus on the fastest vessel plying the seas up to the point that Rodriquez and their products were synonymous of achievement and economic speed.

His death leaves a sense of emptiness that is reaching not only those, who were close to him, but also the entire hydrofoiler community. We, believer of the power and never ending validity of the hydrofoil, should grim his departure.

Leopoldo has been for many years, the glorious ones, Managing Director of the Rodriquez Shipyard located in Messina, Italy. He took this responsibility shortly after graduated from the Genoa University as Naval Architect in the year 1952. Having always thought that one day he would have been involved into the family business, as his uncle was the owner of the then small Rodriquez shipyard, he started his education as ship's master.

The year 1954 was a starting point for the small outfit at Messina, as Carlo Rodriquez started discussion with Supramar on a license agreement to build the PT20 passengers hydrofoil, which was still on the drawing board.

The first vessel built at Messina, the Freccia del Sole or Sun Arrow left its nest during 1956 and Leopoldo was among the design and why not the construction team of it. At that time the Yard was not more than a small workshop with limited tools and almost unlimited manpower. Italy was just trying to forget the destruction of the Second World War and opportunity to work was very scarce.

Not because he was the owner's nephew but only because Leopoldo was a very determined person, he climbed all the way into the yard organization from assistant to the Manager to Technical Manager in charge for the construction of the two very first hydrofoils.

During 1957 he was given the post of General Manager of the yard. Under his management the yard manpower went from the original 85 to over 350, but more importantly the quality of manpower improved to a level that was uncommon for that time and for the geographical area where the Yard was located.

He was a traveler at a time when traveling was not as easy as nowadays. He was always on the move to open new' markets and to spread all over the world the idea of high speed at sea. It was not an easy task, as Rodriquez was pioneering this field and it was always a challenge to convince traditional operators to switch from traditional means of transportation to the advanced one.

The yard was known for its edge technology making use of X-ray, strain gauge technique, plasma cutting, numerical control machines, all of which were familiar at Rodriquez shipyard.

During his management, cooperation started with a number of prestigious international companies. just to name a few, Hamilton Standard, a division of United Technology, SMA, Florence with whom a novel family of hydrofoils were designed, the Towing Tank in Rome, the Institute for Naval Automation of Genoa University, CETENA, the Italian Center for Naval research, The Institute of Sound and Vibration at Copenhagen.

At a time when individuality was the norm, he was so clever to realize that only a finely tuned team was the winning solution, so that he set up a very fine team, able to compete with soon to be fierce international competition.

In spite of this cooperative mood, he always wanted to stay ahead of all the others and to achieve this task he used to work always long hours. At night, his office windows were lit, and literally mountains of files were covering his working desk. Next morning, as his team reached their yard's offices, they surely would find on their desk the relevant file with the terrifying request "please tell me' He made sure not to sign a single order or telex (yes, it was still the telex era) unless he was fully convinced and sure that it was fair for all concerned. On the other hand, he never escaped from taking

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LEOPOLDO
(Continued From Previous Page)

on the responsibility for all actions and decisions regarding the Company's activity. Nothing was too complicated for him; even when matters were completely out of his education and studies-, he listened to the explanations given by his advisors. We are sure that he was only able to grasp the headlines of it, but he then had the capability to explain the matter to others so clearly, as if he had perfectly mastered the matter.

Under his brilliant management, sometime against the will of his uncle Carlo, the Yard participated to shows and conferences were he always gave ample space to his colleagues, as he used to called his employees.

Tough but incredibly gentle and full of humanity. He made sure that night workers (Sometime the yard was working round the clock) had good food and he even drove himself downtown to fetch coffee and cigarettes to pamper his workers.

Leopoldo's maniacal working habits have been very costly to him but more to his family. He was seldom at home. Traveling in Italy and abroad, when in Messina, he spent most of his time at his office; he was unable to spare enough time for his children and his wife.

Alda, his wife, was never complaining even when without any notice he jumped at home with some guest for a late dinner. His home was always open to clients and friends who enjoyed his very Sicilian sense of warm hospitality.

It is worth reminding all of us of the Yard's achievement during his managing life. From the small PT20, production went to the larger PT50. When the marriage between Rodriquez and Supramar went sour, Rodriquez promptly put on the market a modified version of their the RHS series well out of the license brackets.

It was the time when discussions with Hamilton Standard were developing and the acronym RHS stood for Rodriquez-Hamilton-Standard, later changed to Rodriquez—High-Speed.

Leopoldo was the father of the RHS110 series and more importantly the RHS200, a vessel too advanced for the time, plus the highly successful series of RHS160, then modified into the RHS 160/F and now FOILMASTER series. All those hydrofoils were sporting an Electronic Seakeeping Augmentation system that was adopted at a later stage by almost all the other fast ferry builders.

Another ahead of time project, vigorously supported by Leopoldo, was the *ALIMAIUNO*, developed by Rodriquez in the 70's, a forerunner of both the hybrid advanced naval vehicles, successively investigated in the US and the current day foil supported catamarans; the project did not go beyond the design stage only because the market was not yet prepared to accept that kind of novelty.

In an era when all Navies were in search for a fast economical and reliable naval unit, Leopoldo came with the idea of the MAFIUS class of hydrofoil (Missile Armed First Italian Unsinkable Ship). Lacking support from the Italian Navy, at that time already committed with the Sparviero class, this brilliant idea was shortly aborted but a huge fallout benefit came to the Yard.

Leopoldo was active not only in the pure shipyard industry. He was, for a relevant lapse of time, manager at a Hotel resort owned by Carlo. He managed to contract North European tour operators, who chartered flights to Catania and then toured tourist to Messina and to the Eolian Islands, from were his ancestors had come.

The hotel was the homeport and it was even sporting a private mooring point, aimed at embarking tourists to the Islands. Cinema festivals and important events were held at the premises that was very flourishing.

He was founder of the International Hydrofoil Society, at the time of the Countess Juanita Kalerghi, Commander M. Thornton and Leopoldo's close friend Peter Dorey. Fellow of the Royal Institution of Naval Architects, member of the Society of Naval Architects and Naval Engineers, member of ATENA he contributed to all of them with a number of articles and papers.

He had been President of APRO (Association of Organ Recipient), very active in this highly humanitarian association to whom he donated money, time and efforts.

A Rotarian since 1960, he served Rotary Club of Messina as President during 1973-1974. He received the Paul Harris Fellowship for his efforts towards the Rotarian culture. Leopoldo served the Rotary until his departure as Commission President and he guided his commission as a leader.

We can only cry his departure, the fast ferry world has to cry his departure but his figure will always remain in our mind as a pioneer of the Fast Ferry market.

RUSSIAN HYDROFOILS

(By Stanislav P. Pavlov, Director of MTD Marine Technology Development Ltd., Branch Office in Saint Petersburg, Russia)

The organization, MTD-SP was established in 1995 by its parent company, MTD Marine Technology Development Ltd., which is located in the UK. The company was formed to provide scientific and engineering services for preliminary studies, conceptual design, model tests, design and development of advanced high speed craft of different types such as hydrofoils, monohulls, catamarans, foil-assisted catamarans and monohulls, SWATH and semi-SWATH vessels, multihull vessels, etc.

MTD-SP had established a relatively large (12 persons) and talented engineering organisation, where the best specialists were collected from different design offices and R&D centres in Saint-Petersburg. Since 1995, they have established quite an interesting list of new developments, including so-called Foil & Interceptor Conception, which has recently been patented in all major countries, including the USA. The prototype vessel, built based on such conception and known as Marinteknikis Superfast Cat, has been successfully tested in 1998 in Singapore. Foil & Interceptor Conception was proven of being extremely efficient in terms of speed and power (weight-to-drag ratio is about 12 at volumetric Froude number 4), while seakeeping performances in terms of accelerations were several times better, than those typical for conventional craft.

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BOOK ON HYDROFOIL HYDRODYNAMICS PUBLISHED

One of our members, Dr. Frans van Walree, has recently completed a book as a thesis on the subject of theoretical hydrofoil hydrodynamics in partial fulfillment of his doctorate degree from the Technical University of Delft. The book is entitled "Computational Methods for Hydrofoil Craft in Steady and Unsteady Flow". It will be available to the public at a cost of NLG 100 (approx. US$ 50), and can be obtained by sending a request to: Maritime Research Institute Netherlands, Attn: Ms. R. Jurriens, Librarian., P.O. Box 28, 6700 AA Wageningen, Netherlands;

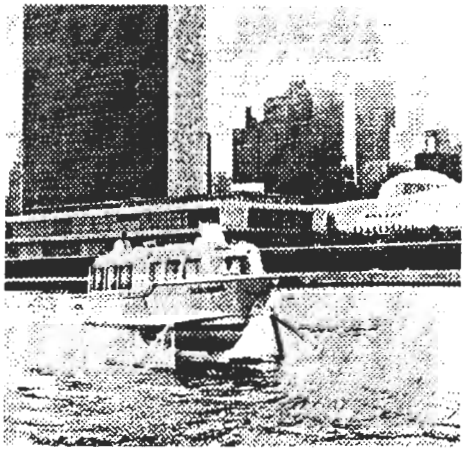
Tel: +31-317-493417;
Fax: +31-317-493245;
E-mail: Rjurriens@marin.nl>

[Ed Note: When this book was received, I sent a message to Dr. van Walree stating: "I was very much impressed with the quality of your work and beautiful presentation of the material. It is indeed a very scholarly work, and you should be very proud."]

THE ALBATROSS I AND THE COMMERCIAL HYDROFOIL ERA IN AMERICA

By Paul Miller

The concept of the surface skimming hydrofoil had spent most of the 20th Century as a designer's dream or an inventor's toy. By the early 1960s, it appeared that the hydrofoil was an idea whose time had come. It was more than just the development of light-weight hull materials and power plants that made the early 1960s bode so well. It was also the economic prosperity and social and technological optimism that pervaded society in those halcyon days. These trends found a single focus and outlet in a great event of the decade that, fortunately, was ideally suited for the introduction of the USA's first commercial hydrofoil: the New York World's Fair.



ALBATROSS I Flying by UN

The market for commercial hydrofoils in the USA was seen as commuter service. It was noted at the time that 23 of the USA's 25 largest cities were on or near navigable waterways that were mostly under-utilized and could carry hydrofoil traffic with none of the huge outlay required to increase the capacity of highways and commuter railroads. All that was needed to unite the technology with this market was the construction of a fleet of hydrofoils. One firm that was ready to accept the challenge was a subsidiary of C.I.T., Wilson Shipyard Inc. of Delaware, and its entry was the hydrofoil *ALBATROSS I* and her sisters.

ALBATROSS I was designed by the noted hydrofoil designer Helmut Koch *(an IHS member - Ed)*, who moved to the USA from his native Chile in 1955. The original construc-

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THE SAILORS PAGE

CATRI FOILERS - TRAILERABLE, HYDROFOIL - STABILIZED TRIMARANS

by Aldis Eglajs

[IHS has received several inquiries about the CATRI hydrofoil sailboats, which range in size from 22 to 30 ft length and can be built as a kit if desired. Accordingly, we present without recommendation or endorsement the concept and design description of these vessels in their designer's own words. For further information, contact the author directly: CATRI, attn: Aldis Eglajs; Box 120, Riga, LV 1063, LATVIA; TEL./FAX + 371 7258427; E-mail: aldis@catri.apollo.lv - Editor]

THE CONCEPT OF CATRI FOILERS

Catri Foilers are not meant only for hydrofoil enthusiasts. The use of this recently patented hydrofoil system opens a new level of high-speed sailing to any contemporary amateur sailor. It is applicable to a wide range of vessels, from small day-sailers and micro-cruisers to 60-feet offshore racing machines in all weather conditions.

Why hydrofoils?

Even though a sail-boat does not easily associate with speed records, the modern wing-like sails are very effective at high speed. The hydrofoil can also be very effective at high speed. As compared to the popular gliding principle (glider), it allows to reduce water resistance by three times.

A combination of sails and hydrofoil is therefore very effective - both scientists and designers agree that the future of the speed sailboat is after the hydrofoil.

What is the problem?

A greater speed of a sailboat can only be achieved by ensuring a higher level of stability, which cannot be guaranteed by traditional types of boats. Multihulls offer a solution to this problem.

The problem of a hydrofoil sailboat stability is even more complicated. Up until now technical solutions have been found only for still water and uniform wind conditions. Under these conditions the speed of a hydrofoil sailboat exceeds 40 kt (74 km/h). Still, to this moment no appropriate hydrofoil sailboat has been developed for open sea and real weather conditions. Catri Foilers offer the first feasible solution to this problem.

Why Latvia?

The French have been more active than others in the field of sail- hydrofoil research. Very expensive hydrofoil projects take place regularly in France.

On the other hand, despite years of isolation from the international community, Latvia has made use of a number of stimulating factors,— namely, the results of Russian research in the field of hydrofoil application. A group of talented students in Riga started yachting-research as a hobby, but understood soon enough, that their only hope to compete with the outer world was attempting to break the speed records.

The Latvian solution

If we compare a hydrofoil with an arrow, it is remarkable that up till now attempts have been made to stabilize it by attaching the regulating mechanism (feathers) at the wrong end! All patents, issued in this field in the last years, have to do with moving hydrofoil stabilization mechanisms, whereas the Catri Foiler solution simply attaches the "feathers" at the end of the arrow, thus making all kinds of regulating mechanisms irrelevant. Tests have been carried out to control the working and interaction of sails, hydrofoil and wind, and an optimal solution has been found.

[The full story on Catri Foilers can be found on the IHS Home page. We recommend that you log on. - Ed]

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HYDROFOIL TRIMARAN SAILBOAT

The EIFO is a 25 ft racing hydrofoil trimaran. The boat was designed by Walter Schurtenberger, and the hydrofoils were designed by Prof. Sam Bradfield. Mr. Schurtenberger, the president and founder of Multihull Technologies in Key West FL, has accumulated over 18 years of experience in the field of design and construction of Hi-Tech composite boat structures. His company has been successfully building catamarans and trimarans since 1993. EIFO is entirely constructed out of carbon fiber and is capable of speeds up to 30 knots.

Principle characteristics are: LOA - 25'; BOA - 24'; Displ. - 500 kg.; Sail - 45 sq. m. The prototype is currently for sale. See the EIFO web page: http://multihulltechnologies.com/eifo.htm or send an email to wsmti@ibm.net for more information.

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INTERNATIONAL HYDROFOIL SOCIETY

30th ANNIVERSARY MEETING

ANNOUNCEMENT AND CALL FOR PAPERS

The International Hydrofoil Society will hold its 30th Anniversary meeting in May 2000 in the Washington, DC area. The event will consist of an afternoon technical session comprising 3 to 4 technical papers, followed by a social hour, dinner, and a Speaker or a Panel Discussion on future commercial and military applications of hydrofoil and hydrofoil-hybrid marine vehicles. Technical papers related to hydrofoil and hydrofoil-hybrid marine vehicles are solicited in, but not limited to, the following areas:

- Engineering and Applications
- Market Analyses with Cost and Intermodal Issues Highlighted
- User Experiences, Lessons Learned, and Future Perspectives

Please submit an Abstract, of 250 words or less, to the International Hydrofoil Society, P.O. Box 51, Cabin John, MD 20818, USA, (or by e-mail to: foiler@erols.com) not later than 1 August 1999. Authors will be notified of acceptance of their paper by 1 September 1999. Draft papers, in hard copy, will be required by 1 February 2000. This will provide adequate time for review, suggestions, and modifications by the author prior to submittal of the final copy for reproduction and dissemination at the meeting.

The IHS 30th Anniversary Meeting will be held in conjunction with a joint meeting of the IHS, the U.S. Hovercraft Society (USHS) and the Society of Naval Architects and Marine Engineers (SNAME) SD-5 Panel. IHS welcomes your participation in this event. Questions regarding technical papers may be addressed to members of the Technical Papers Committee: Mark Bebar, Jim King, and Frank Peterson who may be contacted via the IHS e-mail address: foiler@erols.com

Please note: Authors preparing an abstract should bear in mind that the IHS does not endorse individual or Company products.

ALBATROSS

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tion and testing was done in 1961-62 by Hydro-Capital, Inc., of Newport Beach CA and involved 180,000 man-hours of work. The California tests were very successful, and foilborne speeds up to 40 mph were achieved with a full load of 24 people. On the basis of these tests, *ALBATROSS I* received United States Coast Guard certification to carry passengers commercially, the first U.S. hydrofoil to do so.

[The rest of the story is posted on the Home Page. We recommend that you tune in. - Ed]

ALBATROSS I Today

NEW BENEFIT

IHS provides a free link from the IHS website to members' personal and/or corporate site. To request your link, contact Barney C. Black, IHS Home Page Editor at foiler@erols.com

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LETTERS TO THE EDITOR

WASH CHARACTERISTICS

Referring to the article from Fast Ferry International re Washington State Ferries RFP, this is good information to publish, but it will mislead many if you do not also advise that the criteria being applied are extremely questionable from several standpoints:

(1) It deals only with an "average" wave, constructed with arithmetic sums of a series of individual wave measurements, (centered upon the waves with greatest wave height). Hence, the "wave" upon which energy calculations are made is an artificial wave that has extensive arithmetic "cancellation" of much of the energy actually involved ahead and behind the wave of highest wave height.

(2) In the high speed wake world, the waves ahead of the highest wave height have much longer periods and hence, correspondingly higher wave energy to compensate for lower wave height. (The Chinook's appear to all have about the same wave energy all the way out to waves of only four or five inches of wave height, moving at very high speed!)

(3) There is no dealing at all with the true destructive damage cause by the entire wave train, because the whole wave system is not analyzed.

(4) There is a tremendous law suit going on between property owners whose beaches, bulkheads, marine life, etc. are being destroyed by the Chinook. Hence, it appears Washington State Ferries could be further liable for proceeding with follow-on boat procurement using criteria known to be inadequate and under legal challenge. How many potential responders to the WSF RFP have been so advised? I think you should include these thoughts in the IHS newsletter, don't you? Karl Duff

MORE ON WASH CHARACTERISTICS

William H. Buckley wrote:

Dear Karl,

John Meyer copied to me your e-mail messages regarding wave energy and related matters and suggested I respond to your inquiry if I had the info you wanted. Regarding wave energy, Vol. I of the Army Corp of Engineers "Shore Protection Manual" (p. 2-27) gives the following total (P+ K) energy equation:

E = (rho)g(H squared) divided by 8; where H = trough to crest wave height

The energy flux for waves of uniform height = ½ EC where C is the phase velocity of the waves, which is given by C = gT/2(pi) with T = the wave period.

A bit of information regarding wake problems of high speed ferries is contained in a Danish Maritime Authority report Chapter 1 of which has been translated into English and can be down loaded at the following web address: sname.org/committees/tech_ops/044/highspeed.html. You can track the SNAME high speed ferries initiative which leads to this report at the following address: www.sname.org/committees/tech ops/044/home.html. Incidentally, Stan Stumbo is a Corresponding Member of the 044 Panel.

A second bit of info is that Gabor Karafiath at the Center (301-227-7005) is the person to talk to about ship wakes. He is acquainted with the wake problems of the M/V Chinook and indicates that with a set of lines he could investigate the benefit of bow and stern modifications which might lead to wake and concurrent drag reductions. He has not heard from Stan Stumbo.

Regards, Bill Buckley

RUSSIAN HYDROFOILS

MTD-SP was established in 1995 by its parent company, MTD Marine Technology Development Ltd., which is located in the UK. The company was formed to provide scientific and engineering services for preliminary studies, conceptual design, model tests, design and development of advanced high speed craft of different types such as hydrofoils, monohulls, catamarans, foil-assisted catamarans and monohulls, SWATH and semi-SWATH vessels, multihull vessels, etc. I was graduated from Leningrad Shipbuilding Institute (State Marine University now) in 1975 as naval architect and research engineer in hydrodynamics and mechanics. Since then I have worked in a big naval design office in Saint-Petersburg, as a research engineer, senior engineer, head of propulsion department. From 1975 to 1991, we have developed several interesting projects, including the biggest (more than 400 t) and fastest in the world so far (more than 60 kn.) hydrofoil craft with fully submerged automatically controlled foils. In MTD-SP we had established a relatively large (12 persons) and tal-

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LETTERS TO THE EDITOR
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ented engineering organisation, where best specialists were collected from different design offices and R&D centres in Saint-Petersburg. Since 1995, we've got quite an interesting list of new developments, including so-called Foil & Interceptor Conception, which has recently been patented in all major countries, inc. the USA. The prototype vessel, built based on such conception and known as Marinteknikís Superfast Cat, has been successfully tested in 1998 in Singapore. Foil & Interceptor Conception was proven of being extremely efficient in terms of speed and power (weight-to-drag ratio is about 12 at volumetric Froude number 4), while seakeeping performances in terms of accelerations were several times better, than those typical for conventional craft.

Stanislav P. Pavlov - Director of MTD Marine Technology Development Ltd., Branch Office in Saint-Petersburg, Russia (MTD-SP)

HIGH POINT

I was on the west coast last month where I met up with Will Knuth who is at this time tending High Point until a buyer can be found. I was able to get aboard and take an extensive tour. She is in very restorable condition. The layout is very usable as a live-aboard and with very little work the main deck could accommodate large windows and seating for sight seeing. The hullborne propulsion including engine and outdrive is intact and with one Detroit turning a prop I would guess very affordable to operate. the only thing that appears missing for foilborne operation are the turbines and I understand that these can be found reasonably compared to the LM2500. I know that this ship can be bought very cheap! I believe it would take less work to make her seaworthy enough to ferry than what it took us on Pegasus. It would be a shame to see this fine ship scrapped!

Eliot James

HYDROSAIL

Sam Bradfield reported that the 16.5 foot RAVE offered by HydroSail, Inc. is in production now. Their 25 footer (EIFO) has been sold (Netherlands) and will be racing in Europe this coming season. HydroSail is doing preliminary design work on a 60 footer now.

BOB JOHNSTON MEMORIES

Bob was a special person and even though I worked for him only for 2 ½ years, he had a profound effect and influence on my life and later career. As far as I can tell, mostly positive and constructive things happened from any interactions with Bob. I still remember quite clearly the day that Bob asked me to help him organize what was then the IHS-NAA (a subsidiary of the London group). Bob explained that he'd like for me to get the group incorporated and then to get tax-exempt, charitable status from the IRS. When I told Bob I'd never done anything like that before, he just leaned back in his chair and did his customary little "chuckle/gurgle" and informed me that it (my inexperience) didn't bother him.....and before long, it was done...and IHS-NAA was a New York not-for-profit corporation with 501(c)(3) status.

William C. Stolgitis

GRUMMAN REMINISCES

I enjoy the Newsletter. One of these days I will have to go through my collection of hydrofoil pictures and send scanned copies to you....if you want them. I have about a dozen boxes of material that I brought home over the years, and have been meaning to see what I had accumulated. I saw Dennis (Clark) a year or so ago at a marine work boat show in New York. He was there drumming up business for the model basin. Times have certainly changed. I see Jack Murphy in town from time to time. He and his wife moved east after he retired. Last time I talked to him he was recovering nicely from a heart attack. He also said Larry Bauer was doing the same recovery. Hear from Ed Hermanns occasionally and always get a nice note from Ray Wright at Christmas time. Same with Frank Otto, who is the big man (in more ways than size) at Edo these days. Nice to hear he is doing well. Best regards, Charlie Pieroth.

FOIL DESIGN GUIDANCE NEEDED

I am writing to ask for assistance in locating specific design information on underwater foils. I am doing a concept design of a twin keeled sailboat for which I would like to find lift and drag coefficients for a symmetrical cross section foil. I am a retired Livermoore engineer moderately capable in stress and vibration but weak in hydrodynamics. I am, e.g., ignorant as to how the shape of such symmetrical foils are characterized, i.e., by tabular values, by equation, or even perhaps by a NACA airfoil identification number. Of particular interest is the effect of aspect ratio, i.e., how the lift and drag parameters of a single keel compare to the ones for a double keel of half the chord and proportionally reduced cross section but of the same span or draft. That is, of double keel of the same wetted area as

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a conventional single one. Regarding the lift and drag coefficients, I have assumed that for the probable small angle of attack of a keel, the lift to drag ratio remains relatively constant for small changes in the angle. Here again however, unlike to angle of attack assumption, my ignorance is large. In thinking about the problem I have wondered if perhaps relevant information on the design parameters of the foils used for lifting high speed power or sailing craft out of the water might apply. Perhaps the such underwater horizontal foils are unsymmetrical as might also be the case for the self leveling vee-type. But maybe their parameters are sufficiently close to those of symmetrical ones that this might be a good place for me to start. In the off chance that there might be a textbook in print on foil design, I would be happy to purchase it if you know of such. Published papers, or perhaps Master or Doctors theses might also be available. Or even Internet items of your Association. Or, as is likely, something that I am unaware of. Thank you in advance for whatever help you can provide without being too much of a demand on your time of patience. If the mathematics of my pipe dream are encouraging, I would be happy to share the idea with you. If at even greater odds there might come to be a prototype, I'd invite you for a sail somewhere in the San Francisco Bay area if it were not for the fact that I am semi- invalided with rheumatoid arthritis and occupy my spare moments now with thinking about sailing rather than actually doing it. — Jerry B. Cain (jerrybonline@thegrid.net)

A SMALL, FUN, CHEAP HYDROFOIL

I 'm the "webmaster" of a little site : "PK hydroptere de loisirs" (with alta vista, key word: hydroptere) I have designed and built a little hydrofoil boat for only $800! This is not a boat for speed record but for "the pleasure" ! — Frédéric Monsonnec (monsonnec@multimania.com)

HYDROFOIL SAILBOARD DESIGN PROBLEM

I'm a student in my first year in the Ecole Nationale Supérieure des Mines de Paris, And I'm just beginning to work on a project : I'd like to try to make a windsurf board with hydrofoils. I know this is not very original, and I have seen the links to " Miller hydrofoil," but I don't know how to contact him. Moreover, I don't know which solution I am going to chose (number and type of foils). I'd like to have some advice on this issue. I already have some contact with Hugues de Turckeim, a French shaper who is working on the TECHNIQUES AVANCÉES, the catamaran of Ensta, also a French engineering school. — Yannig-François le Roux, PARIS. (98leroux@paris.ensmp.fr)

Letters To the Editor allows hydrofoilers to ask for or provide information, to exchange ideas, and to inform the readership of interesting developments. **More correspondence is published in the Posted Messages and Frequently Asked Questions (FAQ) section of the IHS Internet web site at http://www.erols.com/foiler.** All are invited to participate. Opinions expressed are those of the authors, not of IHS.

ANOTHER HYDROFOIL SAILBOARD DESIGN PROBLEM

I'm working in the design of a windsurf board with the hydrofoil concept. Do you have some information regarding this idea? — Juan Carlos Santilli (jcsantilli@email.msn.com)

Response...

There is an on-line magazine article that describes the Miller hydrofoil wind surfer in detail... this description will give you plenty of ideas for your project. Please note that Miller's design is patented and may not be copied for profit! — Barney C. Black (foiler@erols.com)

RUSSIAN VESSELS FOR SALE

We have for sale two Russian hydrofoils type KOLKHIDA, 140 passengers, 1985, 1989 year, engine MTU, Russian Register of shipping Class documents (A2) 4 years, excellent condition (just after repair), location Black Sea, US$ 520 000/each. — G. Kasyanenko(anna@farlep.net)

THE RACE

We are currently designing three 9' horizontal foils for my 60' long and 59' wide 15.000# trimaran with 3,000 sq. ft. of sail. (ex Ker Kadelac) They are being designed to swing aft and up in case of collision. Would appreciate info from anyone experienced with this type of application. Also, interviewing ambitious students willing to get their hands dirty. — Peter Murray tel.1.561.708.7008; fax..219.2270; (therace2000@ hotmail.com)

JETFOIL POSTERS

I am in need of any Boeing Jetfoil posters or pictures for our company

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office. Where can I find any? (We are interested in the Far East's Hydrofoils.) Please advise. — Kelly Anderson (kelly@pacsky.com)

RUSSIAN HYDROFOIL FOR SALE

Volga 275 Russian Hydrofoil Aquaflite — Previously in Spain, this vessel is now located on the Hamble at Ancasta Marine Port, Hamble. Seriously for sale please contact the owner c/o Henthorn@cwcom.net. Guide price - in region of £20000.

RACING BOAT DESIGN SOURCE

Does anyone know where you can get designs for jet boats (sport/racing versions - not fishing/commercial)? Please email me. — Mathew Davies (porsche@porsche-enthusiasts-club.freeserve.co.uk)

Response...

The following groups run both propeller boats and JET (impeller) boats in various classes. The prop boats are quicker but both achieve speeds in excess of 200 mph regularly. Contacts (Hope the phone numbers are current.): Liquid Quarter Mile magazine (909) 989-1169; IHBA International Hot Boat Assoc. (714) 634-4422; ADBA American Drag Boat Assoc. (216) 543-9647; NJBA National Jet Boat Assoc. (714) 993-2664; Southern Drag Boat Assoc. (817) 662-0774 — Ken Cook (kencook@hydrofoil.com)

STUDENT NEEDS ADVICE ON WAKE CHARACTERISTICS

I wakeboard a lot (like snow boarding but being towed by a boat) and use thewake to perform tricks, using it as a ramp. For the project that I am making in my Design and Technology course at Ashville College, I have decided to make a device which will attach to the back of a speedboat which will increase the size of the wake to allow me to perform more tricks due to the increased size of the ramp. At the moment I am thinking about using a hydrofoil with the blade angled downwards to pull the back of the boat down into the water which will increase the size of the wake because of the greater displacement of the boat. I am hoping to be able to use the water to make the size of the wake bigger instead of just increasing the water displaced by the boat to make the wake bigger. I am hoping to be able to find a way to channel the water that would be wasted, make the wake of the boat bigger. For example, smaller wakes are generated by a speedboat during speeds of around 18 mph and I want to be able to get rid of these smaller wakes, using them to make the main wake bigger. I am trying to find a diagram showing where each component of the boat wake comes from in order that I might be able to develop a way of using the smaller wakes in a different way. — Andy Padgett (Padgett@btinternet.com)

Response...

Andy, I am not a hydrodynamicist nor a boat designer so I may not use the proper terms in my reply to you. My background is in the construction and evaluation of hydrofoil ships and systems for the US Navy's research center. The problem you present is not necessarily a hydrofoil related solution. Mainly, a wake is a product of a pressure wave caused by the hull or in case of the hydrofoils, the foils carrying the weight of the ship. My understanding is that the more harder the chine and flatter the bottom, generally you get larger wakes. But then so much is involved especially since you apparently want to place this wake at a distance from the boat for the wakeboard. I don't know what type of hull your boat has, but I am not sure that adding a foil section to pull the hull down will do much toward your goals. I feel that adding weight on the stern would accomplish the same thing. Before we go any further, lets look at other considerations. Are you going to accept the increased drag which relates to requiring more speed to plane the boat? This will also decrease the top speed. Does your engine have the additional horsepower to overcome the increased load? Are you willing to play with the propeller i.e. diameter and pitch to obtain optimal performance? Handling characteristics would also change, most likely contributing to wandering condition. Many I/O boats exhibit this characteristic before coming up on plane due to the heavy weight of the engine at the stern. Boat designers take all of these factors into consideration when designing boats, especially when they try to reduce the wake for water skiing, which is opposite of what you would like to do. I don't think you will find an easy fix. It could be that a new hull form would give you the most gain. — Sumi Arima (arimas1@juno.com)

2nd Response....

Andy, Have you seen the April 1999 issue of Trailer Boats? on page 64, they report on a test of a Correct Craft Pro Air Nautique, which is a modified Nautique to induce wake for wakeboarders. They also mentioned installing a bladder to carry water for ballast to enhance the wake. Checking the magazine, subscription/back issues manager can be contacted at "tbmcirc@aol.com". — Sumi Arima (arimas1@juno.com)