THE NEWSLETTER

INTERNATIONAL HYDROFOIL SOCIETY

Post Office Box 51, Cabin John, Maryland 20818, USA

Editor: Robert J. Johnston | SPRING 1995 | Co-Editor: John R. Meyer

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ANNOUNCEMENT

25TH ANNIVERSARY CELEBRATION AND CONFERENCE
Fort Richardson Room
Army-Navy Country Club
Arlington, Virginia
June 14,15,16 1995
PLEASE SEE PAGE 3 FOR DETAILS

ALL MEMBERS SHOULD HAVE RECEIVED A REGISTRATION PACKAGE. IF NOT, PLEASE WRITE TO IHS

1995 DUES REMINDER

ALL MEMBERS WHO HAVE **NOT** PAID THEIR DUES FOR 1995 ARE REQUESTED TO DO SO

Please send your $20.00 check made out to IHS to:
CAPT. John W. King, USN (Ret.)
4313 Granada Street
Alexandria, VA 22309 USA

THE PRESIDENT'S COLUMN

On the morning of March 16, 1995 we received the very sad news that Mike Eames had died of a heart attack. As many of you know, Mike was a hydrofoiler of great note, as ably expressed by Bob Johnston in the adjacent column.

On behalf of the Board of Directors and all the IHS members, I immediately sent a note to his wife, Judy, as follows: "It is with great regret that I, on behalf of the Board of Directors and all the IHS members, send you and your family my heartfelt sympathy. We, in the hydrofoil community, have always looked to Mike as one of the great leaders - who stood tall - in this field that we all love so much. He will be long remembered by his fellow hydrofoilers."

Since our last Newsletter we are pleased to report that a lot of progress has been made toward finalizing plans for the 25th Anniversary Celebration and Conference. All of you should have received a registration package containing a registration form and information about the Conference.

We are particularly fortunate to have as our Keynote Speaker, Admiral Elmo R. Zumwalt, Jr. U.S. Navy. As many of you know, in the 1970s, he was instrumental in promoting R&D on High Performance Marine Vehicles in general for the 100-knot Navy, and particularly the PHM hydrofoils. He was also author of the "High-Low Fleet Ship Mix " concept.

Through the dedicated effort of many of the IHS Board members and authors of papers, a very broad and comprehensive group of papers are scheduled. A feature article on page 3 is an update on the Program, and elaborates on the Panel discussion scheduled for Friday morning, June 16. Bill Hockberger has worked diligently to organize a Panel theme, with discrete elements and noted authorities to discuss these important matters at that time. You can see from the list of participants that this part of the Conference program promises to be extremely interesting and thought provoking.

Another important activity of the IHS Board of Directors is that of expanding the Society through membership growth throughout the world. Mark Rice, Membership Chairman, has been sending out letters to many prospective members. As you can see from this Newsletter, and recent issues, new members are being welcomed into the Society every month. Mark joins me in soliciting your aid in encouraging your colleagues to join the Society and expand our roles.

On more point that the Board joins with me on is the issue of 1995 dues. All those who have not paid, please send your $20.00 check to John King, IHS Treasurer. See page 1 for address.

Again, I make a plea to all members to send the IHS Newsletter editors news about you, your colleagues, and what is going on in the hydrofoil world. We want to and need to hear from you.

John R. Meyer, President

MEMORIAL - MICHAEL C. EAMES

By Robert Johnston

It was with great sadness that I received Bill Ellsworth's phone call informing me that Mike Eames had suffered another heart attack and had died on 16 March, 1995. I was just finishing a paper on the history of IHS for presentation at the upcoming 25th year celebration. Mike had supplied some very useful information on the formative years of our organization. We had corresponded on this subject and on getting together with our wives at the celebration. Mike, in a very upbeat manner had replied that he was on the mend and was planning a trip to England where his daughter Jennifer was to be a bridesmaid. Therefore our get-together would have to be postponed for perhaps a sail on his boat. We never know what's around that next bend in the road.

Mike has been involved with IHS since before its establishment in London as an English Charity. He was a member of the steering committee that worked with Cdr. Mark Thornton, Juanita Kalerghi, and others in planning the formation and management of IHS. After the Society was established, Mike became a member of the first Council that governed the organization. He became a Vice President of IHS, the second person so elected. Since the beginning, he has been a loyal member of our Society. Many of us remember the excellent job he did as co-chairman of the IHS Conference in 1982, held at the Keltic Lodge in Ingonish Beach, Nova Scotia. His valiant efforts made this event both memorable and enjoyable for all who were fortunate to be able to attend.

I first met Mike in 1953 when he was the project manager of the Canadian Navy's "Massawippi" (R-100) hydrofoil program. The design and construction of "Massawippi" was sponsored and funded by Cdr. Duncan Hodgson, an inactive Canadian Naval Officer. He had been involved with the Canadian Navy's hydrofoil smoke layers during WII. This was the only use of hydrofoils by the allied forces during that war. "Massawippi" was designed with the hope of setting a world speed record. When it became apparent that was not to be, "Massawippi" was given to the Navy by Cdr. Hodgson with the understanding it would be used as a test craft.

At that time Mike was a young naval architect, educated in England and a U. K. Citizen. He was selected and brought to Canada to manage their hydrofoil program. Mike became Mr. Hydrofoil of the Canadian Navy, staying with the program and almost single handed, keeping the program alive. His efforts resulted in the design, construction, and evaluation of the HMCS BRAS D'OR, FHE-400. For those who may have forgotten, this 200-ton hydrofoil achieved a speed of over 60 knots.

Mike's interests and expertise became much broader than hydrofoils. These included all advance ship types which he studied and led a team evaluating the potential military role of each for NATO.

When Mike retired he was the assistant to the Head of the Canadian Forces Defense Research Establishment, Atlantic. He retired to enjoy his family and his sailboat. That cruise was cut all too short.

25TH ANNIVERSARY CELEBRATION AND CONFERENCE

As you read in the Winter 1994 Newsletter, the IHS is planning the 25th Anniversary Celebration and Conference for June of this year. In that article, on page 3, it stated that the Conference would be held in Annapolis, Maryland. However, just as the Newsletter was being mailed, it was found that we could not come to an acceptable financial arrangement with the Loews Hotel in Annapolis. We have therefore made arrangements with the Army-Navy Country Club in Arlington, Virginia for our Conference. If any of you have made reservations at the Loews Hotel, please cancel them immediately.

A Registration Package was sent to all members and many colleagues that have shown an interest in HPMV activities over the years. The package contained a Preliminary Program with abstracts of the papers.

Many of you may have noted that we are particularly fortunate to have as our Keynote Speaker, Admiral Elmo R. Zumwalt, Jr. U.S. Navy.

The first paper following ADM Zumwalt's keynote address will be a retrospective look, by Bob Johnston, at the first 25 years of the IHS, followed by a series of historical commentaries, technical papers, and the future potential of hydrofoils.

As a counterpoint - and a suitable wrap - up after two days of stimulating papers and discussions, there will be a concluding panel discussion on "Hydrofoils and the IHS - the Next 25 Years." Bill Hockberger will moderate the session and has assembled a panel of eminent experts including Mark Bebar (NAVSEA), William M. Ellsworth, CAPT William Erickson (OPNAV), and Robert J. Johnston. Each participant, in turn, will have an initial opportunity to express his views on particular aspects of the subject, after which all panel members will be able to comment on those views and broaden the range of the discussion. The floor will then be opened up to all attendees at the session for comments and questions.

While we do expect this session to be lively and interesting, and maybe even entertaining, there is a serious purpose behind it, too. We hope to gain some real insight the hydrofoil may have in the future, and consequently, the future the IHS should have. If hydrofoils do not have a real future, neither does the IHS, except as a focus for occasional nostalgic get-togethers. But if hydrofoils do have a future, the IHS should move with it and in fact help lead it. The panel we have assembled is well qualified to look into the future and discern what may lie ahead, and this should be a most interesting and valuable session.

We hope that many of our members and colleagues/guests will be able to attend. The registration form contains a fee schedule. All should note that the fee covers two luncheons on Wednesday and Thursday, the dinner on Wednesday evening, and a continental breakfast on Friday, in addition to a copy of the Conference Proceedings. The Board has made every effort to minimize the cost of this important event, so a maximum number of members can participate.

The Preliminary Program for the Conference is as follows:

Wednesday, June 14, 1995

0800 - 0900 Registration
0900: Welcoming Remarks
0915: Keynote Speaker - Admiral Elmo R. Zumwalt, Jr., U.S. Navy
0945-1000: Coffee Break
1000: "IHS, A Review of the First Twenty-Five Years", Robert J. Johnston
1045: "The Hydrofoil, ENTERPRISE", Jean E. Buhler
1120: "An Overview of Advanced Marine Vehicles - A Video", Dr. Dale Calkins
1200-1300: - Luncheon
1300: "Overview of the Hydrofoil Technical and Research Bulletin", James H. King
1340: "Hydrofoil Ship Load Criteria Development: A Retrospection", William H. Buckley
1415: "The NATO PHM - Conception to Reality, A Difficult Birth", Robert K. Ripley
1500- 1515: Coffee Break
1515: "PLAINVIEW Remembered", Robert D. May
1600: "The Departure of PEGAGUS- A Short Story", John L. Monk
1730: Reception
1900: Dinner
2015: Meeting and Speaker: "*Decavitator* Human-Powered Hydrofoil", Mark Drela, Marc Shafer, Matt Wall

Thursday, June 15, 1995

0830: "Hydrofoils And Other High Performance Vehicles In The Pacific Rim", Dr. Frank Peterson
0915: "Summary of the Techno-Superliner Project TSL-F", John R. Meyer
1000 - 1015: Coffee Break
1015: "HYSWAS Design Activities in Germany", Dr. Volker Bertram and Julius Schmidt
1100: "HYSWAS Concept Demonstrator", John R. Meyer, Jay DeVeny, & Daniel Jordan
1145 - 1300: Luncheon
1300: "Westamarin FOILCAT 2900", Svein Berntsen
1345: "Gas Turbine Propulsion for Fast Ferries", Carroll R. Oates
1430 - 1445: Coffee Break
1445: "Imposed Limitations, not Operational Capabilities Have Minimized Hydrofoil Craft Utilization in the U.S.", V. H. VanBibber
1530: "High Speed Ferries for Southern California" by Stanley Siegel
1615: "Commercial/Industrial Applications of Advanced Marine Vehicles", Joseph Sladky

Friday, June 16, 1995

0800: Continental Breakfast
0900: Panel Discussion - "Hydrofoils and the IHS - The Next Twenty-Five Years, William A. Hockberger, Discussion Leader
1100: Closing Remarks
1300: Golf

DUTCH HYDROFOIL OPERATOR COMPLETES FIRST SEASON

(From Fast Ferry International, Jan - Feb 1995)

Bearing in mind the country's historical association with water and the sea, it seems surprising that The Netherlands is virtually bereft of fast ferry operators.

The notable exception is Rederij Doeksen, who became one of the first Westamaran 86 operators outside Norway when it introduced *Koegelwieck* between Terschelling and Harlingen in 1973.

The third vessel to bear the name, the only 35m catamaran built by Harding Verft, now operates alongside the company's ships on it's routes in the north of the country linking the Dutch Frisian islands with the mainland.

Heymen Shipping

Just over 20 years after that first service started, a second fast ferry company appeared on a route running across virtually the entire country from Germany in the east to the North Sea in the west. The debut of the vessel, a Meteor hydrofoil, could have gone more smoothly however.

Based in Arnhem, Heymen Shipping was, until a few years ago, one of those traditional shipping companies that operate along the inland waterways of Europe.

Then, having decided that long term salvation lie in diversification, it introduced two specially commissioned vessels: a luxury cruising/nightclub boat and a Mississippi stern paddlewheeler. The third part of the restructuring was the acquisition of the hydrofoil, the result of a completely accidental sighting of a Meteor by director Eddy Heijmen while he was in Moscow on other business.

Meteor

The company's vessel, *Flying Dutchmann*, was built in 1992. Amazingly, the Meteor was still in production more than 30 years after the prototype was launched. By September 1993, this was ready to be publicly unveiled to invited guests and the media in a ceremony in Arnhem. One of the two M-401A diesels failed within 30 minutes.

During the next six weeks a service between Arnhem and the German city of Duisburg was operated but, Eddy Heijmen reports, there was a problem with one or other of the engines every week. Consequently, it was decided to completely refurbish the Meteor over the winter period and replace the M-401As with a pair of MAN D2842 LE402 V12 diesels.

FLYING DUTCHMAN

Several modifications were also required by the Dutch authorities, particularly with respect to fire protection and evacuation. Double opening windows had to be installed at the stern and some internal doors had to be widened by 3mm.

When *Flying Dutchman* returned to service in 1994, virtually the only Russian items left on board were the seat frames. There are 116 seats in the three saloons plus a VIP room for six people in the area between the main and aft saloons, which is also equipped with a crew room and two toilets.

The Flying Dutchman and 'Sailing on Wings' motifs are visible throughout the vessel and Heymen Shipping stresses the flying connection. The captain is referred to as Wing Commander, the crew wear airline uniforms and every seat has a belt, which the company insists that the passengers fasten. Normal crewing is captain and first officer plus between one and three cabin attendants, depending on the number of passengers on board.

From June 14 until September 16 last year, the vessel was scheduled to complete one return trip a day from Arnhem on three days each week - to Nijmegen and Duisburg on Tuesdays and Thursdays, and to Nijmegen and Rotterdam on Wednesdays.

One unusual feature of the service was the non-availability of return journeys on the hydrofoil, excursion companies chartered *Flying Dutchman* to carry tourists to Arnhem and passengers returning to the city travelled by coach.

The hydrofoil left Arnhem every morning, on Tuesday-Friday, at 1000 and Nijmegen at 1040, arriving in either Rotterdam at 1240 or Duisburg at 1300. The return coaches left at 1700, arriving in Nijmegen at 1800/1815 and Arnhem at 1830/1845. The return fare to either Duisburg or Rotterdam was DFl 37.50.

The only speed restriction placed on the hydrofoil is on the stretch of river between Heymen Shipping's base and Arnhem harbor.

On Fridays, a single Arnhem-Nijmegen-Rotterdam trip was operated, positioning *Flying Dutchman* in Rotterdam over the weekend. On Fridays, Saturdays and Sundays, 45 minute foilborne tours of Rotterdam harbour were operated from Parkhaven, close to the Euromast. Four were operated on Friday afternoons between 1330 and 1715, and six on Saturdays and Sundays, when departures at 1130 and 1230 were added. The fare was DFl 14.50.

So popular did the harbour tours prove that Heymen Shipping extended the season until October 16, operating four trips each Saturday and six each Sunday. Frequencies on Saturdays were reduced because a 1 hour 30 minute cruise of Rotterdam Delta was introduced, leaving Parkhaven at 1130 and costing DFl 34.50. A full range of refreshments were available on all the hydrofoil trips and this fare included a light lunch.

In addition to the scheduled services, *Flying Dutchman is* operated both as a high speed feeder vessel for Heymen Shipping's two boats and on charters to other companies within The Netherlands and to Germany or Belgium.

Two charters a day is not uncommon and even in October a total of 27 were operated. The only quiet months are December and January. One particularly popular charter destination has been Koln, which the Meteor can reach from Arnhem in 3 hours 15 minutes.

1995 Season

Although the MAN engines are rated at 1,100 kW at 2,300 rpm, they are usually run at 2,100 rpm. Since their installation, the biggest operational problem has been debris after storms, Eddy Heijmen reports, but even this is not too bad.

Most of the trips to Duisburg and Rotterdam operated during 1994 were full, he says. They will not be repeated this year, however, because the limited number of seats available each day made marketing and administration relatively expensive.

With up to 700 seats a day on offer, this is not a problem on the Rotterdam tours, each one of which carried an average of 71 passengers last year.

Flying Dutchman was operated for over 1,000 hours during 1994 and Heymen Shipping is aiming for over 1,200 hours this year. The Rotterdam trips will resume in April and continue until October, being scheduled on three days during off peak weeks and on five days during peak-weeks.

HIGH SPEED FERRY PROPOSAL FOR LONG ISLAND, N.Y.

(From Maritime Reporter/Engineering News, March 1995)

According to a report released in January by the Suffolk County, New York Budget Review Office (BRO), the legislature is exploring plans to implement a $76 million project that would connect Shoreham, Long Island and New Haven, Conn. via high-speed ferries across the Long Island Sound.

The ferry proposal originates from the need to find an alternate and more economically efficient mode of connecting New York and New England for trading purposes.

The Long Island Sound Shuttle Limited Partnership (LISSLP), authors of the ferry proposal, submitted a theoretical cross-Sound ferry operational plan whereby two vessels would be constructed, each designed to cross in 30 minutes at a cruising speed in the 40-knot range - carrying people, cars and trucks. The proposed LISSLP vessel is the HM 780, to be designed by Hovermarine International Ltd. The HM 780 will be propelled by four 7,000 hp diesel engines and two 14,000 hp waterjets. The vessel proportions would be 262 ft (79.8 m) by 81.25 ft (24.7 m), with a weight of 850 gt.

The vessel's cruising speed is designed to be 40 knots, topping out at 60 knots. Although this vessel would be the first of its kind, some existing vessels meet most of the specifications of the HM 780. For example, Schichau Seebeckwerft's SSW 320 vessel, Stena's 407 ft (124 m) catamaran, FBM Marine's 147.6ft (45 m) aluminum catamaran TriCat, Dutch yard Royal Schelde's 230-ft (70 m) catamaran, Kvaerner Fjellstrand's 131-ft. (40 m) catamaran (FlyingCat), and Westamarin's 50-knot FoilCat 3000. The estimated cost for each vessel is $24 million.

The Budget Review Office's study estimated that losses would total $2.8 million for the first year, and after five years, would total $10.2 million. By the sixth year, there is a predicted turnaround in net income and cumulative net would turn positive in year nine.

LISSLP financial projections estimate they would stand to break even the first year, experience losses in the next two years, and absorb long-term profits of $15.8 million after 10 years.

The cost of meeting environmental standards has not been substantiated, although it has been estimated that extensive overhauling of the Shoreham dock configuration would not be necessary, since LISSLP's proposed vessels are surface vessels, not requiring excessive space for maneuverability. Other projects, such as dredging channels, constructing jetties and breakwaters, and reducing shoreline erosion would also be considered in the assessment of environmental costs.

The conclusion of the Suffolk County Budget Review Office is that the project is economically feasible, but, like most ventures, would carry financial risks.

The development of the ferry proposal has the potential to impact both the regional economy and transportation network. The Budget Review Office projected a net benefit for local Long Island communities due to the availability of lower cost goods from New England.

Both Connecticut and New York would benefit from the additional transportation option, which would be acquired with no public outlay.

In early February, the Suffolk County legislature voted down a resolution, discouraging the Long Island Lighting Company (LILCO), the owners of the proposed Shoreham site, from leasing the property to LISSLP for development of the project. Some of the legislators appear to be concerned that the project will dip into public funds, and possibly require government subsidies.

Ultimately, the ferry project has been designed to create jobs and open new markets, and to function solely on private funding.

According to Budget Review Office Director Fred Pollert, the resolution was designed to direct LILCO and is non-binding. The ferry proposal is not dead, and shuttle group investors are continuing negotiations with LILCO, while investigating other sites for the ferry project's development.

"The details pertaining to the ferry proposal plan were obtained by Maritime Reporter from the Suffolk County, New York Legislature's Budget Review Office Report, Review Of the Proposed High Speed Ferry Service Between Shoreham, New York & New Haven, Connecticut."

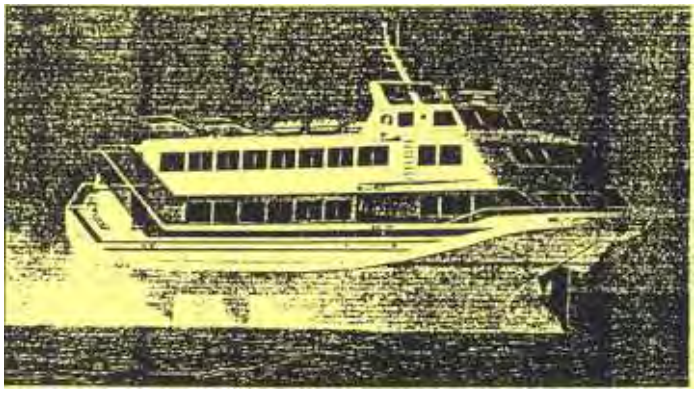
[Editor's Note: The article stated that the estimated cost of each vehicle is $24M. Could the cost of Westamarin's relatively small FoilCat be the same as the much larger STENA?]

FAST FERRIES AND TRIP BOATS IN CHINA

(By Wu Xing Quiang, From Ship & Boat International, November 1994)

A hydrofoil fast ferry developed and built in China is now in service with Hong Kong Far East Hydrofoil Co Ltd in Hong Kong.

North Star uses fully submerged hydrofoils and water jet propulsion and was built by China State Ship Building Corp. The 30m craft has a full load displacement of 118 tonnes and with a full load can cruise at over 42 knots with a take off speed of 23 knots. The hydrofoil is built in aluminium alloy to ABS rules, the hydrofoils themselves being in stainless steel with titanium flaps under computer control from a foilborne attitude control system (FACS).The longitudinally framed hull is in 5456 alloy and the hydrofoil is in 15-5ph stainless steel. *North Star* is designed to operate in wind force up to Bf9 in sea state 4. With a significant wave height of 2.1 m, the boat has vertical acceleration less than 0.1g with pitch and roll not greater than 2°.



The propulsion system comprises two gas turbines each of 3,180kW, geared at a reduction of 6.37:1 to the water jets. Passengers are accommodated in saloons on two decks with a further accommodation for four on the wheelhouse deck. There is air conditioning throughout.

In China itself fast ferry services are rapidly growing. Between Shanghai and Nantong six operations have been set up and these comprise half of the total fast ferry routes on the Changziang River Basin. Between Nantong port and Wusongkou port in Shanghai is some 90 km and the typical fast ferry speed is now 50 to 60km/h, or two or three times the speed of the original conventional Changziang River passenger ferries. Last year 600,000 passengers were carried on the Nantong fast passenger ferry services.

Main Particulars - *North Star*

Length o.a.	30.1m
Breadth o.a.	9.2m
Depth moulded	2.6m
Draft, maximum	5.0m
Passengers	300
Crew	4
Power	2 x 3,180kw
Speed, cruise	42 knots

Gorge trips

Changziang Shipyard in Shanghai has delivered a trip boat to a joint venture, the Hubei Oriental Royal Tourism Co Ltd. *Orient Emperor is* a luxurious tourist boat thought to be the first in China to 5 star hotel standard, it operates in Changziang Three Gorges. This futuristic 91.5m by 16.4m vessel has a draught of 2.5m and a speed of 32km/hr given by twin engines. The hull and propulsion systemprovide good maneuvering and operation in the gorges where the current is swift and the channel shallow and meandering.

A futuristic look has been chosen with a streamline superstructure, with light blue glazing. At night the vessel' s outline is emphasized by floodlights to give the appearance of a floating palace. *Orient Emperor* has seventy eight luxury two person cabins, two President Staterooms and corresponding entertainment facilities, not least of the facilities is an extensive satellite communications system. *[Editor's Note: One can readily see the resemblance of North Star to the JETFOIL .]*

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FIRST CHINESE BUILT JETFOIL JOINS FAR EAST FLEET

(From Fast Ferry International, December 1994)

The first of two hydrofoils produced in the People's Republic of China for Shun Tak Holding's Far East Hydrofoil division, *Balsa*, officially joined the company's fleet on November 17, 1994.

The submerged foil design, dubbed Jetfoil by Far East Hydrofoil, was built by the China Shipbuilding Trading Company and Shanghai Simno Marine, and is part of a HK$560 million expansion and refurbishment program.

Shun Tak's chairman, Dr Stanley Ho, has confirmed that four new vessels, two Jetfoils costing HK$200 million and two Kvaerner Fjellstrand FoilCats costing HK$300 million, are to be introduced by the middle of 1995. In addition, the company's existing fleet of 16 Jetfoils is being refurbished at a total cost of HK$60 million and this program is due to be completed shortly.

Speaking at the launching ceremony for *Balsa*, Dr. Ho said: "This upgrading of our service will increase our passenger capacity from 13 million to an astonishing 17 million a year. This expansion reflects the growth and development of both Macau and Hong Kong and also their links with China. For Macau, the new airport, now fast approaching completion, will also emulate the days when Macau attracted ships from around the world to its great trading post on the China coast.

So, it is specially pleasing to welcome this new Jetfoil to our fleet because it has been designed and built in Shanghai. It is an advanced technological achievement on which we congratulate all the Chinese companies involved, especially the China Shipbuilding Trading Company and Shanghai Simno Marine and their personnel."

The name *Balsa*, previously carried by an Hitachi PT.50 hydrofoil operated by Far East Hydrofoil during the 1970s, continues the company's tradition of naming its vessels after Portuguese Islands.

WELCOME NEW MEMBERS

Steven Loui - President, Pacific Marine Ltd, Honolulu, Hawaii. Mr. Loui has promoted the use of HPMV in the "Islands" through the introduction of NAVATEK I and NAVATEK II during the last several years. He and his company, working with Lockheed, are building a 170-ton SLICE vehicle, a SWATH variant.

Dr. Michael D. Wilson - His interest in hydrofoil craft started during his undergraduate work at the University of Michigan, Department of Naval Architecture. He worked as a practicing engineer on the preliminary design of PT130 (later PT150) for a half year at Supramar, AG in Luzern, Switzerland. During his long tenure at the David Taylor Model Basin, he has carried out, among many other experiments, tests on foils at low Froude Numbers.

CDR. H. Lowe Pruitt - CDR. Pruitt is Officer-in Charge at the Carderock Division, Naval Surface Warfare Center. He has had a long term interest in hydrofoils ever since being introduced to them by Jean Buhler in 1963. He is a 1978 Graduate of the US Naval Academy in Mechanical Engineering. Among several assignments he served aboard the USS RECOVERY as Diving and Salvage Officer from 1979 thru 1982. In 1984 he received a Masters degree in Naval Arch and Marine Engineering from MIT.

Kenneth I. Grina - A former Boeing-Vertol executive and now retired to Winnetonka, Minnesota. Ken has taken up hydrofoils as a hobby, and is adding surface-piercing foils to his runabout on a Lake near his home.

Mac Stevens - Mac is an Aeronautical Engineering student at Mission College, CA. He is working on a project involving the use of hydrofoils on a sailboat, and is interested in learning as much as he can about surface-piercing foil systems.

NEW USA CAT DESIGN DEBUTS

(From Marine News, February 17, 1995)

USA Catamarans, Inc. of Fort Lauderdale, Fla., has developed an entirely new foil-assisted planing catamaran. The new design, called the Cyclocat, employs a fixed main foil between the symmetric round bottom demi-hulls. This combination produces an exceptionally smooth ride in choppy seas.

The 52.5-ft. (16-m) *Extreme Machine* was designed to be the ultimate snorkel-drive boat in every detail, including the high visibility pilothouse with the sun visor and open aft end for communication with the passengers.

The main engines are Caterpillar 3116s rated at 350 hp at 2,800 rpm. Propulsion is through fixed surface drives designed by USA Catamarans turning France Helices fourbladed surface propellers.

Full load speed of the 49-passenger catamaran is 26 knots. The main deck arrangement complies with ADA requirements for accessibility including the toilet, and the gin pole on the swim platform to help retrieve the handicapped. There is a snorkel bar forward on the main deck with storage for snorkel gear aft and lockers for refreshments on the forward side of the bar.

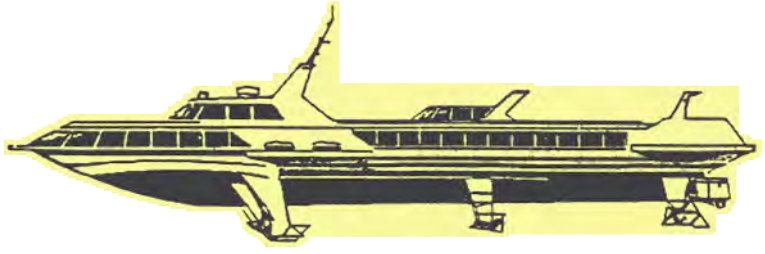
NEW DESIGNS AND NEW COMPANIES APPEAR IN RUSSIA

(From Fast Ferry international, November 1994)

The KoRT Joint Stock Company, which is based in Moscow, has implemented a "high speed fleet development program" in association with the Dedal design office, the Central Hydrofoil Design Office in Nizhny Novgorod, and yards in both Russia (St. Petersburg and the Volga) and elsewhere in the former USSR (the Poti Shipyard in Georgia and Morye in Ukraine).

Current activity is concentrated on selling hydrofoils, Kolkhidas from Poti and Olympias from Morye's Feodosia yard. According to the company, "We are planning to increase the number of hydrofoils built annually by 4-5 ships, to a total output of 15, 8-10 of which will be built at Russian yards. We plan to place orders for hydrofoils on a tender basis."

Two new hydrofoil designs being offered by KoRT are the Kometa-Beta and the Alpha-F. As the name implies. the Kometa-Beta is a development of the Kometa, over 200 of which were built between 1961 and 1981.



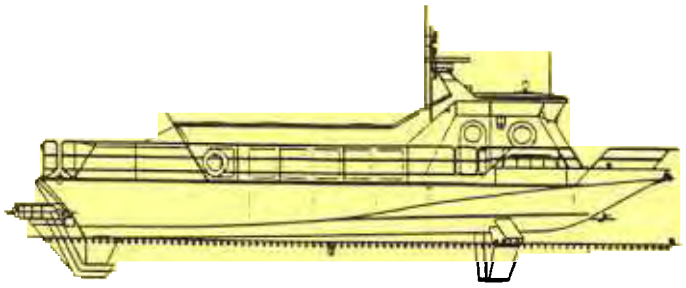
KOMETA - BETA

The Alpha-F is a design produced in St. Petersburg by Dedal, with technical support from Forma, for a waterjet powered vessel intended for passenger excursion, yacht and patrol roles. It is anticipated that the first vessel will be completed in 1996. Equipped for commercial operation, the Alpha-F would have up to 20 seats plus a bar.

Established in St. Petersburg in 1991, Forma specializes in research and consulting on dynamically supported high speed vessels. The Dedal Bureau of High Speed Vessels is an associate company.

Kometa-Beta Hydrofoil	
Length	35.0m
Beam	11.0m
Height - Foilborne	12.6m
- Hullborne	10.4m
Draught - Foilborne	1.4m
- Hullborne	3.7m
Displacement - Full load	67 tonnes
Passengers	110
Service speed	32-34 knots
Range	240 n miles
Limiting conditions	
- Waveheight	2.0m
- Wind	Force 5

Forma reports, "The company pools about 30 specialists who have worked in leading scientific and design centers of the USSR over many years, and who have practical experience in the field of conventional and high speed hydrodynamics, as well as having taken part in the creation of passenger hydrofoils, other vessels and the world's largest high speed vessels for the Soviet Navy."



Profile of ALPHA-F Hydrofoil

Alpha-F Hydrofoil Characteristics

Length overall	17.7m
Beam overall	5.0m
Draught	
- Foilborne	0.8m
- Hullborne	2.0m
Displacement (Full load)	17.5 tonnes
Passengers	20
Crew	2
Service speed	32 knots
Range	200 n miles
Limiting condition	Sea State 2
Main engines:	2 x MTU 6R 183 TE92; 450 hp
Classification:	Russian Register of Shipping KM 2 A3; Passenger Hydrofoil

Another company based in Nizhny Novgorod is the Volga Shipyard. In addition to Kolkhida hydrofoils, this is currently promoting seven seat hydrofoil boats and a 'High Speed Air Cavity Freighter' having a cargo capacity of 45 tonnes and speed of 32 knots.

Volga Shipyard describes itself as "The pioneer manufacturer of hydrofoils and ekranoplanes (Wingships). Our successes to date include lead ships of the R.E. Alekseev Central Hydrofoil Design Bureau, a unique series of operational multi-role naval ekranoplanes. and a 400 tonne search and rescue super ekranoplane capable of speeds of up to 500 km/hour."

CLASSIFICATION SOCIETIES PUBLISH RULES FOR HIGH SPEED CRAFT

(From Maritime Reporter/Engineering News, Feb 1995)

Following the adoption of a new Chapter 10 to the SOLAS Convention by the International Maritime Organization's (IMO) Safety Committee, which makes mandatory the International Code of Safety for High Speed Craft, EEIG Unitas member societies have completed the publication *Rules For High Speed Craft*. The requirements of the new IMO Code enter force on January 1, 1996.

EEIG Unitas, established in 1993 by Bureau Veritas (BV), Germanischer Lloyd (GL) and Registro Italiano Navale (RINA), exists to enhance cooperation - particularly in the areas of research and development, classification rules and surveyor training.

As BV, GL and RINA already had their own rules for high speed craft, the new international code meant that these were required to be updated. According to EEIG Unitas, cooperation among the three in preparing the new rules avoided duplication of efforts and resources, while tapping each member's strengths.

The Letter Of The Law

The new EEIG Unitas rules are for application as a complete set of comprehensive requirements, covering the design and construction of high speed craft engaged on both international and national voyages, the equipment which should be provided, and the conditions for their operation and maintenance. The new rules include:

- The International Code of Safety for High Speed Craft - Adopted by IMO in May 1994, it will be made mandatory January 1, 1996. It is anticipated that the code will be used by flag administrations as the basis for defining regulations applicable to high speed craft flying their flag and engaged on national voyages.
- The Classification Requirements - These specify the design, construction and maintenance rules that must be complied with for high speed craft to fulfill the general requirements of the IMO Code.

The IMO Code specifies a general obligation for high speed craft to have a structural strength capable of withstanding static and dynamic loads, and which can act under all permitted operating conditions.

FAST FERRIES DEMAND NEW ENGINES

(From FAIRPLAY, 16 March 1995)

The demand for ever-increasing power in the fast ferry market has led to production of two new engines by UK-based GEC Alsthom and Germany's MTU. Both manufactures have built up considerable experience in the fast ferry market and are reacting to operators' requirements for increased payloads and greater speed.

MTU has 1,585 of its 956/1163 series diesels in service around the world. Over two hundred of its V20 versions have already been delivered. Based on that experience, the new engine will have a continuous rating of 6,500 kW and include a package of improvements. These include modification to the two-stage sequential turbocharging system and its adaptation to match the 325 kW cylinder output.

The engine incorporates features designed to increase the intervals between overhauls. These include preheated intake air for idling and low load operation, and cylinder cut-out systems. In addition a CAS (condition analysis system) is designed to monitor and record relevant engine data. The system predicts future performance in an effort to reduce planned maintenance.

GEC Alsthom produces the Ruston 20RK270, a turbo-charged and charge-cooled medium-speed diesel developed from the successful RK range. Producing 6875 kW at 1000 rpm, the four-stroke engine is compact and low weight. The RK270 range is already in ferry service on a number of wave-piercing catamarans.

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TSL PROTOTYPES COMPLETE TRIALS PROGRAMS

(From Fast Ferry International, March 1995)

The Technological Research Association of Techno Superliner has reported that sea trials of the two TSL prototypes launched in Japan last year have now been completed.

The 17m TSL-F *Hayate*, a one-sixth scale fully-submerged hybrid hydrofoil, was operated from June until November and the 70m TSL-A *Hisho*, a one-half scale surface effect ship, from July until December.

Basic design, construction and components were evaluated during the trials. According to the Association, "The TSL-F achieved over 40 knots. Twenty knots is adequate for seakeeping performance evaluation. A higher speed, however, was required for cavitation characteristics studies on underwater foils and struts."

As for the TSL-A, "Approximately 37 knots is enough to assess propulsion and seakeeping characteristics. However, the prototype was designed to reach a speed of over 50 knots to assess the influence of absolute speed on the ship, such as damage to seals during high speed navigation."

The Association says that scheduled tests were carried out satisfactorily on the two prototypes and that the technical performance of both was encouraging. Further studies continue.

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1994 DELIVERIES AND ORDERS

(From Fast Ferry International, Jan-Feb 1995)

The number of fast ferries known to be delivered during 1994 was just one short of the total for the previous year while, at first sight, the number of outstanding orders at the end of the year is substantially down on the figure of 72 at the end of 1993. However, an unusually high number of those outstanding orders, 12, involved vessels that have yet to be delivered. Eight of these have been launched or are in various stages of production but they are not included on the following pages as they are stock boats at present. Two, an 18m and a 22m foil assisted catamaran, were launched by Henze Werft during 1994 but the customers, KD Line and Niekamp See Touristik, refused to accept them.

Work on two others, 33m surface effect ships, stopped when Scheepswerft Beliard Polyship was declared bankrupt, a development that also resulted in orders tor two more 33m SES lapsing.

Elsewhere, there are three Rodriquez Foilmaster hydrofoils and a 47m monohull in various stages of construction at the company's Messina yard but these are unlikely to be delivered to Aliscafi SNAV in the near future as Rodriquez continues to concentrate on Aquastrada production.

Although the number of deliveries and orders has not grown in the past year, the size of vessels certainly has. During 1993, five vehicle ferries were delivered and there were outstanding orders for 11 more at the end of the year. During 1994, six were delivered but the number of outstanding orders leapt to eighteen.

Two minor changes have been made to the listing this year. When the FoilCat designs of Kvaerner Fjellstrand and Westamarin were introduced they were described as 'foil assisted catmarans' but the same term is now also used to describe catamarans fitted with foils to gain a worthwhile, though less spectacular, improvement is speed and ride quality.

As the two are distinctly different vessels, catamarans on which foil systems are used to lift the hulls clear of the water will in future be referred to as 'hydrofoil catamarans' in the magazine while those on which foils are used to produce some lift but whose hulls remain in the water will continue to be called 'foil assisted catamarans' .

The other change is the addition of another section in the listing covering vessels that remain with the same operator but whose names have been changed during the year.

As always, for the purposes of this survey, a fast ferry is regarded as a vessel, delivered to or ordered by a commercial company, capable of carrying at least 50 passengers and having a minimum service speed of 25 knots.

1994 Deliveries and Orders

	Deliveries	Orders	Total
Catamarans	37	36	73
Foil assisted catamarans	7	-	7
Hovercraft	-	1	
Hydrofoils	5	2	7
Hydrofoil catamarans	-	3	3
Monohulls	10	10	20
Surface Effect Ships	4	2	6
Swaths			1
Wavepiercing catamarans	2	3	5
Totals	65	58	123
50-99 seats	1	-	1
100-149 seats	8	6	14
150-199 seats	10	3	13
200-249 seats	7	4	11
250-299 seats	9	2	11
300-349 seats	10	11	21
350-399 seats	9	5	14
400-449 seats	4	3	7
450+ seats	1	3	4
Vehicle ferries	6	18	24

As the table on this page is based on the actual capacity of individual vessels, some designs are included in more than one size category. This is particularly true of the Kvaerner Fjellstrand Flying Cat, examples of which have ranged during the past year from 168 seats to 433 seats.

SNAME SD-5 PANEL REVIEWS MARITECH EFFORT

By Ken Spaulding and John Durkin

The AMV community has been cautiously optimistic regarding the probability of obtaining ARPA/Maritech funding for several SD-5 projects which would produce products needed for the AMV Workshop. The reality is that truly "volunteer" efforts are a scarce commodity. Where we have been able to provide resources, in terms of dollars or paid manhours, we've made significant progress. The anticipation of ARPA funding has provided a convenient excuse for deferring some of our efforts. John Durkin commented that at this point it looked still promising but would more likely be a Fall (rather than a Spring) 1995 Workshop. The following is the status of the workshop initiative:

The Maritech program was initiated as a means of making U.S. shipyards commercially competitive. It is a multi-year program that is administered by ARPA. It supports cost-shared projects from consortia that are formed to investigate specific requirements. The consortia typically include designers, builders or integrators, end users, and financial supporters.

Most of the projects currently funded by Maritech involve conventional monohull ships.

Following discussions by the IHS and U. S. Hovercraft Society boards, the Maritech program office was approached to solicit their interest in programs involving high performance marine vehicles. Based on these discussions, in December NSWC, Carderock submitted a proposal to develop a workshop on technology of high performance ships and craft. The workshop proposed would address several areas including the status of high speed transportation systems in North America, Europe and Asia; the different high performance vehicle concepts; the economic aspects of utilization of high performance vehicles; materials; and regulatory issues. Our approach was to develop much of the material that would be presented at the workshop from the SD-5 program of work that is currently underway.

In January 1995, a meeting was held with people from the Maritech office to discuss the proposed Workshop. Although there is not a final decision on the proposal, it is highly probable that at least one Workshop will be held for an audience of owners, users, financiers, insurers, builders/integrators, and designers. Specific topics for subsequent workshops would be defined by the results of the initial Workshop.

LETTERS TO EDITOR

Dear Sirs; March 27, 1995

I am doing a research project and am hopeful you will be able to help me. I understand there is a hydrofoil operation in Hawaii and I would like to learn about their operating experiences, to be able to compare it to a service that would run on the mainland.

I would also like information on the requirements needed to become a pilot, the licensing procedure, the wage scale, and licensing foreign pilots to work in the United States.

Also, could you please tell me about the market in used hydrofoils, their average life expectancy, and perhaps the names of some of the dealers. If you think of anything else that may be helpful, please send it along.

Thank you very much! I look forward to hearing from you at your earliest convenience.

Very truly yours,
Alexander Ho, President
P.O. Box 1575, Salem
NH 03079, Tel: 603-890-1541
Fax: 603-890-4060

Dear Sirs: March 6, 1995

I have been asked by an associate of mine in South America to try to get some information on hovercraft and hydrofoil vessels. Specifically I am interested in technical information such as operating expenses on a per passenger per mile basis and other such feasibility studies. They would also like to have information as to U.S., Canadian, Australia and U.K. suppliers/manufactures.

As such could you please send me any information and or sources which I can contact to obtain this information. There seems to be a general lack of literature in libraries regarding the above.

Thank you in advance for your help and attention to this matter.

Neil Goldstein, 1952 Vermont St., Houston, TX 77019

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Gentlemen:

In January of 1995 The American Association for the Advancement of Marine Ferries (A^3mF) was formed. This association is dedicated to the promotion of slow/high speed ferries in American waters. The ultimate goal of the association is for the building of Jones Act ferries in the U.S, in which many companies who depend on shipbuilding, can benefit from the ferries construction. The association members are shipyards, manufacturers, suppliers, ferry owners & operators, designers, engineers, architects, civil construction contractors, environmental corporations, and naval architects. A^3mF has encouraged other associations which would benefit from the promotion of ferries to become members. These associations include labor unions, technical societies, manufacturing associations, business associations, environmental associations, metal workers, electricians, research, and retail associations to name a few. We encourage private individuals who are interested in seeing ferries excel to join. Any organization or individual who has a financial or personal interest in the advancement of marine ferries and in the continuation of U.S. commercial shipbuilding, is encouraged to apply.

Sincerely,
James M. Acuna, President
American Association for the Advancement of Marine Ferries (A^3mF)
15606 Powell Lane
Mitchellville, Maryland 20716

[Editor's Note: The material from Mr. Acuna was much more comprehensive, but space was not available to reproduce it in its entirety. Please contact him for details.]

THE NEWSLETTER

INTERNATIONAL HYDROFOIL SOCIETY

Post Office Box 51, Cabin John, Maryland 20818, USA

Editor: Robert J. Johnston | SUMMER 1995 | Co-Editor: John R. Meyer

IN THIS ISSUE.....

ANNOUNCEMENT

25TH ANNIVERSARY CELEBRATION AND CONFERENCE
PROCEEDINGS AVAILABLE
PLEASE SEE PAGE 4 FOR LIST OF PAPERS

Anyone who was not able to attend the 25th Anniversary Celebration and Conference in June may obtain a copy of the Proceedings containing a complete collection of papers presented. Please send $15 plus $3.50 to cover handling and mailing costs to:

CAPT. John W. King, USN (Ret.)
4313 Granada Street
Alexandria, VA 22309 USA

1995 DUES REMINDER

ALL MEMBERS WHO HAVE **NOT** PAID THEIR DUES FOR 1995
ARE REQUESTED TO DO SO
Please send your $20.00 check made out to IHS to:
CAPT. John W. King, USN (Ret.)
4313 Granada Street
Alexandria, VA 22309 USA

THE PRESIDENT'S COLUMN

The Society's 25th Anniversary Celebration and Conference in June was an unequivocal success. We were privileged to have as our Keynote Speaker, Admiral Elmo R. Zumwalt, Jr., U.S. Navy, to set the tone of the Conference. A summary of his remarks at the opening of the Conference is contained on page 3.

During my welcoming remarks I gave credit to many of our members and guests who made the event not only possible, but one we will remember for a long time. My remarks are reproduced on page 3 for those who were not able to attend.

As mentioned on the front page of this Newsletter, papers presented at the Conference have been assembled in a "Proceedings" document and are available. These papers are an excellent collection of hydrofoil historical information and state of the art record, and it is recommended that everyone avail themselves of the opportunity to purchase a copy.

During the Dinner Meeting on June 14, results of the election of the Board of Directors for the Class of 1995-1998 and Officers for the next year were announced. All Society members had received a Ballot this Spring. The returned Ballots have been counted and reported on at the Board of Directors meeting on June 6, 1995. The elected members are: Bill Ellsworth, Captain Peter Squicciarini, Capt. Bill Erickson, and John Meyer. At that same meeting, officers of the Society were elected: They are: John Meyer, President; Jim King, Vice President, and John King, Treasurer.

The Panel Discussion on Friday, June 16,, on the subject of "Hydrofoils and the IHS - The Next Twenty Five Years" was well attended, and both interesting and stimulating. We are indebted not only to Bill Hockberger and the Panel Members, but Jim King and Ken Spaulding for taking notes and providing a record of this very important aspect of the Conference. A summary of the Panel Member's remarks are reproduced on pages 6-8 of this Newsletter. As I stated in my remarks at the closing of the Conference, the Board will be acting on the various comments and recommendations made by the Panel Members and attendees. Note that on pages 12 and 13 of this Newsletter, some of our members have already commented on the Conference and the Panel subject. We hope that all members will review the Panel discussion notes and these letters, and will write to the Society with their comments.

Some of our readers may be interested in the U.S. Navy development of the Hydrofoil Small Waterplane Area Ship (HYSWAS) concept which has recently materialized with a "Roll Out" and subsequent launching of a Demonstrator vehicle. See page vv for an official press release, dated 5 July 1995, from Carderock Division, Naval Surface Warfare Center. Future Newsletters will keep members up to date on the results of the Test and Evaluation program that will be carried out on the Demonstrator during the next several months.

John R. Meyer, President

A TRIBUTE TO JAMES L. SCHULER

By Robert J. Johnston

On June 28, 1995, James L. Schuler, the sixth president of the International Hydrofoil Society, suffered another heart attack from which he did not recover. Jim had been in poor health since 23 January, 1989 when he had his first attack. During this interim period, many of his close friends and associates agonized over his condition remembering the up-beat, vigorous Jim Schuler of by-gone years.

Jim leaves a remarkable legacy of technical achievement, marked by his many contributions to the field of advanced naval vehicles. His close association with the development of hydrofoils is particularly noted by members of IHS. In the field of hydrofoils, Jim Schuler was known as an active participant and supporter in the development of military hydrofoils.

Jim was known among his peers, senior naval officers, and representatives of industry as a government representative who was intelligent, a man of integrity, and who always gave a straight forward opinion on matters of concern. He knew and worked the governmental "Golden Rule: He who has the gold, rules".

At the 25th celebration of IHS, James Schuler was honored by being the recipient of an IHS Award Citation. Jim's health prevented him from attending the award ceremony. Unfortunately, the award was presented posthumously to his wife, Marie. A copy of the Award Citation can be found on page 5 of this Newsletter.

The death of James L. Schuler is a loss to hydrofoils, to the IHS and to the field of advanced naval vehicles. And as one of his many colleagues, let it be said, we have lost a great friend.

Sympathy may be expressed in form of memorials to American Heart Association, Montgomery County Chapter, 839 Quince Orchard Blvd., Gaithersburg, Maryland 20878.

MACK E. WORTHEN, BOEING ENGINEER

A memorial service for Mack Elwood Worthen, 68, was held at 2 p.m. Saturday, July 15, at Holy Spirit Lutheran Church in Kirkland, WA. Mr. Worthen, a resident of Bellevue for 30 years, died Tuesday, June 20, 1995 at his home.

Born Sept. 2,1926, in Spokane, to Carl and Marie E. Worthen. Mr. Worthen graduated with a Bachelor of Science degree from Washington State University in 1948. A design engineer, he worked for The Boeing Co. for 41 years until his retirement in 1989. He spent a large part of his career in the Marine Systems Division and was honored as Man of the Year in that division in 1985.

His survivors include his wife of 47 years, Jean L. Worthen; sons and daughters-in-law, David and Sandra of Gig Harbor and Brian and Susan of Bothell; daughter, Brenna of Seattle.

In lieu of flowers the family suggests remembrances in Mr. Worthen's name may be made to The Nature Conservancy, 217 Pine St., No. 1100, Seattle, Wash. 98101.

IHS 25TH ANNIVERSARY HIGHLIGHTS

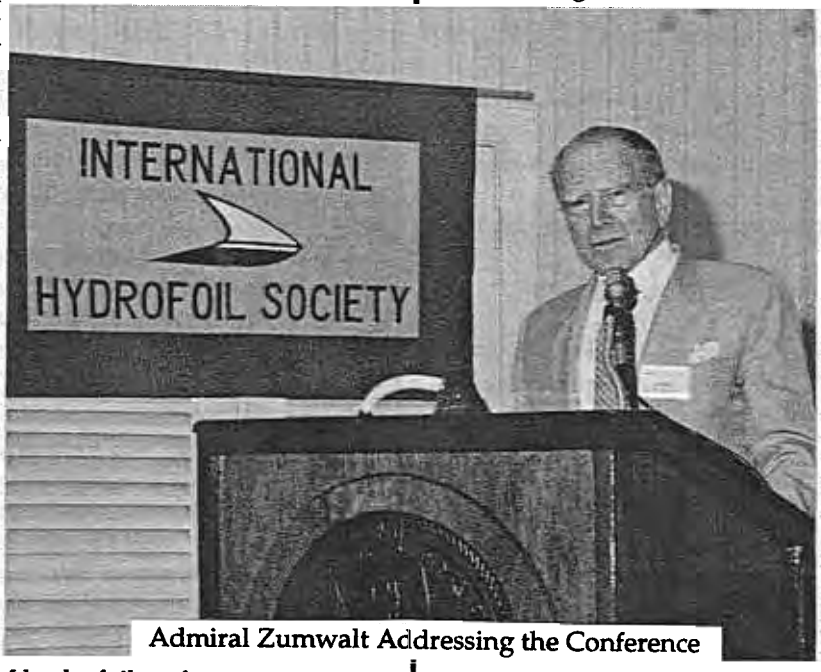
Reconstructed Comments Made to the International Hydrofoil Society by E. R. Zumwalt, Jr. Admiral, USN (Ret.) on June 14, 1995

I summarized factors contributing to development of hydrofoil and other fast craft at the time that I was CNO and concluded that the same factors pertain today. Such fast vehicles are even more desperately needed today.

In 1970, the situation was that we were fighting a war on a "guns and butter" basis and that the money which heretofore had been used for other purposes was going into the expenditure of ammunition and replacement of attrition aircraft. The country was in the midst of an anti-war anti-military mood. Budgets were at best level and usually declining.

The Soviet Union with the expenditure of roughly $1 billion a year to aid Vietnam was driving us to expenditures of in excess of $30 billion a year. The PRC and the USSR were working together to our disadvantage in Vietnam as they were in all of their client states.

With the foregoing, I found myself in a position of having to cut the number of our ships, the technologically obsolescent ones, by nearly 50 percent to free up dollars to go into research and development and procurement of new ships. We came up with the "high-low" mix. At the high end, we achieved appropriations for the CVN 70 and the Spruance class destroyers; at the low end we sought funding for the sea control ship, the surface effect ship, the Oliver Hazard Perry class frigate and the PHM hydrofoil craft.



Admiral Zumwalt Addressing the Conference

With regard to the hydrofoil program, the original plan was to procure 35 of them...only six were built in the formal program. Our concept was to achieve a small, high performance, small radar cross section, high speed, all weather capability with sufficient armament to deal with likely threats. Our planned use was to achieve presence in the smaller seas, i.e., Adriatic, Aegean, Gulf of Sidra, Red Sea, Persian Gulf, Arabian Sea, Pacific Rim areas, the Baltic and Black Sea. This would permit our larger ships to avoid risk by laying back until coming in for war-time operations at the ready. It was capability that would have been particularly useful against regional threats initiated by Soviets. The PHM was born in 1970 and died in 1993.

The future threats that we face are many fold; a revanchist Russia, the PRC, Bosnian-type operations, North Korea, Syria, Libya, Iraq, and Iran as the center of a bloc of fundamentalist religiously fanatic nations. Readiness to deal with these threats makes hydrofoil craft of modern design ideal as the low end of a modern high-low mix.

The commercial development of high-speed craft is serving to reduce the costs of military craft.

In this day of threats, not subject to the rational control of the former Soviet Union, we would be much better off if we had PHMs in our force.

I give tribute to the progenitors of the hydrofoil and other fast combat craft and urge you all to hang in there.

President's Welcoming Remarks

On behalf of the Board of Directors of the International Hydrofoil Society, I welcome all members, their guests and colleagues to this 25th Anniversary Celebration and Conference commemorating the founding of the Society in 1970.

It was during a Board meeting in JUNE 1994 that a suggestion was made to celebrate this event. This single remark has generated hundreds of volunteer-hours of effort on the part of many Board members, other IHS members, and fellow colleagues to finally bring us to this point - the opening session of a two and one half day Conference

Not only have the authors worked hard to generate their papers in a timely fashion for inclusion in the Proceedings along with their presentation materials, but many have worked behind the scene to organize the myriad of details necessary to accommodate the IHS here at the Army-Navy Country Club. We are indebted to John King and George Jenkins for the privilege of meeting here. Papers Chairman, Barney Black, is to be complemented and thanked for the his dedicated effort in this capacity. His numerous E-mail messages have found their targets worldwide. Bill Hockberger took on the task of assembling and organizing a Panel Program for Friday morning. His tireless efforts and leadership in this role are to recognized and appreciated.

Not since the First North American International Hydrofoil Society Conference in Nova Scotia in 1982 have we met, as an independent group, to hold meetings and discussions on our favorite topic on the scale that we attempt today. It is therefore my honor and privilege to open his Conference with a hope and desire that much will be gained by all of us as we proceed with the Program before us during the next several days.

IHS 25TH ANNIVERSARY CONFERENCE PROCEEDINGS LIST OF PAPERS

Welcoming Remarks, John R. Meyer, President
"IHS, A Review of the First Twenty-Five Years", Robert J. Johnston
"ENTERPRISE", Jean E. Buhler
"An Overview of Advanced Marine Vehicles - A Video", Dr. Dale Calkins .
"PLAINVIEW (AGEH-1) Remembered", Robert A. May
"Overview of the Hydrofoil Technical and Research Bulletin", James H. King
"Hydrofoil Ship Load Criteria Development: A Retrospection", William H. Buckley
"The PHM - Conception to Reality, A Difficult Birth", Robert K. Ripley
"The Departure of PEGASUS", John L. Monk
"Decavitator Human-Powered Hydrofoil", Mark Drela, Marc Schafer, Matt Wall
"Recent Hydrofoil Developments in East Asia", Frank Peterson
"Summary of the Techno-Superliner Project TSL-F", John R. Meyer
"Development of Fully Submerged Hydrofoil Catamaran", Kazuyuki Kihara, Naoji Toki, and Tohru Kitamura
"HYSWAS Design Activities in Germany", Dr. Volker Bertram, Julius Schmidt
"HYSWAS Concept Demonstrator", John R. Meyer, Jay DeVeny, Daniel Jordan
"FOILCAT 2900 Design and Performance", Svein Berntsen
"Marine Gas Turbines for Fast Ferries", Carroll R. Oates
"Imposed Limitations, Not Operational Capabilities Have Minimized Hydrofoil Craft Utilization in the U.S.", V. H. VanBibber
"High Speed Ferries for Southern California", Stanley Siegel
"Commercial and Industrial Applications of Advanced Marine Vehicles", M. A. Caldron, J. F. Sladky, Jr., & T. Vu
Panel Discussion - "Hydrofoils and the IHS - The Next Twenty-Five Years, William A. Hockberger, Discussion Leader

IHS AWARDS

The following awards were presented at the Dinner Meeting of the 25th Anniversary Conference:

Dr. Michael Curtis Eames

The International Hydrofoil Society honors, posthumously, Dr. Michael Curtis Eames for his many contributions and innovations to the field of hydrofoils. He devoted the major portion of his professional career to the design, development, and application of advanced naval vehicles, in particular, naval hydrofoil ships and craft and their mission equipment. Upon his graduation in 1951, with honors in naval architecture from King's College, University of Durham, he migrated to Nova Scotia and became Scientific Officer at the Naval Research Establishment (NRE) in Dartmouth, N.S. There, he was involved in projects directed toward development of anti-submarine hydrofoil ships, variable-depth sonar, and helicopters flying from frigates. He also was responsible for setting up the first digital computer facilities at NRE.

In 1948, Duncan Hodgson, a former Canadian naval officer, had commissioned Bell & Baldwin's associate Phillip Rhodes to design a hydrofoil capable of setting a new world water speed record. Hodgson was subsequently persuaded to divert his craft to a demonstration of the military potential of the hydrofoil. In 1951, NRE initiated a project for this purpose and Eames was put in charge. The 5-ton 45-foot craft designated the R-100 and unofficially named the MASSAWIPPI, had a ladder foil system in an airplane configuration similar to the Bell-Baldwin HD-4. Trials of R-100 were not successful and the craft was re-designed as the 7.5-ton R-102. Trials of this craft were conducted in 1956 and their success led Canada to fund another test craft, the 17-ton R-103 built by Saunders Roe in England and named the BRAS D'OR. Trials began in 1958 and, on the first foilborne flight, Mike Eames was at the helm. A picture of him at the helm later appeared on the cover of Life magazine. These trials led to the conclusion that the airplane configuration with main foils forward was not the best approach for a surface-piercing hydrofoil operating in rough seas.

In 1959, NRE undertook a study of design requirements for a nominal 200-ton ASW hydrofoil ship designated the R-200. The same year, Eames was persuaded to leave NRE and join Bill Ellsworth at Cleveland Pneumatic Industries, System Engineering Division in Washington, DC. Meantime, the Canadian interest in hydrofoils continued to grow and, in 1960, a contract was awarded DeHavilland Aircraft of Canada to carry out engineering studies of a hydrofoil ASW ship. Eames could not resist the attraction of being a driving force in this new program and, in 1961, he returned to NRE at their invitation and became a special consultant to DeHavilland on the design of the hydrofoil ship FHE-400. The design of this beautiful ship clearly reflects much of Eames flair for naval architecture. The ship, officially named the BRAS D'OR, was finally delivered to NRE in 1968 in spite of a disastrous fire that occurred in 1966. A long series of trials began with a military crew and extensive involvement by technical personnel at DeHavilland and NRE. Here again Mike Eames played a major role. In 1972 he became Associate Director of the Technology Division at what was then called Defence Research Establishment Atlantic (DREA) vice NRE. Later in 1974, he became Senior Scientist and was appointed Study Director of the NATO Long Term Scientific Study of new technologies for high-speed surface vessels. He was the principal driving force in this important study and a follow-on study of mission applications for advanced ships and craft until his retirement from DREA in 1989. Subsequently, he taught at Dalhousie University and consulted in Canadian Marine Policy and Strategic studies.

Throughout his long and fruitful professional career Dr. Michael C. Eames was a major force in the conception, development, design, and application of hydrofoil ships and craft. He will always be internationally recognized as a true pioneer in the field of Naval Architecture and hydrofoil development and is clearly deserving of this award given by the I. H.S.

Dott. Ing. Leopoldo Rodriquez

The International Hydrofoil Society honors Dott. Ing. Leopoldo Rodriquez for his many contributions to the development of hydrofoils and for his outstanding support of the Society.

Leopoldo received his Doctoral degree from the University of Genoa's School of Naval Architecture. Upon graduation he joined the family shipyard, Rodriquez Cantieri Navali, in Messina, Italy as the shipyard's naval architect. This made him a third generation Rodriquez associated with the shipyard. At this time Leopoldo's uncle, Carlo Rodriquez was the managing director having taken in 1953 the bold, entrepreneurial step of building hydrofoils of the Supramar design. His efforts had brought success to Rodriquez Cantieri Navali and to Supramar. As the production of these PT type hydrofoils grew, so did Leopoldo Rodriquez's position in the shipyard. He advanced to technical director based on originating improvements to the hydrofoil design and to production methods.

In the early 1970s, Leopoldo sought and received Carlo's approval to develop a new, improved hydrofoil design using an electronic seakeeping system and a modified foil system. The objective was to build a series of hydrofoils with improved passenger comfort for longer sea routes with larger seating capacity. Leopoldo Rodriquez, working with the American Company, Hamilton Standard, perfected an electronic control system that met these requirements. Leopoldo's expertise also contributed to the surface piercing V-foils modification to W-foils with hydraulically actuated trailing edge flaps on both the bow and rear foils. With the launching of the first RHS-160 in 1976, with a passenger capacity of over 200, Rodriquez Cantieri Navali met its development objectives. This new design provided passenger comfort on sea routes once considered too severe for surface-piercing hydrofoils. This successful design, with its improvements over the years, has kept Rodriquez Cantieri Navali in the forefront of hydrofoil producers.

From the beginning of the concept of an International Hydrofoil Society, Leopoldo Rodriquez has been a loyal supporter. Starting in the late 1960s he met with Cdr. Mark Thornton RN (Ret) and Countess Juanita Kalerghi to offer his services to the Society. This early backing led to his selection as the third president, a position he held from 1977 to 1981. Leopoldo was an involved president, participating and leading IHS's activities. Based on the size of the North American membership, Leopoldo envisioned a North American Chapter of IHS. This idea he pursued vigorously and in April 1980, the Chapter was formed as a not-for-profit corporation under the statute of the State of New York. This formation of the Chapter ultimately led to the IHS's change from a Charity in the United Kingdom to a not-for-profit incorporation in the United States.

For his many contribution to the development of the hydrofoil and for his many years of effort in keeping IHS a viable organization, the International Hydrofoil Society is most pleased to present Dott. Ing. Leopoldo Rodriquez with this well deserved Award Citation.

James L. Schuler

The International Hydrofoil Society honors James L. Schuler for his outstanding role in the research and development of the modern day hydrofoil, and for his many contributions to the Society.

James Schuler, after graduating from Webb Institute in 1947, joined the Bureau of Ships as a Naval Architect. His formal education did not stop there as he continued his studies at George Washington School of Law obtaining a jurus doctor degree in 1954. His career with the U.S. Navy became focused with research and development of advanced marine vehicles. His naval architectural capabilities, combined with his legal expertise, well suited his advancement into the managerial roles for R&D. This function he fulfilled for BUSHIPS and continued into the Bureau's sequel, the Naval Sea Systems Command. He is a past chairman of the Flagship Section and a former member of the National Council of the American Society of Naval Engineers.

During the period when the U.S. Navy was trying to identify the military role of advanced ships, Jim was a motivator and supporter working to clarify this issue. Joining forces with William M. Ellsworth, a hydrofoil special trials unit (HYSTU) was formed and supported. This innovative unit solved development issues and identified roles and weapon systems suitable for hydrofoil missions. For example, when the U.S. Navy's Tucumcari (PGH-2) was badly damaged in a grounding incident, the need for a high speed navigation system was clearly apparent. Building on a concept generated by two sailors from High Point (PCH-1), another HYSTU asset, which involved a radar image superimposed on a navigation chart, Jim supported the effort to develop a high speed navigation system which eventually became installed hardware on the PHMs. HYSTU, Tucumcari, High Point, HYCATS were all necessary steps along the way that led to the Navy's first fleet of operational advanced naval vehicles, the PHMs...and Jim Schuler played a pivotal role in getting us there.

For many years Jim has been a supporter of the IHS. As a member of the Society he contributed to the establishment of the North American Chapter of IHS. His legal knowledge assisted in obtaining the charter for this chapter as a not-for-profit organization. When headquarters was moved from London to Washington, D.C., Jim was a member of the Interim Council which organized the smooth transition. In 1987, he was most appropriately elected as 6th President of the Society, a term cut short by a most untimely illness.

Because of his contributions to the development of the hydrofoil and support of the IHS, it is most appropriate that James L. Schuler receive this award.

NOTES ON PANEL DISCUSSION, FRIDAY, 16 JUNE 1995, INTERNATIONAL HYDROFOIL SOCIETY 25TH ANNIVERSARY CONFERENCE

HYDROFOILS AND THE IHS - THE NEXT TWENTY FIVE YEARS

The panel discussion leader was William Hockberger (consultant). There were six panel members; Mark Bebar (NAVSEA), William M. Ellsworth (consultant), Capt. William Erickson (OPNAV), Robert J. Johnston (consultant), William C. O'Neill (consultant) and Joseph F. Sladky, Jr. (Kinetics).

INTRODUCTION

Bill Hockberger opened the panel discussion by stating the objectives of the session and introducing each of the panel members with a summary biography. It was intended that the panel would summarize the state-of-the-art in hydrofoil technology, applications and economics and forecast the role of hydrofoils over the next 25 years. Recognition of the various impediments to their wider application was to be included. Finally, the future of the International Hydrofoil Society in this predicted future environment was to be considered.

The credentials of each of the six panel members cited by Hockberger were most impressive, firmly establishing the authority of the panel. He then explained that each panel member would discuss a particular segment of the subject. This would be followed by a general discussion with audience questions and participation.

PANEL MEMBER DISCUSSIONS

Ellsworth - Ellsworth addressed hydrofoil technology as it has evolved over 40 years, identifying the principal design issues and considering possible gaps in our current capability. Initially foil configuration was addressed including surface-piercing, fully-submerged and hybrid and the airplane, canard and tandem alternatives, which could be fixed or retractable. Tail-draggers were also studied. Sub-, trans- and super-cavitating foils were included.

Ellsworth briefly summarized the foil material alternatives which had been evaluated, including titanium, aluminum, composites and the various steel alloys. Titanium foils were built for FRESH-1, but not used. Foil coating experience was discussed.

Hydrofoil operating modes (contouring and platforming) were covered, along with flat and banked turns.

The various propulsion system alternatives were noted: basically waterjet and propeller water propulsors with a few examples of air propellers. The advantages of waterjets compared to angled shafts and Z-drives were cited. Gear boxes have consistently introduced significant development and maintenance problems.

The complexities of the various control system alternatives were explored.

Hockberger asked what the real past and future "impediments" to the wider application of hydrofoils might be. Ellsworth cited cost, "cultural" resistance of a "blue-water" Navy, and perceived shortcomings in mission capability.

Continuing his summary of the state of hydrofoil technology, Ellsworth mentioned cavitation, ventilation, vibration and analysis of loads, including impact and fatigue. Margin policy is critical, particularly if normal Navy shipbuilding policy is applied.

Mission and navigation systems were discussed. High speed operation in constricted or heavy traffic areas requires effective collision avoidance capability and night vision devices. Various weapons systems which have been evaluated on, or proposed for, hydrofoils were noted. Deception and decoy systems as well as MCM capabilities were mentioned.

Finally, Ellsworth stressed the importance of guidance and feedback from Navy operators. Crew policy needs development by operators.

O'Neill - O'Neill opened his discussion with a plea that the existing hydrofoil data bank be preserved somehow for future applications.

O'Neill projected a continuing maximum speed of around 50 knots, considering the costs and risks associated with supercavitating foils, particularly in the commercial world. The square/cube law will also limit larger applications. A size limit around 200 tons (400-500) for commercial passenger ferries was considered realistic. Foil Cats are a very attractive alternative, as they provide maximum passenger capacity at reasonable cost. Hybrid (e.g., HYSWAS (Hydrofoil Small Waterplane Area Ship) or foil-assisted catamaran) car ferries exceeding 1000 tons may be expected.

Particularly in craft over 100 tons, gas turbines are attractive from weight, maintenance and noise reduction standpoints. Turbines are running between 15,000 and 20,000 hours between major overhauls.

Mechanical direct drive to propellers are practical in many hybrids, such as HYSWAS and foil-assisted catamarans, where the hulls must still provide buoyant lift and are therefore sufficiently immersed in the water to make direct drive propellers feasible. Z-drives are to be avoided, as underwater gears have consistently given trouble. Direct drive PCs up to 70 percent are achievable for foilcats at speeds about 50 knots. In the case of waterjets, PCs of 40-50 percent are achievable for pure hydrofoils, whereas PCs of 50-62 percent are attainable by foilcats because of the reduced water lift required.

O'Neill considered control technology to be well in hand, with flaps and incidence control the preferred approach. Alternatives have not been successful.

Foil materials were cited as a key area where cost (ease of fabrication) and weight gains may be expected. An easily weldable, corrosive-resistant 100 KSI yield uncoated steel would be very desirable. O'Neill said that lift/drag ratios could be accurately predicted analytically but that tank testing is required to minimize cavitation at the foil-strut intersections. He said that there would always be some cavitation in the vicinity of 50 knots, but if cavity collapse occurred clear of the foils there was no problem.

Bebar - Bebar spoke of hydrofoil technology from "a designer's viewpoint". Regarding military applications in

the U.S., the PHMs have demonstrated capability to 235 tonnes at 40 knots in 3 meter waves with a 15 percent military payload factor. However, the Soviet BABOCHKA class has demonstrated capability to 400 tonnes at 50+ knots. Commercially, the Rodriquez RHS-200, at 120 tonnes, carries 254 passengers at 37 knots. The Boeing Jetfoil, at 120 tonnes, maintains 45 + knots in 2.5 meter seas with 250 passengers.

Pure hydrofoils to 400 tonnes have been operated successfully. Studies (ANVCE-1976) have been accomplished to 2400 tonnes. Bebar suggested that the practical limit is probably 1000-1500 tonnes at 40-50 knots in SS 5 or 6. Hybrids (foil-cats) to 180 tonnes have been built. Foils have been used effectively for motion control. Hydrofoil-SWATH hybrids are feasible. There is no obvious size limit for the hybrids.

Bebar noted that operational restrictions include draft/beam, wake, night operations and high speed navigation but submitted that the technology exists to deal with these restrictions.

Bebar presented a 25-Year Technology Projection which included foils of coated HY steels, improved control systems, non retractable foils, welded aluminum 5456 hulls with riveted aluminum or composite superstructures, improved propulsion systems, 60/400 HZ electrical systems, lighter, higher performance auxiliary systems, use of probabilistic structural design methods and composite hull structures.

With respect to the hydrofoil industrial base, Bebar observed that the US hydrofoil industrial base has virtually disappeared, with little prospect of renewal. The foreign industrial base for fast ferries in general in Europe and the Far East is active and growing.

Bebar identified expectations for the future impact of technology improvements: use of performance based specifications with greater use of commercial off the shelf (COTS) and non-developmental items (NDI), improved performance, lower acquisition and life-cycle costs and greater use of hybrid concepts as their cost effectiveness is proven.

In conclusion Bebar stated that hydrofoils do have the potential to fill future commercial and naval roles, based on their ability to provide high speed and superior stability and ride quality. Selections will ultimately be based on cost effectiveness. From the military standpoint, the increased emphasis on littoral warfare may make hydrofoils more competitive. Consideration of high speed craft (AMVs) in the 21st Century Surface Combatant (SC-21) program is a possibility.

Ron Adler commented that logistics considerations had not really been mentioned here and that historically they tended to be considered too late, as was the case with the PHMs. Bebar said that logistics is now introduced early in the design process. Bebar mentioned IPPTs (Integrated Product and Process Teams) as an approach to alleviate this deficiency.

O'Neill commented that there were a lot of "nuts and bolts" areas (fasteners, bearings etc.) where significant improvements could be achieved.

Karl Duff observed that perhaps we were being too conservative with a 50 knot limit, noting that 60 knots was safely achievable while still in the sub-cavitating range. Duff said that forward foil venting tended to be more critical than cavitation. Use of composites for foils was also suggested. Johnston said that the DENNISON had demonstrated 60 knots without ventilation. O'Neill re-emphasized the cost issue, particularly with respect to horsepower. It was noted that AGEH was designed with the possibility of repowering for 90 knots. Erickson mentioned the "battle override" provision on the PHMs.

Ellsworth reminded the group of the driving endurance requirement, an inherent shortfall of the hydrofoil concept. He also commented thatthe endurance requirement is another reason for holding to a 50 knot speed regime.

Frank Peterson observed that titanium had recently been shown to be competitive for propellers. He said that encapsulation had also been successful with propellers and that ventilated waterjets were a promising concept. O'Neill said that we mustn't forget rudders and other appendages. Peterson mentioned the current Japanese development of ceramic diesels. The development of such a 5,000 HP engine is progressing rapidly. There is significant improvement in both weight and SFC.

Sumi Arima noted that civilian crews had better success than Navy crews in keeping water out of the lube oil.

John Monk stressed the need to transfer technology findings to the Navy operators. He cited shortfalls on PHM in this respect and that training funds were scarce. Monk suggested that a PHM lessons-learned conference, similar tothat done for the FFGs, be held to collect operational wisdom before it dissipates.

Erickson - Capt. Erickson said that, although he was a blue water sailor, hydrofoils were truly his first love, as he had spent 19 of his 30 years in the Navy with hydrofoil programs and operations.

Erickson emphasized that, ultimately, it will always be the mission which drives the design. The Navy requires multi-mission ships with ample volume and endurance. The Navy is not a "brown water Navy" and it is not tied to shore-based support. The new PC has a 2,000 mile range, The FFG 7, 4,500 miles. Primary mission considerations are AAW and Strike. AAW requires AEGIS. The primary SC-21 solution must include AEGIS. Strike requires volume. The DD 963 now has more strike capability than the battleships had. The other key areas are ASW and Surface. Only ASW justified speed, and that in blue water. With the anti-ship missile, speed is only required to "get there". Once there, staying power is required. In this scenario 30 knots is adequate. The FFG 7's SH-60Bs provide effective surveillance and targeting. Hydrofoils greatest shortfall is endurance. However, Erickson stated, advanced technology (hybrid?) may be considered for SC-21. If this technology is not proven and "in the can" it will not be considered.

Karl Duff strongly endorsed Erickson's philosophy. Duff said that the technical community simply did not understand the methodology for assessing the military value of proposed AMVs. Duff contended that the technical community must participate in the operations analysis arena. A specific example cited was the requirement of both

Light Airborne Multiplti-Purpose System (LAMPS) and Tomohawk Land Attack Missile (TLAM) for platform stability, a requirement area where AMVs are effectively competitive.

Bill McFann mentioned a misinformation example where a recent paper had concluded that T-foils and flaps were ineffective on large ships when, in fact, their effectiveness had been demonstrated.

Johnston - Johnston addressed the subject of commercial hydrofoil operations. He commented that his association with the Navy hydrofoil programs had been perhaps the most rewarding but that he had, in fact, been very much involved on the commercial side also. Johnston observed that today the prospects for military hydrofoils were not at all promising, whereas commercial developments of fast ferries (overseas - not U.S.), some of which are hydrofoils or hybrids, were booming.

The ferry is a single element in a transportation system, sometimes a rather minor element, and any venture into craft development or operation must assess the economics of the entire system before committing investment capital. Investors will tend to be more concerned with craft acquisition costs than with life cycle costs. He stated that "first costs" beat life cycle costs in the eyes of the decision makers, even commercial ones. Catamarans currently dominate the market because of least cost per seat. The most notable example at this time appears to be in fast car ferries. Johnston observed that it was only in the case of rough water routes where hydrofoils and hybrids were likely to be competitive.

Johnston showed a series of historical slides, providing insights regarding the development of commercial hydrofoil operations. He noted that the Kawasaki Jetfoil was selling for about $21 million and observed that Foil Cats could lose their price advantage with hulls more costly than for pure catamarans and foil systems comparable in price to those of pure hydrofoils.

Sladky - Sladky explored future possibilities for hydrofoils and the associated role of the IHS. He stressed that IHS must be "pro-active"; marketing, educating, documenting and sponsoring various supporting activities. Sladky suggested that concept studies and position papers should be developed and that IHS should pursue lobbying opportunities as they present themselves. These opportunities present themselves in the form of conferences, courses, student activities and competition for federal grants. He suggested that "niche" markets for hydrofoils be actively pursued.

Sladky suggested that program leadership (as opposed to program management) was called for and that analysis and marketing efforts should be carefully researched and focused. Total transportation systems must be considered. All elements of the system must be considered, including; environmental impact, wake, weather, navigation, traffic mix, terminal facilities, connecting transport and logistics support. Politics is always a key factor and, in the final analysis, economics will always drive. He thinks bankers and insurers have tended to reinforce the tendency to emphasize firt cost over life cycle. Passengers, vehicles and cargo should all be considered. Existing or proposed competing systems must be considered.

Sladky said that hydrofoils have "excellent parametrics" compared to other AMVs but they tend to be expensive and sophisticated. Historically the simplest systems have been the most successful. He suggested that technology opportunities may include hybrids, composites and automation. Sladky presented several examples of "specialized fast marine transport". These included key support of real estate developments in otherwise inaccessible areas, transport of perishable cargoes and construction crews, specialized tourist transport, emergency vehicles (police, SAR, fire fighting). Specific geographical opportunities include Boston, New York, Chesapeake Bay, Puget Sound, Alaska and San Francisco Bay.

Considering military applications, Sladky explored possible examples of small, fast, versatile single mission vehicles.

AUDIENCE PARTICIPATION AND CONCLUSIONS

John King compared WW II ship costs to those of naval ships today and suggested that we may be "pricing ourselves right out of the market". Mark Bebar emphasized that, with today's budget reductions, the Pentagon must look at less costly solutions.

Bill O'Neill restated his plea for saving the hydrofoil data base before it disappeared entirely.

Bob Ripley said that, although the military had done well with fighting the last war, it was unlikely that they could effectively select the correct weapons for the next conflicts. He suggested that it may well be "outsiders" who define the military's future requirements. Is IHS equipped to effectively function in the political arena?

Ron Adler suggested that perhaps IHS should be renamed, perhaps merge with USHS and/or SD-5. John King said that, if IHS leadership is logically where the hydrofoil activity is, then perhaps IHS should move to Europe or the Far East. Karl Duff reinforced this suggestion, saying that hydrofoils were essentially dead in the US. He suggested that IHS be renamed Marine Vehicle Society, or that it be transferred overseas.

Bob Johnston cited historical examples where the U.S. turned to its overseas allies for particular technologies.

John Meyer endorsed an IHS role, in cooperation with USHS and SNAME Panel SD-5, of actively "lobbying/marketing", in an educational mode, to ensure that, as a minimum, the decision makers were truly aware of the proven potential of hydrofoils and other AMVs.

Bill Ellsworth stressed the need to enlist the shipbuilding industry, who are the "constituents" and able to get the attention of Congress. Bob Ripley noted that it was important that senators or congressmen be able to "take credit", within their terms in office, for whatever AMV programs might achieve good press.

Joe Sladky restated his recommendation that IHS be pro-active, synthesize educational materials and look for targets of opportunity.

John Meyer closed the conference with an expression of his appreciation for everyone's support and participation in the three days of meetings. He advised that the Board would consider the various recommendations for IHS' future at their August meeting.

IHS 25TH ANNIVERSARY CELEBRATION AND CONFERENCE ATTENDANCE LIST

The Society was fortunate in having a good turnout for the Conference on the 14, 15, and 16th of June. Attendees over the three day period include:

Arima, Sumi
Adler, Ron
Bebar, Mark
Bertram, Volker
Black, Barney
Buckley, Julianne
Buckley, William
Buhler, Jean
Buhler, Phyllis
Calkins, Dale
Clark, Dennis
Cleary, William
Chorney, Steve
DeVeny, Flavia
DeVeny, Jay
Duff, Gretchen
Duff, Karl
Ellsworth, Ann
Ellsworth, William
Erickson, Emily
Erickson, William
Gallagher, Lynn
Gallagher, Tom
Gore, Dan
Hockberger, William
Hoop, Ray
Ingram, Tom
Jackson, Patsy
Jackson, Patrick
Jackson, Amy
Jenkins, George
Jenkins, Pat
Johnston, James
Johnston, Marcia
Johnston, Robert
Jordan, Danny
King, Bonnie
King, Jim
King, John
King, Suzanne
Kitamura, Tohru
Kobitz, Cynthia
Kobitz, Nat
Lamb, Bob
May, Robert A.
May, Michael
Mc Fann, Bill
Meyer, Gisela
Meyer, John
Monk, John
Monk, Mary
Morazes, Bob
Oates, Carroll
O'Neill, Elizabeth
O'Neill, William
Pappas, Chris
Patterson, Ralph
Patterson, Kaye
Peterson, Frank
Peterson, John
Pruitt, Lowe
Rice, Mark
Ripley, Martha
Ripley, Robert
Schab, Ben
Schafer, Marc
Sciucciarini, Anne
Sciucciarini, Peter
Sebra, Charlotte
Shen, Young
Siegel, Stan
Sladky, Joe
Spaulding, Ken
Stolgitis, William
Tanaka, Seigo
Toki, Naoji
VanBibber, Nancy
VanBibber, V.H.
Webster, Wade
Wight, Don
Wight, Pat
Wilson, Mike
Yarnall, Philip
Young, Jeffrey
Zumwalt, Admiral Elmo

ANNOUNCEMENT: Advanced Marine Vehicles Conference - "Expanding The Envelope"

Sponsored by: ASNE Advanced Technologies Steering Group, P.O. Box 1998, Silverdale, WA 98383-1998

Date and Location:

Wednesday, June 5 through Thursday, June 6, 1996 at Silverdale on the Bay Resort Hotel 3073 N.W. Bucklin Hill Road Silverdale, Washington 98383

Call For Technical Papers

In order to survive in business today, we must constantly strive for innovative thought, application of emergent technology, and incorporation of state-of-the-art materials and processes. Our theme, "Expanding the Envelope" is designed to capture the spirit of innovation and productivity. Abstracts are being solicited in all areas of advanced marine vehicle technology, but especially: Automation; Communications; Environmental Issues; Logistics Processes; Maintenance; Materials; Operations; Propulsion.

Abstracts

No more than two pages in length, your abstract should be in the English language, and provide a summary of your investigation and serve as an introduction for the program should your paper be selected for publication and/or presentation. Abstracts (and papers) must be completely free of commercialism and proprietary or classified information. Submit your abstract no later than November 1, 1995, to: Advanced Marine Vehicles Technical Papers, PO Box 1998 Silverdale, WA 98383-1998

Selection Criteria

All abstracts will be reviewed for technical merit and authors notified by December 15, 1995. At the time of notification, the format for the final paper will be provided.

Papers

After notification of selection your final smooth paper must be received prior to our printing deadline of April 6, 1996. Final smooth papers must be submitted with a copy on magnetic media. The papers must be prepared using MAC, MS-DOS, or MS Windows™ - based word processors, submitted on 720K, 1.2M, or 1.44M floppy disk. The content must be totally free of reference to commercial entities. You may provide your title and name of your employer on the first page of your paper only.

Presentation

All material you wish to be included in the briefing packet for your presentation must be provided at least 30 days prior to the conference. As with the paper, the content must be totally free of reference to commercial entities. You will have approximately 25 minutes for your presentation, followed by an interactive period.

The reference to Boeing's Fresh-1 (Foil REsearch Supercavitating Hydrofoil) in '30 Years Ago' in last December's issue has prompted Daniel E. Filley of Bremerton, Washington, to send us this recent photograph of the vessel.
He reports, "It still exists and appears to be intact, minus the foils, TV camera, outboard motors and foil hydraulics. It is in good shape except for the plastic windows. A few years ago mention was made of an attempt to put Fresh-1 on display but I am not aware of any action. If anyone is interested in helping preserve this unique hydrofoil I will volunteer my time to assist in locating additional information"

June 1995 *Fast Ferry International*

HYBRID HYDROFOIL PRESS RELEASE

The following is a copy of the Press Release on the HYSWAS Demonstrator, dateline 5 July 1995, from the Carderock Division, Naval Surface Warfare Center.

Background

Under a Small Business Innovation Research contract with the U.S. Navy, a Maryland firm has designed and constructed a 12-ton, 37-knot hybrid hydrofoil known as HYSWAS (Hydrofoil Small Waterplane Area Ship). The Maritime Applied Physics Corporation design builds upon research conducted over a 20-year period at the Carderock Division of the Naval Surface Warfare Center. The vessel's superior seakeeping (low motions) at high speeds is expected to be of great value in both military and commercial applications.

The HYSWAS vessel will be "rolled-out" of its construction facility on 7 July in Laurel, Maryland prior to its transport to Navy facilities in Annapolis, Maryland. (Editor's note: The roll-out will be attended by Navy personnel, commercial participants and members of the press.)

The objective of the project is to build an affordable craft that demonstrates the performance characteristics of the HYSWAS hull form. It is anticipated that the hull can be applied to Navy craft and commercial passenger vessels. Although the technology for this craft was pioneered by the U.S. Navy nearly 20 years ago, the first HYSWAS vessel was launched in Japan earlier this year.

The Maryland vessel is substantially different from its Japanese counterpart. While the Japanese boat is powered by a gas turbine and waterjet, the U.S. vessel has a higher efficiency diesel engine and a conventional propeller. Both vessels are dependent upon an electronic controller to maintain stability in heavy seas.

About the Craft

The HYSWAS craft operates at two very different waterlines. When at rest or when moving at slow speeds, the vessel rides on its upper hull and looks very similar to a conventional boat. As the vessel's speed increases, the control computer commands the submerged foils to an angle where they generate lift. The lift from these submerged foils allows the craft to rise up to a new waterline. At this new waterline, the slender strut allows the vessel to remain relatively motionless as the waves ride up and down on the strut. By controlling the position of each of the four foils independently, the boat's roll and pitch motion can be controlled. In this mode of operation the craft is similar to its cousin the SWATH (Small Waterplane Area Twin Hull) ship; however, the HYSWAS is capable of higher speeds due to its smaller wetted surface area.

The demonstration craft is equipped with four seats and standard navigation equipment. The craft is capable of carrying 2,500 pounds of payload over 800 miles when foilborne at a speed of 20 knots. Predictions indicate that the craft will have less than 3 degrees of roll and pitch motion when operating at speeds above 30 knots in 8 foot seas.

The HYSWAS differs from a traditional hydrofoil in that a portion of the total "lift" is obtained from the buoyancy of a submerged lower hull. The lower hull does result in higher drag forces than those experienced on a traditional hydrofoil at speeds above 40 knots; however, the buoyancy of the lower hull supports the weight of the engine and fuel thereby allowing the vessel to take-off at lower speeds, to operate at much greater ranges, and to carry greater payloads.

The HYSWAS control system receives motion and position data from sensors throughout the vessel. These signals are used by the computer to determine optimum foil positions to minimize boat motions. The positions of each of the submerged foils is adjusted one hundred times each second to achieve exceptionally stable operation. As in modern aircraft design, the boat's control system is a "fly-by-wire" design.

The U.S. Navy has studied HYSWAS ships that vary in size from 180 to 2000 tons. The present extension of these designs down to the 12-ton size is a result of Navy interest in unmanned craft that are capable of performing a variety of missions. As remotely controlled or autonomous craft, the HYSWAS offers an ability to operate at high speeds over long distances in heavy sea conditions. The HYSWAS hull is particularly well suited to this combination of range, speed, payload, and seakeeping in a craft of modest size.

About The Program

Maritime Applied Physics Corporation successfully won a Navy competitive procurement for a Phase I HYSWAS design contract in 1992. This $50,000 effort resulted in design drawings, a design report and various computer simulations of vessel performance. The results of this Phase I effort led to the award of a Phase II construction contract in 1994. The $731,000 construction contract covered an 18-month period. The July 7 roll-out is occurring 15 months after contract award within the contract cost that was bid.

The completion of this difficult construction effort involving new technology within a constrained budget was possible by using the very flexible work-force of a small company and the specialized expertise of larger companies. For example, Cummins Engine Company (Columbus, Indiana) provided a prototype engine that is capable of fitting within the 4-foot diameter lower hull yet generates 825 horsepower. By committing a prototype engine to this effort and by following this up with a strong applications engineering effort, Cummins demonstrated faith in the new hull form and its future in both Naval and commercial applications.

A subcontract with Bath Iron Works (Bath, Maine) allowed the expertise of a large shipbuilder to be applied to the lofting and forming of complex aluminum surfaces. The specialized talents within the "loft" of the large shipbuilder were used to develop the digital code that allowed the panels to be cut efficiently from plate and to then be accurately formed into required shapes. Approximately 1100 pieces of cut and formed aluminum were shipped to Maryland from Maine within the first three months of the contract. Each shape was defined by a computer-aided-design drawing developed during the concept design. These files were used by Bath Iron Works to develop the numerically controlled cutting and forming code that resulted in

fabrication of each part.

A third subcontract with Mechanical Welding Service of Woodbine, Maryland brought aluminum welding expertise to the project. The high-strength alloy used to construct the hull requires particular welding qualifications. Mechanical Welding Service was able to integrate its welding work with the outfitting work to minimize the construction period. The heat-induced warpage of the aluminum was consistently controlled to achieve clean lines on the relatively complex shapes of the HYSWAS hull form.

Also two other companies contributed equipment for demonstration on the HYSWAS vessel. CPV, Inc. agreed to provide high-performance fittings for the prototype at substantial discount. The demonstration craft is designed for unmanned use in its Naval application and the reliability of hydraulic systems was given a high priority. The use of the CPV fittings ensures the integrity and reliability of the hydraulic plumbing subsystem. The second contribution, from Electronic Marine Systems, is a digital GPS system known as Chart Viewer™. This digital chart allows the craft master to accurately observe the present position of the craft on a digital chart. Electronic Marine Systems provided the Chart Viewer™ at no cost to the Navy as a demonstration of the system's applicability to advanced marine craft.

The Craft's Purpose

The 27-foot HYSWAS was conceived and designed to demonstrate the HYSWAS hull form in a manned configuration and provide a technical basis for adapting HYSWAS to Navy unmanned vehicle applications.

Commercial applications envisioned for the technology include high-speed passenger transport, high-priority intermodal cargo movement, oceanographic research, hydrographic surveying, geophysical research, offshore platform supply, and other specialized operations that require the combination of range, payload, seakeeping and speed that the HYSWAS hull form offers.

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WELCOME NEW MEMBERS

David Lavis - Dave is President of Band Lavis Associates. He has had a long-term interest in hydrofoils dating back to the Canadian/DeHavilland BRAS D'Or developments in the 1960s.

Naoji Toki- Mr. Toki holds Bachelors and Masters degrees in Naval Architecture from the university of Tokyo. He is with Nagasaki Research and Development Center of Mitsubishi Heavy Industries (MHI) where he has been associated with the development of advanced marine vehicles, such as SWATH, SES and hydrofoils.

Tohru Kitamura - Mr. Kitamura holds Bachelors and Masters degrees in Naval Architecture from the university of Hiroshima. After joining Shimonoseki Shipyard and Machinery Works of MHI in 1985, he has been engaged in development of several types of advanced marine vehicles.

Flavia DeVeny - Ms. DeVeny is a Project Engineer with Marada Industries Inc. in Maryland. She is responsible for the design and manufacture of automotive parts for many of the large automobile makers in the U.S.

Robert Lamb - Bob Lamb is Chief of Technology with SWATH International, Ltd. in Calverton, Maryland. Previously, he had been employed by the David Taylor Model Basin for many years where he had been in the forefront of Small Waterplane Area Twin Hull (SWATH) technology research and development.

Carroll R. Oates - Carroll R. Oates has been with the AlliedSignal (Lycoming) Turbine Division for sixteen years. Since 1988, he has been specifically involved in marine/industrial and vehicular projects. Special emphasis has been given to the promotion of marine turbines for high ferries and rail service.

Frank Peterson - Dr. Frank Peterson is a graduate of the University of California, Berkeley in Mechanical Engineering and later obtained his Doctorate in Mechanical Engineering at Northwestern University. During the last 10 years he has been Head of Propulsor Technology at the Carderock Division Naval Surface Warfare Center.

Seigo Tanaka - Mr. Tanaka is Vice President of Kawasaki Heavy Industries (USA), Inc. with offices in metropolitan New York.

CROSS SOUND FERRY SERVICES BUYS TWO VESSELS

(From Fast Ferry International, June 1995)

Cross Sound Ferry Services, an American operator based in New London. Connecticut, has purchased an Incat 37m wavepiercing catamaran built by Nichols Brothers and an Air Ride 109 SES built by Avondale Boat Division.

Both vessels were originally delivered in 1990. The wavepiercer entered service with Bay State Cruises as *Nantucket Spray.* In 1991 it was sold to Metro Marine Express and renamed *Metro Atlantic.*

Later the same year it was sold again. This time to Sea Jet Cruises, and renamed *Sea Jet 1.* After a short spell in Hawaii operating dinner cruises from the island of Oahu, the vessel was transferred to San Diego and operated on a route to Catalina Island.

The Air Ride 109 was delivered as *Metro Manhattan* to Metro Marine Express and briefly operated on a commuter route between Lower Manhattan and Inwood, Long Island. During 1991 it was renamed *Sea Jet II* and transferred to the Delta Water Shuttle service between Manhattan and New York's La Guardia airport. Sea Jet Cruises was then in the process of purchasing the franchise from the existing operator but negotiations broke down; the craft remained laid up.

Sea Jet Cruises went into receivership at the beginning of last year, since when *Sea Jet I* has been in a shipyard in San Diego awaiting repairs to both waterjets following an incident in which the wavepiercer struck a jetty, resulting in rocks, mud and sand passed through both units.

Cross Sound Ferry Services are expected to use the Air Ride 109 as a source of spares, both vessels are powered by MWM TBD 604B V 16 engines and KaMeWa waterjets. The company currently operates ferries on 2 routes from New London, across Long Island Sound to Orient Point, Long Island, and across Rhode Island Sound to Block Island. Its plans for the wavepiercer have yet to be confirmed.

LETTERS TO THE EDITOR

June 22, 1995

I have a few comments about the International Hydrofoil Society that I will pass on to you now. According to the dictionary, a hydrofoil is: 1. A body similar to an airfoil but designed for action in or on water. 2. A motorboat that has metal plates or fins attached by struts and fore and aft for lifting the hull clear of the water as speed is attained. Up to now, I believe we have used definition 2 as the intent in using Hydrofoil in the organizational name. If we expand our view to encompass all foil attached ships, we do not have to change the name of the society, but change the connotation in defining hydrofoil. I believe we have to expand our base to stay a viable organization. The hydrofoil community is a dying breed in the present day atmosphere. If we do not expand, we might will write our chronicles and close up shop. I firmly believe that the chronicles should include computer assisted design programs such as HANDE and/or ASSIST. It would be much more useful if they could be put on CD ROM for PC users.

I strongly feel that for a society to succeed, it must provide a payback for the members. To lure younger members, we must provide the incentives. Usually, a society provides an information exchange base where members write papers furthering the knowledge of the Society's interest and secondly, providing the members with a means for staying contact with other like interested people to either promote their wares or exchange information. The International Hydrofoil Society has failed to accomplished these goals in recent years. We members on the west coast are even further from the main stream of the organization. As a starting point for improvements. the quarterly newsletter should be expanded to include papers which exchange technical information. Papers such as written by Bill Buckley on loads criteria are needed to entice the young engineers to join and make our organization more of what it should be.

Sumi Arima

June 21, 1995

I want to thank you for a terrific time on the occasion of the IHS's 25th! Not only was the hospitality great at the King residence, but the meeting was run flawlessly, the papers were excellent to outstanding, and the setting was just right. In fact, I definitely think we should be expanding the IHS, not contracting it, and working to include the hovercraft of the world, and other advanced design ships in an organization world-wide to keep our name in front of the public. As I told John King, we need also to have a feature article written on this anniversary, and stress some things of interest to the general public from the various papers presented.

John, you asked for formal comments. Mine are:

- Make the year 2000- a reunion year, and make it outstanding!
- Increase our publicity, using the past meeting as a start.
- Investigate the possibility of joining other advanced craft societies in either a loosely-knit federation, or a single Society for advanced design ships.
- Make a positive hydrofoil data bank input to Jim King, and SNAME Panel-5 on advanced design.
- Plan for a IHS delegation to visit Capitol Hill on behalf of increased military R&D for advanced design ships. Stress that only weapons systems seem to get any R&D attention; and the Navy is merely working on evolutionary change in a world requiring revolutionary change in ship designs. Add the cost-effectiveness of hydrofoils as a principal reason to re-think Navy policy on PHM's and the "DBH".
- Publicly praise the efforts by other countries, especially Japan, to out-distance the U.S. Then appeal to national pride with OSD and the Congress as a reason for moving on with development.

Warm Regards,
Bob Ripley

July 25, 1995

I thoroughly enjoyed the meeting and seeing old friends. The location for having the meeting could not have been better chosen for Nancy and me.

The Panel Discussion should have been earlier because there was much to be said and much to be discussed. Specifically, I think that Capt. William Erickson's comments are governed by the Flag group he was subservient to. Regardless of how Capt. Erickson feels, I am certain that the hydrofoil ship in a Navy Fleet role has a great potential that has not been fully exploited. Had the Panel Discussion included the audience, I would have presented many questions and comments to the Captain that might have stimulated considerable discussion.

- Captain Erickson alluded to a good Fleet mix for littoral areas of the world. Were potential opponents such as Iraq, Iran and other Arabic nations allied, for example:

(1) Areas like the Persian Gulf could be closed rapidly at the Strait of Hormuz by a few sophisticated mines which could be obtained from Russia and others.

(2) War of immanence in which the enemy is well equipped and takes a defensive role, and a policing action for containment are totally different situations. All engagements in recent years have been NATO type policing actions. (And these have not been too effective.)

(3) The Captain's comments evolved around the concept that our Fleet is "big and tough and invincible". First, the fact that the U.S. has, relatively speaking, an enormous Fleet of larger ships does not mean they can not be seriously damaged or sunk by mines laid in strategic littoral areas such as the Strait of Hormuz, Suez Canal or Bab el Mondeb. Secondly, if effective shore equipment were made available to people like Saddam Hussein, what does the Captain think would happen to an anchored Fleet?

(4) It is one thing to cross an open ocean at a 30-knot cruise speed, but he or no one else can maneuver those larger ships in straits at those speeds. Furthermore, to pull anchor and get even a Frigate up to flank speed takes an hour. With a well equipped shore battery in the offensive mode it could be devastating.

- Were Russia, China, North Korea and small well-financed

countries such as Iraq an Iran to ally, then many littoral areas would not be accessible to the U.S. Blue Water Fleet. (1) The littoral water threats of today have the greatest potential for escalation into a threat of immanence. A significant defensive action could occur by the use of modern mines and surface to surface missiles such as the Exocet. (2) The Fleet should develop a rapid deployment group that can Blue Water operate to the littoral areas then launch a rapid deployment group (over 40 knots). This Fleet group should be able to react in a moments notice, attain full operational speeds in short range and be very maneuverable.

The hydrofoil ships like LCAC's could be home ported on a Landing Dock Hydrofoil. Such vehicles operating together have a far greater probability of establishing a beach-head than a Blue Water Navy in conjunction with LCAC's. Lastly, I have been around hydrofoil craft utilization longer than most and I can sincerely say the potential has never been exploited. Any time I have ever heard a staff group discuss hydrofoil craft for military utilization, reliability and range are the key factors in discounting their potential. Often, like Captain Erickson, it is implied the helicopter can do the same thing that the hydrofoil craft can - so why hydrofoils? I know many Navy helicopter pilots, and they are consistent with their answers:

- In severe weather even if it clear the pilots will not bring the helo down close to the water.
- Even in relatively calm seas, helos have a difficult time of launch and recovery, and they certainly are not maneuverable with a tow.
- In sweeping operations with helos there must be great path overlap to assure sweep effectiveness.
- For every hour of flying time, helos still require 11 hours of maintenance.

On the other hand the hydrofoil can operate in quite inclement weather and in case of war of immanence it could operate in very severe weather conditions. The hydrofoil has a greater towing capability, certainly more maneuverability with a tow and unequaled ability to maintain a true course. From all the information I have gathered, even the hydrofoil of today does not require the maintenance that the helo requires.

Like airplanes, it takes several generations of hydrofoils to develop the reliability and maintenance programs that keep them operating. In dollars per pound the hydrofoil is far cheaper than the helicopter and for a rapid deployment in littoral areas it could be far superior and ultimately more effective.

V. H. VanBibber

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July 27, 1995

Before any more time goes by I want to thank you for the opportunity to present my paper on ENTERPRISE. I regret that I was not able to better pace myself to allow more time at the end to show the video that you so kindly prepared for me.

Hind sight is always 40/40 but based on the other presentations that I heard I wish I had made my paper more technical; although all our calculations and data are 40 years old they are realistic and actual but just as advanced and sophisticated as some of the dream data presented by others. Furthermore, our calculations were all made by slide rule and Marchant Calculator. I don't know what Alexander Graham Bell used but he too made his hydrofoil fly without a computer.

I think the computer is a great tool but it should not be used to "reinvent the wheel." Documentation of old data is good (We are still using Reynolds number and Froude number) but I think our students should use it to think ahead, not play games. Sure I enjoyed my school days making fun projects in the lab but think of how much more worth while it would have been to have made useful products in the lab.

Jim King's idea of a data bank is fine but it seems to me to be "after-the-fact." If he really wants to pursue the project why does he not start with Bob Johnston's AMSA bibliography. I still have an extensive hydrofoil library, the backbone of all our (Miami Ship & Marine Systems) hydrofoil work, but it is some what scattered, not cataloged and I am not yet ready to part with it, although I will share with IHS members. You should know about data banks; that is what I thought you were trying to salvage from DTMB before it was given the deep six. As to a Design Manual, I don't see any real need for it.

The SNAME Small Craft Committee and Panel SC-1 have been talking about writing a Design Manual for Small Craft for quite some time but that is about all it amounts to, talk. Toward this goal the only publications that I know of are bibliographies by Joe Koelbel for Naval Ship Systems Command (Report 120-1, 1971) and DTMB (Report 23086-1, 1977). These are now 20 years old but may be of some interest to Jim King for a start.

It is obvious, and for good reason, that the Navy has lost interest in hydrofoils and since the membership of IHS is largely Navy or ex-Navy personnel I can see the concern of IHS about its future. Technical papers galore have been published for both military and commercial vessels but they all seem to miss a more crucial aspect, namely the economics. For Commercial vessels there is the question of shore facilities, connecting transportation or "Intermodal" transportation I think it is now called, logistics and supplies not to mention competing transportation and the unions. The struggle and cost of getting higher speed is a joke if getting beyond the terminal is interminable.

The 65 forty-foot supply trailers for the PHM fleet at Key West was rediculou, but could you conceive something similar for a commercial operation? The above factors are why I, with all my enthusiasm about hydrofoils, have not been able to convince my contemporaries or customers that hydrofoils are here to stay.

I had expected to say something about all this at the panel discussion but here again I was more interested in listening than putting in my out-of-date opinions.

As a parting shot, I'd like to say there is one nice thing about living in Miami and that is, it is so close to the U.S.A.

Sincerely,

Jean E. Buhler

ARPA PICKS MARITECH PARTICIPANTS FOR FY 1995
(From Navy News and Undersea Technology; May 29, 1995)

The DOD's Advanced Research Projects Agency has selected 24 new projects for negotiations in the fiscal year 1995 MARITECH competition. Combined, these projects are expected to receive $18.7 million in Federal FY 95 funding, with the participants kicking in their respective amounts. The Pentagon noted that in some cases, only portions of the project have been selected for federal funding. But in all cases the Federal share is subject to negotiations. The projects and organizations, see accompanying chart, were selected from 64 proposals received, and include 18 major U.S. shipbuilding companies, foreign organizations, the Navy and other federal organizations and various subcontractors. The 24 projects include efforts in advanced shipyard process and shipboard product technologies development, and nearterm ship design and construction technology application projects.

SHIPYARD PROCESS AND SHIPBOARD PROJECT TECHNOLOGY

MARITECH, in its second year of a five-year program, is aimed at developing and applying advanced technologies for improving the competitiveness of the U.S. shipbuilding industry, and likewise, preserve the capability for Navy ship construction in the United States. "MARITECH is matching industry investment with federal funds on a competitive basis to develop and implement technologies and advanced processes for the competitive ship design, marketing, construction and support," the DOD said in announcing the program participants.

NAVY AND MERCHANT MARINE SHARE TECHNOLOGIES

Also technologies and processes developed for the merchant marine requirements will be applied to Navy combatants, resulting in improved performance and more affordable ship acquisition for the U.S. military.

ARPA said the MARITECH-developed technologies and processes being implemented in the shipbuilding industry will result in long-term effects that:

- maintain the shipbuilding infrastructure for future mobilization contingencies, such as shipways, skilled workers and marine suppliers;
- safeguard affordable Navy ship construction using world-class, Navy-applicable commercial shipbuilding processes and technologies; and
- assist the U.S. shipbuilding industry in competing in the international commercial maritime market.

The program is managed by ARPA in conjunction with the Maritime Administration and the Office of Naval Research.

The government expects fund of $220 Million for the five year MARITECH program, with a corresponding sum from industry - in hopes of improving the competitiveness of the U.S. shipbuilding industry.

The following identifies several of the selected proposals and companies of interest involved in the 24 MARITECH projects.

Prospective MARITECH Projects
Advanced Shipyard Process and Shipboard Product Technology Development (BAA #94-44)

Consortium Member	City	State	Total Proposed Cost
Adaptive Control for SLICE and SWATH Ships			$960,000
Lockheed Missiles & Space Company	Sunnyvale	CA	
Pacific Marine	Honolulu	HI	
SWATH High Speed Ferry			$900,000
SWATH International	Calverton	MD	
Altair Engineering	Dearborn	MI	
Bollinger Shipyard	Lockport	LA	

PROSPECTIVE MARITECH PROJECTS
NEAR-TERM SHIP DESIGN AND CONSTRUCTION TECHNOLOGY (BAA #95-02)

Consortium Member	City	State	Total Proposed Cost
Fast Ferry Market Penetration			$610,000
Nichols Brothers Boat Builders	Freeland	WA	
Gladding Hearn Shipbuilders	Sommerset	MA	
Incat Designs Sydney		Australia	
Midfoil SWAS Ship Design			$1,530,000
Pacific Marine	Honolulu	HI	
Nichols Brothers Boat Builders	Freeland	WA	
Westport Shipyards	Westport	WA	
Art Anderson Associates	Seattle WA		
Large Fast Ferry Technical Development			$5,040,000
Halter Marine	Gulfport	MS	
Bank of Tokyo Financial Corporation	Boston	MA	
V. Ships (USA)	New York	NY	
Band Lavis & Associates	Severna Park	MD	
Derrick Offshore		United Kingdom	
Fry Design & Research		Australia	

THE NEWSLETTER

INTERNATIONAL HYDROFOIL SOCIETY

Post Office Box 51, Cabin John, Maryland 20818, USA

Editor: Barney C. Black | AUTUMN 1995 | Co-Editor: John R. Meyer

IN THIS ISSUE.....

ANNOUNCEMENT

25TH ANNIVERSARY CELEBRATION AND CONFERENCE PROCEEDINGS AVAILABLE

PLEASE SEE PAGE 4 OF SUMMER NEWSLETTER FOR LIST OF PAPERS

Anyone who was not able to attend the 25th Anniversary Celebration and Conference in June may obtain a copy of the Proceedings containing a complete collection of papers presented. Please send $15 plus $3.50 to cover handling and mailing costs to:

CDR George Jenkins USN (Ret.)
713 S. Overlook Drive
Alexandria, VA 22305 USA

1995 DUES REMINDER

ALL MEMBERS WHO HAVE **NOT** PAID THEIR DUES FOR 1995 ARE REQUESTED TO DO SO

Please send your $20.00 check made out to IHS to:

CDR George Jenkins USN (Ret.)
713 S. Overlook Drive
Alexandria, VA 22305 USA

THE PRESIDENT'S COLUMN

We hope that the general membership of the Society found the summer issue of the Newsletter informative, and particularly so for those who were not able to attend the 25th Anniversary Celebration and Conference. We are continuing to publish happenings and letters related to this event. Some of the many pictures taken by Ken Spaulding can be found on page 3 of this issue. Space limits us to just several for now - more will appear in future Newsletter editions.

I regret to inform our members that Bob Johnston has stepped down as Editor of the Newsletter. All of us are grateful to Bob for his many years of dedication and for making a major contribution to the Society. In fact, I can't remember a time during my long membership in the Society that Bob Johnston was not the Editor of the Newsletter. In a recent letter, he wrote:

> "The time has come for me to resign as Editor of the IHS Newsletter. It is my opinion that the editor should be someone in the vicinity of D.C. who can attend Board Meetings and work with all of you on a closer basis than a Florida golfer. I shall be most pleased to continue to provide material as a contributing editor or such other assignment as you would ask me to perform. I still have a few sea stories that should be somewhere on the record.
>
> I must say that Patsy Jackson put up with my being an out of town editor for several years and John Meyer has done the same for the past years. The time has come to change this situation.
>
> Please accept my resignation at the time you have designated a new editor."

As you can see from the header on page 1 of this issue, Barney Black has taken over the reins as Newsletter Editor. Barney has the talent for the job and has already made a significant contribution to the Society as the one who pulled together the many papers for the 25th Anniversary Celebration and Conference and the resulting 302 page Proceedings.

We continue to be indebted to Mark Rice, Membership Chairman, whose hard work in bringing in new members is bearing fruit. The last several Newsletters, including this one, shows new members totaling 26. Thanks again, Mark.

As many attendees to the Panel discussion on the topic of the "Next 25 Years", can attest, comments were lively, interesting and diverse. Several letters were inspired by these discussions and were reproduced in the Summer Newsletter. To enlarge the picture, we have reproduced some of the September and October Board of Directors meeting notes starting on page 4 of this Newsletter.

Again, I welcome all members to express their thoughts on this subject. Your letters will certainly be welcomed and your ideas given much consideration.

John R. Meyer, President

NEW OFFICERS ELECTED

We regret to report that in September, because of ill health, John W. King had submitted his resignation as Secretary/Treasurer of the International Hydrofoil Society. It was only as this Newsletter issue was going to press that we learned of his death. John has served faithfully and diligently as an Officer of the Society for many years. He has also served on the Board of Directors equally as long, and will be sorely missed by many of his IHS colleagues and friends.

John King, a Navy Captain, who retired in 1975 as coordinator of the U.S. Navy's hydrofoil program, died of cancer Nov, 15 at his home in Alexandria, Virginia. Capt. King's 29-year career included service in the Pacific during World War II, in the waters off Korea during the Korean War and as commanding officer of the USS Hawkins during the Vietnam War. He served largely as a surface warfare officer, and received the Navy Commendation Medal.

The members of the Board of Directors present at the October 17 Board meeting decided to split the heretofore Secretary/Treasurer position into two. George Jenkins has accepted the responsibilities of being the IHS Treasurer, while Ken Spaulding will take on the Society's secretarial duties.

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WELCOME NEW MEMBERS

Stephan Gordin - Mr Gordin came to Annapolis in Feb 95 to become the President of Kvaerner Masa Marine, Annapolis, MD. Prior to that, he was Program Manager on several research vessel programs at the Kvaerner Masa Yard (formerly known as Wartsilla Industries). His masters degree is in Naval Architecture from Technical University of Helsinki. He is an expert in ice-breaking technology.

John Avis - Mr. Avis is Vice President of Kvaerner Masa Marine. He received his undergraduate degree in Systems Design Engineering from the University of Waterloo. His masters is in Mechanical Engineering with an emphasis in Naval Architecture from the University of British Columbia. He sailed with the Canadian team aboard the Canada II in the 1987 Americas Cup. Kvaerner Marine's interests in the U.S. include Air Cushion Vehicles.

James P. Cummings - Mr. Cummings is with Honolulu Shipyard in Hawaii. His experience with hydrofoils goes back to days of the Jetfoil, "Seaflite", when he was Engineer and Captain. His more recent interests have been with Small Waterplane Area Twin Hull (SWATH) craft.

Richard A. Difede - Mr. Difede is with Gold Coast Yachts in the U.S. Virgin Islands. His specialty is marine engineering.

James Hynes - Mr. Hynes is with Loral Aerospace in Rancho Margareta, California. He is an expert in guidance and control theory, and believes that low cost control systems for hydrofoils can now be built. He is also interested in variable inlets for waterjets.

Christopher B. McKesson - Mr. McKesson is a naval architect with Arthur Anderson Associates. Prior to this he was a naval architect with the Naval Sea Systems Command working on Surface Effect Ship (SES) designs.

PICTURES FROM IHS 25TH ANNIVERSARY CONFERENCE - Courtesy of Ken Spaulding

Bob Ripley and Patsy Jackson Welcome Attendees

Bob Johnston Leads off with a Paper on IHS History

Attendees Pay Close Attention to Speakers

Dan Gore Describes Foils by Maritime Dynamics, Inc.

Bill Hockberger Introduces Panel Members

Conference Attendees Who Stayed to the Bitter End

THOUGHTS AND COMMENTS ON THE FUTURE OF THE IHS

By Bill Hockberger

In material I sent out to those preparing for our panel discussion for the 25th Anniverary Conference, I listed the following reasons for having an organization such as the IHS, and I still think they provide a useful outline for thinking about its future:

1. Keep together a group of people who know about and care about hydrofoils, against the time when serious interest revives. Preserve the knowledge of hydrofoil developments and experience.
2. Maintain a track on the state of hydrofoil technology and design, in the absence of a solid U.S. Navy or U.S. commercial program that would do it.
3. Maintain a track on the state of the markets for high performance marine transportation — and keep alert for unrecognized areas in which hydrofoils could be cost-effective.
4. Share information, so IHS members remain aware of what is happening and stay alert to new ideas and are stimulated to think about them and come up with other new ideas.
5. Assemble information on hydrofoils and hydrofoil technology for use in informing and educating potential users and supporters.
6. Foster some continuing work important to the field.
7. Motivate members periodically to write papers that capture new developments and fit them into the current context.

Comments made during our panel discussion at the 25th Anniversary Conference included:

- Bob Johnston noted the contrast between peacetime negligence and wartime needs
- The fact that there is no AMV program of any kind now, hydrofoils included, is a big reason why an IHS is needed to keep things together. When there is a program and money, no extra help (from volunteers) is required. People get paid for thinking about such things, and developments keep occurring steadily.
- Sumi Arima notes that if we take a broader view of what a hydrofoil is — not just a whole ship supported by foils, but a foil alone that can be added to any kind of vehicle for any of several reasons —we'll recognize more potential applications and more reason to keep working on hydrofoils. (But I don't think rudders or anti-roll fins qualify. Maybe the foil has to be used for vertical lift, for us to consider it valid for out purposes?)
- Arima thinks to be viable the IHS must get its members to do more useful work and distribute it to people who will be educated and motivated by it - e.g., younger people. (Maybe in lieu of new work we could replenish key papers from before?)
- Jean Buhler suggests changing name to "International Hybrid Society," to reflect present realities and keep hydrofoil work going within it. (Much info and discussion centered on hybrids and their uses and potential.)
- Buhler, Duff, Erickson, others think hydrofoil has no future — too costly for what it does, not sufficiently capable for extended deployment and response to any mission need.
- Van Bibber and some others believe the hydrofoil has never gotten a real test, that it is highly capable for some uses that are important now and that it is much more cost-effective than a helo, for example.
- There's a general concern that the hydrofoil "databank" be preserved for the future.
- Joe Sladky comments re being proactive: marketing, educating, documenting, sponsoring supportive activities. Develop concept studies and position papers for use when opportunities present themselves. He recommended that we find niche applications for AMVs.
- Ron Adler proposed renaming IHS, combining it with USHS and maybe SD-5. Duff agreed, saying maybe it should be just "Marine Vehicles Society."
- John King suggested that if the real focus of hydrofoil activity is in Europe of the Far East, maybe IHS should be transplanted to one of those areas. Duff agrees, is convinced hydrofoils are dead in the U.S.
- Bill Ellsworth suggested getting shipbuilders involved, since they are the constituents for whom congress may do something.
- Bob Ripley noted that congressional representatives will only do something if they can take credit for it during their time in office.

EXCERPTS FROM SEPTEMBER 1995 BOARD OF DIRECTORS MEETING

The majority of time available for this meeting was devoted to discussion of alternative strategies for educating transportation decision makers regarding the potential of hydrofoils and other HPMVs. This discussion included consideration of the basic mission and potential of IHS as well as the degree to which IHS should cooperate with SD-5 and USHS.

John Meyer opened this discussion with a review of recent IHS efforts to assemble and present materials describing HPMV experience and potential. He also related the contacts made with potential decision makers such as Marty Pilsch of the Urban Harbors Institute, Becky Berg of the Passenger Vessel Association and attendance/presentations at ISTEA regional planning meetings. He distributed copies of two information packages assembled for these contacts.

The possible approach of actually introducing legislation supporting the development of "showcase" transport demonstrators was described. Ken Spaulding commented that perhaps the IHS (and USHS/SD-5) role was more appropriately to simply educate, in a conservative and credible mode, the planners and decision makers regarding the potential (and actual state-of-the-art) of HPMVs in order that they (HPMVs) could be given rational consideration in the transport planning process. Thus an HPMV community group (undefined composition but possibly IHS/SD-5/USHS) could establish itself as an available and credible advisory panel. John Meyer noted that Frank Peterson, whose excellent credentials and recent HPMV

sojourn in the Far East particularly qualified him for this role, had volunteered to support such an initiative. Frank had been invited by John to this meeting to explore this possibility.

Bill Ellsworth made an appeal for the preservation of the U.S. HPMV technology base, saying that we should try to create a credible, comprehensive, HPMV data bank which would be readily accessible by all. Bill stressed the need to put this data bank "on-line", consistent with the currently developing "information highway". Spaulding observed that there was some resistance on the part of elements of the U.S. industrial base to releasing any data which would weaken their competitive edge. In any case much of this data is already "public information" and releasable by the Navy.

Mark Bebar said that there were a lot of specific, HPMV related, technology areas where a U.S. lead could be exploited. He cited the World-Phoenix example of a really bold U.S. initiative. There are clearly numerous market "niches" which might be identified and developed. Mark emphasized the importance of seeking consensus of the various government agencies regarding these opportunities. Examples of "involved" government agencies include the Urban Harbors Institute and the Washington State Ferry Authority. It was emphasized that the entire transport "system" must be considered and that no initiative would go far without convincing effectiveness analysis.

Bill Ellsworth noted that the classic UMTA study results still were generally applicable even if some of the parameters had changed a bit. Bill voiced a concern, reflecting a group consensus, with the use of the term "marketing". We should be, as Bill has stressed in the past, "honest advocates" of the best solution. We must be educators, not sales people.

Capt. Peter Squicciarini commented, referring to an SC-21 Surface Navy Association showcase, that trimarans and SWATHs had actually surfaced as SC-21 candidates. Pete commented on the recurring "value of speed" issue. He encouraged the group to be realistic in developing a strategy, taking care not to be derailed by specific advocates ("Dead Poet's Society"). He said that the U.S. is totally auto/highway oriented with little sensitivity to "mass transportation" needs. Bill Ellsworth noted that speed, from a safety and traffic control standpoint, in congested waters, could be a liability. The Washington Ferries people seem more interested in low-wake vehicles. Bill also stressed the current focus on car ferries, as opposed to strictly passenger carriers. Pete Squicciarini said that *freight* may be the key (it is with the railroads). He also stressed the developing trade in this hemisphere (NAFTA etc.). Pete suggested a "storyboard" approach to strategy planning. He commented on the "global analysis" of groups such as NEDLLOYD regarding profitability analysis of the "box-flow" of containers. He mentioned, also, American President Lines. Pete noted that "shuttle ships" are still a requirement.

There was a discussion of the ability for, and potential of, congressional lobbying. The consensus was that IHS members have neither the time nor the capability to play this role. Again, we are, more appropriately, educators.

Continued on page 10

CRUISE + FERRY 95

(Contributed by Jennifer J. Zeien)

"Cruise + Ferry 95" was held on May 16-18, 1995, in London. The event drew an international, primarily European, audience. Designers, engineers, businessmen, financial wizards and others presented technical papers against the backdrop of a much larger event which was the associated exhibition. Several hundred exhibitors displayed their wares in large exhibit halls. The exhibitors were organized according to country and featured providers of the entire range of associated products and services: shipyards, classification societies, interior designers, furniture and fabric distributers, engine and pump manufacturers, terminal designers, and port authorities to name a few. The United States exhibit was disappointing. Tucked off in one corner on the third floor, the American exhibitors, which were not particularly representative of the maritime services available in this country, did not receive much attention. No American shipyard exhibited at the conference.

The technical papers were literally inspiring. Compared to the usual mixture of wailing and bravado that has characterized some of the conferences I've attended in the United States, the papers demonstrate that the cruise and the ferry industries (sometimes the distinction between the two gets a bit blurry) serve robust and thriving markets. Yes indeed, ships are being built that capture the imagination. Companies are making money. New concepts and ideas are being developed and implemented.

It is very difficult to distill the proceedings of a three day conference into a short presentation. I've tried to select a few areas that would be representative of the conference as a whole. I would encourage you to examine the materials from the conference for additional detail. For me, the conference served to illustrate the challenge faced by American shipyards that would attempt to enter either the ferry or the cruise market, which is a daunting one. The conference brought home the point that shipbuilding is not just building ships. There is an entire market psychology to address. Perhaps the need to gain an intimate understanding of that psychology is the most serious barrier that stands between the U.S. shipyards and the international shipbuilding markets.

The Cross Channel Market

One of the most interesting discussions that developed during the conference was the outlook for cross-channel ferry operations now that the Chunnel (the tunnel linking the U.K. to the continent) has been open for approximately a year. Apparently, the Chunnel has been quite successful in attracting a large percentage of the freight that moves on the route, but passenger vehicle operations are encountering problems, and the ferries are optimistic about their ability to retain a sizeable share of the passenger market.

The cross-channel passenger and vehicle market is interesting because high speed ferries, conventional ferries, and the Chunnel are in head-to-head competition. The consumer has distinct choices among three radically different services. High speed ferries are able to make the crossing in times that are comparable to the Chunnel.

Capacity is restricted and fares are high. When rough weather prevents operations, passengers and vehicles are automatically transferred to conventional ferries that operate from nearby facilities. The high speed ferries are actually old hovercraft built in the 1960s. The vessels require extensive maintenance on a routine basis. The replacement cost of these craft is prohibitive, so the service will have to be phased out. The operator is optimistic that it will be able to squeeze at least five more years out of the vessels before they are forced to retire.

Although their crossing time is slower than the Chunnel, the conventional ferry operators are convinced that they will continue to provide cross-channel services for several reasons. They believe that their reservation system is superior to the "pay-go" system used by the Chunnel because it minimizes waiting times during peak periods. The ferries are more reliable than the Chunnel has been to date. More importantly, there is no doubt that the overall travel experience is superior on a ferry than it is via Chunnel (unless seasickness is a concern). Passengers can take a break from a longer journey to eat, relax, walk around, etc. The additional transit time of the ferry is offset by reducing the necessity to stop elsewhere en route.

"When to Use Fast Ferries and When Not To!"

Thore Hagman of Chalmers University of Technology in Gothenburg gave an interesting and thought-provoking paper about when, and when not, to use fast ferries. The paper recognizes that "Fast Sea Transportation is not just a question of sailing at high speed at sea. It is just as much a question of creating new transport systems where the links co-operate in order to achieve a short total transportation time." Improvements are needed in all parts of the transportation system.

Factors which should be addressed in considering whether to use a fast ferry on a particular route include:

1. What is the length of the time at sea compared to the time that a typical passenger will spend in the transportation system (defined as the time that the passenger comes through the gates until the time that the passenger clears immigration (not customs) at the point of debarkation)? If the at sea time is a small fraction of overall time in the system because of pierside efficiencies or a short sea route, an investment in fast ferry technology may not be worthwhile.

2. Will fast ferry operations expose passengers to unacceptable motions in transit? According to Hagman, traditional tools used by naval architects are inadequate to assess the effect on passenger comfort of the vessel's seakeeping characteristics and have underestimated the number of motion sick passengers. Studies show that civilian passengers are much more sensitive to motion than military passengers and occasional travellers are much more sensitive than frequent travellers. The number of motion sick passengers is influenced by the confined space, anxiety of the possibility of getting sick, exposure to other sick passengers (what he refers to as a snowball effect), and consumption of food and drinks. He suggests that a study is necessary to describe prevailing sea, sea conditions, wind force and direction, and wave height and direction will tell the operator about the risk of cancellation associated with a particular vessel design.

3. Is the distance too long for a ferry? Whether a trip is too long is a function of the vessel, specifically whether the vessel is suited for the intended traffic depends on how cramped the vessel is and what services and facilities are available on board as well as the vessel's speed and bunker fuel capacity. Sea Containers gives an ideal distance for its 74-meter WPCs of 30 to 90 miles, with an at sea duration of three hours. If routes my be too long, they may also be too short, for example, Hagman suggests that a sea distance of 2.6 nautical miles may not be long enough to achieve an appreciable reduction in total transit time on the route compared to a conventional ferry. An increase in speed from 15 to 30 knots would reduce transit time by only six minutes, or 15 percent of the total time in the system.

4. Is the "fairway" suitable for a fast ferry? In addition to the physical constraints of the vessel's size and maneuvering characteristics, consider how long the approach is to the harbor, the level of congestion caused by other traffic using the same waters, whether traffic is controlled, and any speed restrictions along the route. The author notes that little time is available, when operating at high speed, to detect any failures in the system or correct for any operator errors.

5. Is the port or port pair suitable for operation of a ferry? Hagman notes that the ratio of open sea miles to miles approaching port may dictate the suitability of a fast ferry system, or a system with good low speed and high speed characteristics. Wake characteristics of the vessel are important in this context. Use of port areas for recreational activities can create conflicts with high speed operations.

6. Are the terminals adequate for the service? Hagman emphasizes the vital importance of terminal operations in the total transportation system including check in systems, baggage handling systems, and provisioning systems. Hagman notes that significant resistance to newer larger terminals may come from the surrounding community.

7. Is the existing transportation infrastructure suitable for fast sea transportation? Hagman's premise is that fast ferries will replace existing ferry services rather than operating on wholly new routes. The existing infrastructure in terms of the rules of the road and for collision avoidance undermines the savings in time attributable to the water mode.

New Cruise Ship Designs

The cruise ship designers and operators presented a dazzling array of their latest and greatest. The conference participants were treated to audiovisual tours of ORIANA, LEGEND OF THE SEAS, IMAGINATION, and the QUEEN ELIZABETH II refurbishment. Designers explained the use of atriums as focal points for moneymaking activities such as on-board shopping. They discussed the fine points of casino design, theater and lounge design, and observation deck design (including a particularly creative combination observation deck, lounge and disco). The designers of ORIANA explained how the British cruising market differs from the Caribbean market, and how they incorporated special features into the design to accommodate the differ-

ences. The biggest differences were the inclusion of a conventional theater in lieu of a show lounge, to cater to the British taste for serious theater, and the inclusion of an honest-to-goodness library. In general, ORIANA and QUEEN ELIZABETH II (the refurbishment of which had more of the flavor of an historical restoration) were not nearly as flashy as the Caribbean cruise ships, where the emphasis was on glamour, glitz, and fun. The Caribbean ships featured lots of glass and mirrors. The Caribbean designs emphasized large wide open spaces, whereas the British designs were much more homey and intimate.

Terminal Design and Passenger Handling

Another important discussion area was the design of cruise ship terminals. The Port of Dover presented its very well thought out conversion of an old railway station to a cruise ship terminal. The railway station was a protected historical site, and Dover was sensitive in its conversion. The Port of Canaveral gave the "big business" perspective, emphasizing the efforts to accommodate passengers arriving at the facility from the nearby airport as well as by bus and car. Passenger throughput, baggage flow, customs, and curbside traffic management were major considerations. The session also discussed design of piers and gangways. Pier and gangway design are critical at terminals that must accommodate a variety of large cruise ships. Ship access locations are not standardized, so designing gangways to handle a variety of ships is a much more complex problem than is jetway design for aircraft.

P&O European Ferries discussed their automated passenger ticketing system. P&O was able to revamp its ticketing system to use a standard ticket (which a travel agent could issue). The ticket is coded electronically into P&O's central reservations system. Upon arrival at the port, the ticket is read electronically into the port handling system. Any amendments are entered into the system real-time and can be accessed and modified subsequently throughout P&O's European operation. Apparently, this automation and standardization of ticketing has allowed P&O to eliminate a Ticket Administration Department that, at one time, employed 100 people.

FAST FERRY PROJECTS APPROVED BY SNAME

(Contributed by William Hockberger)

The Technology and Research Steering Committee of the Society of Naval Architects and Marine Engineers put out word last summer that SNAME had a small amount of money to invest in promising research projects. Panel SD-5 (Advanced Marine Vehicles) submitted two proposals entitled "Informational Video on Fast Ferries for United States Applications" and "Alternative Hullforms for U.S. Fast Ferries." At the same time, SNAME Panel O-36, Maritime Economics, submitted a project proposal entitled "Economic Decision Methodology for U.S. Fast Ferries," developed in coordination with the SD-5 proposals. These two panels have been trying to promote the understanding and use of fast ferries in the United States, for particular areas and routes where they may be competitive with other transportation modes. IHS members are involved in both panels and were instrumental in developing these proposals.

SNAME has notified Panels SD-5 and O-36 that all these project proposals have been selected from among those submitted. In fact, the notification letter states, "The T&R Steering Committee recognized this is an important subject for the U.S. Maritime Industry and directed the three projects be coordinated to cover the technical, economic and marketing aspects of the subject."

The video project was begun some time ago and made substantial progress, but it has been stymied for lack of a small amount of money for professional video services to complete the work. It will show real, operational AMVs, to demonstrate the feasibility and practicality of such vehicles in fast ferry service. The hullform selection project of such vehicles in fast ferry service. The hullform selection project will develop a solid technical basis for the selection of an AMV for ferry use. It will analyze all the different hullform alternatives on a consistent basis and produce a T&R Bulletin with guidelines as to which vehicles might be most appropriate for particular types of fast ferry services and routes.

The economic methodology project will develop a T&R Bulletin to provide a prospective ferry operator or investor and approach for evaluating a proposed ferry service to determine its prospects for making a profit. It will use the technical information developed by the hullform project as the basis for the carrying capabilities and performance of the various ferry alternatives. It will not point to the best answer; rather, it will lay out the evaluation process and help the user through it to reach decisions appropriate for his own circumstances.

Although the SNAME funds will help considerably to get these projects moving toward completion, the projects will still involve more volunteer effort than paid effort, and a number of SD-b and O-36 (and IHS) members will be supporting them.

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FASTSHIP MARKET DEMAND CONFIRMED BY MIT

(From Maritime Reporter/Engineering News September 1995)

A Massachusetts Institute of Technology (MIT) study of the potential market for FastShip service found that demand for the ship would open new markets for products between North America and Europe, with no new competition in sight.

"In the areas we investigated, the market for FastShip should be everything its supporters predict," said Robert Simpson, principal investigator for the project and director of MIT's Flight Transportation Laboratory, which prepared the analysis. According to the report, FastShip will provide transportation value superior to anything existing or realistically available in the foreseeable future.

The report featured three primary findings: there is definitely a market for FastShip service; FastShip will stimulate demand for shipping new commodities across the North Atlantic; and neither air nor ocean service can directly compete with FastShip.

KVAERNER FJELLSTRAND DELIVERS FIRST TWO 35M FOILCATS

(From Fast Ferry International, July-August 1995)

The two Kvaerner Fjellstrand 35m FoilCats ordered by Far East Hydrofoil for its Hong Kong-Macau route, Penha and *Barca*, were shipped from Norway at the end of last month following a two month trials program that was everything that of the prototype 40m FoilCat was not.

That is to say, no major problems were encountered. The vessels took off without difficulty and achieved maximum speeds of close to 52 knots. As early as the middle of June, Kvaerner Fjellstrand confirmed. "All requirements set for the vessels have been fulfilled by good margins."

Apart from the shorter length, major differences between the 35m and 40m FoilCats include a significantly lighter structure, redesigned stainless steel foils and new hull lines, particularly forward where those of the 35m vessel are closer to a conventional slender hulled symmetrical catamaran than those of the 40m or even the first profile drawing of the 35m Foilcat released by Kvaerner Fjellstrand.

Machinery

Similarities between the 35m and 40m vessels include the fully submerged foil arrangement and propulsion system. The 35m FoilCat has a T-foil forward on each hull and a full width foil aft supported by three struts, the port and starboard struts incorporating waterjet intakes at their base. All the foils are fitted with trailing flaps and fences. The forward struts are used to steer the vessel at service speed.

The propulsion system consists of a pair of General Electric LM 500 gas turbines, rated at 4,474 kW at 7.000 rpm, each of which powers a KaMeWa 80 SII waterjet via a MAAG Gear MPU-23/G-50 gearbox. The engines, which are protected by a three stage air filtration system, are housed in modules supplied by Kvaerner Ships Equipment.

The gearboxes were designed specifically for the FoilCat and manufactured according to ISO-9001 standard. They are approximately 800 mm x 900 mm x 1,600 mm, weigh 930 kg each and reduce the 7,000 rpm of the engines to the 895 rpm of the waterjets.

According to MAAG Gear, especially stringent requirements were established for the power/weight ratio and dimensions as well as noise reduction. Due to the application of the latest design and high tech materials, total weight was reduced by 50% compared with the MAAG gears for the original FoilCat.

Not all the engine power available is required, the limiting speed factor is the performance of the foils, and one pleasant surprise has been the fuel consumption of the vessels which has proved to be considerably less than the projected range of 300 nautical miles at 45 knots suggests.

The automatic flight control system, designed by Kvaerner Fjellstrand, comprises motion sensors, three processing units and a fail safe voting unit. The FoilCat automatically makes the transition from hullborne to foilborne operation at approximately 30 knots, normal service speed being 45 knots.

When foilborne the hulls will normally be about 0.6m clear of the water but this can be increased to just over one meter. When operating in rough seas, however, the height will be reduced to ensure that the waterjet intakes do not ventilate. According to Kvaerner Fjellstrand, "The vessel will be able to maintain its high speed even in wave heights of 3 meters."

The integrated bridge design is as would be expected of a vessel that has a service speed of 45 knots, with two crew positions forward, a central engineer's console and a night vision operator's position to starboard.

In addition to radars, gyrocompass, log and autopilot fitted as standard, vision augmentation systems will be installed when the vessels arrive in Hong Kong. Designed in house by Far East Hydrofoil, these will be identical to the units installed on the company's 16 Boeing Jetfoils and two CSSC PS 30 hydrofoils.

Passenger saloons

Penha and *Barca* have been fitted out with a total of 403 seats. Facilities on board reflect the nature of the Hong Kong-Macau route. This is 36 nautical miles long. Trip times by the FoilCats will be less than 55 minutes and few passengers travel with luggage.

Hong Kong service

In common with the rest of its fleet, Far East Hydrofoil will market the FoilCats as Far East Jetfoils. The company is initially planning to operate a dedicated FoilCat service offering frequencies based on a single vessel with additional departures according to availability.

The craft were scheduled to arrive in Hong Kong in the middle of September and enter service, during daylight hours only, three weeks later. Night services are expected to follow four months after that. A three class fare structure will be introduced, one more than on the Jetfoils, but, as on the Jetfoils, the VIP saloons will not be made available to passengers.

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RACING WITH THE SUN

(From Popular Science, November 1995)

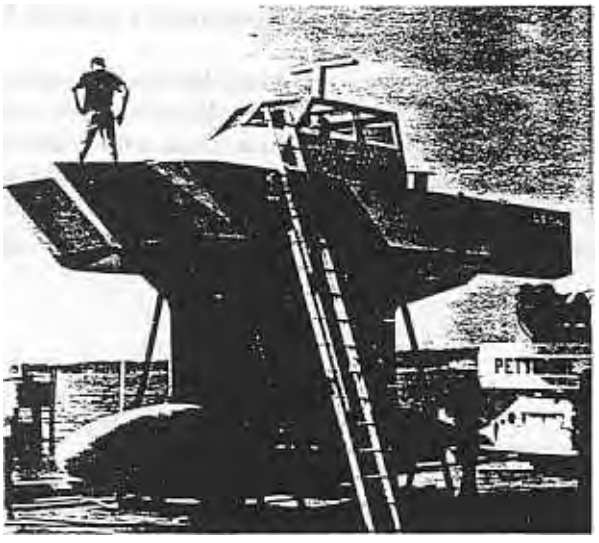
Powered by a blazing sun, almost two dozen catamarans, hydroplanes, and styrofoam canoes raced along the shore of Lake Michigan in the 1995 Solar Splash, a solar/electric boat regatta involving 170 students from 15 U.S. and Japanese schools.

Japan's Kanazawa Institute of Technology won the 30-kilometer endurance event with a 9-mph hydrofoil shown here. Part of the craft is lifted above the water to reduce drag. The University of Arkansas entry, using a motor adapted from an industrial forklift, hit 25 mph to take the 300-meter sprint event.

UPDATE ON HYSWAS

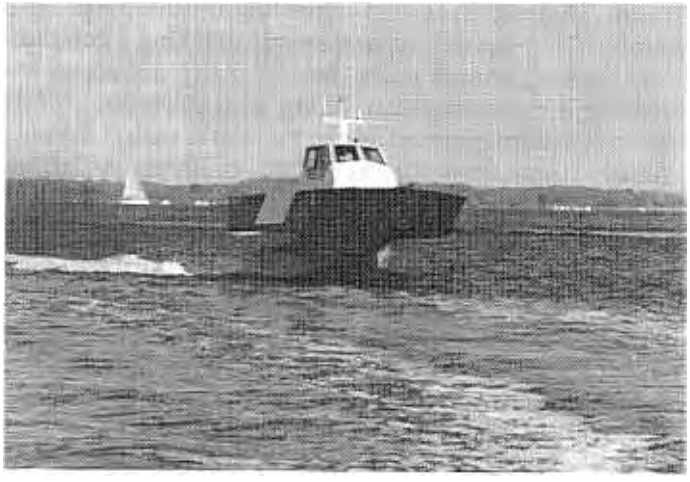
The Summer Newsletter included, on page 10, a copy of the Press Release from the Carderock Division, Naval Surface Warfare Center about the Hybrid Hydrofoil - HYSWAS Demonstrator. The craft was designed and built by Maritime Applied Physics Corp under a Small Business Innovation Research Program under contract to the U.S. Navy.

Since the delivery to the Navy in July, trials on this experimental craft, named QUEST, have been underway on the Chesapeake Bay from the Center's facility at Annapolis, Maryland.



QUEST in Her Cradle at Pierside

Quest is up and flying after several voyages to wring out a number of subsystems. Major emphasis has been on the automatic control system which is the heart of QUEST and keeps the upper hull flying several feet above the water surface. Software discrepancies first experienced have been resolved and the vehicle is ready for testing in rough water.



High Speed Runs Through Wake of Chase Boat

Updates on rough water trials will be reported in the next Newsletter.

GAS TURBINES

(From Marine Log, August 1995)

Gas turbine designers are challenging high and medium speed diesel engines in the blossoming market for fast ferries. High speed freight carrier projects promise further future business for a propulsion mode offering light weight, compactness and low emissions.

A high profile year is assured for General Electric with the forthcoming commissioning of the first of Stena AB's HSS ferries from Finnyards. The 120 m long, 40 m wide class—largest fast ferries in the world—will be powered at 40 knots by a 92.480 shp plant based on two LM2500 and two LM1600 turbines. Earlier this year twin LM1600 sets, with a combined rating of 33,730 shp, were specified for Danyard's Seajet car/passenger ferries booked by a Danish operator. These will be the first fast ferries to be powered exclusively by LM1600 turbines, which have breached a 20-26 MW power sector traditionally served by quadruple high or medium speed diesel packages.

Stena's recent orders from Westamarin of Norway for two smaller versions of the HSS ferry, however, brought a breakthrough for ABB Stal. Each HSS 900 ferry is specified with twin ABB Stal GT35 sets. Originally developed for the aero market, the GT53 has hitherto been used in industrial applications. It can deliver up to 17 MW (22,000 shp) for marine duty.

High speed craft longer than 60 m are targeted by Allied Signal with the TF80 marine system based on integrating two Textron Lycoming TF40 gas turbines by a combining gearbox. The integration is arranged end-to-end using Cincinnati gearing or side-by-side with an MA110 gearbox. An output range from 4,000 to 9,200 shp is achieved, with an attractive power/weight ratio compared with a diesel plant of equivalent output.

Caterpillar subsidiary Solar Turbines made its fast ferry propulsion debut this year with FBM Marine's handover of its first Tricat. This series of 45 m, 312-passenger craft for Hong Kong-Macau service is specified with twin Solar Taurus 60M turbines, each rated at 6,120 shp, for a service speed of 47 knots. A time-between-overhaul of 15,000 hours is anticipated.

A new European contender in the small ship sector is the Eurodyn DURA (dual entry radial) gas turbine, jointly developed by Ulstein, Volvo Flygmotor and Turbomeca. Purpose-designed for the marine market, it initially targets applications in the 2.2 to 2.9 MW range.

Mitsubishi developed its MFT8 turbine (incorporating the GC8 gas generator from Turbo Power and Marine Systems Inc., a Pratt & Whitney subsidiary) for Japan's Techno-Superliner (TSL) fast freight carrier project. The prototype yielded a full power rating of 33,000 shp and two sets have since been trialed successfully in a waterjet-powered TSL craft.

[Editorial comment from Carroll Oates of AlliedSignal: High speed commercial and military craft have long been the target market of AlliedSignal, with the TF40 (4000 hp) and TF80 (8000 hp) marine turbines. These are the same engines that power the U.S. Navy's Landing Craft, Air Cushion (LCAC) hovercraft, as well as many military and

commercial vessels worldwide. The TF80 is directed at larger craft (normally 60 meter length or greater) and combines two TF40s as a twin pack mounted onto a Cincinnati MA107 gearbox in either a nose-to-nose or side-by-side configuration.

AlliedSignal has had TF40s powering five 43 knot, 40 meter catamarans in China for the past two years. The company recently announced the use of TF40s for high speed ferries in the USA as well as a 48 meter megayacht under construction and incorporating a TF80 system. The two new projects are in cooperation with Detroit Diesel Corporation, which has a marketing joint venture with AlliedSignal and sells and supports the marine turbines worldwide.

Note that the 70 meter (one half scale) Japanese TSL-A prototype mentioned in the article also incorporates an AlliedSignal TF40 used at 2000 hp to provide lift power for this SES craft.]

GLADDING-HEARN TO BUILD CAT FOR NANTUCKET RUN

(From Marine Log, July 1995)

Hy-line Cruises, a division of Hyannis Harbor Tours, has awarded Gladding-Hearn Shipbuilding, Somerset, Mass, an order for an Incat-design fast catamaran ferry. It will provide year-round service between Hyannis, Massachusetts, and Nantucket Island.

The 89-passenger ferry will be 93 feet long. This is "deliberately larger" than most passenger ferries of this capacity, says Gladding-Hearn president George Duclos, explaining that, "because of the rough sea conditions in Nantucket Sound, we selected a hull design that normally carries 400 passengers, even though Hy-line's passenger loads will be much less. This design has performed well in similar conditions on the choppy Great Lakes as well as between Seattle and Victoria Island, Canada."

The all-aluminum vessel will be powered by twin Detroit Diesel 16V92TA DDEC engines, each producing 1,100 bhp at 1,100 rpm. They will power two MJP-500SD waterjets. Use of the jets will reduce the vessel's draft to 3.8 feet rather than the 7.5 feet that would have been required for conventional propellers.

The vessel will reach 30 knots, fully loaded. At this speed, its wake height will be only about one foot.

The two deck ferry will offer enclosed seating in the heated and air-conditioned 28.5 feet wide main cabin and outdoor seating on the upper deck. Resilient mounts between the twin hulls and the superstructure will reduce vibration and noise levels inside the vessel to 70 dB.

The ferry design will incorporate wide cabin aisles, flush door sills, two large heads and sliding boarding gates for easy wheelchair accessibility.

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Excerpts from Board Notes Continued from Page 5

Ken Spaulding said that SD-5, for two years, had attempted to put together an HPMV educational show and get it on the road. He said that the reality is that it cannot be done without resources - primarily funding. Pete Squicciarini suggested that we must move forward, assemble a planning group, develop a specific strategy and acquire the necessary resources.

Bill Ellsworth proposed that we consider new alternatives for sponsorship of such an initiative. ASNE and ASME, for example are possible sponsors. We should not assume that we are constrained to an IHS/USHS/SD-5 context. Bill said that ASME would possibly provide a sounder financial base.

As the meeting drew to a close John Meyer summarized this wide-ranging discussion. He perceived a clear consensus that we were to be in an educational, not a "marketing" or lobbying role. He said that he would discuss a strategy with Jack Offutt (President ofthe USHS) and Philippe Goubault (Chairman of the SNAME SD-5 Panel).

LETTER TO THE EDITOR

15 September, 1995

Dear John;

I have been wanting to respond to your query of where I think the future role of IHS should lead us. My thoughts go in several directions, but the bottom line is that I think it is worthwhile to maintain a hydrofoil organization. From a military viewpoint, sometime, and somewhere, the U.S. Navy, and other navies, will be involved in an action that demands a small boat presence. Then the scramble will be on to find some technical skills that can fulfill that need. Our past naval history demonstrates this to be true. Small craft become forgotten in peace time and then are immediately a requirement when things start to get hot. Who better to keep some hydrofoil technology alive than IHS.

One other aspect of IHS is the comradery of the organization. Hydrofoilers are an interesting and unique group of people. They have the characteristic of taking a good idea and sticking with it in the face of many detractors and making it go. This feature, along with being some of the most interesting individuals in the world makes the occasional get-togethers, such as the 25th Anniversary Celebration, very enjoyable events.

Any organization to exist must grow. Dormant groups eventually die. So to keep IHS healthy we must find ways and means to have the membership of IHS expand. You as our President have done an outstanding job in that regard. Certainly we should be open to whatever the HYBRIDS developers can bring to our organization. This may also point us in the direction suggested by Bob Ripley of forming a loosely-knit federation with other Societies interested in advance craft.

In any event lets keep IHS alive and expanding.

Best Regards,
Bob Johnston

THE NEWSLETTER

INTERNATIONAL HYDROFOIL SOCIETY

Post Office Box 51, Cabin John, Maryland 20818, USA

Editor: Barney C. Black | WINTER 1995 | Co-Editor: John R. Meyer

IN THIS ISSUE.....

ANNOUNCEMENT

25TH ANNIVERSARY CELEBRATION AND CONFERENCE PROCEEDINGS AVAILABLE

PLEASE SEE PAGE 4 OF SUMMER NEWSLETTER FOR LIST OF PAPERS

Anyone who was not able to attend the 25th Anniversary Celebration and Conference in June may obtain a copy of the Proceedings containing a complete collection of papers presented. Please send $15 plus $3.50 to cover handling and mailing costs to:

CDR George Jenkins USN (Ret.)
713 S. Overlook Drive
Alexandria, VA 22305 USA

1996 DUES

ALL MEMBERS ARE ADVISED THAT DUES FOR 1996 SHOULD BE PAID

Please send your $20.00 check made out to IHS to:

CDR George Jenkins USN (Ret.)
713 S. Overlook Drive
Alexandria, VA 22305 USA

THE PRESIDENT'S COLUMN

It is with much sadness that we report the recent passing of two of our members: John W. King and Anton Maier. The Autumn Newsletter mentioned John King only briefly since his death almost coincided with press time. At the time that John King notified the Society of his resignation as Secretary-Treasurer, the Board of Directors had voted to honor him with an IHS Award. Events leading to John's very rapid decline in health, due to cancer, took us all by surprise. We regret that we had not acted faster in preparing the proper documents, including an inscribed plaque and award citation. It was only in December that we learned of Tony Maier's bout with cancer which he lost in June of last year. The heartfelt sympathies of the entire IHS membership go out the survivors of these two great hydrofoilers.

I want to report on follow-up actions to the IHS 25th Anniversary Celebration and Conference last June on the Panel topic of the "Next 25 Years." The Summer and Autumn 1995 Newsletters had 5 letters from our members. We are anxious to hear from more of you. The Autumn Newsletter also had excerpts from the September Board meeting which emphasized this topic. Captain Peter Squicciarini's suggestion to assemble a planning group, develop a specific strategy, and acquire necessary resources to put together a High Performance Marine Vehicle educational presentation, is taking shape. At the November Board meeting, Captain William Erickson agreed to represent the IHS on a joint group which the Board suggested be called "Advance Marine Vehicle Strategy Group." This information was passed on to the U.S. Hovercraft Society and the Society of Naval Architects and Marine Engineers (SNAME) SD-5 Panel, and a member from each one of these organizations has been designated.

All members should be aware of the numerous inquiries made by both members and non-members for technical information on the subject of hydrofoils. We are encouraged to realize that there are a number of enthusiasts who want to design hydrofoils ranging from sail-powered, small runabouts, to fast ferries. With a limited volunteer staff, we are attempting to keep up with the demand. Thanks go to Ken Spaulding and Barney Black who are assisting me in this phase of IHS activities. In this connection all members should be aware of a hydrofoil bibliography, of about 11 pages, that was assembled as part of our cooperative effort with the SNAME Ship Design (SD-5) Panel activities several year ago.

Again, we are including some pictures taken by Ken Spaulding at the 25th Anniversary Celebration and Conference. More will appear in future editions. Thanks again, Ken.

In closing this column for 1995, I personally want to wish all of our members best wishes for a 1996 New Year of success, progress and satisfaction in whatever your venture may be.

John R. Meyer
President

WELCOME NEW MEMBERS

Dr. Jin-Tae Lee - Jin-Tae Lee graduated from Seoul National University in the department of Naval Architecture in 1971. He received a Ph.D. from M.I.T. in the Department of Ocean Engineering in 1987. He has been working for the Korea Research Institute of Ships & Ocean Engineering (KRISO) since 1980. He was involved in projects to develop technologies for high speed ships in Korea. He is now working in the Propulsion Technology Branch at the Naval Surface Warfare Center, Carderock Division, Carderock, Maryland as a visiting scientist until September 1996.

Chung Chen Shaw - Mr. Chung Chen Shaw of Alexandria VA developed his interest in hydrofoils early in his career as a mechanical engineer for a shipbuilder in Taiwan. He immigrated to the United States 15 years ago, but the declining level of commercial hydrofoil activity in the U.S. has inhibited his ability to work with hydrofoils directly. Nevertheless, he has retained a strong interest in hydrofoils and holds two hydrofoil related patents. He received his masters degree in mechanical engineering from Catholic University.

Christopher Martin - Chris is fromVancouver, British Columbia, Canada. He has recently contacted the IHS in connection with a projecthe has started in which he wants to add a foil up forward of a 25 ft. aluminum boat. The boat will then be "tail-dragger".

John R. Belchez - John is from Makawao, Hawaii. He was with "Seaflite Hawaii" and served ascaptain of Boeing's 929 JETFOILS for about three years.

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CORRECTION

(By John Meyer)

I personally apologize for the "goof" on page 3 of the Autumn Newsletter containing a series of pictures taken at the 25th Anniversary Celebration and Conference. The caption under the picture of the Maritime Dynamics Incorporated (MDI) display should have credited Bill McFann rather than Dan Gore (both of MDI) with a highly interesting spontaneous talk on the company's activities in designing and building large foil systems for various fast ferries around the world. By the way, MDI should be highly complemented for their inroads into this field - keeping foil-supported and/or controlled craft in the limelight.

ACRONYMS, ACRONYMS, ACRONYMS!!

Sumi Arima, one of the Society's more faithful "West Coast" correspondents, has provided us, in a recent letter, with a strong reminder of how important it is for authors (and editors) to spell out acronyms. The Newsletter editors publicly appologize for the numerous slips in the past and will pay close attention to this aspect of the publication in the future. We hope that this current issue is free of any such oversights. Thank you Sumi.

PICTURES FROM IHS 25TH ANNIVERSARY CONFERENCE - Courtesy of Ken Spaulding

John King Provides Attendees with Vital Data

Bill Buckley Takes a Look Back at Load Criteria

Luncheon was a Time for Feasting

Bill Ellsworth Accepts an Award for Mike Eames

Joe Sladky Instructs Attendees on Marine Matters

Dinner Speaker Marc Schafer Recognized

CAPTAIN JOHN W. KING, Jr., USN (Ret.)

At the time that John King notified the Society of his resignation as Sectretary-Treasurer, the Board of Directors had voted to honor him with an IHS Award. Events leading to John's very rapid decline in health took us all by surprise. By the time proper documents, including an inscribed plaque and award citation, were assembled, he had passed away. We regret that we had not acted faster. Therefore the award was presented to his wife, Suzanne. The Award Citation read as follows:

The International Hydrofoil Society honors, posthumously, Captain John Warburton King, Jr., USN (Ret), for his outstanding contributions to the introduction of U.S. Navy hydrofoil combatant ships. He played a pivotal role in bringing about the development, design, and construction of Patrol Hydrofoil Missile (PHM) ships. This was the first class of ships designed in a NATO partnership between the United States, Italy, and the Federal Republic of Germany. The U.S. lead ship of the Class was the PEGASUS (PHM-1) which was followed by five more PHMs to form a Squadron based in Key West, Florida. These 235 metric ton ships which carried eight missiles and a rapid-fire 76 mm gun, were capable of speeds in excess of 40 knots in very rough seas. They performed brilliantly in a variety of roles including operation with the U.S. Coast Guard in many successful drug traffic interdictions. Captain King is also honored for his long active leadership and support of the International Hydrofoil Society.

John King was born in Newport, Rhode Island, the son of a distinguished career naval officer. He had a varied education at the University of California at Berkeley, Rice Institute, and George Washington University, and was a graduate of the U.S. Naval Post Graduate School. He served as a Navy Surface Warfare Officer during World War II, and was decorated for staff service during the Korean War and as Commanding Officer of a destroyer in the Vietnam War. He served several tours in the Pentagon, notably in the area of research and development of electronics and the advanced design of high speed ships. In the latter area he was the program developer and later coordinator for all aspects of hydrofoil development. In international projects, he was the U.S. Representative to the NATO Exploratory Group and Chairman of the Hydrofoil Working Group that brought to fruition the cooperative hydrofoil design project with Italy and the Federal Republic of Germany.

Captain King combined a lifetime of technical expertise and operational experience to lead the successful transition from experimental hydrofoil ships to U.S. Navy hydrofoil combatants. He skillfully orchestrated the NATO design of the PHM until over 90% commonality was achieved with subsystems from the participating countries. His thoughtful and persuasive presentations to NATO and U.S. decision makers led to both military and commercial exploitation of hydrofoil ship technology in spite of the many technical, operational, and political obstacles.

John King was not only a leader, but a tireless worker for the IHS, serving as a Charter Member of the North American Chapter, a Director and Secretary-Treasurer of the Chapter, and later after transfer of headquarters to Washington, DC, as long time Secretary-Treasurer of the Society. For his many contributions to development of hydrofoil ships and his unswerving support of the IHS, the Society is pleased to pay him honor as a true Hydrofoil Pioneer.

ANTON MAIER Jr.

It is with regret that we report word received of Tony Maier's death only in December after the Autumn Newsletter went to press. His wife, Ursula, wrote a brief note and followed up with additional information about Tony.

Anton Maier, Jr., age 71 of Bluewater Bay, Niceville, Florida passed away Saturday afternoon June 10, 1995, at his home, after an extended illness.

Anton (Tony) was born in Bad Toelz, Germany and came to New York City, USA, in 1928 with his parents. Upon graduation from Brooklyn Poly Technical Institute he entered the U.S. Army Air Corp in 1941. Completing military flight training, he served with the Allied Expeditionary Forces in Africa and the European Theater during World War II. In 1945 he was recruited into the CIC as a special agent until 1948. In 1966 he retired as Chief Master Sergeant, where his 23 years of military service spanned from Aircraft Accident Investigation, Flying Safety Office, Chief of Maintenance and one of the founding Fathers of the 33rd TFW at Eglin AFB in 1965. In 1966 after military retirement his expertise as a Safety and Reliability Engineer brought him to the Boeing Company in Seattle, Washington, where his involvement as Project Engineer ranged from the Mercury Space Program to being responsible for the design of the 747's Rapid Evacuation System. In 1972 new challenges came his way as Head of the Maintainability and Reliability System Division at Boeing Marine System Division, where the production of the U.S. Navy's first six operational Hydrofoils had begun. In 1980, after 15 years with Boeing Company, he elected to retire only to strike out on yet another new endeavor, starting his own company, HYdrofoil Applied Support Technology Inc. (HYSAT), as owner and president. In 1987 he decided his golf game and sailing had long been neglected and moved back to the Niceville, Florida area where he maintained a home and retreat since 1978.

Surviving are his wife Ursula K. Maier, son Richard A. Maier, daughter-in-law Patricia A. Maier, grandsons Richard A. Maier, Jr. and his wife Heather, and Michael J. Maier; granddaughters Jennifer and Kristen, and his sisters Charlotte Maier and Philomena Rustay (Maier).

Tony Maier was well known and respected by his many colleagues in the hydrofoil world. His devotion to the U.S. Navy PHM program was rarely equalled, and spanned several decades both at Boeing and the PHM Squadron TWO in Key West, Florida. Tony's effort was pivotal to the success of the Automated Surface Ship Information- Technical (ASSIST) developed for the PHM ships. His dedicated effort to many aspects of the PHM program will long be remembered by many hydrofoilers, both U.S. Navy and civilians alike.

FERRY FRANCHISES AVAILABLE ON PUGET SOUND

(By Barney Black)

"It appears that (1) there is indeed room for private high speed ferry operators on Puget Sound, (2) at least one (maybe three) have franchises, and (3) there are still-needed or newly emerging routes going a-begging." So reports IHS member Karl Duff, who researched the possibility of private fast ferry operators sharing the Puget Sound market with state-run ferries. Karl adds that the Southworth-Seattle route is franchised to Victoria Clipper, but is not currently being serviced. Other routes with a potentially strong demand for fast ferry service are Kingston-Seattle, Tacoma-Seattle, and Port Townsend-Seattle.

Washington State Senator Bob Oke looked into the legality of a private operation on the Southworth-Seattle route. In a letter of 18 July 95 he wrote, "... it would not be against the law for a private company to operate a passenger-only ferry between Southworth and downtown Seattle. The Attorney General has... found that such service would not be prohibited... despite the fact that the Washington State Ferries operate a run from Vashon Island to downtown Seattle. However, the Victoria Clipper purchased the franchise for the Southworth to Seattle run from the previous owner, Puget Sound Express. Since [the applicable section of the state code] RCW 47.60.120 specifies that a new run cannot infringe upon any franchise lawfully issued by the state and in existence at the time a new service is implemented, I do not believe that another private company could operate passenger-only service on this run without first obtaining the franchise from the Victoria Clipper." According to Senator Oke, the Washington State Utilities and Transportation Commission can advise as to Victoria Clipper's license on that particular route.

IHS invites members with knowledge of ideas, proposals, or plans for privately operated fast ferry service on Puget Sound to share the information. Send comments by mail to Newsletter Editor, IHS, P.O. Box 51, Cabin John, MD 20818, USA, or submit (to Barney Black) via internet to 102134.1446@compuserve.com.

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WASHINGTON STATE FERRIES TO ORDER NEW FAST FERRY

(From Fast Ferry International, October 1995)

Washington State Ferries (WSF) has been authorized in the latest budget adopted by the Washington State Legislature to acquire a new fast ferry. The operator has wanted to expand its fast ferry activities for some time and was hoping that it would receive approval to order a fleet of as many as six vessels.

However, as WSF deputy director Terry McCarthy explained after the latest budget round, "That hinged on an overall transportation revenue package which the department [WSF] did not receive. Therefore, we did not get approval to expand the passenger-only program as much as we had requested.

"We did receive permission to purchase one new passenger-only vessel. This will allow us to demonstrate the kind of technology now available that can make the program grow to its potential in the future.

Talking about the single vessel WSF had received clearance to order, he said, "It will be a long process to award a contract and allow procurement opportunities to build the new vessel, but we expect to have it in service sometime before the end of the coming [1995-97] biennium.

"We'll put it on the Seattle-Bremerton route. If we can succeed on that route with a high speed vessel, then we know we can succeed on the other routes where we would ultimately like to expand, namely Seattle-Southworth and Seattle-Kingston."

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QUEST UPDATE

(By William Degentesh)

We departed Worthington Basin at the Annapolis facility of the Naval Surface Warfare Center, Carderock Division at 19:40 on 3 November 1995 for a short evening's ride aboard "QUEST", the Hydrofoil Small Waterplane Area Ship (HYSWAS) demonstrator designed and produced by Maritime Applied Physics Corp. under the Small Business Innovation Research Program (see Summer and Autumn NL). I was accompanied by Capt. Squicciarini (former Executive Officer of USS PEGASUS, PHM-1) now serving on the Joint Chiefs Staff.

MAN, WHAT A RIDE! The 825 HP Turbocharged Cummins Diesel powering QUEST makes a race-car impression, even at idle, as does climbing through the pilothouse roof to enter the bucket seats and then fitting the five-point seat belts. After leaving the pier, the boatmaster opened the throttle and QUEST immediately created, then lifted through, heavy bow spray and began complete flight at about 3 feet above the waves. There were NO wave forces evident during the ride, and passage through other ship wakes was completely effortless, totally without sensation. Foilborne turns were coordinated so that g-forces were normal to the deck, and QUEST's turn rate was sufficient to easily make a 360 at 22 knots within the Severn River. Imagine looking out the side portal DIRECTLY onto wave tops (even in the dark, to boot), but having no sensation of own ship roll!

QUEST held over 500 Gallons of fuel, so was NOT in 'light ship' condition, while flying easily and turning rapidly. Neither wake nor bow wave were evident throughout our foil-borne ride, and one or two "fast" inboard/outboard planning craft quickly abandoned attempts to keep up with QUEST. While they showed pronounced motions (slamming) the QUEST rode fast and dead level.

The fuel mileage currently being observed by the QUEST crew was reported as; about 1.25 Miles per Gallon (at onset of Foilborne operations) down to just above 1.0 Miles per Gallon (at full throttle). Hey, that means Foilborne (30+ knot) smooth-ride transit from Long Island to Miami, with a maximum of three fuel stops, and QUEST does not yet have the optimum propeller or foils or any anti-torque/pre-swirl vanes installed. The HYSWAS design has the potential for fast, long legs. It was nice to see a product, and ride it. You can't do that to reports, graphs, and paper deliverables. An enjoyable evening for all.

FAST '95

Although we cannot boast of many papers on conventional hydrofoils at FAST '95, there were a total of eleven papers about marine vehicles that depend upon hydrofoil technology. The conference was held in Travemuende, Germany in September 1995. The Proceedings listed the first paper below as the only one on a pure hydrofoil, the Super Shuttle 400. The remainder of the following papers described hybrid vehicles where foils are used for motion control.

"Structural Responses of Mitsubishi Super Shuttle 400, Rainbow, in Seaways", Sueoka, H, Tozawa, S., Sakai, F., Kabata, T., Mitsubishi Heavy Industries, Ltd. (Japan).

"Time Domain Simulation of the Motion of a High Speed Twinhull with Control Planes in Waves", Kang, C.-G., Gong, I.-Y., Korea Research Institute of Ships & Ocean Engineering (Korea).

"Development of a New Calculation Method on Large Motions in Following Seas for a Foil Assisted Catamaran, Superjet 30", Arii, T., Shigehiro, R., Hitachi Zosen Corp. (Japan).

"Hybrid Hydrofoil Monohulls", Bertram, V., Universitat Hamburg, Marzi, J., Schmidt, J., EMIT (Germany). (See p.7)

"Free Running Turning Tests of a New Displacement Type High Speed Semi-Submersible Ship with Wings", Mori, K., Ninomiya, S., Doi, Y., Hiroshima University (Japan).

"Predicted Performance and Seakeeping of the Semi-Planing Ship", Lewthwaite, J.C, JCL High Speed Craft Consultancy (U.K), Oehlmann, H., MTG Marinetechnik GmbH (Germany). (See summary below.)

"Experiments at Sea by Large Scale Models of Techno-Superliner", Sugai, K., Endo, M., T.R.A. of Techno-Superliner, Ogiwara, R., Kawasaki Heavy Industries, Ltd, Yoshiki, T., Mitsui Engineering and Shipbuilding Co., Ltd (Japan).

"The Seagoing Test Ship to Verify the Technologies Developed for a Submerged Hull and Foil Hybrid Super High Speed Liner", Yamanaka, N., Tomila, M., Yamagami, Y., Itoko, T., Kohno, Y., Hamamatu, M., Kawasaki Heavy Industries, Ltd. (Japan).

"Study on the Cavitation of the Hydrofoil for the Techno-Superliner-F", Watanabe, O., Shirose, Y., Ishikawajima Harima Heavy Industries Co., Ltd. (Japan).

"CORSAIRE 11000 - Optimization and Contractual Validation of the Seakeeping Performance of the New Fast Ferry Ship for SNCM", Dussert-Vidalet, R., Gaudin, C., Galtier, B., and Adams, J.

"Optimisation of Hydrofoil-Supported Planing Catamarans", Hoppe, K.-G., University of Stellenbosch, Republic of South Africa.

SEMI-PLANING SHIP

(From Fast Ferry International, November 1995)

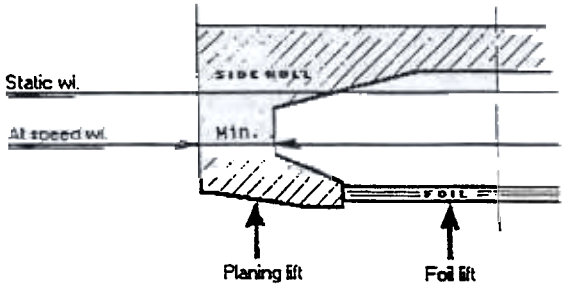
An update on the Semi-Planing Ship (SPS) hybrid vessel was given at FAST '95 in the paper "Predicted Performance and Seakeeping of the Semi-Planing Ship" presented by John Lewthwaite.

The concept is based on a large asymmetric chined-hull catamaran with foils between the two hulls and is being developed jointly by the UK based JCL Consultancy and the German ship design agency MTG Marinetechnik.

John Lewthwaite said, "The SPS is intended to operate on open-sea routes at about twice the speed of conventional ship ferries but to carry the same payload.

"An essential part of the concept is that the SPS can use existing port facilities and be built mainly using steel, employing current shipyard practices.

"The SPS has an unusual hybrid type hullform based on a catamaran type with two large underwater foils which span between the hulls.



50% Total - ie. Semi-Planing Lift
(Remaining 50% from buoyancy)

Midship Section of an Early SPS Concept

"At the design speed of 40 knots, the SPS develops dynamic lifting forces which support about half its full weight. The lift is generated mainly by the foils and partly from the planing underwater hullform.

"The width of the sidehulls at the operational waterline is greatly reduced and this results in the hulls having a small waterplane area. The fully submerged foils produce damping effects in waves, the active flaps on the aft edge of the foils will be used to further control motions in rough weather.

Tests of the hull form, using a scale model, have been carried out at the Haslar Towing Tank in the UK. To evaluate the contribution of the foils to the design, the calm water resistance of the model was first measured and then additional tests were carried out with the foils removed and the model off loaded to run at the previous full load waterline.

"It was found that about 35% of the lift was generated by the foils and up to 15% from the planing underwater hullform.

"A breakdown of the scaled resistance components shows that at the design speed of 40 knots, about 30% of the total resistance was due to foil drag, and 50% to sidehull friction. The remaining 20% was basically sidehull wavemaking resistance, which was due to the slenderness of the sidehulls.

In his concluding remarks, John Lewthwaite said. "The studies described have demonstrated the potential for a new type of hybrid catamaran, to provide an improved performance and seakeeping behavior compared to similar sized more conventional catamarans.

"The Semi-Planing Ship achieves this by the integration of lift forces generated by an unusual chined hullform

with those from two large underwater foils which span between the hulls.

"The SPS foil system has been carefully designed with the assistance of tank tests, to minimize the interference effects and optimize the foil sizes and their angles of attack. This is believed to have been an essential phase in the development program.

"Discussions have taken place with a number of ferry operators and shipbuilders with a view to adapting the design to specific routes. The next phase will be to prepare more formalized layouts and continue with the detailed design. Further model tests are planned in waves to confirm the computer seakeeping predictions."

SPS Design Specification

Length overall	120m
Beam overall	24m
Depth	
- To bulkhead deck	9.0m
- To top of viewing deck	23.0m
Draught	
- Static	5.0m
- At speed (mean)	2.7m
Freeboard, ststic	4.0m
Deadweight	1,200 dwt
Gross tonnage	16,000 grt
Passengers	1,200
Vehicles	580 cars or
	460 cars + 22 coaches
Service speed	40 knots
Range	500 nautical miles
Main engines	4 x Rolls-Royce Marine Spey Gas turbines

[Editor's Note: Unfortunately this article does not describe many of the technical aspects of the SPS. We are attempting to obtain more details from contacts in Germany.]

HYSWAS IN GERMANY

(By John Meyer)

From time to time we have reported on Hydrofoil Small Waterplane Area Ship (HYSWAS) activities in both Japan and Germany. At the FAST '95 conference in Travemuende, Germany in September, 1995, a paper (see p6) was given by Bertram, et al, and a pamphlet was distributed to attendees on this subject by EMIT (Entwicklungszentrum fuer Maritime und Industrielle Technik) - member of the Vulkan Group, in Germany. Thanks to Richard Holcombe, of SWATH International, a copy has been provided to us. The following information has been extracted from this brochure:

"HYSWAS Mark IV Design Study was performed by a joint effort of EMIT, Ernst Mohr technical consultants, the University of Hamburg, and DesignLabor Bremerhaven who designed the ship superstructure.

"HYSWAS - The unrivalled concept for fast waterborne transport. Hybrid small waterplane area ships - HYSWAS - are the most innovative concept for fast sea transportation. They combine hydrostatic and hydrodynamic lift, thus merging the advantages of SWATH and hydrofoil technology.

"The vessel shows outstanding performance characteristics combined with superior seakeeping capabilities and makes it an ideal candidate for operation especially in rough coastal areas.

"Mark IV is the latest stage of EMIT's HYSWAS developments for a combined passenger/car ferry of 500 tons capable of carrying up to 80 cars and up to 320 passengers. The vessel is powered by 2 MTU 20V diesels of approximately 13,000 kW and will achieve a maximum speed of about 40 knots.

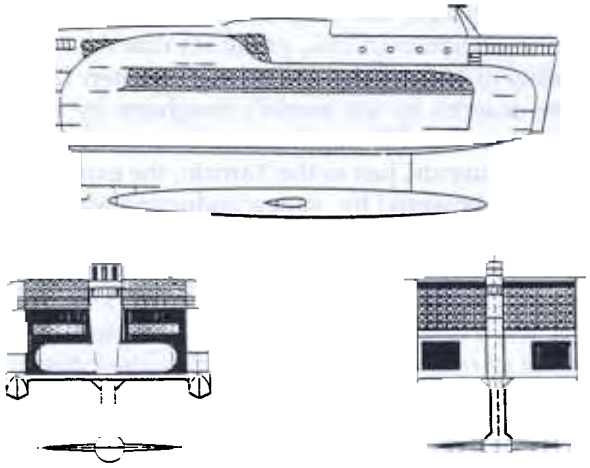
"The outstanding hydrodynamic and operational concept of the vessel is underlined by a radically new design of ship superstructure. Spacious passenger compartments including restaurants and shops are located in the upper part of the uniquely designed superstructure.

"The vessel complies with latest International Maritime Organization (IMO) safety regulations. HYSWAS allows the traditional 'drive-through' car traffic to be abandoned. The new car deck concept requires stern doors only. The vessel is equipped with the most modern Marine Evacuation Systems. The advanced design incorporates recent proposals concerning compartmentation.

"HYSWAS - Mark IV combines unique features in a most advanced concept:

- Superior performance
- Outstanding seakeeping capabilities
- Attractive customer oriented design

"Mark IV design features a conventional airplane-type foil configuration together with a long strut supporting a rudder behind the propeller and horizontal control surfaces in the propeller slipstream. The main foil system is of a cantilever type without supports at the tips in order to reduce drag. The large span provides maximum performance of the roll and heeling stabilisation systems. The main ship hull and the strut are designed in order to minimise frictional as well as wave drag during 'on-foil' operation.



"The upper ship hull is designed to minimise drag when operating in 'off-foil' condition. Here the vessel will perform comparable to a trimaran. For operation in limited water depth special versions of Mark IV are anticipated featuring retractable side floaters.

PROGRESS WITH THE TECHNO SUPER LINER PROJECT

In partnership with Mitsubishi, Mitsui Engineering & Shipbuilding (MES) has been active in the Techno Super Liner (TSL) project to develop a fast vessel capable of carrying 1,000 tonnes of cargo at speeds of around 50 knots. A half-scale jointly built air-cushion vehicle type craft was model-tested over the past year with reportedly excellent results.

Sea trials on this TSL-A (air cushion) model, 70m long, 19m wide, with gas turbine main engines and water-jet pump propulsion units, were tested in Japanese waters, and subsequently actual container loading trials were carried out at a number of Japanese ports. These involved the use of an innovative horizontal container loading system, which replaces conventional crane handling. In the sea trials, the TSL-A prototype managed 54 knots, with a payload of 200 tonnes.

Both MES and Mitsubishi Heavy Industries (MHI) say there has been a lot of interest in the TSL concept, but as yet no firm orders have been placed. Until that happens, the project appears to be on hold.

Another group of yards, led by Kawasaki, and including Hitachi Zosen, Ishikawajima-Harima Heavy Industries (IHI), NKK and Sumitomo, have also been working on a TSL-F design, which was model tested recently. In this case, a hydrofoil-type hybrid hull arrangement was used, in a model that was 17.1m long and 6.2m across. Again these trials are said to have been very successful, and the yards are now waiting for a firm contract, before taking the technology forward into a full scale craft.

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TSL UPDATE

(FromYong Park, Office of Naval Research, ASIA)

The following article predicts a bleak outlook for the future of the Techno-Superliner (TSL) in terms of its commercial use by the freighters in Japan. Recall that, as I stated in my report of the Aluminum Ships Forum held in Melbourne about a month ago, Dr. Sugai, Director, Technological Research Association of TSL, predicted that the commercial viability of TSL will be demonstrated when 100 ships would be ordered by the world's freighters by the year 2,000. It appears that TSL might end up as an exhibition item at a Marine museum, just as the Yamato, the experimental ship that was powered by superconducting Magnetohydrodynamic (MHD) propulsion.

FAST BUT PRICEY - New freighter's future in doubt (From The Japan Times, 7 January 1996): Japan's super-fast freighter, the Techno Super Liner, has completed its test voyage but its commercial future remains bleak due to the high costs of operating the vessel, industry sources said Saturday. Seven major shipbuilding companies have jointly developed the ship (the SES version) which can transport 1,000 tons of cargo at a maximum speed of 50 knots, or 93 kmph, as opposed to 30 knots for ordinary large freighters, conventionally powered by propellers. About 15 billion yen has been spent on technology to make the ship hover above the sea and enable it to achieve 50 knots. Although the scientists involved in the development are confident they can build the ship for commercial use, most industry observers doubt its commercial viability. One of the principal shortcomings is the vessel's low fuel efficiency. The vessel consumes 170 kiloliters of light oil to travel 1,000 km, twice as costly as road transportation. With no expectations of commercial orders, the consortium of shipbuilders that has developed the ship will be dissolved by the end of March after writing a report. Regular shipments of 1,000 tons of freight at such high costs are "unrealistic," observed one transport company official. Commercial use of the ship was not the original objective of the project, which was designed to enliven the Japanese shipbuilding industry through joint ventures on new technology. The Transport Ministry will draw up plans for model businesses for the vessel, but a ministry official admitted that he has no practical ideas for commercial use at the moment.

[Editor's Note: Readers should be aware that this article refers specifically to the SES version of the TSL. The "model" tested was about half scale of the final version capable of performing the 1,000 ton mission mentioned above. The fate of the TSL-F hybrid having foils is not certain either at this time..]

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FAST FERRY DATABASE

(By Barney Black)

The IHS has recently acquired a Fast Ferry Database (in electromic format) from Fast Ferry International (FFI). Although it was easy to extract information about individual yards, operators, and vessels, I have discovered no automated feature to extract statistical summary information that I wanted for publication in the Newsletter. Contact with Giles Clark (of FFI) filled several gaps.

The FAST FERRY INTERNATIONAL Database ver 1.1 provided details on 320 companies operating a total of 1,044 high speed passenger vessels. Of the companies listed, 75 operate at least one hydrofoil vessel. It should be noted that the Database includes those companies that were operating fast ferries at the end of September 1995, or had operated seasonal services earlier in the rear, or were awaiting delivery of vessels. However, an individual vessel may be listed which did not actually operate last year. In the Operators Directory, only vessels are listed which were owned and operated. In the Database, FFI covers all vessels they can confirm exist and are capable of operation. Hence the number of individual vessels in the database is higher than the number listed in the FFI Operators Directory.

Also, it was confirmed that a fast ferry is a vessel able to carry a minimum of 50 passengers and has a full load speed capability of at least 25 knots.

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NORDBLITZ PROJECT RUNS TO SECOND GENERATION

(From Fast Ferry International, November 1995)

Trials of a prototype 23 metre foil assisted catamaran, *Nordblitz*, in the East Frisian Islands have proved successful enough for the yard, Baron Yachtbau in Bremerhaven, and the designer, Axel Hoopenhaus of Nomen Designs, to develop the idea further with a *Nordblitz 2* project, according to project engineer Matthias Wittek.

Baron Yachtbau, a subsidiary of Heirich Ronner GmbH, built *Nordblitz* as a subcontract for the now closed Henze Werft yard in Bremerhaven.

The aluminum vessel was the second, and larger, of two that Henze Werft was contracted to deliver during 1994. The other one, the 18.0m *Rheinjet*, was built for, but not delivered to, KD German Rhine Line.

Nordblitz

Since its completion at the end of last year, *Nordblitz* has been operated by Niekamp Seetouristik between Bremerhaven and the East Frisian Islands of Heligoland and Sylt.

The vessel is powered by two marinized MAN D2842 LYE diesel truck engines rated at 735 KW at 2,300 rpm driving four bladed controllable pitch propellers having a diameter of 850 mm. The single saloon has 114 Eknes Transit seats in a 3-4-3 seating configuration and a kiosk aft.

Commenting on the trial service during a demonstration trip at the end of September, Matthias Wittek said. "After some teething troubles, which are only to be expected with this kind of innovation, *Nordblitz* has performed superbly in daily service in the rough conditions of the North Sea."

Perhaps more importantly, the first season has shown Niekamp Seetouristik that the vessel can be a commercial success as it has covered its operating costs. "Even without much advertising, the ship quickly became a tourist attraction. In the high season we could have done with more than twice the capacity we had," Wittek added.

Nordblitz 2

While *Nordblitz* is strictly a prototype, Baron Yachtbau says, a developed version incorporating a number of technical and design improvements, highlighted by the summer's operational experience, is to be built.

According to Axel Hoopenhaus, "The aim is to demonstrate a comprehensive concept for contemporary travel over water. A key element in this connection has been the redesign of both the exterior and the interior. The company is considering replacing the fixed foil, which spans the two hulls, with a controllable one able to optimize the ride.

Nordblitz 2 has been designed both for scheduled service in coastal waters and for excursions. Matthias Wittek says it is planned to deploy the vessel on north German routes. He feels that there is great potential for a fast ferry operating on routes along the north coast of what was East Germany.

[Editor's Note: Unfortunately this article does not describe the technical aspects of Nordblitz. We are attempting to obtain more details from contacts in Germany.]

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FOIL ASSISTED CATAMARAN ENTERS SERVICE IN SPAIN

(From Fast Ferry International, November 1995)

The past summer has seen MK International's 22.5m foil assisted catamaran *Sea Shuttle I* based in the Spanish Atlantic coast port of Vigo. The vessel has been operated on a trial basis by the local ferry company, Vapores de Pasaje, between several local towns but mainly on a 3 nautical mile commuter route between Vigo and Cangas.

Vapores de Pasaje

The development of ferry services in the Ria de Vigo has been problematic over the years. The Ria [estuary] cuts deep into the land mass, allowing ferry operators to offer links which are a very attractive alternative to the long and time consuming land route.

Nevertheless, the market is limited and over the years competition on the Ria de Vigo routes has made it very difficult for operators to run effective and profitable services.

The present sole operator came into being in 1928 when the three companies then running ferries came together under the control of Vapores de Pasaje. At that time it was running return services to five points in the estuary and had secured exclusive rights to operate within the Ria.

Since then the company has experienced mixed fortunes. principally as the exclusive operating rights have been granted and removed. Currently, Vapores de Pasaje enjoys a *de facto* exclusivity on routes within the Ria de Vigo as license requirements, imposed by central government, make it totally uneconomic for a new operator to enter the market.

The license agreement, though, is no blank check book for the company as it includes requirements for the provision of minimum capacities on the Vigo-Cangas and Vigo-Moana commuter routes and an undertaking to renew its fleet over the coming four years.

Vapores de Pasaje is required to provide, for instance, a minimum 30 minute service frequency to both Cangas and Moana offering capacities of at least 200 and 100 seats per departure respectively. The Vigo-Cangas route carries approximately 3,000 passengers per day in the winter while the shorter 1.5 mile Vigo-Moana route carries about 1,000 passengers per day.

However, Snr Rodrigo Freire, the managing director of Vapores de Pasaje, is concerned that the official requirement does not correspond in reality to the requirements of the service. "With two high speed vessels, both with a capacity of about 150 passengers and running triangular routes in opposite directions, we could cover both routes more efficiently."

High Speed Trials

While Vapores de Pasaje's principle route is only 3 miles long, usually considered too short for a high speed operation, the company has been convinced for some time that fast ferries, properly deployed, could provide a fillip [stimulus] to the development of its business.

As long ago as 1974 there were trials of a hydrofoil on the route and in 1984 plans to build catamarans in Norway fell through only at the last minute.

In June this year the Teknicraft-designed 22.5m foil assisted catamaran was brought down from Germany, following its successful test service there, to run for a trial period with Vapores de Pasaje. Services have been concentrated on the VigoCangas route but the vessel has also been operated on a variety of other routes, both existing and new.

Although capable of running the Vigo-Cangas route in 6-7 minutes at its full speed of 30 knots, for the purpose of the trials *Sea Shuttle I* has been operating at 24 knots. This provides a pier to pier time of 10 minutes and, allowing for a turn around of 5 minutes, a trip cycle of 15 minutes, or half that of the existing tonnage.

The turn around time has been achieved in spite of an old and poorly maintained infrastructure. "The port facilities are simply not adequate for a fast ferry operation," says Snr Freire. "Maneuvering and boarding times are comparatively high because of a lack of terminal facilities. It is a real problem. We have a vessel for the next century and port facilities of three centuries ago."

Despite the problems, *Sea Shuttle I* and the service have received a very positive welcome from passengers; something that has undoubtedly been helped by an enormous amount of enthusiastic coverage in the local media.

Passenger numbers have been good, says Snr Freire, even though, because of the license terms concerning capacity, *Sea Shuttle I* has often been operating services shortly after departures by the displacement ferry.

The Wider Picture

Trials with the craft have evaluated several alternative routes within the local area. One obvious extension of the existing operation is to introduce *Sea Shuttle I* on the Illa Cies route, a major factor in the Ria de Vigo equation.

The Islands, which lie at the mouth of the estuary some 8 miles from Vigo, have national park status and are a hugely popular tourist destination. The route, currently served by a displacement ferry, is an attractive and profitable one for Vapores de Pasaje.

The introduction of Sea Shuttle I would allow the company to reduce the trip time from approximately one hour to 25-30 minutes. Snr Freire says he is looking at the long term possibilities of a route combining up to five of the most important tourist points within the estuary, allowing the company to offer both a tourist and commuter service side by side.

LETTERS TO THE EDITOR

November 5, 1995

To: The International Hydrofoil Society

Please accept my thanks for your very special Award to Mike. It is indeed an honour and he would have been so pleased and proud to accept it.

To be given something like this by colleagues who understand his work was of immense and special value to him.

Thank you. Yours Sincerely,
Judy Eames

THE INEFFABLE ALLURE OF HYDROFOILING

As a result of Barney Black's initiative in placing a message about IHS on the Internet, we have stirred up some interest and responses. Here is one of them:

Patrick Comey of Spring Valley CA writes via the Internet to describe his first hydrofoil experience during a 3-month business trip to Russia in 1995: I saw all the big sights: the Kremlin, the Armory Museum, the KGB Museum, the convent at Novelichy, etc. Nevertheless, I did have one small "complaint." I felt like a tourist. Fortunately, I met a woman named Ludmila, or Luda for short, who spoke a little English. One day, Luda asked me if I wanted to "go on the *Raketa*." I queried her as to how we could do that, thinking she might be referring to an amusement park. She wasn't really able to explain to me where she wanted to go but, being adventurous, I said, "Yes!" We took the Metro Green Line nearly to the end. We exited the subway and walked through a park towards the Moscow River. It was a beautiful Spring day. When we got to the water, I saw the "rockets": hydrofoil boats with the word **Raketa**, in Roman letters, painted on their side. Luda selected the *Raketa* and, since we weren't "tourists," paid the Russian price of somewhere around U.S. $3.00 for both of us. We boarded the Raketa and headed up river. It was a wonderful ride which lasted over an hour and a half. The boat made a few stops where some people got off and some got on. I observed that some people used the *Raketa* for relaxation and fresh air whereas others used it to go to a particular beach or other place on the river. I particularly enjoyed the fact that the *Raketas* are not overly commercialized: no tour guide on a loud speaker interrupting my reverie, nobody selling film and tacky souvenirs, no tasteless food, and no high prices. I only wish I had more time so I could have ridden the *Raketa* again.

Yehuda Manor submitted the following suggestion and personal note in December 1995: "I would appreciate greatly a list of sources of DESIGN information such as known books or famous papers. Such a list should be updated if anything new comes out."

"I have been awarded a United States Patent [4,926,773] on a concept of a hybrid craft I named 'Wingfoil' several years ago (May 1990). I am looking for partners that can contribute and are willing to cooperate on its further development. " The abstract for the Wingfoil patent describes.... "a sea-going craft [that] has a main central body with two wings affixed to the body and extending horizontally away to either side. A catamaran-type hull is attached to each wing end, and provides flotation. The rearward edge of each wing is generally closer to the water than the forward edge when the craft is under power, thus adding lift due to the ground-effect phenomenon. A hydrofoil is affixed to each hull and extends downwardly, and a third hydrofoil is affixed to the central body, extending downwardly. The craft includes propulsion apparatus."

[IHS members interested in the Wingfoil concept are invited to contact Yehuda Manor to offer help, ask for more information, or simply to comment. Write to: Yehuda at Manor Interface Craft, Ltd., 1 Giladi Street, Jerusalem 93385 Israel. IHS has a bibliography of hydrofoil-related publications, and a copy was mailed to Yehuda Manor. Anyone else who would like a copy may send an internet request to jmeyer@oasys.dt.navy.mil or write to IHS, P.O. Box 51, Cabin John MD 20818, USA.]