

# THE INTERNATIONAL HYDROFOIL SOCIETY

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President David C. H. Liang

Telex: 21879 HYDROFOILS LONDON.

## SPRING NEWSLETTER

### ALEXANDER GRAHAM BELL INSTITUTE 1982

Members! Please plan ahead for JULY 1982 AGM in Nova Scotia. Save and prosper but leave enough for this trip so that the whole society supports IHS-NA who are doing all the organisation. Accommodation has been BOOKED and needs must be filled!! It will be an outstanding event and the first presentation of the Baron Hanns von Schertel Lecture.

### SPRING MEETING OF IHS at RINA 1700 23 March 1981.

Juanita Kalergh, Council Member, Editor H-SSC

Today I have the sad and pleasant duty to say farewell to a departing President and to hail a new one. Our society has been singularly fortunate to have had three such outstanding presidents and now a fourth who I am sure will prove to be of equal stature.

Our first President, Baron Hanns Von Schertel already has a place in history as a pioneer of hydrofoil design. Our second, Peter Dorey was the first man in Britain to establish and run highly successfully a hydrofoil service. And our outgoing President Dr Ing Leopoldo Rodriquez is the world's leading constructor of hydrofoil vessels.

In his three year term of office which has now ended, he has made a new reputation for himself as a powerful force that has done much to mobilize and energize the members of this society. Our numbers have grown, our influence has grown, our voice is stronger throughout the world. In large part this is the doing of Leopoldo Rodriquez, an ever-willing servant of the society, and a master communicator of ideas and enthusiasm. We all thank you Dr Rodriquez.

Switzerland, Great Britain, Italy and now Hong Kong. It seems totally appropriate that for our new President we reach out to a part of the world where hydrofoil services are accepted, important and profitable as no where else.

David Liang who was born in 1945 attended primary school in Hong Kong and was then sent to public school in England before completing his university education in America, during which time he spent a year in Canada as an exchange student. He is married, and is the proud father of an 18 month old son. He comes from an old established shipping and ferry company. He is the eldest child of Mr Y C Liang, who founded the Hong Kong Macao Hydrofoil Company in 1964. On his father's death in June 1979 he assumed responsibility for his family's interests which include property and hotel holdings in Hong Kong, as well as other small businesses.

The importance his father always placed on the operation of the hydrofoil route between Hong Kong and Macao gave this particular company greater significance in his eyes, and he says he is very fortunate in having three of his brothers assisting him in the business, each being responsible for a different sphere of operation.

He hopes to broaden the membership of our society in future to take in "intellectuals", mariners and shipbuilders. He sees fuel economics as the main problem in hydrofoil operation but says that the next generation of vessels will reduce this.

Although still very young — David Liang has a tradition of success. I hope and believe he will build upon that tradition both for his own enterprises and for the benefit of our society. On behalf of all present, and all our members, worldwide, I extend him a very warm welcome.

David C. H. Liang, President I.H.S.

Leopoldo Rodriquez is probably unaware of how difficult a task he has set me, but succeeding as active and successful a president as he is is a daunting prospect. Leopoldo's life-work has been the introduction and promotion of hydrofoils throughout the free world and his achievements are reflected in the acceptance of such craft in almost every corner of the world — to the extent, in fact, of virtually being taken for granted by commuters in some areas. I know you will join me in thanking Leopoldo for his contribution to the industry as a whole and his efforts on the society's behalf in particular.

I consider myself doubly honoured to have been elected President of the International Hydrofoil Society, not only because of the calibre of men in whose footsteps I am following, but also because I am the first President to come from a non-european country. My illustrious predecessors — Baron Von Schertel, the late Peter Dorey, and Leopoldo Rodriquez — are legendary figures in the hydrofoil field, pioneers who laid the foundation for the thriving industry in which we are involved, and the fact that an operator from the Far East is standing before you today giving this inaugural address is ample vindication of their faith in the vessel and its potential markets. I, too, share their confidence in our industry and its future and believe the 80s will witness a continuance of their dream, with more and more markets opening up and better designed, more cost-effective vessels being produced.

Hydrofoils have played a vital role in improving transportation and opening up new areas for development, especially in densely-populated regions with a high ratio working commuters. My own territory serves as an excellent illustration of this, where in 1980 close to 5 million people travelled by hydrofoil between Hong Kong and Macao, and where additional feeder services — admittedly using side wall hovercraft for the most part — are constantly being introduced to meet demand on the run between Hong Kong and the People's Republic of China. The figures speak for themselves: at present, there are some fifty craft of various types in operation, with demand showing no sign of abating despite fare increases due to spiralling fuel costs and inflation. People want to be transported quickly and in relative comfort, and herein lies one of our greatest strengths.

To ensure the continued growth of our industry, however, it is imperative that we adapt to market demand, broadening our operational base and placing greater emphasis on technical research so that we can compete favourably with other forms of transport.

Given the foregoing, I am delighted to be able to report on the strides constantly being made by manufacturers such as Rodriquez, who will shortly be coming out with a bigger, more cost-efficient hydrofoil, the RHS-200. Other promising craft due to make an appearance this year include the Haltermarine Bell-Halter, which is already undergoing trial runs in New York, and the Marinteknik Jetcat. The introduction of these vessels augurs well for the industry as a whole and should vastly improve the operation of commuter services in many parts of the world. Advances are being made on all fronts, and I would especially like to mention the current generation of military hydrofoils which are capable of carrying powerful weapons packages and are an attractive proposition as consistent high-speed coastal patrol craft in this era of rising protectionism. Oil rigs require craft capable of carrying both men and materials safely and speedily and here again, hydrofoils are well suited for the task while advantage can also be taken of the increasing concern about the environment to promote hydrofoils as an attractive and 'clean' alternative to motor vehicles wherever feasible.

But all this is immaterial if one does not have the full support of that sector most closely involved in the day-to-day operation of the vessel: the crew and technical team, whose knowledge of their craft is incalculable. Looking around me today, I see representatives mainly from top management, and one of my aims as President will be to broaden the Society's base to encompass a wider cross-section of people:

the mariners whose suggestions and advice should be sought whenever possible: the shipbuilders and designers, who will shape the vessels of the future: and the transportation consultants, whose expertise will determine government planning in years ahead. The more practical experience we can call upon from within the society, the greater our chances of breaking new ground technologically and thus producing a new and better generation of hydrofoil. In this context, account should also be taken of other types of high-speed craft (such as catamarans) which do not employ foils but which serve the same objectives as hydrofoils, and discussions entered into with manufacturers of these craft to develop a closer working relationship and create more opportunities for future cooperation and the exchange of technical information. Above all, we need bright, young graduates to inject fresh ideas on design and technology and here I would like to mention the work of Professor Jose Alaez of Madrid, who has set up a special faculty at his university for the study of high-speed craft, a venture which deserves our full support and encouragement. We must each out the young, show them that a career in this field is an exciting one with excellent prospects, and encourage them to join us in designing the vessel of tomorrow.

In closing, I would just like to emphasize the need of keep abreast of development throughout the industry and it is here that publications such as "High-Speed Surface Craft", with its excellent section on hydrofoils, have a part to play. Publications of this sort merit more exposure and wider circulation and should be made available to staff at all levels in the organization, and not just a handful at the top. As a further service, your society will be issuing a handbook on Hydrofoil Technology shortly which should prove useful to operators and manufacturers alike. Details will appear in the Society's next newsletter and your support would be appreciated.

It only remains for me to remind members of our next meeting, to be held in Seattle from 14th to 16th September, and to thank you all most sincerely for having accorded me the honour of serving as your President at the opening (start) of this very exciting decade for our industry.

The whole proceedings were put on video and have been sent to Professor John Caldwell, University of Newcastle-upon-Tyne. Other Naval Architecture orientated universities home and overseas will be offered the tape.

#### PAPERS

1. Hydrofoils in Hong Kong by Kenny Tham, Technical Manager, Hong Kong Macao Hydrofoil Company
2. Future Ships Bridges and Navigation Systems by Captain I.S.S Mackay, Royal Navy
3. A new Self Controllable pitch propellor by John Coxon (Innovatos)

After the papers the Chairman ran over points of interest to members.

The Library is now in RINA and is to be updated.

Preparations for the Hydrofoil Handbook are progressing.

There is an increasing number of letters from people wishing to know "all about hydrofoils".

Dr R MacGregor, Glasgow University is collecting facts on all hydrofoil routes.

Boeing now has 21 Jetfoil sales. Rodriguez hydrofoils are running on routes worldwide. The Belgian state hydrofoils are to run Ostend/Dover starting in May. It is possible, it is understood, that Brighton/Dieppe may re-start.

We are following up a Danish suggestion that we should offer membership to catamaran owners when the craft have elementary foils. The Editor of HIGH-SPEED SURFACE CRAFT was thanked for all the help given to the society. It is our 'Official Organ'. Builders of craft are asked if they can spare some brochures relating to their craft which can then be sent on request to students to whom we pay special attention.

### MODEL HYDROFOILS

Miss Thea Rouse, Member, writes that she has been looking for a hydrofoil model — nothing fancy and not necessarily a working model. "I just want one which I can display in my room". She found a PT 150 at £60 but it was NOT value for money, and a further £50 for radio control. Perhaps a member will make her a hydrofoil model or tell her where she can find a reasonably priced model craft?

### JETFOIL LIVERPOOL-DUBLIN

May 8 to May 28 leave Liverpool Mon to Fri 1600 arrive Dublin 1915. Fares, Economy £20 single Weekend £23 are examples, but best look at the B & I Programmes.

### Extract from the Naval Architect (with Acknowledgements)

Six more of the OLIVER HAZARD PERRY (FFG-7) class frigates (similar to the RAN ADELAIDE) were in commission by the end of last year, making eight in service. The last of five improved PEGASUS (PHM-1) class hydrofoils was started by Boeing Marine Systems at Seattle on 12 September. The HERCULES (PHM-2) was originally ordered in 1973 as a sister of the PEGASUS but in August 1975 when she was 40% complete she was cancelled because of the serious cost over-run on the whole programme. The material saved was used to complete PEGASUS but when the PHM programme was revived in 1977 HERCULES was re-ordered as the fifth unit of a slightly modified class. The GEMINI (PHM-6) will be unarmed and is to serve as a trials craft.

### Acknowledgements to Financial Times

£2m jetfoil terminal for RTM and Sealink by Our Shipping Correspondent

A £2M TERMINAL is to be built at Dover's Western Docks to accommodate the new Dover-Ostend jetfoil service, which will start on May 31.

Belgium's Regie Transport Maritime and its British partner, Sealink UK, are planning to operate two jetfoils on the route, which will offer six return crossings a day at the height of the holiday season. In addition, there will be up to 15 return crossings by conventional ferries.

Last year, two other UK-Continent jetfoil services, operated by P and O Ferries from London and Seajet from Brighton, were taken off. RTM believes its service will be more successful since schedules coincide with train services.

The Ostend terminal is next to the railway station and the Dover terminal will be connected with British Rail's train services at the Admiralty pier. The two Boeing jetfoils will make the crossing in one hour and forty minutes as against 3½ hours for the conventional ferry service operated by RTM under the Sealink umbrella.

The operators claim that the London to Ostend journey will take 3½ hours. Brussels will take 5½ hours and Cologne 8½ hours.

The service is being competitively priced at only about £4.50 per person per trip more than the ferry, and people are assured of a seat. Each craft will carry 316 passengers.

### SUBSCRIPTIONS due 15 July 1981 for 1981 - 1982

Your Council has had to raise the subscription to £9. The costs of printing and postage have risen markedly. An INVOICE will be sent with the SUMMER NEWSLETTER.

A UNIVERSITY PROFESSOR "there is a lot of student interest in hydrofoils and with around 200 young marine technologists studying here, there is considerable potential IHS membership".

### CORRESPONDING MEMBERS

It is no longer possible to keep in touch with every operator so it is intended to seek area "Corresponding Members" to keep in touch, reporting events to the society. The first is Kenny Tham, Technical Manager, Hong Kong Macao Hydrofoil Company. Reports are requested about a month or so after the newsletter is received, ready for the next. Members who are willing to do this task for the benefit of others are requested to write. All FEEDBACK is appreciated.

### NAVY INTERNATIONAL (with acknowledgments)

Missile armed F.P.B's Completed, Projected or on order up to 400 tons.

Israel	2 FLAGSTAFF (Hydrofoils)	4 Harpoon,	2 Gabriel
Italy	7 SPARVIERO	2 Otomat	
Soviet Union	1 SARANCHA	6 Matka,	2 Styx

### HIGH-SPEED SURFACE CRAFT Hydrofoils January/February 1981 issue.

Patrol Combatant Missile (Hydrofoil) —PHM— design By David S Olling and Richard G Merritt  
Stolkraft

Test results in Sydney NSW are completed satisfactorily. "She combined the elements of both hydrofoil and hovercraft".

March Issue

Systems of costing of hovercraft, hydrofoils and WIG effect machines — Part I  
By J.M.L. Reeves and D.P. Findley

PT150's introduced on Canadian Route (Toronto-Yorktown)

Death of Rostislav Yevgenyevich Alekseyev, chief designer of Soviet hydrofoils.

### BOEING JETFOIL LAUNCHED FOR BELGIUM

16.2.81

The first of two Boeing JETFOIL hydrofoils for Regie voor Maritiem Transport (RMT), the state-owned ferry company of Belgium, is launched Boeing Marine Systems. The 316-seat hydrofoil, Princesse Clementine, will enter commercial service on May 31 between Dover, England and Ostend, Belgium. Operating under the name "Sealink," RMT will provide up to six trips a day on the 62-nautical mile route when the second JETFOIL, Prinses Stafanie, is added to the service this summer. Direct train connections will enable travellers to make the trip between Ostend and London in just three-and-one-half hours at approximately \$43 one-way fare. RMT presently operate regular car-carrying vessels between Ostend and Dover/Folkestone.

### CANARY ISLANDS (February 5)

Compania Transmediterranea, State run company has bought a second Boeing Jetfoil. The route Las Palmas/Tenerife is 52 miles. The company holds an option on a third craft.

President of the company, Don Federico Esteva reports "The Jetfoil has proven very satisfactory in the rough water of the Canaries". Over 1000,000 Passengers were carried in the first six months of operation. Value of the 294 seat craft is US Dollars 13.1 million.

### IHS STUDENT

One of our early joining students is now a Professor

AIAA/ASNE/IHS Marine Systems Conferences 14-16 September. The call for papers closed 1 March and final papers will close 24 July 1981, if accepted 8 May.

Donald E Germeraad  
 Manager Ocean Systems & Program Developments,  
 Lockheed Missiles & Space Co.,  
 POB 504 Org 57-70 5685.  
 Sunnyvale  
 California 94086.

### INDONESIA

The Indonesian Government, 12 February 1981, announced the purchasing of a Boeing hydrofoil for 1982. Value US Dollars 13.7 million. The Operating authority is the Agency for the Study and Application of Technology under the Minister of Research & Technology.

Customs, Navy, Offshore Oil Operations, Ocean Resource Control and commercial transportation are her tasks. In the passenger role she will have 255 seats, galleys on both decks and run Jakarta and the East End of Sumatra through the Java Sea and the Sunda Strait.

### HONG KONG

Far East Hydrofoils now operate seven Boeing craft and have ordered two more. Jetfoils have carried 10 million passengers worldwide.

U.S.S. PEGASUS has run 100,000 nautical miles. Five more PHM's are now in production at Boeing's Renton, Washington facility and are to join US Navy next year.

### OFFSHORE JETFOIL

Plans are moving ahead on the production of an OFFSHORE Jetfoil to provide crew and supply transfer to offshore oilrigs.

### H.M.S. SPEEDY

Was reported as arresting a fishing vessel in the South West Approaches to the English Channel.

A critical view of her North Sea capability was printed in the London Sunday Telegraph. The official reply to an enquiry was . . . . "is partway through her trials with Royal Navy. She can operate successfully and get up on her foils in Sea States up to 5 (waves 12ft peak to trough). She has been used so far with some success in a Fishery Protection role where high speed dash is a prime advantage".

She covered the 320 miles to Flamborough Head, off Yorkshire at 42 knots against headwinds 15 - 35 knots, sea state 2 -5 earning from RN "We are very impressed with SPEEDY's performance in such bad weather conditions". It is understood that early in her operations she was able to cover for THREE standard Fishery Protection vessels when they were all out of action. Further it is understood that the most experienced of captains of Jetfoils reckons that the full capability of rough sea operation has not yet been reached.

### RED FUNNEL HYDROFOILS

By buying 100 tickets, the return fare for the Red Funnel hydrofoils between Southampton and West Cowes is reduced from £4.85 to £3.80, a saving of £1.05.

### Acknowledgements Marine Engineers Journal—London.

#### **Dover Jetfoil Terminal**

A £2M scheme is underway to construct a jetfoil terminal at Dover's Western Docks to be completed by the summer. Dover Harbour Board Sealink and Regie Transport Maritime (RTM) are sharing the cost of the project.

The service to Ostend is due to start on Sunday May 31, RTM, a partner within the Sealink consortium, says the first jetfoil will operate three daily trips and, when the second jetfoil is introduced in July, there will be a maximum of six daily return trips.

Each jetfoil can carry 316 passengers and the journey between Dover and Ostend will take 1 h 40 min.

The engineering work at the Admiralty Pier, involves the construction of a sheet pile wall 66 m long, 10 m wide and 16 m high. Its purpose is to form a protective breakwater and create acceptable wave conditions for the jetfoil to berth alongside the pontoon.

On the outside of the wall, 10 tonne blocks will be placed to form a wave absorbing slope. This was decided as a result of hydraulic model study test.

### SPEED SAILING 1981. Acknowledgements to A.Y.R.S

#### Sailing Speed Records @ 1st February 1981.

Open	Class Timothy Colman (GB)	36.0 knots	Crossbow	Portland	17.11.80
'C'	Class Don White (USA)	24.4 knots	NF(2)	New York	18.11.78
'B'	Class Alan Grogono (GB)	23.8 knots	Icarus	Portland	8.10.80
'A'	Class Ben Wynne (GB)	23.0 knots	Mayfly	Portland	3.10.77
10 sq.m.	Jaap Van der Rest	24.6 knots	Windsurfer	Maui, Hawaii	18.7.80

Tim Colman tried to break 40 knots with Crossbow but getting the wind at the right direction for the transits at 30 to 35 knots with observers and timers ready to record the event proved too difficult.

Crossbow's sails cannot be reefed and wind in the region of 40 knots proved too much. Given the right wind with calm water her speed should be over 40 knots for a 'run'.

Icarus crashed in 1979 and had new (Tornado) hulls for the 1980 Portland meet. Her main foils were moved about two feet aft to the main cross beam giving a more even 'flight'. Her best run was enough to get her class record back from Prof. Bradfield's team in N.Y. but she seems well able to sail faster.

October      Probably 3rd to 10th — Speed Sailing Week at Portland. Ten Cate Sports have again kindly agreed to sponsor the setting up of measured courses and observers so that anyone interested in setting a new world sailing speed record can try. The A.Y.R.S. will again do as much as possible to help the R.Y.A. to run this event and hope again to award a prize to the fastest "craft" (not a sail board) having under 10 sq. metres of sail area. Details from Royal Yachting Association, Victoria Way, Woking, Surrey.

### SAILING

Eric J Manners, Principal Norfolk Broads School of Sailing & Seamanship, Martham, Great Yarmouth, England.

Since 1957 his original yacht design introductions to achieve sailing around the world include: First with both catamaran and trimaran; first single-handed catamaran and first hydrofoil stabilised trimaran to circumnavigate. Each vessel covered over twice the world's circumference under sail (Seaways Feb 1981)



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## SUMMER 1981

### BIG DEMAND FOR HYDROFOILS JAPAN

A PT-20 hydrofoil boat constructed at the Kanagawa Works of Hitachi Zosen was delivered to her owner, Ishizaki Kisen of Japan, recently. The hydrofoil boat has been named Ryusei.

With a seating capacity of 69 passengers, the boat will travel between Matsuyama on the Island of Shikoku and two cities, Onomichi and Mihara, on the Honshu side of the Inland Sea.

Ryusei is the seventeenth PT-20 hydrofoil boat constructed since 1960 by Hitachi Zosen under a licence from Supramar A.G. of Switzerland. Including the 123-seat PT-50-type, also built at the Kanagawa Works, a total of forty-two hydrofoil boats constructed by Hitachi Zosen are in service in countries around the world. As fuel costs continue to rise, the demand for hydrofoil boats is also increasing.

During cruising with hydrofoils, hull resistance is low and propulsion efficiency is high. As a result, fuel cost is very low — approximately 50 per cent less than normally required — thus making the PT-20 hydrofoil ideal for this energy-saving age.

The ship's hull is constructed of a light, strong aluminium alloy that meets both requirements for high speed and energy conservation.

Large windows, fluorescent lighting, comfortable seats, and a complete air conditioning system provide excellent comfort for passengers.

By redesigning shipboard facilities of the PT-20, three more passengers can be accommodated.

### COUNTER THRUST (Strategic and Naval Policy) Miles A. Libbey III.

This article appeared in the latest issue of "Naval Forces".

With the Possibility of Soviet Naval Forces in time of war forcing their way through the Baltic and Black Sea to gain access to the wider oceans, it is obviously desirable for NATO to have a powerful striking force capable of 'occupying' these areas. Few, if any normal warships, could be spared for such a hazardous mission, but there is one type of craft that might possibly be used — the hydrofoil. The following is a synopsis of the discussion how such craft could be used and the weapons they should carry.

"The threat from the air, surface and the depths can be so concentrated that speed, small radar cross section and stealth trade for minutes necessary to launch an attack."

—— lead to a ship similar to the NATO developed, but US built PEGASUS class combatant, having a compact 76mm gun and eight Harpoon missiles.

... probably limit underway time to three cycles of five days at sea and two in port, followed by as much as a week for crew (4 + 17) rest and ship maintenance.

... therefore for the current proposal to work, the PEGASUS PHM would trade off conventional missiles against crew size and combat radius. This specialized ship will be referred to as an Attack Hydrofoil, Missile (AHM)

... the NATO hydrofoil armament the Tomahawk sea launched cruise missile. For self defence against air attack, a Vulcan-Phalanx 20mm close-in weapon would probably be of more use than the 76mm.

"If every ship carried five TLAMC and ten were always on station in each sea there would be 100 non-nuclear NATO cruise missiles aimed at important military sites".



<p>8:30 — PANEL DISCUSSION</p> <p>10:00 TOPIC: Postulated Political/Economic/Defense Environment for Century 21 Marine Systems Applications</p>	<p><u>Chairman</u></p> <p>Norman D. Dicks</p> <p>U.S. Representative</p>
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— 15 SEPTEMBER —

<p>7:30 Speaker's Breakfast also NAA/IHS Board of Directors Breakfast</p> <p>9:00 — SESSION III — NEXT GENERATION MISSIONS/CONCEPTS</p> <p>12:00 AM</p> <p>12:30 NO HOST LUNCHEON — AIAA 50th Anniversary Presentation</p> <p>2:00 — SESSION IV — ADVANCED DESIGN CAPABILITIES/</p> <p>5:00 PM TECHNIQUES</p> <p>EVENING Salmon Bake, Tillicum Village, Blake Island</p>	<p>Peter Mantle, Office of Asst Secretary of the Navy, RE&amp;S</p> <p>Prof. Dale E. Calkins University of Washington</p> <p>William M. Ellsworth Systems Development, DTNSRDC</p>
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— 16 SEPTEMBER —

<p>7:00 Speaker's Breakfast</p> <p>8:30 — SESSION V — ADVANCED TECHNOLOGY — NEEDS &amp;</p> <p>11:00 AM PROMISING SOLUTIONS</p> <p>11:30 — FIELD TRIP to:</p> <p>2:30 PM Boeing Renton Plant</p> <p style="padding-left: 40px;">o PHM Christening &amp; Launching Ceremonies</p> <p style="padding-left: 40px;">o PHM &amp; Jet Foil Production Lines</p> <p>7:00PM- NAA/IHS Annual Meeting and Dinner</p> <p style="padding-left: 40px;">Saturn Room - Red Lion Inn</p>	<p>William J. Phillips, Tactical Technology, DARF</p> <p>Richard G. Merritt, Boeing Marine Systems</p> <p>David Liang Guest Speaker</p>
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— ADJOURN —

24 April 1981. Racal-Decca Navigation has announced Belgian Maritime Transport Authority has placed £75,000 order for two Decca Navigator MK19/DANAC Pictorial Display Radio Navigation Systems for Jetfoil hydrofoils, PRINCESSE CLEMENTINE & PRINSES STEPHANIE (Dover-Ostend route). The current 7 hours 30 minutes London - Brussels is cut by two hours (£5 surcharge for Jetfoil making the single fare £26) (£49 by air)

SOUTH CHINA MORNING POST 20 March 1981

The Far East Hydrofoil Co jetfoil PICO hit an unknown object near Cheung Chau. 89 people were injured out of 171 on board. A Marine Department investigation, Senior Surveyor of Ships, Captain Alan Pyrke is heading the enquiry. A later report was that PICO had hit the Adamasta Rock, well marked by a beacon.

JUANITA KALERGHI

Editor of HIGH-SPEED SURFACE CRAFT, a Vice President and Council Member of IHS receives the congratulations and best wishes of the society. She was married quietly and privately in September 1980.

## SHIP AND BOAT INTERNATIONAL

### LARGE HYDROFOIL LAUNCHED

Outside the USSR, the Messina (Sicily) yard of Rodriguez Cant. Nav. S.p.A. is the acknowledged leader of surface hydrofoil building and since 1956, 135 hydrofoils of different types have been sold to owners for use in 24 countries. Besides scheduled passenger services, a number of Navaltecnica hydrofoils are also in service as cargo/crewboats with the offshore oil industry. The latest developments are represented by the RHS 200, the prototype of which has just been launched, and the M Class of surface-piercing naval hydrofoils.

The prototype RHS 200 has an overall length of 35.80m and has sets for 254 passengers in its standard configuration or seats for 400 commuters. Power is supplied by two MTU diesel engines developing 5200hp and driving c.p. propellers to give a cruising speed of 36 knots.

The RHS 200 features the Seakeeping Augmentation Stabilising System for the damping of heave, pitch and roll motions, providing increased passenger comfort in heavy sea states (sea state 5/6 Beaufort).

As with other hydrofoils of the RHS series, a mixed passenger/cargo variant of the RHS 200 is being developed for the servicing of offshore oil drilling rigs.

Standard Navaltecnica designs also comprise the 71-passenger RHS 70, (22.2m long o.a.), the 200-passenger RHS 150 (28.7m) and the long-range 160/200-passenger RHS 160 (30.9m). In the offshore versions, the RHS 70 carries, for example, 14 passengers and 3 tonnes of cargo at 32 knots while the RHS 160 carries 42 passengers and 10t cargo at 35 knots.

Among special variants, the MRHS 150 is particularly interesting. This is a long-range (700nm) rescue cruiser with a stern ramp carrying a 'daughter boat' in the German fashion. With its high top speed of 36 knots this design obviously has appeal as an interceptor craft for contraband and immigration control.

### FAR EAST HYDROFOIL Co Hong Kong

#### Vessels at present in service July 1981

(This includes vessels undergoing repair or annual refit but does not include vessels permanently layed up).

#### JETFOILS

001 ex Kalakava  
002 —  
003 ex Kame Hameha  
004 ex Kuhio  
005 —  
006 ex Jet Caribe I  
008 ex Jet Caribe II  
010 ex Flying Princess III

#### HYDROFOILS

PT 50                      RHS 160

#### PTS 75 Mk III

Rosa  
Patane

The following is the first five of 34 sailings per day

#### Sailing Schedules with effect from 1st July 1981

<u>Trips</u>	<u>Departure Hong Kong.</u>	<u>Departure</u>	<u>Macau.</u>
1.	07.30 hrs. P.Delgada/S.Maria	07.30 hrs.	S.Maria/P.Delgada
2.	08.00 " Flores/Corvo	08.00 "	Corvo/Flores
3.	08.15 " Balsa/Guia	08.15 "	Guia/Balsa
4.	08.30 " S.Jorge/Acores	08.30 "	Acores/S.Jorge
5.	08.45 " Rosa/Rosa	09.00 "	P.Delgada/S. Maria

HIGH SPEED SURFACE CRAFT Contd.

JUNE. Night Eyes for FPB's

JULY. Reports on Liverpool-Dublin and Dover-Ostend routes.

BANKERS STANDING ORDERS

Please will members with a Bankers Standing Order kindly amend them to £9.00 which is the new subscription. It should be checked that the 1978 amendment was made to £7.50, and if this was not done, would they please reimburse the Society with the difference. Thank you!

SOUTHAMPTON UNIVERSITY

J.F. Wellicome of The University writes " I am currently acting as supervisor of a group design project for students on our enhanced four year degree course. The aim is to design and build a submerged foil craft over a period of 3 - 4 years, subject to cost and sustained student interest. Last year a group of three student did a feasibility study for a submerged foil design and this year's team will, I hope, design and build a foil incidence control system as the first stage of the actual construction. The progress to date would not justify a paper, but it is certainly something we could consider later on.

RTM starts second Jetfoil — Travel News

RTM.S second Jetfoil — Princess Stephanie — starts operating on the Dover-Ostend route tomorrow (Friday), alongside its sister vessel Princess Clementine which has been in service for two months.

The number of return crossings daily will double to six during the peak summer season. Fares are the same as on Sealink's ferries on the route, with a £5 surcharge. Because of limited space on the 316-capacity craft reservations are necessary.

At the end of its second month of operation Princess Clementine has carried 30,500 passengers. There were no weather cancellations or technical delays.

Sealink's Continental manager, Derek Roberts, said: "We are obviously delighted with the performance and the public's response to the new service, which clearly justifies our Belgian partner's confidence in introducing the Jetlink".

HAVE YOU PAID YOUR 1981 - 1982 DUES?



# THE INTERNATIONAL HYDROFOIL SOCIETY

17 Melcombe Court, Dorset Square,  
London, NW16EP

Telephone: 01-262 9641 or 01-935 8678  
Telex: 21879 HYDROFOILS LONDON

## Newsletter Autumn 1981

"As President of this Society it is an honour and a privilege to congratulate the American Institute of Aeronautics and Astronautics on their 50th year, and I am overawed by the progress that has been made in the state of the art in the past half century. The Society I represent is a very young one, comparatively speaking.

Whilst the AIAA 6th Marine Systems Conference has generally devoted its discussions to military and defence concepts and technical developments relating thereto, it is hoped that in due course research and development in advanced marine craft for military purposes will lead to viable commercial applications.

During the 50 years that the AIAA has been in existence, the knowledge and experience gained from research and development for military purposes has certainly paid off in the development of commercial aircraft in improving communications, understanding and trade worldwide.

The concept of the Hydrofoil for high speed surface transportation goes back to the 19th century. Almost to the time when the concept of an aeroplane began to be a reality. The main stumbling-block in achieving commercial viability was the need for a lightweight engine capable of producing the necessary power. Thanks to the faith and tenacity of purpose of Baron Von Schertel and his associates, however, the first successful commercial model was launched in 1936.

Since that time, there have been a number of developments in dynamically-supported craft: Hydrofoils, known as 'surface piercing' craft: the Russian 'ladder foil': and Jetfoils, using the 'submerged foil' principle. We have witnessed the emergence of 'surface effect' ships operating on an air-cushion principle and some very large vessels of this type are currently in operation throughout the world. A version of this type of craft which operates with a water propeller driven system has also been introduced. All this is a far cry from the day in 1953 when the first scheduled passenger service utilizing a Hydrofoil skimmed the waters between Switzerland and Italy, yet the passage of time has not brought with it the hoped-for revolution in craft design.

Developments in high-speed surface transportation have not kept pace with those in the aircraft industry and even today, the Hydrofoil craft (PT50) using surface piercing foils remains the most successful in financial terms.

Operators are still seeking a more ideal commercial vessel to service potential markets in many parts of the world, but growth is dependent on the manufacturers' ability to provide craft with greater carrying capacity than current models'. However, just increasing the size of vessels based on present designs requires a corresponding increase in power. The result? A self-defeating rise in operating costs that effectively negates any increase in profitability.

Operators are essentially looking for vessels that can give safe, comfortable, high-speed service at a price that can be self-supportive, without subsidy from any political entity or other commercial enterprise. This may sound a bit idealistic, but it has been achieved in a very large segment of commercial air transportation. What is clearly needed is a radical change in the present vessel design, and when a manufacturer or designer can come up with a fresh innovation that will comply with our commercial objective, he - or she - will find any number of operators around the world only too eager to convert the blueprint into reality.

President: David C. H. Liang

Past Presidents: Baron Hanns von Schertel Peter Dorey Dott Ing Leopoldo Rodriguez

In view of our common objectives, I hope that our two respective associations will work together in the future to promote projects of mutual interest and benefit".

#### HIGH-SPEED SURFACE CRAFT.

July 1981 Lt Cdr P.L. Roach. Personality Profile of Commanding Officer H.M.S SPEEDY.  
 August Motion Control systems as a means of improving hydrofoil craft seakeeping. by Yu N. Chernysh, T.S. Chernyshev and E. Yanchesky.  
 The uses of secondary radar by Vice Admiral (Retd) Sir Ian McGeoch. A review of the current position and a case for adopting MIDAR.  
 October Hovercraft and Hydrofoils - the past 20 years Desmond Wettern.  
 Model tests for a wind-propelled by hydrofoil trimaran Neil Bose.

#### On September 17th 1981,

The Patrol Hydrofoil Missile ship Aquila (PHM-4), the third of six all-weather combatant hydrofoils being built by Boeing Marine Systems for the U.S. Navy, was launched to join Pegasus, PHM-1, already commissioned, and Taurus (PHM-3), to be commissioned by the Navy October 10, and three other PHMs to be delivered next year to form a six-ship PHM squadron at Key West, Florida. Aquila was christened by Mrs. John. D. Bulkeley, wife of Rear Admiral Bulkeley, President of the Navy Board of Inspection and Survey and principal speaker at the launch ceremony yesterday (September 16). The PHM is a compact, highly-mobile, combatant hydrofoil ship capable of speeds exceeding 40 knots. Designed for all-weather operations, PHM's fully submerged foil system permits the ship to operate in heavy seas with stability normally available only in much larger ships. The hydrofoils are equipped with Harpoon missiles and rapid-fire 76-mm cannon. Boeing Marine Systems also produces commercial hydrofoils called JETFOILS, which have accumulated more than 100,000 hours of service and carried over 11,000,000 passengers since beginning operation in 1975.

#### On November 6th 1981,

Vice Admiral Earl B. Fowler Jr, Commander of the Naval Sea Systems. Command was principal speaker at the launch of U.S.S. AIREX.

New Papers: Wing Sections for Hydrofoils Part 2 Nonsymmetrical Profiles by Young T. Shen and Richard Eppler.

#### MARINE LOG - May 1981

Robert Bateman(Boeing) "We have the engineering and manufacturing skills and capabilities to build up to 12 PHM's a year with the tools immediately available. PHM Squadrons deployed in forward areas such as Mediterranean/Middle East, Subic Bay in the Philippines and Japan can augment the major combatant ships in the area, effectively patrol critical sea lanes and choke points release larger elements of the fleet for duties for which they are better suited".

#### Maritime Reporter & Engineering News

Boeing Marine Systems Patrol Hydrofoil Missile:-

PHM-2. Estimated Contract value Millions of dollars US 21.3(1)  
 PHM-3. Estimated Contract value Millions of dollars US 78.0(4)

SEE COMMENTS AT THE END OF THE NEWSLETTER

Harbour & Shipping APRIL 1981

Lineas Maritimas Argentinas. MS JULY II recently carried the 272 passengers Boeing Jetfoil ferry MONTEVIDEO JET from Seattle to Buenos Aires. The jetfoil will operate on the Rio de la Plate between Argentina & Uruguay (Request updated information on her ferry operations - Sec IHS)

Amateur Yacht Research Society

Hermitage, Newbury, Berkshire, England.

HYDROFOIL OPTIONS : £1.50 (4.00 dollars US) 1978. Lists Foil Shapes & Types. Illustrated with Photos & Drawings 80 pages.

LIST OF MEMBERS.

Amend to:-

Dott.Ing. Leopoldo Rodriguez, via Consulare Pompea 51, VII S Agata 98010 Messina (Italy).

MODEL MAKING

To celebrate the Shipwrights' Company's bicentenary next year, the society is organising a model-making competition with a £1000 prize. The theme is technical development in ships between 1782-1982.

Models may be within any of the following classes: (A) complete ships or boats; (B) sections of ships or boats to illustrate construction; (C) marine engines; (D) marine equipment; (E) ship or boat yards.

Models must not exceed 6ft overall, and each must be supported by a 500-word technical paper.

Entries are invited from individuals or from groups of not more than six people, who are British subjects and not commercial model makers.

Entries should be notified not later than 31 January 1982. Further information from The Clerk, Worshipful Company of Shipwrights, Ironmongers' Hall, Barbican, London EC2Y 8AA. Tel: (01) 606 2376.

ATLANTIC CHALLENGE

A non profit making corporation ....

ROUTE .... Is that chosen by Charles A. Lindbergh ... 3000 miles

TYPES of CRAFT ... Truly unlimited except the vessel can not have a flight capability defined as follows:-

The vessel cannot have the controlled capability of either:-

- (1) obtaining a maximum altitude equal to the greater of either (a) 5½ feet or (b) an altitude given by the formula (length plus beam of craft)/2 or
- (2) being airborne for a predetermined time period between time period between 1 -5 minutes, or
- (3) being airborne for a predetermined distance of 2-10nm

By this definition, hydrofoils, hovercraft, and the many variations of the ACV and SES types including Wing-In-Ground Effect would be allowable vessels.

Information from:-

Edward Wukowitz, 60 Birch Drive, N.Y. 10536 USA (914) 232-3990

# AIAA 6th Marine Systems Conference

**Paper No. 81-2080. After HMS SPEEDY-- The Military Mission.** GENE R. MYERS, Director, Military Systems and Configurations, Boeing Marine Systems, Seattle.

HMS SPEEDY is the first military derivative from the Boeing commercial JETFOIL hydrofoil. The use of this well-developed piece of generic hardware allowed HMS SPEEDY to be built and made directly operational. HMS SPEEDY used the basic machinery, foil, strut, control system and other associated subsystems. Additional fuel capacity was provided for range and mission requirements. Diesel CODLOG was provided to give the vessel a low-speed endurance improvement. Derivatives such as this open a number of configuration options while retaining the generic-common commercial component. It offers mature hardware at the program start. It eliminates the need for prototypes.

**Paper No. 81-2070. JETFOIL Variant for Offshore Transportation.** H.F. TURNER, Manager, and P.R. GILL, Naval Architect, Boeing Marine Systems, Seattle, WA.

The Boeing JETFOIL, a fully submerged foil, automatically stabilized, waterjet propelled hydrofoil, is presented as a solution to effective water transportation for offshore workers. The problems of transferring personnel between a moving vessel, severe seas and a fixed platform are discussed and proposed solutions presented. Three potential operating areas, the North Sea, Gulf of Mexico, and the Indian Ocean off Northwest Australia, are discussed relative to the environment and operating requirements. Characteristics and capabilities of a proposed offshore crew variant JETFOIL are presented. Predictions of physical operability based on coupling data from JETFOIL in a seaway with statistical seastate data for prospective operating areas is discussed. Finally, criteria and predictions of passenger comfort are presented.

**Paper No. 81-2088. Water Inlet Blowdown.** THOMAS TIMAR, Principal Engineer, Boeing Marine Systems, Seattle, WA.

Cleaning inlet grills of waterjet propulsion systems on hydrofoil boats with a diver removing debris by hand was slow and expensive. A blowdown system was developed to serve the same purpose rapidly and without a diver.

A state-of-the-art blowdown system requiring closure of a seacock prior to operation could not be employed because the waterjet discharge nozzle must always stay open. A new blowdown system was developed. It consists of high pressure compressed air discharged abruptly. Pulses are brief for energy conservation. The open discharge nozzle is utilized as a safety valve if the inlet is plugged solid. Semi steady state equations were used to prove feasibility, and were confirmed by full scale testing. The system is now fully operational.

**Paper No. 81-2067. Extended Performance Hydrofoils.** J.R. MEYER, Jr., EPH Project Manager, DTNSRDC, Bethesda, Md.

While providing about 50 percent of the Extended Performance Hydrofoil (EPH) foilborne total lift, a buoyancy/fuel (B/F) tank located below the foil system can be used for fuel, extending the hydrofoil's range well beyond that possible from comparable conventional hydrofoil designs. This capability is achieved without a large sacrifice in maximum foilborne speeds. Range improvement, which increases with ship size, results basically from higher weight-to-drag ratios, particularly at lower foilborne speeds, and increased fuel weight fraction. The lower end of the foilborne speed range can be efficiently extended to 20 to 25 knots, whereas maximum speeds greater than 40 knots are still attainable. A program for demonstrating the feasibility of the EPH concept on the Navy PCN-1 HIGH POINT RD hydrofoil is described. It is concluded that the EPH concept will give the hydrofoil designer another option to meet specific missions, and provide new alternatives to the operator when setting forth achievable mission requirements.

**Paper No. 81-2079. MYCAT: Hybrid Hydrofoil Catamaran Concept.** D. E. Calkins, Research Associate Professor, Ocean Engineering Program, University of Washington, Seattle, WA.

A hybrid marine vehicle concept has been developed which utilizes a combination of static and dynamic support. This concept, termed MYCAT for Hydrofoil CATamaran, combines a planing catamaran hull with two fully submerged hydrofoils mounted transversely in tandem fore and aft. The hullform is developed by adding a high length/beam ratio, high deadrise side-hull along the keel of each catamaran demi-hull. The side-hull, which is the only portion immersed when operating foilborne, provides buoyancy support. Spray sheet reversers provide discontinuities which separate the flow and provide dynamic lift in addition to the hydrofoils. Stability in the heave, pitch and roll degrees of freedom is achieved through the displacement dependent side-hull buoyancy and the rate dependent lift developed by the spray sheet reversers and hydrofoils. A comprehensive series of model tests has been conducted to characterize the smooth and rough water performance.

**Paper No. 81-2082. Load Alleviation and Life Extension for Hydrofoil Systems.** D.R. STARK, Principal Engineer, Boeing Marine Systems, Seattle, Wash.

Load alleviation and life extension via Automatic Control technology shows great promise for hydrofoil ships. The keys to this promise are a comprehensive multi-technology dynamic simulation, combined with realistic sea way characterization, and long term foil system damage rate estimates. The paper illustrates key elements of the loads simulation and controls technology that have been found important in load alleviation. Two fatigue life analysis programs are tied to dynamic simulations of the ship in random sea ways to produce damage rate and foil life estimates. Foil system load measurements from full scale trials are correlated with simulation predictions for similar conditions. Automatic control system models are evaluated for their effect on overall foil system life.

**Paper No. 81-2084. The M151 Transmission System for the MARK II Hydrofoils.** R. E. Peek, Senior Transmission Specialist and L. H. Bauer, Marine Engineer, Grumman Aerospace Corporation, Bethpage, N.Y.

Marine Propulsion System of the type described in this paper have been in existence for more than twenty years. When an advanced 5000 horsepower transmission system for a high performance marine vehicle is contemplated, a challenge is presented to all concerned. MARK II transmission was no exception.

Three and one half years after inception, the craft with the new propulsion system completed sea trials. This paper takes the reader through the concept, design and development, manufacture and testing of this transmission. Supporting systems are discussed as an integral part of the total system. The manufacturers back to back testing and shipyard land based full load testing represent a major step forward in developing reliable and lightweight, high performance marine propulsion systems.

**Paper No. 81-2068. Pegasus, First Two Years in the Fleet.** W. ERICKSON, Pentagon, Washington, D.C.

The lead ship of the U.S. Navy's first squadron of Patrol Combatant Missile Hydrofoil (PHM) ships, USS PEGASUS (PHM-1), was delivered to the Navy 15 June 1977. The five production PHMs are scheduled for delivery to the Navy during the next 12 months, approximately four years later. In this time interval, PEGASUS has been utilized in a variety of missions, including a very successful deployment to Hawaii in which she transited the open ocean in convoys and participated in Fleet exercises both enroute and from Pearl Harbor. In operations from Hawaii she was supported by a reduced Mobile Logistics Support Group (MLSG). A chronology of PEGASUS PACFLEET operations and lessons learned during the first two years following delivery, and her transit from San Diego, CA to Norfolk, VA is described in this paper. PEGASUS is now home ported in Key West, FL where she will be joined by the rest of the squadron.

**Paper No. 81-2086. A Hydrofoil Advanced Technology Lift and Propulsion System.** C. G. Pieroth, Deputy Director, Grumman Aerospace Corp., and F. W. Otto, Section Head, Adv. Systems, Edo Corp., College Point, N.Y.

The technical feasibility of developing an Advanced Technology Lift and Propulsion System is described. This development could offer significant improvements over the presently demonstrated state-of-the-art operational capabilities of U.S. Navy hydrofoil ships in the 250-metric ton class. These improvements, if expressed in propulsive power per full load displacement ton, show a reduction in requirements from the present state-of-the-art values of 11% at takeoff conditions; and 44% at cruise. This level of improvement leads to markedly reduced fuel requirements, thereby improving range and/or military payload capabilities of a given hydrofoil platform.

The total system represents a combination of developments in hydrofoil-unique systems not previously available, and thus, in total, can be considered to be at the forefront of practical and demonstrable hydrofoil technology.

**Paper No. 81-2085. Noise in Hydrofoil Ships.** A.E. NOREEN, Manager-Hydrodynamics, and J.V. O'KEEFE, Engineering Supervisor, The Boeing Company, Seattle, WA.

Hydrofoil ships currently in operation worldwide are compact vessels powered by gas turbines and diesel engines. Machinery is in close proximity to passengers and crew. Noise in passenger cabins and working spaces is controlled to levels permitting unimpeded communication and a tolerable environment by acoustically shielding those spaces from machinery noises. Acoustic absorption treatment and local machinery noise suppression at the source is also necessary. Design of acoustic shielding and absorption systems was based on laboratory tests of candidate materials in a reverberant-anechoic chamber, followed by modeling noise sources, acoustic transmission losses, absorption characteristics, and noise levels in various spaces in a computer program to predict noise levels throughout the ship. Measured noise is compared to predictions. Noise levels near those of other transportation modes were achieved on hydrofoil ships.

**Paper No. 81-2071. Six Years of Successful POWERJET 20 Service.** C. L. HECKART, Chief Project Engineer, Marine Systems and O. L. TRUMBauer, Project Manager, Waterjet Product Support, Rocketdyne International/Rocketdyne Division, Canoga Park, California.

Rocketdyne's POWERJET™ 20 Waterjet Propulsion Systems have accumulated over 200,000 hours of operational service on the Boeing commercial hydrofoil passenger craft-JETFOIL. The simplicity of the single-shaft axial flow pump coupled with design features that control corrosion and cavitation damage have minimized in-service problems and maintenance. Weight is low due to the successful utilization of lightweight materials while providing long life. The Boeing JETFOIL serves wide geographical locations and provides a significant base for evaluation of the design, operation, and maintenance of the POWERJET 20. Mean time between removal and scheduled and unscheduled maintenance actions have been well established.

Papers are held

in IHS Library  
R.I.N.A., London



Jane's SURFACE SKIMMERS 1981, with acknowledgements

de Havilland Canada's latest design DHC-Marine Patrol-100.

104 tons, 50 knots with BRAS d'OR's seagoing capability.

GERMANY (FDR) RFB X-114 Aerofoil Boat. This wing-in-Ground Effect machine now

has foils beneath the sponsors. The vehicle is designed to operate over waves up to 1.5m (4' 11") in ground effect. Fuel consumption costs when flying in ground effect are lower than those for cars.

USSR BABOCHKA 'The world's biggest and most powerful hydrofoil warship. 400 tons, 50 knots.

SAEANCHA 330 tons. Fast Attack craft. Four SS-N-9 ant ship missiles. One twin SA-N-9 surface to air missiles launcher on fore'd deck. One 30mm Gatling type gun.

HYDROFOIL Inc New Jersey, USA. Are developing craft for an attempt on the world hydrofoil speed record.

#### SAILING HYDROFOILS.

Japan Department of Mechanical Engineering. Kanazawa Institute of Technology. HI-TROT II. Three sail panels in parallel with an air rudder automatically adjusting the angle of attack.

HI-TROT III has two parallel soft wing sails. Maximum speed 21 knots in an 18 knot wind.

USA PACIFIC EXPRESS. Successor to WILLIWAW, hydrofoil cruising trimaran, top speed 45 knots.

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Extracts from a letter from Captain R.J. Needham, A/Secretary Irish Association of Master Mariners, Dun Laoghaire. It was published in SEAWAYS, the journal of the Nautical Institute.

#### ENGINEERS MOST NECESSARY

In the paper entitled 'Training for Command' by Captain T.B. McGregor it is suggested that if the shipowner is prepared to meet the expense of additional training, back-up equipment and servicing facilities, there would be no need to have any engineers on board seagoing vessels.

Having operated in this manner for the past two years on a 44-knot hydrofoil, where my owners did go to the very considerable expense of providing specialist training for bridge crews, back-up and servicing facilities (which included a manned radio station) as well as an engineer who was required by the regulatory authorities, my experience has been that the engineer has proved to be a most necessary member of the bridge crew. This is so much so that all traces of oil and water have completely vanished and a better understanding of the overall job has resulted.

It is my opinion that a lot of the modern equipment as found in today's vessels is not so robust and trouble-free that it could withstand prolonged periods of one/two months without having to be serviced by an engineer or electronics officer. We cannot assume that the equipment will be kind enough to await the vessel's arrival in a port where repair facilities would be available. These breakdowns usually happen in a heavy seaway or dense fog.

It is worth noting that the International Airline Pilots Association are at this moment contesting a claim by a leading aircraft manufacturer that a new passenger plane now being marketed can safely operate without an engineer. This is a long-standing issue in the air industry.

I agree that any craft that can be sold to the shipowner or the air industry with reduced manning on board is an obviously attractive proposition to both the vendor and buyer, but whereas this might make economic sense on paper, the realities of the situation are entirely different.

#### JETFOIL NAVIGATIONAL ACCIDENT - August 15 1981

Extracts from London Daily Telegraph.

PRINCESSE CLEMENTINE collided with a Swedish freighter in thick fog eight miles off Calais. Belgian officials ordered an urgent enquiry into why the craft's two radar systems apparently failed to give warning of the closeness of the freighter BUENOS AIRES, 10,348 tons. Officials said the craft had broken the for'd strut (on sighting the captain had been able to achieve a glancing blow only). Minor injuries only were received and the 208 passengers were transferred to a sister craft while three merchant ships formed a lee.

Mr Paul Muyldermans, director general of the Belgian Transport Co said the accident was a complete mystery. He added that the jetfoil service had proved very popular. Passengers pay £5 supplement with the passage time 40 mins compared with 3hrs 45mins for the conventional trip.

Lt. Cdr. Mike Holmes RN

The first two man transatlantic yacht race from Plymouth, England to Newport, Rhode Island, USA, started on the 6th June, 1981. There were 103 yachts in the race.

" Getting from Cawsand to the start line outside the breakwater was like an obstacle course. It was blowing a Force 7 from the South West. I changed down to the No.2 Genoa, got thoroughly soaked and felt grateful for my wetsuit. We had to shout at a massive French Trimaran which just altered course in time, for his hydrofoil to knife past within inches of our outrigger. That was close, but we were luckier than some. The start is arguably the most hazardous part of the race."

PHM - Costs - The herein reported estimated contract values are in error. The PHM-2 cost of \$21.3 M was a 1972 NATO estimate for PHMs in lots of 30 hydrofoils. Current escalated total program costs for the 5, Boeing built, PHMs are \$75.2 M each.



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FEBRUARY 1982

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## HONG KONG

Our corresponding Member sent the following telex:-

1. The Marine Court of Inquiry held to investigate the Jetfoil PICO accident in March 1981 when 85 people were injured, was adjourned and will reconvene to give it's verdict after the lunar new year.
2. On 12 September 1981 another jetfoil hit a floating log on it's return from Macau within sight of Hong Kong Pier. The sudden crash sent most of the 179 passengers inside the craft sprawling. 11 injured.
3. Recently, a third jetfoil TERCEIRA Block II type, purchased from England crashed on to a barge which was being towed, the jetfoil unaware of the second barge on tow tried to pass between the two barges. The craft is under repair.

## INDONESIA TO USE JETFOIL

BIMA SAMUDERA I will be evaluated in coastal defence and Customs enforcement roles as well as off-shore oil operations, ocean resource control and commercial passenger transportation. Due to start operations next month. She will be operated by the Agency for the Development and Application of Technology. Admiral Waloejo Soegito, director of PT PAL, the National Shipyard, represented the Government at the launching ceremony. Value of the sale is approximately US Dollars 13.7 million.

## HIGH SPEED SURFACE CRAFT Journal. DECEMBER

Cover picture is one of the P420 Sparviero Class Hydrofoil Missile Craft designed and constructed by Cantiere Navale Riuniti under contract to the Italian Navy. Swordfish the first vessel was delivered in July 1974. An order for a further six of this type was placed by the Italian Navy in February 1976.

### JANUARY 1982.

Progress in inflatable lifesaving equipment for High-Speed Surface craft by Betty Moat. Twenty Years of RFD equipment for hovercraft and hydrofoils.

### FEBRUARY 1982

Hydrodynamic design and development of high-speed surface craft at Mitsubishi Heavy Industries by K. Takekuma & E. Baba.

## CANARY ISLANDS

Reports on this route are very good. A detailed report is being sent.

## HMS SPEEDY

Is to be laid up. Press reports spoke of costs of operation as being £860,000 and the short steep seas in the North Sea being a factor. Your Chairman took the matter up with the Admiral concerned who said that he had authorised the money aspect to be the reason, and not the seas. A very experienced member says that he does not think that operators have yet developed her sea keeping qualities to the maximum.

SEA POWER — the need has not diminished. by Desmond Wettern, Naval Correspondent DAILY TELEGRAPH

Royal United Services Institute symposium on Maritime Strategy for the 1980s.

## Extract from US Naval Institute Proceedings

### Patrol Combatant Missile (Hydrofoil)

PHM-2	*HERCULES	FY Program 76	Boeing	Seattle	KL	12 Sept. '80
PHM-3	TAURUS	75	"		Lau	8 May '81
PHM-4	AQUILA	75	"		Lau	16 Sept. '81
					Comm	19 December '81
PHM-5	ARIES	75	"		Lau	5 Nov. '81
PHM-6	GEMINI	75	"		KL	18 June '81

\* Originally ordered under the FY 73 program along with PEGASUS — then DELPHINUS — (PHM-1). Both were to be constructed with research and development funds. Keel for PHM-2 was laid on 30 May 1974. When construction costs of the two units continued to rise, the HERCULES was cancelled in August '75 when she was 40.9% completed, and remaining funds were diverted to complete the PEGASUS. After stripping, the uncompleted hull was scrapped. Re-ordered as the last ship of a five-ship production contract.

### SMALL WARSHIPS

Aside from the progress toward completion of the missile hydrofoil (PHM) class, not much has occurred during the past year in the development or production of small combatants and other minor warship types for the US Navy. With the commissioning of the TAURUS (PHM-3) in 1981, hydrofoil enthusiasts are looking forward to full-scale evaluation of the type under service conditions.

### JET BOAT SERVICE SCRAPPED By John Petty, Shipping Correspondent.

The Liverpool-Dublin jet boat service is to end, with 210 redundancies. It will leave Dover-Ostend as the only route from Britain using the 50 mph Boeing-built ferries.

The Brighton-Dieppe and London-Ostend routes have already closed.

The problem is making the fuel-thirsty craft profitable during a recession which prevents a realistic fare being charged.

The British and Irish Line service across the Irish Sea ran for two summers and was to have been resumed this year. But the group is reviewing all its service after losing £5 million last year.

It will announce cuts next week which could affect some traditional ferries as well as the jet. The 1,000-passenger Munster, 4,057 tons, is up for sale.

Further blow....

Loss of the jet service will be a further blow to Liverpool following the shutdown last October of the two-ship P & O Ferries service to Belfast.

Negotiations continue in the hope that Irish Shipping, of Dublin, will take over the old P and O route.

B and I Line has conventional ships on the Liverpool-Dublin run as well as the jet. It is proposing to start a Dun Leoghaire-Holyhead service in competition with Sealink.

But members of the National Union of Railwaymen who handle ships at the Railway-owned Welsh port are threatening to boycott the newcomer.

The jetboats cost more than £6 million each. P and O made heavy losses before ending its London-Ostend service. So did the Seajet venture from Brighton, which was backed by Associated Newspapers.

The Dover-Ostend route, which opened last summer, is run by the State-owned Belgian side of Sealink.

### Hapag-Lloyd brings HK new jetfoil

Hong Kong's 10th jetfoil has been delivered by Hapag-Lloyd.

The German line's Mosel Express one of their six ships serving the Transpacific trade picked up the boat from Seattle where it had been undergoing a complete overhaul at a Boeing factory.

Hapag-Lloyd cont.

Named Urzela, the jetfoil has been purchased by Shun Tak Enterprise. It is about three years old having previously worked on charter in Spain.

The Urzela is fitted with night navigation equipment and rectangular foils. Boeing's latest models have a newly designed triangular foil that creates less drag and gives greater lift to the flying seacraft.

Jebson, Hapag-Lloyd's agents in Hong Kong, arranged a floating crane to unload the jetfoil, whose cradle had been welded to a hatch cover for safety in transit across the Pacific.

Guns for Small Warships. Anthony Preston.

"Look at the subject with a view to establishing some criteria for what guns can reasonably be expected to do. This is particularly important to small attack craft, for in the foreseeable future they will continue to be vulnerable to ordinary air attack as well as from missiles.

**FIRST INTERNATIONAL HYDROFOIL SOCIETY CONFERENCE. Nova Scotia.**

July 27-30 1982

Conference Fees: IHS Members 75 Dollars US  
Non-Members 100 Dollars US

HIGH-SPEED SURFACE CRAFT CONFERENCE 1983.

Royal Garden Hotel, London, May 1-4 1983.

**CALL FOR PAPERS.****SNAME—HAWAII Discusses HIGH-SPEED CATAMARAN HYDROFOILS.**

The paper was delivered by Rudy Choy, President of Aikane Corporation. He has been involved in catamaran construction and design since 1947. Model testing was at the General Dynamics Tank, San Diego, Calif.

Rudy Choy reports that he spoke without more than notes but there is a tape recording and he will send a copy to IHS.

NEWCASTLE UNIVERSITY.

Your Chairman spoke on HYDROFOILS at the University to a 'full house'. There are 200 marine orientated students there. All are able to get jobs on completion of their time there.

AERODYNAMICS OF FAST SAILING

JOINT INTERFACE from RINA by A. Fraser a paper given to the R Aes at 4 Hamilton Place London W1

SPEED SAILING WEEK 1981

Austin Farrar, RYA measurer in 'Naval Architect' with acknowledgements

'a new world record was made "subject to ratification" in B Class ( $13.94\text{m}^2$  up and including  $21.84\text{m}^2$ ) by ICARUS, a Tornado catamaran fitted with hydrofoils. She already held the record at 23.8 knots and with slight modifications to help her maintain stable flight, raised it to 24.46 knots.

"PENCIL" which achieved 13.02 knots in  $10\text{m}^2$  class and Derek Keall's BITS & PIECES managed 17.01. The combined lift of the inclined sail and a hydrofoil on the lee hull lifted this almost out of the water: the next development will be foils on the windward hull.

## ^SPEED SAILING Cont.

Swiss, YACHT-NC, a beautifully engineered and very light foil-borne trimaran, with V foils just inboard of the wing floats and an inverted T foil on the rudder was over-powered in the heavy weather but achieved 13.66 knots in 10 knots of wind when it moderated. Before this, however she pitch-poled spectacularly on four occasions when her rudder-foil, which was trimmed for negative lift, came out of the water between waves and the stern shot up into the air-with short wing floats she proved embarrassingly stable in this up-ended duck-like attitude,

Note; RINA Small Craft Group, of which Mr Farrar is a leading member, is proposing to hold a one day meeting on 27 October to discuss high speed sailing hydrofoil craft.

March 1 1982. Design of a High Speed Sailing Hydrofoil by D. R. Pattison at Western Joint branch RINA/I Mar E.

## US NAVAL INSTITUTE Proceedings (with acknowledgements)

PHM'S UNIQUE SHIPS, UNIQUE PROBLEMS by Lt Cdr Alan D Zimm, US Navy, recently executive officer, USS PEGASUS.

A fascinating but sad review of the fact that bureaucracy designed for the big and multi-purpose does not seem able to cope with the small and specialized. "In spite of eight years of hydrofoil service US Navy has no PHM doctrine or tactics: no proper logistic foundation has been established; and a blizzard of bureaucratic paper has almost buried PHM".

Without shore establishment support, the hydrofoil program will not succeed. The fate of a worthwhile program is in the balance.

Footnote: The author recommends PEGASUS sole NATO metric hydrofoil be the squadron test vehicle and HERCULES, now selected for test vehicle be kept in company with her sister vessels.

Recently, elsewhere, an officer Chairman, when it was suggested two similar organisations should have a combined party with their ladies said "But we do not know any of them" Reply "Surely the reason to try the mixing is to get to know them". So, an outsider, reading this article feels 'surely if support and the system of operation does not work, put in an enlightened effort and use it to spearhead an improvement of the whole of shore support thus stimulating the whole service! Alternatively have the builders maintain the craft?

AYRS — Amateur Research Society, Hermitage, Berkshire, England.

HYDROFOIL OPTIONS £1.50 (4 Dollars) Lists Foil shapes and types. 80 pages.

SPEED SAILING. Same price. High Speed Sailing Vehicle, Hydrofoil Tests, Experimental craft. Analysis of sailing ship performance. 40 pages.

HYDROFOIL CRAFT. AYRS Publication 19. 50p or 1 dollar.

## Extract from BRITS DO WELL AT BREST by Jon Montgomery.

### A Class

This class saw a comeback to the speed sailing world of the famous Mayfly, owned by Ben Wynn, after a two-year absence. Sadly, Ben suffered a capsize when manoeuvring with the foils up, and due to the inexperience of the crew rescuing her, the strain under two caused her to break up and she had to retire which was a sad end for such a famous boat. Fortunately for Ben, Colin Douglas was at hand with an A Class Seaflly and looking for a top helmsman. It was most interesting to hear from Colin that Ben, after sailing the Seaflly, thought it a faster boat. The winner of A Class was a Seaflly sponsored by the Base de Vitesse de Brest, helmed by Ben Wynne, with 18.4 kn, 2nd was Airlift - S. Griesseman, 17.1 kn., 3rd at 14.5 kn. was Ben Wynne again in Mayfly. 4th were J Krauth and Y Fournereau in Coca Cola at 12.4 kn. and 5th Valton Pichery in Plastimo at 10.2 kn.

15.  
Bits and Pieces. This proa, first seen at Weymouth, has a very canted rig and a foil in the leeward hull. However, by the time the boat arrived at Brest ten days later, it had sprouted two new foils at each end of the windward hull, one of which had to be pruned back as it was giving too much lift. Derek had a few problems taming this beast which obviously travels at high speed when on the starboard tack.

James Grogono hopes to add hydrofoils to a board soon but most people do not expect this to bring a big increase in speed, Mike Todd wants foils to hold down rather than to lift. Foils are expected to cause problems with the increased height but should give a more even ride and cut out some of the bumps at high speed.