THE NEWSLETTER

INTERNATIONAL HYDROFOIL SOCIETY

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

Editor: Robert J. Johnston | SPRING 1993 | Co-Editor: John R. Meyer

IN THIS ISSUE.....

ANNOUNCEMENT
ANNUAL DINNER AND MEETING
MAY 6, 1993
FORT MYER OFPICERS' CLUB, ARLINGTON, VIRGINIA
ABRAMS ROOM

6:00 PM Cash Bar - 7:00 PM Dinner - 8:15 PM Program; $25.00 Per Person
Menu- Fruit Cup, Salad, London Broil or Chicken, Vegetables, Wine, Dessert, Coffee
Make reservations and choice of menu no later than April 30 if you plan to attend. Call one of the following:
Mark Bebar 703-697-9572; John R. Meyer 301-227-1796; Patsy Jackson 703-329-0102

PROGRAM
"HIGH PERFORMANCE MARINE VEHICLES AND ISTEA*"
Captain James R. Carman - Division Chief, Port and Intermodal Planning
Federal Maritime Administration
*INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT

1993 DUES REMINDER

ALL MEMBERS WHO HAVE NOT PAIDTHEIR DUES FOR 1993 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

Since our last Newsletter, major events regarding the U.S. Navy's PHM Squadron have taken place. In a Naval Message dated 7 January 1993 from CINCLANTFLT, USCINCLANT concurred with early PHM Decommissioning, stating that the "Standdown Process" can commence in April 1993 with final decommissioning efforts completed by March 1994. After only a brief discussion at the January Board meeting, it was agreed that the IHS should form a Congressional Liaison Committee and proceed to delay any such move on the part of the Navy. The committee consists of Jim Wilkins, Chairman, Bill Ellsworth and John King. The plan was to contact the Boeing Washington office (Ron McWilliams) to obtain points of contact, lay out a strategy, develop a "point paper", write letters, and make phone calls.

The IHS Congressional Liaison Committee prepared a "PHM Point Paper" for the purpose of placing the possible early decommissioning of PHMs in perspective. Unfortunately, lead time for preparation was short and was completed about the same time that SECNAV approved CINCLANTFLT's request. It was hand carried to a number of Senators and Representatives from key areas, and the Drug Enforcement Agency. Also, thanks to Jim Wilkins and his committee, numerous calls were made to the "Hill" to ensure that the word was getting through. Any IHS member wanting a copy of the Point Paper should send a self-addressed, stamped envelope to IHS. We will be glad to send you a copy.

The final outcome of PHM disposition is not known at this writing, but George Jenkins provided some enlightenment in his talk at the 19 February Winter Dinner Meeting. A summary of George's talk is provided in the next several columns. A copy of his complete talk can be obtained by sending a request to IHS at the Cabin John address.

In connection with the PHM Foreign Military Sales, several foreign military organizations are being contacted by the U.S. Navy. However, it is too early to project what the outcome of this option will be.

On a different note, we hope that as many of you as possible who are going to be in the Washington, D.C. area for ASNE Day, will also attend the IHS Annual Meeting. An interesting program is being planned on the topic of Intermodal Surface Transportation. See your Fall 1992 issue of the Newsletter for info on Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). We are looking forward to a good turnout with Captain Carman of MARAD as our guest speaker. Come also to meet the Board of Directors new Class of 1993-1996!

Again, we are calling for all members to continue their much-needed financial support through their annual dues. Please remember that there are a lot of people in the Society contributing their time and effort to keep things running. We look to the general membership to help as much as possible.

John R, Meyer, President

PHM HISTORY - PART III

By George J. Jenkins, Jr.

(Editor's Note: This was the topic of the IHS Dinner Meeting on 19 February 1993. A full copy of this abridged version can be obtained on request from IHS.)

This part of the PHM story covers the period from 1976 to the present. In late 1976 when I reported to OPNAV to relieve John King's successor, Al Smith, as PHM coordinator, the PHM Program was moving rapidly toward a "go-no-go" production decision via the Defense Systems Acquisition Review Council (DSARC) process. Captain Ed Molzan had relieved Jim Wilkins as PHM Program Manager a couple of years before, and had his feet well on the ground by the time I showed up. PEGASUS (PHM-1) had just completed one of the most extensive TECHEVAL/OPEVALs ever conducted in the Navy.

Congress had appropriated the funds required to build PHMs 3-6 in FY 1975 and appropriated funds to "complete" construction of PHM 2 in FY 1976. The FY 1978 budget contained $42.8M to convert the ex-USS WOOD COUNTY to a PHM support ship (AGHS). The support ship concept, borrowed from the earlier PG program, was considered indispensable to deployment of the ships to the Mediterranean, their intended area of operations.

The Production Decision Process

At first glance, it would appear that this was a program with a clear, trouble - free course to a favorable production decision. Actually the storm clouds were gathering rapidly. The PHM OPEVAL had turned up six discrepancies that would have to be corrected in production. Correcting these deficiencies would be a fairly expensive undertaking, adding more cost to other cost growth items that had plagued the program since 1972. There was a perception among some of the decision makers that PHM cost growth would never be brought under control and that some of these deficiencies introduced a high technical risk aspect to a program. Perhaps the most damaging situation was the lack of really strong support in the Navy itself and the determined opposition of a few antagonists in OSD. The net result was an uphill battle resulting in two reversals of the original December 1976 DSARC decision, culminating in Congressional direction to proceed with production in July 1977. The delay resulted in a $13M shortfall which was offset by not weaponizing PHM-6 initially, and probably contributed to the withdrawal of Germany from PHM production. [Editor's note: The entire "Decision Process" is a lesson in how not to do it, and George described this in great detail.]

At any rate, the contract to complete PHM 2 and to build the other 4 ships was finally awarded to Boeing on October 20, 1977. The delivery sequence was to be PHM-3,-4,-5,-6, and -2. The reason for PHM-2 being last was that the funding to "complete" PHM-2, had been appropriated a year after the funds to build PHM-3,-4, and-5. Also it often asked why PHM-6 was selected to be the one that be delivered without weapons, rather than PHM-2, the last delivered. The reason is that Congress appropriated funds "to complete" PHM-2. A ship without weapons is not "complete", and to build it this way could be construed to

be a violation of Congressional intent.

Planning For PHM Employment

We then got serious about planning to use the ships. One major concern was utilization and homeporting. We had long advertised that the PHMs would be used and probably homeported in the Med, in which PHM characteristics could be used to control many strategic choke points; but surprisingly little detailed planning had been done. True, PEGASUS had been homeported in San Diego since August of 1977, but we all recognized that this was a temporary expedient. I was directed to head up a PHM operational concept working group and develop a plan to get the ships from delivery in Seattle to their ultimate homeport. By early 1978 we had a pretty well-developed plan to shift PHM-1 to Little Creek, VA in December 1980, with the production ships coming around in two groups; PHM- 3, -4 and -5 in Summer 1981 and PHM-6 and- 2 in 1982. While this was happening, PHM-1 would conduct a trial deployment to the Med in 1981, after which plans for ultimate Med homeporting would be finalized.

In late 1979 and early 1980, OPNAV continued to vacillate on the subject of homeporting the production PHMs; but the problem was complicated further by the CINCLANTFLT initiative to homeport them, at least temporarily, in Key West. This was driven by a desire to show a "presence" in the Caribbean and - interestingly enough - by ADM Train's perception that it would shake out the support concept and allow a much smoother deployment or homeporting in the long run.

At last, in march 1980, a decision was made; PEGASUS was assigned to Key West effective 1 August 1980; the fledgling COMPHMRON TWO staff and MLSG effective 1 October 1980, and the production ships effective upon commissioning. After 3 more years of planning PHM deployments, OPNAV indefinitely suspended this effort in 1983, citing need to refine the PHM support concept and to develop tactics. To date the ships have not left the Eastern Atlantic/Caribbean theater.

Operations

With the exception of overseas deployments, the PHMs have operated in much the same way as any other Atlantic fleet ship, participating in major and minor fleet exercises, primarily in the Caribbean, but also in other WESTLANT OPAREAS, such as Virginia Capes and Mayport.

They have provided valuable service in the national effort to increase the U.S. presence in Central America and in the Caribbean Island Republics. With foils retracted, they are able to enter ports too shallow for larger ships, their liberty party is not so large as to swamp limited port recreational facilities, and the ships themselves are high tech and - let's face it - exciting!

Their most important service has been their heavy involvement in the national counter drug program. Since the Squadron was first fully constituted in 1983, PHMs have accounted for over about 30% of all surface Navy-assisted drug seizures. In FY 1992 they devoted over 84% of their underway time to this mission. The senior Coast Guard Commander in the Miami area has said that "[PHMs] are the most effective surface asset [for certain types of counter drug operations]." This success may be a mixed blessing, however; there are those in the Navy who view drug interdiction as a Coast Guard mission - definitely a secondary (maybe even tertiary) mission for any "real" Navy ship. To these people, the fact that PHMs have never deployed beyond the western Atlantic/Caribbean and did not serve in Desert Shield/Storm weighs heavily in their disfavor.

The Future....

In June 1992, CINCLANTFLT proposed to CNO that PHMs be decommissioned by the end of FY 1995, and replaced in their counter drug role by the "Patrol Coastal" (PC). This ship is a 300 ton semi-displacement craft under procurement for the Special Operations Command (USCINCSOC). Rationale was high PHM operating and maintenance costs. CNO agreed "in principle", directed CINCLANTFLT to generate a plan for replacement of PHMs with PCs. In January 1993, CINCLANTFLT acknowledged that PCs could not be used as originally assumed. As CINCSOC units, they are not normally under CINCLANTFLT operational control, and CINCSOC would not agree to any firm commitment of his assets to USCINCLANT missions.

Nonetheless, CINCLANTFLT again recommended PHM decommissioning, to be completed by March 1994 (vice FY 95) . His rationale this time was that PHMs are single mission ships and that he (CINCLANTFLT) had not been funded to operate and maintain them in FY 1993.

In February 1993, in the absence of any objection on the part of the OPNAV staff, CNO approved this course of action. This decision process is worth examining. There was a complete change in rationale between the first and second CINCLANTFLT proposal; the January message referring to the PHM single mission and stating that he had a $19M shortfall in PHM operations/maintenance funding in FY 93. This rationale is so weak that it is actually suspicious. PHMs are single mission; but so are about 52% of all surface Navy ships. As to the funding issue, the Navy comptroller disputes that the shortfall identified by CINCLANTFLT exists; and even if it did, it would amount to only about 1% of the CINCLANTFLT operating budget. Economies in other areas could easily be found to keep PHMs operating - if this were desired.

What, then, might the real reasons be? Let us examine some PHM drawbacks; real and perceived.

- PHMs have limited range. This is true; PHMs generally have to be refueled as soon as they join up with other ships, e.g. Battle Group. This is an irritant to the tactical commander, who generally must assign one of his combatants to the refueling task. On the other hand, this drawback is not especially significant in counter drug operations.
- PHMs are unreliable. Not true. In fact, PHMs demonstrate a voyage reliability (VR) of over 0.97. But because the ships have little internal redundancy, casualties that would not generally be noticed by an outside observer, tend to be highly visible in PHMs.
- PHMs are expensive to operate/maintain: this is pure fiction, perhaps stemming from the early days of the pro-

gram when there were several big-ticket shortfalls that had to be made up. PHMs actually cost about $3M dollars per ship per year to operate; about 1/3 the cost of an FFG-7, or 1/5 the cost of a SPRUANCE Class destroyer. This is a matter of record and the Navy budgeteers are well aware of it, but the belief that PHMs are expensive is prevalent among the higher echelon decision makers.

- PHMs are not deployable. Not true. PHMs have demonstrated this capability in two "dry runs" in 1984 and 1988, but the fleet commander has never exercised this capability.

So much for drawbacks and bad press. What is the success story?

No matter how you slice it, PHM's are the best platform for the counter-drug job, as the Commander of the Seventh Coast Guard district in Miami attested to CINCLANTFLT on 31 December 1992. (Unfortunately, his message is classified and cannot be reproduced here). What we can say is that the six PHMs, representing about 3% of the Navy, have accounted for 26-29% of all surface Navy assisted drug seizures in the last 10 years. The street value of drugs seized by PHMs amounts to $717M, or 3.6 times the cost to operate the PHMs over that period of time. Why, then, should a ship that is eminently successful in its mission, and comparatively cheap to operate, be retired with half its service life remaining?

The correct answer is probably that the decision was colored by the negative impressions mentioned above, but actually centered on the following considerations:

- Many individuals in the Navy view the counter drug mission as not being a "real" mission, since it was congressionally imposed in FY 1990. They believe that law enforcement is a Coast Guard mission, and thus beneath the Navy's dignity. While these people cannot actively thwart the counter drug effort, they do not support retaining a Navy asset simply because it is tops in this field.
- At a time when force structure limits are being externally imposed, the PHM could be seen by some as a threat to the continued existence of other, larger ships. For example, if there are to be only 350 ships in the Navy, PHMs would count as much as an ARLEIGH BURKE Class destroyer. So if we kept PHMs, we could lose 6 ARLEIGH BURKE Class. (Of course the 350 ship Navy with the PHMs would be a lot cheaper to operate than the one with the extra BURKEs, but that doesn't enter into this equation).

At this time, barring external intervention (OSD, Congress, the White House), PHMs will begin the decommissioning process this Spring, with the last ships, the MLSG and the Squadron Staff to be deactivated prior to March 1994. (Some proposals would have that date as early as October 1993). Some thought was given to retaining the PHMs as future mobilization assets (i.e., "mothballed"), but this approach was rejected. The rationale was that the infrastructure that supports PHM-unique logistics and maintenance will be quickly dissipated when the ships are inactivated. In the absence of a continuing American hydrofoil industrial capability, it would be impossible to recreate this infrastructure. Accordingly, OPNAV, NAVSEA, and the Navy International Programs Office are pursuing disposal of the ships and associated equipment via the Foreign Military Sale (FMS) program.

It is a shame to end this summary on such a downbeat note; the ships have performed magnificently and I am proud to have had a small role in supporting them and defending them. I would be remiss if I did not acknowledge some of the fine people with whom I have worked so closely over the years. These include the PHM platform sponsors and many others this limited space does not allow to list.

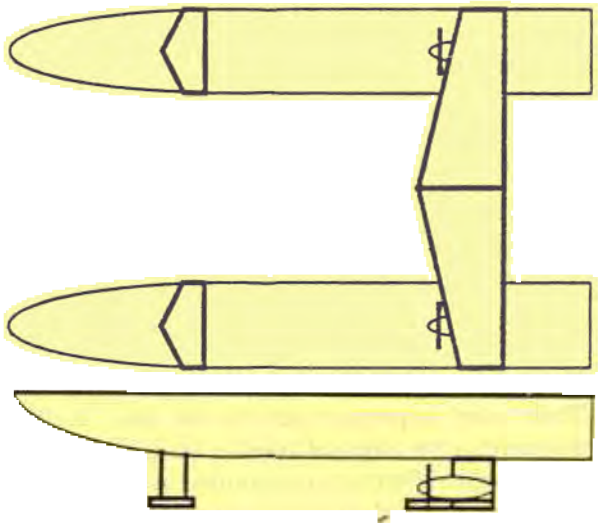
WESTAMARIN FOILCAT 2900 UPDATE

(From Fast Ferry International, November 1992)

A paper outlining the development of a foil assisted catamaran, 'Foilcat 2900 Design and Performance' by Egil Svenneby of Westamarin West and Knut Minsaas of Marintek, revealed new details about the foil system of the design.

The spans of these are 2.50m for the two front foils and 7.79m for the rear foil. The rear foil carries about 60% of the vessel's 114-122 tonne operating weight. As the authors pointed out, "In the foilborne condition, frictional resistance is the main component of resistance. Therefore, in order to keep the resistance at a minimum and to lighten maintenance, the foils are made from stainless steel with the same surface roughness as the propellers. Foil and strut sections are of the laminar type. The cordwise camber and thickness distributions of the foils are such that cavitation is at a minimum for flap angles around 2-3 degrees."

During resistance calculations and towing tank tests carried out at Marintek, "Different foil combinations were investigated until a version with two separate turnable front foils was selected. Aprior version with a single transverse front foil was abandoned due to bad behaviour in waves and because the rear strut rudders cavitated and ventilated.



The Foil Configuration Selected for the Westamarin FOILCAT 2900

"In order to avoid cavitation on the rear foil caused by downwash from the front foils, several load distributions were tried out before we ended up with a version having spanwise variable angle of attack and camber.

"The entire foil and strut system, including operating propellers, was tested in the cavitation tunnel at the Technical University of Berlin at different immersions, foil angles and strut angles. This tunnel has a free surface allowing the study of side forces and lift at correct cavitation and Froude numbers, and the study of propeller and strut/foil ventilation.

"In order to increase the lift/drag ratio of the front foils they were equipped with winglets. Different winglet alternatives were tested and finally we obtained an increase of about 7.5 knots.

"The propellers, which are of the Newton Rader type, were designed to operate cavitation free in the speed range of 45 to 50 knots absorbing 2,000 kW each at around 800 rpm. Several propellers were tested in Marintek's cavitation tunnel. Thrust and propeller induced drag on the rear struts and pod of the Speed Z-drive were measured at different speeds or cavitation numbers.

"During testing special attention had to be paid to the shaping of the fillets between foils and struts. Because the struts and rear foil operate in the propeller wake there was a danger of propeller induced cavitation on them. This had to be considered in their design. The struts were shaped with a twist and the propeller induced velocities included in the local velocity determining the pitch of the foil sections.

"One of the reasons for choosing propellers was the high efficiency of tractor propellers combined with Z-drives. Tests showed that propeller efficiency could be as high as 0.81 in service with an increase in resistance of about 3.5% securing a total propulsive efficiency that was far above the efficiency of a waterjet. At take off this difference in favour of propellers increased."

Other factors included the consideration that "spray from the struts interferes with the hull and will increase the drag if the rear of the hull is not properly designed. Aerodynamic forces are also important. Dependent on superstructure and tunnel shape, the craft may be exposed to negative or positive lift and moments. In order to study these effects the craft with struts and superstructures but without foils was tested in the towing tank at different speeds, pitch angles and immersions."

The Ulstein-Liaaen Speed Z propellers selected have a diameter of 1.25m and Westamarin reports that the Foilcat 2900, in zero to 2.0m significant waves, has achieved 46-47 knots at 90% mcr power from the two MTU 16V 396 TE74L diesels, rated at 2,000 kW at 2,000 rpm, and 49.5 knots at 100% mcr. The company estimates that selecting waterjets rather than tractor propellers would have resulted in an increase of 25% in required installed power.

By the beginning of September, just over six months after the vessel was launched, "The propellers have so far performed in accordance with expectations without suffering from cavitation. We were afraid that ventilation could occur since the propeller tips were, now and then, close to the surface.

"During trials we observed ventilation a few times, especially in waves. This ventilation was considerably reduced by adjusting the trim angle and by reducing the immersion at the rear foil in severe weather conditions. However, ventilation never reached the extent seen on board SES vessels."

(Editor's Note: More details depicting such parameters as Side Force, Lift, Propeller Characteristics, Drag, Power, and

DSO LEASES WESTAMARIN FOILCAT 2900

(From Fast Ferry International, November 1992)

The Foilcat 2900 foil assisted catamaran completed earlier this year by Westamarin West has been leased for an initial one year period by Dampskibsselskab Oresund. Renamed *Flyvefisken*, the vessel was due to enter service by the end of November on a route linking Arhus and Copenhagen.

Two return services a day from Arhus have been scheduled for Monday-Friday and one on Saturdays and Sundays. The one way trip time is expected to be 2 hours 30 minutes.

The 140 seat configuration has been retained, although modifications have been carried out to reduce internal noise levels. A fare of approximately DKK 400, an amount midway between that charged by the competing train/fast ferry and airline services, is being projected.

The Foilcat 2900 made a two day demonstration visit to Copenhagen in June and reappeared in the city, in DSO colours, during the middle of October. Following the confirmation of the lease, crews were trained on the craft and service preparations finalized.

MHI's SUPER SHUTTLE BREAKS SPEED RECORD DURING TRIALS

(From Maritime Reporter/Engineering News, January 1993)

Mitsubishi Heavy Industries, Ltd. (MHI) has announced that its Mitsubishi Super Shuttle 400, the Rainbow, reportedly the world's first super high-speed fully submerged hydrofoil catamaran powered by diesel engines, has achieved a record breaking maximum speed of 45.4 knots during its sea trials. MHI claims that this is the fastest speed ever obtained by a large-size, fully-submerged, hydrofoil passenger ship.

The 310-ton Rainbow is equipped with four high-speed Mitsubishi S16R-MKT-S diesel engines generating 2,850 hp and two Mitsubishi MWJ-5000A waterjet propulsion units with double-cascade type impellers, both of which were newly developed by MHI to be high-powered and lightweight. MHI launched the hydrofoil at its Shimonoseki Shipyard & Machinery Works in September 1992.

The Rainbow is 109.25 ft. in length, has a beam of 43.3 ft. and a 13.8-foot depth. The hydrofoil's deep V-shaped hull bottom sections allow the vessel to take-off and land smoothly, even in rough seas. After the completion of her sea trials and the adjustment of some onboard equipment, including the Auto Pilot on Foils (APF) system, the 341-passenger Rainbow will be delivered to Oki Shinkoh.

GE's "LM" FAMILY OF GAS TURBINES FITS VARIETY OF APPLICATIONS

(From Maritime Reporter/Engineering News, October 1992)

The "LM" family of aeroderivative gas turbines from GE Marine & Industrial Engines (M&I) was launched in 1974 with the introduction of the LM2500. That unit is M&I's most experienced gas turbine with more than 1,000 engines currently in marine and industrial service. The gas turbines rating has been increased to 32 600 hp with a simple-cycle thermal efficiency in excess of 37 percent. To date, the LM2500 has logged nearly 11 million operating hours.

In addition to its wide acceptance by the U.S. Navy, the LM2500 has been selected by 23 other navies worldwide. Today, 140 LM2500 powered ships are in service in the U.S. Navy. The gas turbine is found on the Spruance Class and Kidd Class destroyers, the Perry Class frigate, Pegasus Class hydrofoil, Ticonderoga Class cruiser, the Arleigh Burke Class destroyer and the AOE-6 Super Class support ships.

Internationally, four LM2500 propulsion sets for the new Japanese 673-DDG Aegis destroyer were successfully shore tested recently, and LM2500s were selected for that country's new DDX destroyer program. In general, international navies have used the LM2500 in a broader range of ship classes and sizes than the U.S. Navy. The engine is often used in a CODOG configuration, particularly when operational requirements dictate a high mobility level. The engines provide sprint capabilities to react to emergencies and conflicts, as evidenced by their use on the German Navy's Class F123 for which engines were ordered, and the MEKO's for the Portuguese, Australian, Helenic and New Zealand navies. Additionally Korea chose the LM2500 for its KCX corvette program, and the Royal Thai Navy is using the engine for its two newest frigates.

However, the LM2500 has not been limited to high-speed, lightweight naval operations. It currently powers some of the largest naval ships, including the Italian Navy's Garibaldi aircraft carrier the Spanish Navy's aircraft carrier Principle de Asturias, and the U.S. Navy's 50,000-ton AOE-6 supply ships.

The LM2500s use is also growing in the commercial shipping arena. For example, the gas turbine was selected for two Italian fast ferry programs, the SEC 750 SES from the Societa Esercizo Cantieri (SEC) Shipyard in Viareggio and the Aquastrada TMV 90 Monohull from Rodriguez Cantieri Navali Shipyard, two car/passenger ferries which have 37,000 and 54,000 brake horsepower requirements respectively.

Smaller Aeroderivatives

Aside from the LM2500, M&I fills the growing demand for mobility with other "LM" gas turbines . Available in different sizes, the engines are suited for naval applications or to meet the needs of growing markets such as commercial fast ferries fast cargo ships or high-speed megayachts.

M&I's smallest engine, the LM500, offers its weight as a key benefit. At 2,400 pounds, the engine enhances the speed capability of a vessel with an output comparable to a 24,000-pound diesel engine. This high-performance gas turbine which has a 32 percent thermal efficiency, has been chosen to power the Foilcat class of high speed passenger ferries by Kvaerner Fjellstrand currently being tested in Norway. It also is used by Denmark to power its Stanflex 300 Class patrol boats, and by Japan for its OIPG PG Hydrofoil.

The LM1600 provides up to 20,000 hp at 37 percent thermal efficiency. Used in industrial applications since 1988 and marine applications since 1991, three LM1600s were used to power the Italian high-speed vessel Destriero, which has speed capability of more than 60 knots. Destriero recently won the Blue Riband for the fastest crossing of the Atlantic, a feat accomplished in 58 hours, 34 minutes and 50 seconds at an average speed of 53.09 knots, without refueling.

The LM5000 offers more than 38 percent simple cycle thermal efficiency, and provides up to 55,000 hp. It incorporates many of the same materials and design features of the LM2500.

Finally, M&I's newest gas turbine, the LM6000, is still under development. It will produce more than 57,000 shaft hp with a thermal efficiency of more than 40 percent. The engine will be able to drive its load from either the hot or cold end.

SAFETY ISSUES DOMINATE KRISTIANSAND CONFERENCE

(From Fast Ferry International, November 1992)

With the *Sea Cat* accident of November, 1991 still fresh in peoples' minds, it was perhaps not surprising that safety issues were addressed in many of the 17 papers presented at the '3rd Conference on High Speed Marine Craft' organized by the Norwegian Society of Chartered Engineers and held in Kristiansand on September 8-10, 1992.

Presenting 'Classification Societies - Are they up to Date?', Professor Douglas Faulkner of the University of Glasgow said that his department had concentrated on research and development of swath forms although "our more recent research into foil assisted catamarans suggests that similar structural load and design thinking can be applied."

However, "Unfortunately, our knowledge and its dissemination is not moving at the same pace as these novel developments. The various hydro- and aerodynamic support principles used in high speed vessels have mainly been proved. But these designs are weight critical and structural and material feedback experience is scarce and not openly shared.

"Even for the present generation of relatively small restricted operation fast craft the ship classification societies are not keeping up with the pace of these developments. Moreover, for future operation of larger faster vessels designed to operate without restriction in open ocean conditions, the present fast craft rules and ship rules will not be adequate.

"In the absence of the usual process of engineering

evolution, fundamental thinking supported by sensible R&D, including experiments, is needed before efficient yet adequately safe design approaches can be widely recommended. A greater emphasis on structures and materials, and on rough sea performance, stability and control, is vital. The rewards are great, but the risks must be recognised and addressed."

NEW AMPHIBIANS CRAWL OUT OF SEA

(From Popular Mechanics, January 1993)

Camp Pendalton, CA - The Marines are looking for a few good Advanced Amphibious Assault Vehicles, or AAAVs, to replace their AAV7A1s, which are getting a bit long in the tooth. General Dynamics and FMC Corp. are vying to build the machines.

An AAAV must haul 18 Marines, handle 8-ft. breakers, hit 20 knots in the water and keep pace with M1 tanks on land. The idea is to launch amphibious assaults from ships parked more than 20 miles offshore, with vehicles that can hit the beach in roughly an hour.

The General Dynamics option uses a concept developed by the Navy's research wing (see Tech Update, page 17, May '90). To sprint over the waves, the vehicle unfolds planing surfaces, one at the bow, one at the transom, and one along each chine. The tracks and suspension retract into the hull to reduce drag.

So far a full-scale propulsion demonstrator, powered by two waterjets, has hit 33 knots. A separate rig is testing the planing system's hydrodynamics.

Meanwhile, FMC's offering tiptoes across the water on two hydrofoils that swing down from the rear hull. In high-speed water mode, propellors drove the vehicle. FMC is exploring the possibility of electric drive, whereby an on-board generator powers the separate motors for land and sea.

FMC is currently testing a 3/4-scale demonstrator at speeds above 25 knots. The hydrofoils smooth out the ride, cut power requirements and improve maneuverability, the company asserts. The Marines will review the program shortly. If the Pentagon gives the green light, a winner will emerge.

HITACHI BUILDING WINGSTAR 30 FOIL-ASSISTED CATAMARAN

(From Fast Ferry International, November 1992)

Hitachi Zosen has confirmed that it has started construction of the first *Wingstar 30* foil- assisted catamaran and is planning for the production of three more. The vessel will have a length overall of approximately 31.5m, beam of 9.8m, maximum draught of 2.8m, gross tonnage of 300 grt and capacity of 150-220 passengers. Powered by a pair of 5,000 PS high speed diesels and waterjets, the design is expected to have a maximum speed of 40 knots.

(Editors Note: Recent telephone conversation with the Hitachi representative in New York indicates that the first ship will be completed latter part of 1993.)

HELMUT KOCK, A HYDROFOIL DESIGNER AND BUILDER - By Helmut Kock

In 1955 I came to the United States from Chile, South America, my native country, with the purpose to work on the development and construction of hydrofoil boats. How could I get such an idea in a remote country like Chile?

My interest in boats began as a young boy with ship model building. At the age of 13, I had built a canoe to play with in our nearby river. From 14 to 17, during my high school years, I built two, one seat, folding kayaks and three, two seaters for friends interested in traveling the many lakes and rivers of Chile. From this effort I earned the money to buy my own boat as well as pay my camping and traveling expenses. Alone and with these friends, I spent days and weeks on the rivers and lakes in the wilderness. These boats consisted of wood framing with a canvas hull which could be assembled in 15 to 20 minutes after being taken from their traveling bags. One bag held the mast, paddles and sail and was about 4 feet long. The other bag carried the frames and the canvas hull. These bags could be carried as a backpack, in a car or railcar, or even on packhorses.

After four years of study, travel, and work in Germany, I returned to Chile. There I took the job to install sawmills in a virgin forest and to cut the trees and produce lumber. This place was located on the shore of Lake Villarrica without any access roads. The only way to get there was by boat. That was the reason why I took the job and challenge to start from nothing in the wilderness. The first thing I did was build some small rowboats and then add outboard motors. After this I built a 16 foot outboard.

As the lumber production increased the shipping to the railroad station at the other end of Lake Villarrica, with the existing shipping equipment, was too costly and unreliable. Therefore I built a 52 foot long tug boat, powered with a two cylinder steam engine with an old wood burning boiler. Four, 90 foot barges and a 50 foot landing vessel were towed with this tug. This fleet carried the output of the sawmill and well as cattle, machinery and all the needs of the sawmill operation. Years later, when the lumber production diminished, the entire fleet was sold. A 33 foot workboat was then built, with a cabin and a four ton load capacity. This boat was powered by a four cylinder, 82 HP, BMW 1924 gas marine engine. After a complete overhaul it served without problems for many years until I left for the U.S.A.

I was fascinated by the sparse news of hydrofoil boat developments in the 1930s in Germany. In 1951 I met a German who had worked at the Schertel-Sachsenberg shipyard in Dessau- Rosslau, Germany during the development of the hydrofoil program at the start of World War II. He had been drafted into the German Army and spent two years at the Eastern Front, being wounded five times. At the end of 1945, he was captured by the Russians in East Berlin and sent to a camp in Leningrad where an extensive hydrodynamic and hydrofoil research program was underway. After two and one-half years he escaped back to Germany, where in a refugee's transport he took his family to Chile.

It was there that I met him and where we became friends. I had the opportunity to learn about hydrofoil boat design from his personal knowledge and the scientific material he had in his possession. Enthusiastically I built several hydrofoil boat models. We tested these on a lake by towing them with a line winding on to a pulley attached to a small gasoline engine.

In 1955 my friend decided to move to the U.S.A. and I followed him in June of that year to participate In the construction of a 16 foot outboard hydrofoil sport boat in Miami. Florida. The design of the foils was based on the results of the model tests in Chile.

16 FOOT HYDROFOIL BOAT, MIAMI, 1955

Shortly after the conclusion of this project my friend left for Germany. I was now left on my own in a strange country, trying to learn the language and customs. In order to survive I took several different jobs, finally moving to California.

Then in 1961, I designed and built the foils for an existing aluminum, glass bottom, sightseeing boat, named "*Discoverer*" in the Tod Shaffer Shipyard in San Diego. The successful demonstration of this flying boat resulted in a contract for the design and construction of the 35 foot, hydrofoil boat "Albatross" for Hydro Capitol Company in Newport Beach, California.

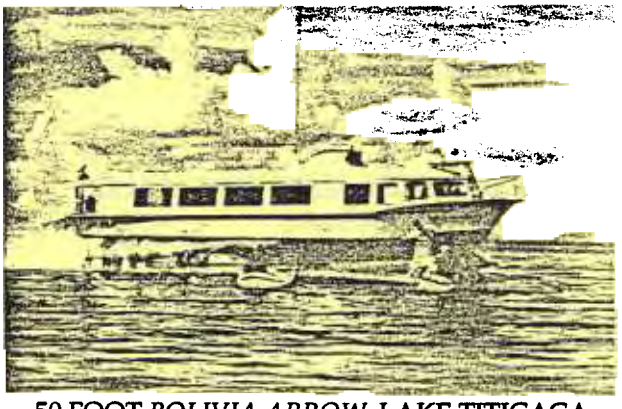

HYDROFOIL BOAT, *DISCOVERER*, SAN DIEGO, 1961

An empty, large building was rented and an aluminum welding machine, saws, tools and materials were acquired. With these on hand, the construction was started after we got the approval of the drawings from the U.S. Coast Guard. The boat was finished, tested and then approved and certified by the Coast Guard as the first hydrofoil boat approved for commercial passenger service in this country.

The "*Albatross*" and the construction rights were sold to an east coast company. Ludwig Honold Manufacturing Company was contracted for the production of twenty vessels of the same kind. By May 1964, 14 boats had been delivered to New York for passenger service between Manhattan and the New York Worlds Fair. Of the original 20 production boats in addition to the 14 in New York, Wilson Lines in Washington, D.C. operated three boats for many years on the Potomac River and other places, one boat went to Lebanon, and one went to the Virgin Islands. At the closing of the Worlds Fair, four of these boats went to Miami and two to Alaska.


ALBATROSS IN WASHINGTON, D.C.

In 1966, Crillon Tours of La Paz, Bolivia bought one of the New York boats. The engine was replaced by a VT8-370 Cummins Diesel because of about a 30% power loss at the 12,000 foot altitude of Lake Titicaca where the boat was scheduled to operate in Bolivia. The boat was shipped on a freighter to Matarani, Peru and then by railroad up to the lake. I trained the Indian crew for the maintenance and operation of this vessel. We built landings and facilities at the harbors in Huatajata, the Sun Islands, and Capacabana.


50 FOOT *BOLIVIA ARROW*, LAKE TITICACA

The Lake Titicaca hydrofoil trip is a link of the tourist route between La Paz in Bolivia and Cuzco, Machu Pichu, Peru. The following year a second "Albatross" was bought and later two more. Increases in tourism demanded more capacity. We agreed to build a larger, 50 foot hydrofoil boat

for 40 passengers. After finishing the design, detail drawings, and a material list of over 1400 items, all material, equipment, engines, and tools were assembled in Pennsylvania and shipped to Bolivia. The construction started in December 1975, the boat was launched in September 1976, and it was then tested, completed and entered service in February 1977. This boat was named the "*Bolivia Arrow*".

The performance of the boat was excellent and a second of the same type was planned, but problems with my eyes developed and the project had to be cancelled. I had three retina operations in Bolivia and three more latter in the U.S. This condition kept me from working for three years. Crillon Tours then acquired a "*Seaflight*" with accommodations for sixty passengers from Italy to be able to cope with the passenger flow. In 1983-84, for Crillon Tours, I stretched one of the old "*Albatross*" boats six and one half feet to increase the passenger capacity to 30 persons. A Cummins VTA-903-M, 8 cylinder Diesel Engine was installed. The performance of this boat was also above expectations.

In 1984 I overhauled and re-powered with Cummins VT-555-M two of the old "*Albatrosses*" in Miami. These hydrofoil boats went to Paraguay for tourist service on the Lake Itaipu.

Flecha Guarani Hydrofoil on Lake Itaipu, Paraguay

After 13 years of continuous service, replacement of the engines in the "*Bolivia Arrow*" was necessary. I spent four weeks in Bolivia in May 1990 to supervise the installation of the New Cummins VTA-903-M Diesel engines. With more power than the old boat VTA-370 engines, the performance of the boat was impressive and the speed increased to 34 knots. Crillon Tours now has 3 "*Albatross*" type boats for 20 passengers, one stretched "*Albatross*" for 30, one new design hydrofoil for 40 people, and one "*Seaflight*" hydrofoil for 60 passengers. They use the different size boats according to the number of persons going on each trip which saves fuel and equipment. Their last acquisition was a Russian built "*Volga*" hydrofoil for six passengers which is used for short trips to the nearby islands to show tourists the building of the reedboats.

In 1980, I rebuilt an old "*Albatross*" boat in San Francisco and powered it with a Cummins V-903-M Diesel rated at 295 HP. It was named the "*Scenic Flyer*" and sold to a tour operator in Salt Lake City for service on the Great Salt Lake. It operated on the lake until the water level rose over 20 feet, swamping all marinas and facilities. This boat was then sold to Miami where recently it was overhauled, painted and renamed the "*Biscayne Clipper*". It is waiting to go into service again.

Sea World in San Diego has operated three hydrofoil boats since the mid 1960s. These boats were fitted out with 28 seats but could load only 14 because it was impossible to fly with more load. Three times they changed engines trying to improve the performance, but in vain. On a visit to Sea World in 1980 I waited over an hour in line to get a ride of only 10 minutes. I was told that they could load no more than 14 people. Next day I came back and gathered information and measurements. After some calculations I told them that I could fix the boats to carry 28 people. We got to work in their own machine shop, changing the shape of the foils. The first boat tested perfectly with a full load, was faster and had lower fuel consumption. All of that was with the same engines. As a result the three boats were modified. From about 75,000 persons carried before, they carried 202,761 people during the May to September 1982 season. Sea World has had to suspend the operation of the hydrofoil boats as requested by their insurance company. This is because of the danger of collision with the jet-scooters which now swarm Mission Bay, as well as with other water-sport activities.

In 1969, I was hired by International Hydrolines, Inc. to check out the reason why their Russian-built hydrofoil boat "*Raketa*" would not fly. On the way down the Inland Waterway from Montreal to New York to Miami, the crew noticed the loss of power of the engine and finally the inability to fly. The boat had to be towed to Trinidad. The "*Raketa*" was not designed for tropical conditions with 82 degrees F water temperature and 90 to 100 degrees F air temperature. I doubled the size of the oil-water heat exchanger and built two scoops on top of the engine housing with air ducting to the engine air intakes. I then reduced the area of the six bladed propellers and increased the pitch of the foils. That did it and the boat performed very well. I was then sent to the USSR to check out a Hydrofoil "*Kometa*" that International Hydrolines had bought for Caribbean operation. But that is another story I shall tell some day.

Editors Note: This autobiography by Helmut Kock has been only slightly edited. The desire was to keep the character and style just as Helmut wrote it, however, we were not able to include all of the many photographs that Helmut provided. Your editor first met Helmut in 1955 when he arrived in Miami to build a 16 foot hydrofoil runabout complete with Cadillac fins. Miami Shipbuilding made space available in their shops for this project. I well remember, with amazement, Helmut shaping the foils with only hand tools. The story of this boat and Helmut's partner are a couple of tales that will have to told one of these days. Helmut knew very little English at this time, but was always easy and pleasant to communicate with. Helmut has done many outstanding things in the field of hydrofoils and has not received the recognition that he deserves. By publishing his story in our I.H.S Newsletter may we start to correct this situation.

Bob Johnston

COMMERCIAL HYDROFOIL OPERATORS AND THEIR CRAFT

FAST FERRY INTERNATIONAL publishes annually a "Fast Ferry Operators Directory". The 1992 edition was distributed in December 1992. Fast ferries are defined as those vehicles carrying a minimum of 50 passengers at a full load speed of at least 25 knots. This ninth annual directory details 180 companies operating 688 high speed passenger vessels, an increase of 30 and 50 respectively over the 1991 edition. The Directory lists 46 operators of hydrofoil boats, with approximately 233 hydrofoils in their fleets. Following is a breakdown of these craft by builder ar.dtype. Note that these numbers do not include craft within the Commonwealth of Independent States (Soviet Union Countries). They probably now total over 200 companies and 700 high speed vessels.

	VESSEL	Number
RODRIQUEZ	PT - 20	19
	PT - 50	17
	RHS - 70	11
	RHS - 100	1
	RHS - 140	7
	RHS - 150	9
	RHS - 160	27
	RHS - 200	2
	MEC-1	1
	Total	94
RUSSIAN	Raketa	1
	Kometa	68
	Kolkhida	22
	Voschod	5
	Meteor	7
	Polesye	2
	Cyclone	1
	Total	106
JETFOIL	Boeing	22
	Kawasaki	12
	Total	34
HITACHI	PT - 20	4
	PT - 50	17
	Total	21
H. Kock	SEAFLIGHT H.57	1
Grand Total		256

1992 DELIVERIES AND ORDERS

(From Fast Ferry International, Jan-Feb, 1993)

	Del.	Orders	Total
Catamarans	27	20	47
Foil-Assisted Catamarans	1	9	10
Foil-Assisted Monohulls	2	-	2
Hovercraft	2	-	2
Hydrofoils	6	9	15
Monohulls	5	12	17
Surface EffectShips	3	4	7
SWATHs	-	2	2
Wavepiercing Catamarans	3	3	6
Totals	50	58	108

WELCOME NEW MEMBERS

Dr. Seung-Il Yang - Research scientist in hydrofoil and related technology at the Korea Research Institute of Ships and Ocean Engineering, Daejon, Korea.

Dale Beresford - Served on HIGH POINT (1965-1967); provided OPEVAL AND TECHEVAL support on FLAGSTAFF, TUCUMCARI and PEGASUS. Dale served as U.S. Navy on-site T&E representative for PHM-1 and production program through delivery of USS HERCULES. Provided mission trial support to HYSTU and HIGH POINT.

Dr. Young T. Shen - Has been actively involved in hydrofoil cavitation research and development, and authored many papers on this subject. Dr. Shen has developed new profiles for surface ship propellers and rudders.

IHS COASTERS AVAILABLE

Your IHS Board has designed a medallion which will be part of an Award Plaque, also recently developed and adopted by the Board. Many thanks to Jim Wilkins, Bill Buckley, and John King for their effort in bringing this all about. The 3-1/2 inch, ceramic Medallions also serve as "Coasters" and make a great addition to IHS member's coffee tables. They are available for sale in sets of four at a price of $12.00 per set plus $2.95 for mailing. After you receive your coasters we would like to have your opinion on having a similar medallion placed on coffee mugs, and made available for purchase.

LETTER TO THE EDITORS

(This is response to J. Meyer's letter to Doug Milliken requesting an update on the Human Powered Watercraft Contest)

Dear John Meyer: There are a couple of reasons that you haven't seen race results—

No one broke the MIT speed of 18.5 knots (set Fall '91).

No one who was there has actually written up formal results yet. Sadly, this often happens with our all-volunteer organization. . .

One team, "Flying Fish 20", did get to 18 knots. They have set up yet another event which is set for Dec 19-20 at the same lake. MIT will attend, so we have the two fastest craft running in similar conditions.

There will be a grand "wrap-up" article on the whole contest (I'm going to write it!) and you'll get a copy of it. This may come out as late as spring because of the protest rule, we have to publish any new records and wait some time for protests before the records are official.

Happy Holidays,

Doug Milliken, Director Du Pont Prize Comm.
INTERNATIONAL HUMAN POWERED VEHICLE ASSOCIATION
245 Brompton Rd.
Buffalo, NY 14221
Tel: 716-632-6710 Fax: 716-633-9283
December 11, 1992

THE NEWSLETTER

INTERNATIONAL HYDROFOIL SOCIETY

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

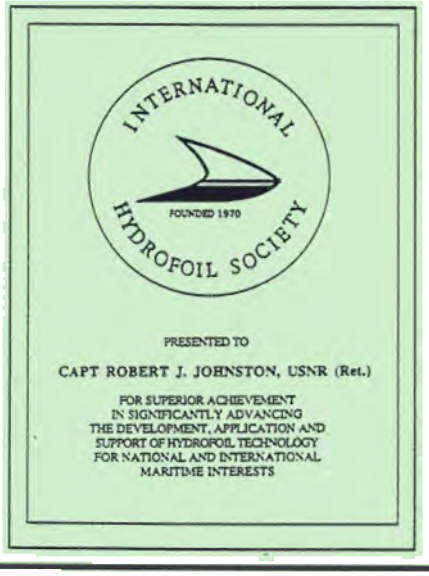
Editor: Robert J. Johnston | SUMMER 1993 | Co-Editor: John R. Meyer

IN THIS ISSUE.....

ELECTION RESULTS

IHS MEMBERS ELECTED THE FOLLOWING TO THE 1993-1996 CLASS BOARD OF DIRECTORS:
Barney Black, James H. King, Mark Rice, and Ken Spaulding
AT THE MAY 14, 1993 BOARD OF DIRECTORS MEETING, THE FOLLOWING OFFICERS WERE ELECTED:
President: John R. Meyer; Vice-President: Mark Bebar; Secretary-Treasurer: John W. King

AWARD PLAQUES PRESENTED AT THE IHS ANNUAL MEETING ON MAY 6, 1993



THE PRESIDENT'S COLUMN

Since the Spring Newsletter was published, several notable events have taken place in the "Hydrofoil World". As we reported, the U.S. Navy PHM hydrofoils were in the process of being deactivated and decommissioned. Since then, in spite of efforts to counter this process, the ships are on their way to Little Creek, VA for decommissioning on 30 July 1993, and inactivation at the Navy's Inactive Fleet Facility there.

With this unfortunate turn of events in the U.S. Navy hydrofoil program, those of us in the hydrofoil program have been considering the commercial potential of hydrofoils in the U.S. One action in this direction is the potential for HPMV offered by the ISTEA of 1991. The picture is not clear right now, but CAPT Caman, in his talk to the IHS at the Annual Meeting on May 6 helped clarify the situation somewhat. A summary of his talk can be found on page 4 of this issue. It was gratifying that we had the opportunity to share the meeting with members of the U.S. Hovercraft Society. As of this writing, it is apparent that a massive effort is needed to first educate the planners, at city and state levels, and operators on the subject of not only hydrofoils but HPMV in general.

The IHS Board, sometime ago, (see Fall 1992 IHS Newsletter issue) agreed to contact various offices in the D.O.T. to obtain a better understanding of the entire ISTEA process. CAPT Carman's talk was one of the the first steps in this process. Ken Spaulding and I are spearheading this effort and it is anticipated that IHS will make a contribution to ISTEA in some way, however, it is not clear yet.

A number of IHS members are also members of the SNAME SD-5 Panel (Ken Spaulding is Chairman) on Advanced Surface Ships and Craft. At the May 5 meeting of the Panel, discussions were held regarding the generation and publication of a Technical and Research Bulletin on "Hydrofoils." It was agreed that this would also include the latest "Foilcats" and "Foil-Assisted" catamarans, many of which seem to be proliferating the market on almost a monthly basis! As many of you know, the IHS started a textbook entitled "Principles of Hydrofoil Technology" about 10 years ago. Many of our members contributed chapters to this ambitious textbook. The document is in "very rough" form and the Society has never found funds (or people with sufficient time or motivation) to complete the final editing and figure generation. However, Jim King, a new IHS Board member and SD-5 Panel member, has volunteered to "pick up the pieces" and run with both projects. Our hats are off to you, Jim, and I hope that you will get some support from our IHS members. The T&R Bulletin will be less ambitious than the "P.H.T.", and perhaps by extracting material from it, an acceptable Hydrofoil T&R Bulletin will be published, comparable to the existing SNAME SWATH T&R and the one being planned for SES. Any member who is willing and able to contribute to this effort, please contact the editor or Jim King.

John R. Meyer, President

KEY WEST'S LAST NAVY SHIPS TAKE FAREWELL TOUR UP COAST

(Based on an article from The Miami Herald, June 14, 1993-Associated Press)

Six hydrofoils, the last Navy ships based in Key West, sailed away Sunday for a farewell tour up the East Coast. They'll be "mothballed," according to Lt. Jeff Ranta, a spokesman. The ships will tour up the East Coast to James River, Va., with an official decommissioning July 30.

The fastest fleet in the Navy is a casualty of cutbacks. A handful of family members saw their loved ones off at the docks. On Capt. Roger Buschmann's command, the hydrofoils hoisted off one after another, slowly making their way out of the harbor, keeping their powerful turbines reined in. Once past the sea buoy, however, the six lined up in winged formation, took off and were gone.

One of their major missions had been the war on drugs. The entire squadron interdicted more than 225,000 pounds of marijuana and 12,000 pounds of cocaine as part of Joint Task Force 4. "Six of our assets just left. It will make a difference," said Capt. James E. Smith, Commander of Coast Guard Group Key West.

FOILED AGAIN - SUPER SHIP MAKES AT LEAST ONE MORE BUST

(Vernon Silver, Citizen Staff Writer, Key West Newspaper, May 6, 1993)

The crew of a local Navy ship helped arrest a Marathon man for allegedly possessing more than a half ton of cocaine Tuesday night (May 4, 1993).

The Navy hydrofoil USS HERCULES - with a U.S. Customs agent and a Coast Guard law enforcement team - intercepted the 43-foot wooden fishing boat, Top Gun, 150 miles southwest of Key West at around 8 p.m. Tuesday.

The team boarded the boat, which is homeported in Marathon, and reportedly found 1,037 pounds of cocaine in the forward hold. They arrested 33-year-old Jose Agustin Franco in Marathon, and 39-year-old Juan Troche Olevero of Miami - considered the boat's captain.

The bust by the HERCULES comes just weeks before the six Key West hydrofoils - the only ones in the Navy - are to be pulled out of service. Because of budget cuts, the entire hydrofoil fleet will likely be shut down by the end of the summer.

The extremely fast boats, which ride above the water on foils, are the field weapons of Joint Task Force Four, the region's multiservice counternarcotics unit.

"This has been one of our largest seizures in the last six months," U.S. Customs Service spokesman Michael Sheehan said. The cocaine - which is believed to be from Colombia - was loaded onto the HERCULES. Soon after, the Top Gun, which had been taking on water, sank in heavy seas, the Coast Guard reported.

The HERCULES, with the prisoners and contraband, arrived in Key West Wednesday morning (May 5). Customs has custody of the cocaine, and the men are in the Monroe County Jail awaiting an appearance before a federal magistrate.

THE FOLLOWING CITATIONS ACCOMPANIED THE AWARD PLAQUES PRESENTED AT THE MAY 1993 ANNUAL MEETING

CAVALIERE DEL LAVORO CARLO RODRIQUEZ

The International Hydrofoil Society honors, posthumously, Carlo Rodriquez for his many contributions and innovations to the field of hydrofoils. It is most appropriate that this first annual award be presented to the Rodriquez family in recognition of Carlo Rodriquez's many achievements and his continuing support of the International Hydrofoil Society as a lifetime member since its inception.

In the early 1950's Carlo Rodriquez recognized the potential of the hydrofoil principle for high speed waterborne transportation. As a result he formulated a working arrangement with Supramar to build their designs at his shipyard in Messina, Italy. Construction of the first PT-20 started in 1953, was launched in 1956 as FRECCIA DEL SOLE and began regular passenger service over the waters of the Strait of Messina. That route is now the oldest, continuous, hydrofoil operation in the world.

In introducing the Messina service he also recognized the desirability of maintaining an interest in the operation of a new hydrofoil craft until it is debugged and proven. Only then is that design ready for sale to ship owners. To follow this principle, Carlo organized the Aliscafi Shipping Company who were the operators of FRECCIA DEL SOLE as well as other designs in the waters around Sicily and the mainland of Italy. Rodriquez also built a number of the Supramar PT-50 design.

In the early 1970s Carlo, having kept abreast of the worldwide developments of hydrofoils, made the decision to develop his own designs with an electronic seakeeping system. These designs, known as the RHS series, have been built in different sizes from the small RHS-70 to the largest RHS-200. The launching of the RHS-160 in 1976, a hydrofoil over 30 meters in length and carrying over 200 passengers, was the beginning of a long and productive success. Over 200 hydrofoils have been built by the Rodriquez Cantieri Navali and most are still operational today. The name Rodriquez is recognized throughout the marine world as the designer and builder of most successful hydrofoils.

Carlo Rodriquez's lifetime interests were much broader than just hydrofoils. He managed shipyards other than the one in Messina, managed a company that repaired railroad cars, was engaged in agriculture, and owned hotels. For his achievements in the industrial field, particularly for the development of the hydrofoil, the President of the Republic of Italy in 1960 nominated him for the title of CAVALIERE DEL LAVORO. Upon receiving this highest Italian honor for an industry manager, Carlo was the youngest person ever nominated.

It is with great pleasure that this award, in recognition of a lifetime of outstanding achievements, is made by the International Hydrofoil Society to the Carlo Rodriquez family.

CAPTAIN ROBERT J. JOHNSTON, USNR (Ret.)

Captain Robert J. Johnston, USNR (Ret.), has devoted almost his entire professional career to the design and development of hydrofoil ships and craft for both military and civilian applications. During and following World War II, as an engineering officer in the U. S. Navy, he was deeply involved in programs for hydrofoil design, research, and development in the Bureau of Ships and the Office of Naval Research. This included many different designs offered by a wide variety of contractors. Of particular note was the modified Chris Craft SEA LEGS produced by the naval architect firm of Gibbs & Cox. This small craft demonstrated the value of a fully-submerged foil configuration with autopilot control, a prime consideration in the design of the navy hydrofoils to follow including the HIGH POINT (PCH-1), PLAINVIEW (AGEH-1), FLAGSTAFF (PGH-1), TUCUMCARI (PGH-2), and finally, the squadron of six Patrol Hydrofoil Missile Ships, the PEGASUS class PHMs.

Captain Johnston left the navy in 1954 and joined Miami Shipbuilding Corporation, later becoming its president. There he was deeply involved in a number of hydrofoil programs including the hydrofoil landing craft HALOBATES. In 1960 he joined the Grumman Corporation where he became Director of Marine Programs. He was responsible for a number hydrofoil projects including the H. S. DENISON for the Maritime Administration; the navy hydrofoils PLAINVIEW, at 320 tons the world's largest, and the patrol gunboat FLAGSTAFF, and Grumman's commercial hydrofoil DOLPHIN.

In 1973, he returned to the U. S. Navy as a civilian to become Manager of the Advanced Hydrofoil Program Office at the David Taylor Naval Ship R&D Center. He directed the R&D technical program utilizing the HIGH POINT and PLAINVIEW as well as other test craft to continue development of the criteria for design of navy hydrofoils. This formed the basis for design and construction of the squadron of six PHMs now deployed with the Fleet.

In 1982, Captain Johnston again retired from government service and became the founding president of Advanced Marine Systems Associates, Inc. Here, once more he devoted his attention to the application of advanced marine vehicles in a world-wide study of high speed waterborne transportation for the Urban Mass Transportation Agency of the U. S. Department of Transportation. This remains as a prime source of data and analysis of commercial applications of advanced marine vehicles.

Without question Captain Johnston has been a significant force in the design, development, and application of hydrofoils throughout his long and distinguished career as a Naval Engineer. He stands alongside other illustrious pioneers such as Baron Hans Von Schertel, Carlo and Leopoldo Rodriquez, Michael Eames, and James Schuler, his friends and colleagues. His many accomplishments and contributions to the advancement of hydrofoil technology are most deserving of this recognition by the International Hydrofoil Society of which he is a founding member.

NOTES ON TALK BY CAPTAIN JAMES R. CARMAN, CTL. DIVISION CHIEF PORT AND INTERMODAL PLANNING, MARITIME ADMINISTRATION: "HIGH PERFORMANCE MARINE VEHICLES AND ISTEA" - PRESENTED AT THE ANNUAL MEETING AND DINNER OF THE INTERNATIONAL HYDROFOIL SOCIETY ON 6 MAY 1993

By Ken Spaulding

Captain Carman gave a very concise presentation explaining the nature of ISTEA and its potential for accommodating HPMVs in ISTEA programs. Following the presentation he answered, very directly, a number of probing questions.

Capt. Carman opened with a brief history of the "Highway Bills", stressing that ISTEA was, in fact a highway bill, a follow on to its predecessor highway bills. He cited the transportation deregulation bills starting with air in 1978 (Staggers Act), motor carriers in 1982 and water carriers in 1984 (Shipping Act). The Interstate Commerce Act of 1887 effectively forced the modes into discrete operations. The deregulation was a necessity before ISTEA could articulate intermodal transportation as a policy. He mentioned that the National Highway System consisted of 150,000 miles of highway (+ or - 10%).

There is great emphasis on improving air quality and reducing traffic congestion on the highways. Local decision making and planning is stressed. CAPT. Carman noted that funding from the National Highway Trust tended to be available to projects which mitigated air pollution. ISTEA requires the States to develop "Intermodal" systems. It has apparently become clear that approaching the national problem by isolating the modes of transportation didn't work well. The goal is "transportation efficiency" (without air pollution). ISTEA stresses moving passengers, not freight, but freight must be considered.

CAPT. Carman said that ISTEA sets up two offices: the Office of Intermodalism and the Bureau of Transportation Statistics. The latter is to collect data at the federal level for local uses. There is some R&D in the Act, particularly for an "Intelligent Vehicle Highway System". The Magnetic Levitation (MAGLEV) program was funded in the Water Resources Development Act of 1990 (WRDA 1990). He noted that MARAD got in the act in the early 1990s, more on the "land" side (terminals and transfer) than on the "water" side. There is now an Office of Intermodalism, which, after much infighting, was established as reporting directly to the Transportation Secretary.

What about HPMVs? ISTEA does talk about "ferry boats" and terminals. CAPT. Carman explored the concepts of "water highways", "connecting links" and "extensions" of the highway system as a means to qualify for program funding. As an example he cited the car ferry service across Lake Michigan which, apparently, C&O has backed out of supporting. He mentioned Hawaii, Puget Sound, Nantucket/Martha's Vineyard, Florida to the Bahamas but said that most of the talk was about terminals and only displacement vessels seem to be seriously considered at this time. Relief for the North/South I-95 corridor was also mentioned.

The Jones Act is very much a factor. CAPT. Carman's answer to the question of whether MARAD might consider a waiver on the Jones Act was essentially, "not a chance".

Five areas of emphasis were cited, with respect to breaking in with HPMVs;

1 - Can we relieve congestion on the highways?
2 - Can we improve air quality - in those areas where there is a problem?
3 - Focus on connectivity between modes - improve it!
4 - Reduce wear and tear on the existing land based infrastructure.
5 - Improve transport efficiency through intermodality.

CAPT. Carman continued. Involve the private sector (investment). Develop marketing strategies. Change the modal stereotypes.

The actual funding available to the marine sector is small. What is available, is slanted to our "merchant fleet". HPMVs would be a "poor stepchild" at best. John Meyer noted that an HPMV demonstration proposal had been suggested to MARAD. It is noted that IHS has established a Congressional Liaison Committee, headed by Jim Wilkins, that could continue working with MARAD and other related agencies on this issue.

In the question period, the complexity of the New York City regulatory system ("15 agencies") was cited.

CAPT. Carman mentioned the European inland waterway systems which moves a tremendous volume of freight. He was asked, Who do we go to? Where do we start? CAPT. Carman's reply suggested the complexity of the problem. He referred to the "locus" of the transportation projects/routes, the interaction of State, Local and National authorities.

A question raised was: Would support be possible for demonstration projects with a foreign-built vehicle. Answer was that essentially, the Jones Act is sacred.

A Bath Iron Works Corporation representative asked about the availability of a data base, routes etc. DOT is gathering more data and there is believed to be available a compendium of U. S. Ferry operations.

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KHI JETFOILS ORDERED FOR NEW AIRPORT SERVICE

(From Fast Ferry International, March 1993)

It has been confirmed that two Kawasaki Heavy Industries JETFOIL 929-117 hydrofoils scheduled to be delivered to Kaijyo Access Company in March 1994 are to enter service on a route between Kobe and a new international airport currently nearing completion on the southwest coast of Honshu at Kansai.

The provision of a fast ferry link across Osaka Bay between the two has been under consideration for some time and KHI has previously reported that three vessels, plus one spare, would be required to maintain a 30 minute departure frequency. The projected journey time by JETFOIL on the 16 nautical mile route, including an eight minute transit through Kobe Harbour at a speed of 14 knots, is 28 minutes.

FAST FERRY DETAILS DISCLOSED IN CHINESE PROCEEDINGS

(From Fast Ferry International, March 1993)

Although the majority of the 42 papers prepared for the Chinese Society of Naval Architecture & Marine Engineering's Second International Conference for High Performance Vehicles, held in Shenzhen on November 12-15, 1992 were highly technical and specialized, a few did detail fast ferry services and vessel production in the People's Republic of China.

Describing the potential for fast ferries in the country, Lei Dian and Chen Tianzhu of the China State Shipbuilding Corporation said, "China is a big ocean country surrounded in the east by the Bohai Sea, Yellow Sea, East China South and South China Sea and further outside by the Pacific Ocean. China has a long coast line which starts from the mouth of the China Korea boundary river, the Yalujiang River, and goes some 18,000 km southwards to the mouth of the China-Vietnam boundary river, the Beilun River. This long coast line and some 6,400 islands provides a natural and superior precondition for developing high speed passenger shipping.

"Since the founding of the People's Republic of China in 1949, passenger shipping has experienced rapid development. The passenger flow in the early years of the 1950s accounted for some 23.77 million persons annually. In the 1980s, the figure had increased to 260 million passengers a year. In the early 1950s, 1.47 billion passenger-kilometres a year was achieved, by the 1980s this had increased to 17 billion. With the reforming and opening up policy, China's national economy saw rapid development and brought forward the opportunity to develop passenger shipping.

"As regards the three major requirements of speed, safety and comfort, China's passenger ships still look out of date. In particular, the low speed of the vessels is the major obstacle to the development of passenger shipping. Therefore, the 'high performance' of high performance vehicles and the latest development of high speed passenger shipping and high performance vehicle technology in recent years in many foreign countries attracted the attention and interest of Chinese shipbuilders and ship operators.

"In 1989 more than 1.74 million passengers travelled by high speed ships. By high speed catamaran it takes only around three hours to go from various major ports of the delta area to Hong Kong. Today the Pearl River Delta is one of the most suitable areas in the world for developing high speed passenger services.

"In the Yangtse River Delta in East China, foreign made, high-speed catamarans and hydrofoils, as well as Chinese built surface effect ships, are operating on various routes between Shanghai, Nantong, Ningbo, Chongming Island, Qinglong Port and the Zhoushan Islands. In Northeast China, the Heilongjiang River area, with the continuing growth of trade and tourism between China and the former Soviet nations, high speed passenger shipping with hydrofoils and air cushion vehicles has started between China and Vladivostod.

"The hydrofoil is also a ship type that was developed very early, leading to the design and construction of *Hydrofoil No 1 Flying Fish* and *Zhengdan*. Recently a hydrofoil was bought from Russia and has been put into operation in the estuary area of the Yangtse River. Today, China is looking for a new high tide of reform and opening up. The national economy and people's standard of living will develop faster. This development has produced new and greater demand on various transportation systems including waterborne passenger services, in particular, high speed passenger shipping.

"We can happily expect that the 1990s and the early years after 2000 will be the golden age of China's high speed passenger shipping and high performance vehicles. In the coming years high speed shipping will bloom everywhere from south to north from coast to inland waterways.

"Although hydrofoils has not received as much attention as that on amphibious hovercraft and SES, the PRC has also been involved in development of hydrofoils for many years. Yet the first vessel produced, *Hydrofoil No 1*, was built as long ago as 1960. The programme since then was detailed in a paper by Zhang Da-Xiong of the China Ship Scientific Research Centre.

"Designed for operation on the Yangtse River, the 40 seat *Hydrofoil No 1* entered service on a route between Wuhan and Jiujiang. Initially shallow submerged hydrofoil systems were concentrated on because it was felt that these were the most suitable for inland transportation on the many rivers and lakes in the PRC. Next came a test boat, designated 101 completed in 1970 that featured a fully submerged foil system and a 1,200 hp Z-drive propulsion system.

"In addition to these test boats and a good deal of theoretical research, replacement foils for the ten Boeing Jetfoil 929-100s operated by the Far East Hydrofoil Company have been fabricated in the PRC. During the next two years, he reveals two hydrofoil ferry designs should be launched in the PRC: a Yangtse River surface piercing design and the PS 30 fully-submerged design, two of which have been ordered by the Far East Hydrofoil Company. The digital control system for the PS 30 is being developed in Hong Kong by the Shun Tech Laboratories and an outline of the technology is presented in a paper by the team developing it.

"The control system is composed of a processing unit and associated electronics assembly. The sensor and command signals are sampled through the analogue to the digital converter before feeding into the processing unit where the digital signals are processed according to the preprogrammed control rules. The digital output is then converted back to analogue signals by the digital-to-analogue converter and used to drive the appropriate control surface through the servo amplifiers. The control system has a very high reliability and is designed to be fail operative. By using voting circuitry, when one of the sensors or computers fails, the overall performance of the control system will not be affected. The system employs advanced sensors such as an optical fibre gyroscope.

RODRIQUEZ CANTIERI NAVALI'S HISTORY

By Dott. Ing. Leopoldo Rodriquez

The history of Rodriquez Cantieri Navali has far-off origins and one has to go back to 1887 to date the beginning of this long and variegated entrepreneurial event. In fact, that year Leopoldo Rodriquez set up a little naval repair workshop in the port of Messina. Therefore the Rodriquez enterprise is a little naval repair workshop in these years which operates in a strictly local circle.

In 1908 Messina was struck by an earthquake and the upset of this unhappy event is countless. The town is almost destroyed and the population more than halved. And there is a lot of damage to the productive system too.

The year 1908 and its earthquake are the first real sharp changes of environmental nature the Rodriquez enterprise has to face in the course of its history. The war in 1915, which followed after a few years, did not substantially change the yard's structure.

CARLO RODRIQUEZ

Carlo Rodriquez, son of the shipyard's founder is the author of the company's huge leap, being the bearer of true entrepreneurial values and at the same time a source of innovation around which the Rodriquez company culture will forge itself.

Endowed with a marked business acumen and exceptionally well disposed towards industrial relations, Carlo Rodriquez put at interest the years he spent abroad.

Now the leadership of the company is his. The disposition of the enterprise is still the original one created by his father, but Carlo Rodriquez has new ideas in mind and decision-making ability to implement them. In 1936 he carries out repair works to the Italian Navy's submarines. Rodriquez Shipyard is a real workshop equipped with simple tools and highly versatile working forces. The yard is destroyed by the first bombings, but Carlo Rodriquez rebuilds it immediately.

RAILWAY BUSINESS

Large numbers of railway wagons damaged by bombing lie on the railway station's blind tracks beside his sheds.

Carlo Rodriquez takes a courageous decision. Without receiving any orders he starts repairing the wagons, delivering them little by little to the Italian Railways. He therefore succeeds in getting a work order from the Italian Railways for the repair of railway wagons and cars damaged by bombing.

Now the workshop has plenty of orders and Rodriquez is forced to expand. So Rodriquez managed to get into the whirlpool of the favourable industrial economic situation caused by the war.

THE HYDROFOIL

The hydrofoil idea comes out one day when skimming through the Domenica del Corriere, the picture of a winged-boat flying over the water caught Carlo Rodriquez's eye. He wanted to know a little bit more about it.

Actually even at that time the hydrofoil was not an absolute novelty. Air Force General Engineer Forlanini, was the first to build a stepped boat which had been tested on the Lake of Garda at the beginning of the century.

Interest towards the hydrofoil revived during the Second World War in Nazi Germany, when the German General Staff decided to design and build hydrofoils for war deployment.

Carlo Rodriguez convinced one of the designers of the hydrofoil, Naval Architect F. Lobau to move to Messina together with his family and work for him at the head of the technical department. At his side, together with another two German experts whom Mr. Lobau wanted with him, there were very few other Messinian technicians and Naval Architects. The PT-20, which was the name of the type under construction, was a 72-seat passenger carrying hydrofoil.

FRECCIA DEL SOLE

The first plates started to be riveted in 1953 and the hydrofoil was launched in 1956. The waters of the Strait of Messina were now ploughed by what revealed itself to be a craft which would have lead to a real revolution in fast water transportation.

THE ALISCAFI SHIPPING COMPANY

Carlo Rodriquez was maturing a decisive step. He would have not sold the hydrofoil to any ship owner. Rather he was looking for partners with whom he could establish a shipping company. The company would have bought the hydrofoil and operated it on a service between Messina and Reggio Calabria on the Italian mainland and Messina and Milazzo and the Eolian Islands.

The PT 20 "Freccia del Sole" owned by the "Aliscafi Shipping Company", Messina started to operate the world's first scheduled seagoing hydrofoil service in 1956 between Sicily and the Italian mainland.

In the meantime the Rodriquez Shipyard was about to initiate the construction of another two hydrofoils of the PT-20 type which would have completed the first batch of three which Carlo Rodriquez had planned to build. Also, a new 130-seat hydrofoil of the PT 50 type is built. Being much larger, this new craft allowed servicing new and longer sea routes.

New sea routes are established in the Gulf of Naples linking Naples to Capri, Ischia, Procida and others. The services proved outstandingly successful and additional hydrofoils of the larger size were added to the fleet which have, to date, carried millions and millions of passengers. As a matter of fact the hydrofoil has come out of its initial pioneer stage making itself now known as a reality in the sea transportation world. The initial skepticism by all the ship owners which had followed the first steps of the project had now changed into a careful observation of the new craft and its possible development potentiality. The Aliscafi Shipping Company played a strong role in promoting the hydrofoil into the world market.

SECOND GENERATION HYDROFOILS - THE RHS SERIES

At the beginning of the 1970s, Carlo Rodriquez decides to play all his cards on the study of an electronic seakeeping system. The Rodriquez Shipyard decides to apply to Hamilton Standard, a big American company specialising in the study and installation of electronic systems in various

sectors like the aero-space sector, in which the company has already a considerable experience.

Re-designed surface-piercing "W" foils replaced the conventional Vee foils whilst hydraulically operated flaps, attached to the trailing edges of the bow and rear foils, are adjusted automatically by the electronic seakeeping system, for the damping of heave, pitch and roll motions in heavy seas.

The first hydrofoils of this new RHS series are built early in the 1970s. These vessels incorporate considerable improvements compared with the previous PT series. In fact, on account of the electronic system, these new vessels are more stable and comfortable compared with earlier hydrofoils. Moreover they proved to be well fitted for navigation on longer sea routes and under worse sea and weather conditions on account of these characteristics. So the hulls can be longer and of larger capacity than the previous ones.

Rodriquez had also commenced the construction of conventional coastal patrol boats in the Messina-based Shipyard whilst the design of a Rodriquez military patrol hydrofoil was ready on the drawing boards of the technical department.

The launching of the RHS 160 in 1976 surely marked a productive success by Rodriquez Shipyard. The hydrofoil, more than 30 metres long and with a capacity of over 200 passengers in its standard configuration, was fit to face sea conditions which were first believed to be prohibitive for a hydrofoil.

THIRD GENERATION HYDROFOILS - THE M.E.C. SERIES

On the ground of the experience and exciting results with the RHS series, the technical department of Rodriquez Shipyard undertakes a series of studies on research and development which lead to the definition of a new product. The MEC (Maximum Efficiency Craft) series which adds the hydrostatic drive to the hydrofoil idea. This revolutionary propulsion system consisting of a set of hydraulic pumps coupled to a conventional diesel engine and a block of hydraulic motors placed on the foil in turn coupled to a propeller. This makes it possible to have a new foil configuration and a new layout of the spaces destined for passenger transportation.

The Rexroth company of the Mannesmann group cooperated in the hydrostatic drive project supplying all its know-how in the sector and establishing a mixed company with Rodriquez for the construction and sale of propulsors based on hydrostatic drive technology.

MONOHULLS

Side by side with the development of the hydrofoil system, at the end of the 1980s, the Rodriquez Shipyard designs a series of monohull vessels which feature an unusual and revolutionary stabilising system. The series called Foil Assisted Monohull starts with the launch of the first unit in 1989. The 37-metre, 35-knot monohull accommodates 350 passengers. This concept materializes successfully in the 1990s with the construction of two additional 47-metre monohulls and construction starting on a 95-metre monohull in a mixed passenger/car ferry configuration with outstanding speed performance characteristics.

CATAMARANS

Production is additionally diversified with the resumption of a patented concept by the Rodriquez Shipyard in 1978 concerning multi-hulls such as catamarans.

In the 1990s, a busy technical department designs a 40-metre, 350-passenger catamaran of futuristic lines. With the latter offer, the Rodriquez Shipyard places itself as an aggregate supplier capable of diversifying its offer in an articulated manner meeting with market and customer requirements in an optimal way.

FOOTNOTE: The foregoing is as presented, retaining the colorful expressions and interesting wording of Leopoldo Rodriquez. What is added, as follows, is an update on the reorganization that has taken place and the current status of Rodriquez Cantieri Navali. This information comes in part from several issues of FAST FERRY INTERNATIONAL and personal knowledge.

Rodriquez Cantieri Navali has undergone a series of name changes. As Leopoldo states, up until the late 1960s the company was known as Leopoldo Rodriquez Shipyard. It was named after and by engineer Leopoldo's grandfather. As the plan was developing to build their own designs, recognition was made of the technical requirements of this effort and the engineering staff was expanded. As a consequence the company's name was changed to Cantiere Navaltecnica SpA. This name was retained until the mid 1970s when the RHS series hydrofoils started to be delivered and the name was again changed to Rodriquez Cantiere Navale SpA. As business expanded the company acquired additional shipyards and in 1987 the name was made plural, Rodriquez Cantieri Navali SpA.

Another name change that took place related to the operating subsidiary, initially formed and named Aliscafi Shipping Company in 1956 to operate FRECCIA DEL SOLE across the Strait of Messina. The scope of this shipping company's responsibilities increased to include not only the proofing and debugging of the first of each new design but also the operation of a number of Rodriquez-built hydrofoils on routes near Sicily and the Italian mainland. From this beginning the company became the source of training for new operators, helping with the introduction of new routes throughout the world. As a result in 1960 the name was changed to Aliscafi Societa di Navagazione Alto Velocita. This organization is now known worldwide by the abbreviated name Aliscafi SNAV. SNAV also deals in used Rodriquez hydrofoils and in arranging charters for commercial operators.

Starting with the shipyard in Messina, the shipyard operations of Rodriquez Cantieri Navali expanded over a period of time to include yards in Malta, Anzio, Varrazze, Pietra Ligure, and Naples. Recognizing the magnitude of the total operation, the family in 1987 formed a holding company, Rodriquez SpA. With this, Rodriquez Cantieri Navali went public and listed their shares on the Milan Stock Exchange. The managing office was then established in Rome. In 1991 60% of Rodriquez SpA was purchased by

the Genoa based Gruppo Cameli. This shipping company had been established over seventy years prior to this time and since 1970 had been diversifying. With this event the Rodriquez Cantieri Navali shipyards were reduced to four. The Rodriquez family retained the Baglietto yard in Varazze and the yard in Anzio was sold.

As presently organized there are four main companies within Rodriquez SpA:

Rodriquez Cantieri Navali SpA is responsible for the operation of the yards in Messina, Pietra Ligure, Malta, and Naples. They also manage Rodriquez Engineering; Aliscafi SNAV SpA is responsible for all fast ferry operations;Alimar SNAV is responsible for car ferry operations; and Navigazione Alta Italia SpA is a company within the shipping sector, chartering dry cargo ships, coordinating oil transportation needs of the Cameli Group, and owns supply vessels and petrochemical ships.

And to think that all this began with a little 70-passenger hydrofoil built to run across the Strait of Messina.

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Competition doesn't create character,
it exposes it.

MES RELEASES DETAILS OF HYPERCAT CONCEPT

(From Fast Ferry International, April 1993)

Mitsui Engineering & Shipbuilding has released preliminary details of a new fast ferry concept. Two versions have been designed to date, the Hypercat 15 and Hypercat 40, equipped for 150 and 400 passengers respectively.

According to the company, "To upgrade the speed/power performance of the semisubmerged catamaran (MES's term for its SWATH designs), the Hypercat has a pair of hydrofoils instead of torpedo-like lower hulls.

"Because of the difference in the hull forms, a Hypercat has a lighter hull weight and a smaller wetted surface area than an SSC of the same size. As a result, Hypercat shows superior speed/power performance, besides the good seakeeping performance of the SSC."

FUTURISTIC FERRIES PUT THE STRESS ON SPEED

(From Marine Log, March 1993)

Ferry passengers around the world are set for some high speed travel. Next month, for example, Japan's Oki Shinkoh will take delivery of the *Rainbow*, a 310 ton (tonnage), 33.3 m, 341 passenger hydrofoil catamaran that hit 45.4 knots on its sea trials late last year. This is claimed to be the fastest speed ever achieved by a large size, fully-submerged-hydrofoil passenger vessel. In service between the Japanese mainland and Okinoshima Island in the Japan Sea, the hydrofoil cat will have a service speed of 40 knots.

Built by Mitsubishi's Shimonoseki Shipyard and Machinery Works, this Super Shuttle 400 catamaran is powered by four 2,850 hp Mitsubishi S 1 6R-MKT-S high speed diesels powering two Mitsubishi MWJ5000A waterjets with double-cascade type impellers.

To achieve speed objectives, considerable emphasis went into the reduction of the weight of equipment items—such as the diesels, propulsion systems, hydrofoils and control systems—as well as the main hull. To ensure a smooth transition from the foil-borne mode, even in rough seas, the catamaran's twin hulls feature a deep-vee section.

While high speed ferries have become familiar on any number of passenger-only runs, a number of designers are now turning their attention to wresting away a slice of the market traditionally held by conventional car and truck ferries.

In Europe, two contenders with futuristic entries in this field are France's ACH (Aieliers et Chantiers du Havre) and Italy's Rodriquez.

ACH's concept features a long highly streamlined single hull and small lateral surface-piercing wings to provide transverse stabilization. It is being developed for a family of craft with waterline lengths from 25 m to 150 m, capacities of 50 to 2,200 passengers and 20 to 550 autos and offering speeds up to 50 knots.

In a passenger/car ferry configuration, ACH's Model 100 M, for example, features a waterline length of 100 m, overall width of 28 m, draft of 2.6 m and deadweight of 320 tons. It offers a capacity of 450+ passengers and 150 autos. A 15,000 kW twin gas turbine/waterjet propulsion plant gives it a speed of 40 knots.

According to ACH, the long length of the slender main hull and the very slim bow shape allow the vessel to cut through waves with only a little pitching and virtually no slamming. The geometry and position of the wings have been optimized by multiple computer calculations and towing tank tests. Lateral seakeeping and stability are adjusted precisely to the values that allow safety and comfort solely by the position and dimension.

The hydrodynamic performance of the displacement type hull is less sensitive to load variations than some other high speed designs and a higher deadweight will cause only a small reduction in speed. Steel can thus be considered for the hull structure, particularly for large size vessels.

Well-known for its hydrofoils - it has built more than 160 of them - Rodriquez has taken a different design approach in offering a high speed vessel to compete in the car/truck market. Its 101 m *Aquastrada* is a fast monohull, designed as a "ship with no fancy hull layout" and featuring steel construction.

[Editor's Note: The reader should be sensitive to the use of "tonnage" and "deadweight" in many of the articles from various magazines, neither of which depict the vessel's displacement. We report the vessel's displacement when it is known.]

FAST '93

The Second International Conference of Fast Sea Transport (FAST '93) will be held for four days from Monday, December 13th to Thursday, December 16th, 1993 at the Pacifico Yokohama Conference center (Pacifico Yokohama), Yokohama, Japan. The aim of FAST '93 is to make an international contribution to high-speed marine traffic and transport from design through operation. This conference is sponsored by The Society of Naval Architects of Japan. More information can be obtained by writing FAST '93, ISS International Shinkawa Bldg. 5F, 2-2-21 Shiba-kohen, Minato-ku, Tokyo 105, Japan.

WELCOME NEW MEMBERS

Captain Cameron Mixon, Jr. USN (Ret.) - Cam is employed by Thomas Enterprises, Inc. and has been supporting the management and logistic functions of the PHM program through NAVSEA.

Erwin J. Hauber - Mr. Hauber, of El Cajon, California, assisted in the development of HIGH POINT, PLAINVIEW, TUCUMCARI, and the PHM-1 PEGASUS class of Navy hydrofoils. As a hobby, he has designed and built five hydrofoil sailboats.

M.C. Butch Theberge - Butch Theberge is a retired Chief Warrant Officer and is currently with Bath Iron Works Corporation. He is Project Manager Conceptual Engineering and has evolved some interesting large hybrid hydrofoil concepts.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY (M.I.T.) *DECAVITATOR* TAKES TOP PRIZE IN DUPONT HUMAN POWERED WATERCRAFT SPEED CONTEST.

(From DuPont Corporate News via Doug Milliken)

WILMINGTON, DE., June 1, 1993 - The DuPont Company announces that the *Decavitator*- a hydrofoil that was engineered, built and operated by a team from M.I.T. - has received the DuPont Human Powered Watercraft Speed Competition's $25,000 grand prize. Mark Drela, a professor in M.I.T.'s department of aeronautics and astronautics, pedaled the watercraft to its world record speed of 18.5 knots (21.3 mph) on October 27, 1991 on the Charles River in Boston, MA.

The *Decavitator* is characterized by a fuselage similar to M.I.T.'s *Daedalus* human-powered aircraft and by an air propeller. "In retrospect, the air propeller turned out to be our greatest advantage as well as a serious limitation," recalls Drela, who was also faculty advisor on the project. "An air propeller means that fewer structures are piercing the water's surface. And dragging the drive train and propeller through air creates less drag than dragging an equivalent assemblage through water. Unfortunately, the air propeller also makes the *Decavitator* extremely susceptible to crosswinds."

The design evolved over four years. M.I.T.'s Marc Schafer, the project's student coordinator, conceived the idea with Bryan Sullivan in 1988 on a return flight from Greece. Both men were members of the *Daedalus* team that had just set a world record for long distance human-powered flight. "Our goal was to build the fastest human-powered hydrofoil on the planet," says Schafer. "On a good weather day I hope we get the chance to pull the craft out again, tune it up, and exceed 20 knots."

As sponsor of the competition, DuPont was pleased to have encouraged advancements in materials, technologies and engineering. IHPVA is a non-profit, educational and scientific organization, dedicated to promoting improvement, innovation and creativity in design and development of human powered vehicles. [Editor's Note: See Winter 1991 & Spring 1992 Newsletters for other Human Powered Hydrofoil info and an illustration of *Decavitator*]

$2 MILLION AWARD IN BOEING JETFOIL CASE

(Based on Seattle Post Intelligencer Article, February 25, 1993)

The Boeing Company was ordered to pay more than $2 million to three former employees who contend that the firm should share in the profits from development and sale of a Jetfoil hydrofoil they helped design. The Company said it expects to appeal the order, the result of a jury award reached February 24,1993.

A King County Superior Court jury deliberated for almost three days before awarding the money to William M. Shultz, Robert J. Gornstein and Charles S. Coffey. Jurors, polled at the request of Boeing's attorneys, said they unanimously approved the award. It was also the latest step in a three-year effort by the men to recover what they argued was their share of the profits from the vessels, which Boeing produced for 10 years before discontinuing production.

After a two-week trial last year, Judge Edward Heavey ruled that Boeing misled the three into signing an agreement in 1966 that voided their rights under a 1943 agreement to share in licensing fees and royalties Boeing received from other firms that wanted to build and sell Jetfoils, which the three men helped design.

Shultz, Coffey and Gornstein said their work involved unique and novel approaches that enabled the company to achieve commercial applications of the craft. They contended they were responsible for invention of the arrangement of foils, struts, water intake, propulsion system and hull, and were entitled to share in royalties Boeing earned from their work.

The legal skirmishing isn't over and the three won't get their money until it is. Boeing, in a statement, said that it anticipated appealing the award and noted that it already has appealed Judge Heavey's ruling to the state Court of Appeals.

During the trial, Boeing told the jurors the design and development of the Jetfoil wasn't a single event or the work of a few people. It said the Jetfoil was the result of engineers, technicians, supervisors and managers over a period of years.

Boeing launched its first Jetfoil in 1974 and it went into service in 1975. The Company sold fewer than 30 of the craft during the next 10 years. Boeing licensed others to manufacture the craft starting in 1983. It has received about $22 million in licensing fees and royalties since then, according to court documents. Kawasaki of Japan is the principal manufacturer of Jetfoils at this time.

In a late March issue the Seattle Post-Intelligencer reported that the Boeing Company has been ordered to pay an additional $2.9 million to resolve this dispute. King County Superior Court Judge Heavey ordered Boeing to pay $1.2 million in interest to the former engineers - William Shultz, Robert Gornstein and Charles Coffey and pay an additional $1.7 million to cover their legal expenses in suing the company. Judge Heavey ruled that the money must be paid in addition to the $2.1 million awarded to Shultz, Gornstein, and Coffey on February 24, 1993.

LETTERS TO THE EDITOR

Dr. Al Ross II, one of our members, writes that he is doing research on TUCUMCARI, FLAGSTAFF, and the PHM's for a series of monographs designed primarily for modelers, historians, and ship enthusiasts. These monographs will include a large number of drawings and photos, as well as developmental and operational histories. Dr. Ross is looking for additional detail material, particularly for TUCUMARI. In addition, he would like to acquire a large number of photos of each type. He is asking the membership for suggestions for reliable, "user friendly" sources for this material. If any of you can be helpful please contact Dr. Al Ross II at 136 West Broadway, Bangor, Maine, 04401 or call him at (207) 942-4465.

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SUMI ARIMA WRITES: 23 April 1993

This is a report on my visit to a fellow named Lloyd Jetts who I was introduced to by Dave Symington (FRESH-1 owner). This fellow has some dreams of a new class of high speed boats. A little background on Lloyd. He previously owned Seward Park Marine, a boat repair yard on Lake Washington. He was on the crew of the hydroplane Slo-mo-shun IV when they went to Detroit with a new configuration and won the gold cup. He subsequently spent time with many other unlimited hydroplane crews throughout the years. Lloyd's boat house being in close proximity to Boeing's Renton plant, did some work for Boeing on the Little Squirt and Maribo. Lloyd presently has housed in his garage many Allisons, Rolls Royce, and GE turbine (J49) aircraft engines. He also has a few of the aluminum Packard diesels. His garage is equipped with 9", 16", and 31" lathes, MIG and TIG welders, overhead crane, brake, roller, and shears for up to 1/4" steel, mill, high lift forklift and all the other envious tools and equipment.

Lloyd has plans to revolutionize the unlimited hydroplane boat by adding surface piercing foils on each of the sponsons and on either the rudder or the prop shaft strut. The configuration would essentially be small supercavitating T-foils without any control surfaces and 4 to 6 inch long struts attached at the rear end of each sponson of the pickle fork design hydroplane. The idea is to run broached at all times. This is generally how the hydroplanes operate now with very little wetted surface of the sponson at racing speeds. Lloyd's thoughts of the foils is to further reduce the wetted area, and thus drag. Lloyd has a 20+ feet air boat with dihedral sponsons. He plans to put foils on it to make preliminary tests of the concept.

While we were talking foils, Dave took us to see the FRESH-1 and the transit foils built by Grumman. The demonstration foils are stored in a field where we could not get to at this time. Dave plans to have his son get his mobile crane over there and relocate them in his construction business equipment yard. FRESH-1 looks intact from the outside except for the outboards. On the inside, most of the panels, APU, etc. were removed prior to Dave's acquisition. Lloyd was interested in looking at the foils to scale down for his boat. My comment was his air boat will not have enough speed to get enough lift in a supercavitating section foil design to demonstrate his concept. His thought was if he could see any reduction in drag at all, he would be satisfied to start construction of a new boat. He already has a stock pile of stainless steel plates for the boat construction. Lloyd showed me a tunnel hull boat made of aluminum that lead him to choose stainless. The tunnel hull has the classic example of exfoliation. I don't know if I changed his mind on aluminum. I'll keep you posted as I learn more about this project.

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Dear Sirs! 18 February 1993

Thank you for the letter and offered information.

Feodosia Shipbuilding Association "Morye" is one of the world leaders in manufacture of dynamically supported vessels of light alloys. Our Shipyard has more than 50 years experience in building hydrofoils. These are Raketa, Kometa, Voskhod which are being operated in many countries of the world, the gas turbine hydrofoil Cyclone (with a passenger carrying capacity of 250 persons) which excellently presented itself on the line Tallinn - Helsinki. Now the trials of the hydrofoil Olympia (with passenger carrying capacity of 250 persons) are being carried out. On board are engines from the German firm MTU, marine equipment from the firms "Decca", "Sait", "Noske-Kaeser" and others.

We are interested in widening of our foreign relations, different business and mutual cooperation with American and European firms, so we take your offer to become a member of the I H S and ask you to inform us of how we can settle our account regarding dues. Our address: Feodosia Shipbuilding Association "Morye" 334871, Feodosia, Crimea, Ukraine. Telex: 187125 PTB SU Kafa.
Yours Sincerely, L. Astakhov,General Director

ANSCHUTZ SYSTEMS FOR HIGH SPEED SHIPS

(A letter and descriptive material was received by IHS from Anschutz & Co. GmbH, Postfach 1166/D-2300 Kiel, Germany)

ANSCHUTZ has developed a range of components especially designed to meet requirements for high speed craft. This includes an autopilot which has proven to be capable of steering high speed craft of any type. And it includes a heading reference system that offers redundant reference Magnetic/Gyro and compass difference alarm monitoring as well as versatile heading outputs for radars, plotters, computers etc. Actual corrected compass reading is displayed by a large digital repeater.

ANSCHUTZ is now offering a special package for high speed craft including the Heading Reference System NAUTOCOURSE "Plus" with built-in automatic correction for both, speed error and dynamic errors, and NAUTOPILOT D. Their experience with a large number of installations on various high speed ships worldwide has made the NAUTOPILOT D a versatile pilot which is capable of steering SWATH, SES, Foilcats or modern monohull designs.

[Editor's Note: For a complete copy of the letter and descriptive material send a self-addressed, stamped envelope to IHS, or for additional information, write directly to ANSCHUTZ]

THE NEWSLETTER

INTERNATIONAL HYDROFOIL SOCIETY

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

Editor: Robert J. Johnston | FALL 1993 | Co-Editor: John R. Meyer

IN THIS ISSUE.....

ANNOUNCEMENT

FALL DINNER AND MEETING
NOVEMBER 12, 1993
ARMY-NAVY COUNTRY CLUB, ARLINGTON, VIRGINIA
NORTH DINNING ROOM
6:00 PM Cash Bar - 7:00 PM Dinner - 8:15 PM Program; $25.00 Per Person
Menu: Salad, Chicken Kiev, Wine, Dessert, Coffee
Make reservations no later than November 8 if you plan to attend.
Call one of the following:
Mark Bebar 703-697-9572; John R. Meyer 301-227-1796; Patsy Jackson 703-329-0102

****** AWARDS CEREMONY ******

PROGRAM

"HPMVs, SNAME ACTIVITIES AND WORLD-WIDE DEVELOPMENTS"
Ken Spaulding, Project Manager, M. Rosenblatt & Son, Inc.
See the latest Videos on RHS-200, JETFOIL, Westamarin Foilcat, Super Shuttle 400 and Hypercat.

1993 DUES REMINDER

ALL MEMBERS WHO HAVE NOT PAID THEIR DUES FOR 1993
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

As mentioned in the Summer N L, the unfortunate, but anticipated decommissioning of the PHMs took place on 30 July 1993. All six ships were decommissioned in a single ceremony lasting only about an hour at the Amphibious Base, Little Creek, VA. Many IHS members were able to attend and witness the remarks by Commodore Buschmann, Adm. Mauz, and the COs of each ship. A special feature in this N L starts on page 6. The PHM Squadron did an excellent job of preparing the ships (which looked spectacular), the ceremony arrangements, and the bountiful reception at the "O" club.

During the last days of the PHM preservation and subsequent decommissioning, members of the IHS Board "assisted" Jim Wilkins (Chairman of the Congressional Liaison Committee) in drafting a letter to President Clinton in an effort to get the PHMs back into the drug interdiction fight with civilian crews. He finalized it on 27 August. Shortly after Jim's letter (see page 11) was sent, a Washington Post article on September 16 announced the Administration's change in policy from "interdiction" to "treatment". At the IHS Board meeting in September, it was agreed by all attendees that this was a lost cause and the IHS should not expend any further energy on attempting to get the PHMs back into the drug war.

In my Summer NL column I mentioned several activities in the commercial arena that could affect the future of commercial hydrofoils and other HPMVs in the U.S. I had the opportunity to attend two Intermodal Transportation Planning Conferences, Chicago in June and Montreal in September. The purpose of these Conferences is to have an interchange of information between the various City and State Planners and the transportation technical community. I described the various commercial passenger, car and cargo High Performance Marine Vehicles either operating or being developed around the world. I suggested that these or similar vehicles, which have been so widely used abroad, should play a role in intermodal transportation planning in the U.S. and Canada. There are plans for another Conference in New Orleans in December.

The SD-5 Panel of SNAME continues to be very active under the Chairmanship of Ken Spaulding, one of our own Board Members. At the Fall Dinner Meeting Ken will be our speaker and bring us all up to date on SD-5 activities and how they may impact on hydrofoils. We anticipate a good turn out. Those of you who cannot attend will hear all about it in the Winter NL.

A major milestone was achieved by Professor Mark Drela of MIT and their human-powered "Decavitator" as reported earlier in the Summer '93 Newsletter. Bob Johnston called to my attention an excellent article about this event which appeared in the July 1993 issue of "Popular Science" (page 66). We recommend that those interested check the July issue or send a self-addressed, stamped envelope to me and I will pass on a copy of the article.

John R. Meyer, President

JEAN BUHLER WINS SAILING TROPHY

Just to prove that hydrofoilers can also be good sailors, your Newsletter Editor has learned that Jean won the last Matheson Trophy Race. This race is held annually in waters off Miami, Florida. It is one of the major sailing events of the winter racing season. Jean and his crew brought his Morgan 35 home in first place. Congratulations Jean!

CHARLIE PIEROTH HEADS GRUMMAN'S CORPORATE LICENSING OFFICE

(From Grumman's "Plane News") -

A Society long time member and hydrofoil designer of some renown is now the Director of the Grumman Corporate Licensing Office. Charlie explains the purpose of the office as follows: "Our job is to improve Grumman's bottom line by helping the company make the most of one of its least-noticed resources; its intellectual property". A corporation's intellectual property falls into a few broad categories: trademarks, copyrighted printed material and software, and patented technologies. Charlie says: "By licensing our technology, we're forming alliances that benefit ourselves and the licensees".

FAST' 93

The Society of Naval Architects of Japan have announced the preliminary program for Fast '93, the Second International Conference on Fast Sea Transportation. The Conference will be held in Yokohama, Japan 13-16 December, 1993. More than 130 technical papers and about 30 exhibitions will be arranged. Social events, tours, and accompanying persons program are also planned. More information can be obtained by writing FAST'93, ISS International, Shinkawa Bldg. 5F, 2-2-21 Shiba-kohen, Minato-ku, Tokyo 105, Japan.

WELCOME NEW MEMBERS

Satoshi Yokoyama - Mr. Yokoyama is Manager of Ship Sales in the office of Mitsui Zosen (USA) Inc., New York. He has been very much interested in providing information on the Mitsui Hyper Cat which has been reported on briefly in the Summer IHS Newsletter.

Terry D. Welander - Terry is a young hydrofoil enthusiast from California. He is with Industrial Applications, Inc. in San Ramon, CA and is interested in promoting hydrofoils in the U.S.

Dr. Thomas D. Lang - A long time SWATH advocate from California has decided to join the ranks of the hydrofoilers. Welcome aboard, Tom!

William A. Hockberger - Bill is Head of the Advanced Design Branch, soon to be the Future Ship Concept Division at NAVSEA and is a long time advocate of High Performance Marine Vehicles in general. We had the honor of having Bill as a guest speaker several years ago when he summarized many of the papers presented at FAST '91 in Trondheim, Norway.

THE TITICACA ARROW

By Robert J. Johnston

To add to Helmut Koch's hydrofoil history, published in the Spring 1993 IHS NEWSLETTER, Jean Buhler has provided us with additional information including an article from the Miami Herald on the "Titicaca Arrow" and the hydrofoil's interesting owner, Darius Morgan. Mr. Morgan is a part time resident of Miami, Florida and owns the Inca Utama Hotel on the shores of Lake Titicaca in the Bolivian Andes.

Morgan is of Romanian and French descent, a mathematician and poet who went to Bolivia 40 years ago to work for the Swedish telephone firm Ericsson. In the late 1950s, he established his own company, Crillon Tours, now one of Latin Americas largest travel agencies. For many years Crillon Tours ferried travelers over the Andes between Puno, Peru and Huatajata, Bolivia in its fleet of six hydrofoils. These craft were designed and built by Helmut Koch. Then came the rise of Peru's Shining Path Guerrillas, which Morgan estimates cut tourism by 65 percent.

Undaunted, he developed a purely Bolivian package, building his 44 room, five star hotel with its spa and "cultural complex". This complex consists of two elaborate adobe museums explaining Andean history and culture. Other special touches include a herd of llamas and a 28 foot hydrofoil run-about that had been a gift from Leonid Brezhnev to President Nixon. Richard Nixon used this craft to travel on Biscayne Bay from his home on Biscayne Key in Miami, Florida. Darius Morgan bought this craft from Nixon in Miami and transported it to Lake Titicaca.

Not long ago, the Inca Utama Hotel was noteworthy chiefly for its health spa. Overweight tourists flocked here to gulp coca-leaf tonics and endure coca-powder and paraffin rubdowns. But that changed after the earth's feminine magnetic rays floated over from the Himalayas and the central vertex of cosmic energy aligned over the world's highest navigable lake. Crillon Tours has developed a new seven day package "The Ultimate Esoteric Experience". With these features and his hydrofoil, Morgan hopes to turn the hotel into a profitable tourist venture.

Jean Buhler also furnished additional information on the Helmut Koch designed and built "Titicaca Arrow". Darius Morgan moved the hydrofoil up to the 14,000 foot elevation lake in pieces and by donkey. After reassembling it, he found that it didn't have sufficient horsepower at that elevation to fly. He therefore decided to laboriously bring the "Titicaca Arrow" back to Miami. There he added four feet to the length and increased the horsepower to improve passenger capacity. His plan was to operate the hydrofoil in passenger service on Biscayne Bay around the Miami area. Although the vessel had been originally built in the U.S. and modified in the U. S., under the Jones Act it was no longer a U.S. vessel. Since the hydrofoil had been exported, he was unable to operate it as a passenger vessel in U.S. waters. Jean suggests that we should take a clue from Mr. Morgan and switch from hydrofoils to hotels to make a profit.

FAST FERRY STATISTICS AND UMTA UPDATE

(From SNAME SD-5 Panel Newsletter)

George Luedeke reports that he has opened a dialog with Eric G. Scharf, Executive Director of the Passenger Vessel Association (PVA) based in Washington, DC. This phone call included Peter Lauridsen, PVA's technical expert who resides in Virginia Beach. PVA would be interested in cooperating with SNAME on such a study, however, they advised that they knew of a similar effort currently underway by the Urban Harbor Institute (UHI) of Boston, MA. Evidently, the UHI is funded by congressional moneys with support from Senator Kennedy. PVA provided George with a contact at UHI. He is Marty Pilsch at 617/287-5570. George will contact Pilsch to see what he can learn about UHI's effort. PVA indicated that UHI's work had been going on for the past several years and that it involves a survey of all commercial ferry operations in the U.S. This includes slow as well as fast ferries and includes freight as well as passenger/car transport. Emphasis is on operations and economics. George observed that if SNAME could tap into this effort with emphasis on developing a "better" assessment of the operating/maintenance costs of high speed craft it would create a valuable and useful SD-5 panel product.

TECHNO-SUPERLINER (TSL) HYDROFOIL

(From Fast Ferry International, July/August 1993)

The Technological Research Association of TSL has confirmed that construction has started on two "prototypes" that will be used to evaluate the results of its research and development prgram.

The first to be launched, the TSL-F hydrofoil*, is scheduled to be completed at Kawasaki Heavy Industries' Kobe Yard in March. The hydrofoil program is a joint effort involving KHI, Ishikawajima-Harima Heavy Industries, NKK, Hitachi Zosen and Sumitomo Heavy Industries. The TSL-F will have a length of 17 meters and a beam of 6 meters and will be powered by a yet to be revealed gas turbine and waterjet.

The second prototype, the TSL-A, is much larger. Due to be completed in June, this is a surface effect ship. Mitsui Engineering & Shipbuilding is building the forward section and Mitsubishi Heavy Industries is building the aft section. Length overall will be approximately 70m, moulded breadth will be approximately 19m and power will be supplied by two MHI MFT-8 28,000 ps gas turbines and waterjets. MHI reports that basic design work on the new engine was carried out at its own Takasago works while detailed design took place at the Nagoya Guided Propulsion Systems Works. The GG8 gas generators for the units, an industrial derivative of Pratt & Whitney's JT8D aircraft engine, have been supplied by Turbo Power & Marine Systems.

**(Editor's Note: This TSL-F "hydrofoil" is really a hybrid hydrofoil consisting of a single, large, central, underwater body and foil system mounted thereon. The upper hull is supported above the water surface by one or more struts. The distribution of buoyant lift and dynamic lift is not known for certain, but is estimated to be 60-40 respectively.)*

NEW PROJECTS UNVEILED AT SINGAPORE EXHIBITION

(From Fast Ferry International-April 1993)

Forty-four companies from 13 countries, including for the first time Korea and Ukraine, participated in the 9th International High-Speed Surface Craft Exhibition held in Singapore on March 9-11, 1993.

It was the first of the series to be held outside the United Kingdom for 17 years and attracted over 600 visitors from 31 countries, 70% of whom had not been to any previous shows.

Several of the hydrofoil supported craft builders released details of new projects or additional details about previously announced designs. A brief summary of some of these details is herein provided.

MOYRE

One of the highlights of the Exhibition was a first appearance by Morye Feodosia Shipbuilding Association, the Ukrainian hydrofoil and hovercraft yard.

Activity at the moment is concentrated on trials of the first Olympia hydrofoil, a 250 passenger ferry having a pair of 1,905 kW diesels installed to give it a speed of 36-37 knots. Launched towards the end of last year, the vessel is expected to enter service this summer with Inreko Estonian New Line in the Baltic on a route linking Tallinn and Helsinki.

The route was introduced in 1992 using Liisa, the only Cyclone hydrofoil built by Morye. During April 1 October 31 this completed 500 return journeys between the two cities and carried 60,000 passengers. Journey times were approximately 1 hour 10 minutes each direction.

Morye is now developing a new version of the design, the 44.2m Cyclone-M, having a lightship displacement of 115.2 tonnes, full load displacement of 150 tonnes and passenger capacity of 210.

Two 2,940 kW gas turbines, replacing the single unit in the first craft, will give the Cyclone-M a service speed of 42 knots and a range, at that speed, of 300 nautical miles.

The next hydrofoil design to appear from the Morye yard, though, will be the 27.6m Voskhod-2M, a 65 seat coastal version of the Voskhod. Production is due to begin this year.

KVAERNER FAST FERRIES

"Kvaerner entered the high-speed craft business in 1989", Bent Hammel said, "by acquiring Fjellstrand a.s. Since then the high-speed craft division has expanded through investments in product development and production facilities to reach a 1992 turnover of US $110 million and employing more than 800 people.

"Kvaerner Fast Ferries comprises three high-speed craft yards: Kvaerner Fjellstrand a.s. Norway; Kvaerner Fjellstrand (S) Pte Ltd, Singapore; Kvaerner Mandal a.s. Norway. Kvaerner Fast Ferries additionally comprises Kvaerner Fjellstrand Shipping a.s., which owns three ferry operations - two in British Columbia, Canada, and one in Denmark.

At present the three production companies are concentrating on five designs: the Flying Cat 40m catamaran, the Foil Cat 40m foil assisted catamaran, the Jumbo Cat 75m catamaran passenger/car ferry, the KM - MCM 55 55m mine counter measures surface effect ship, and the KM - FP 40 40m fast patrol boat surface effect ship.

Looking at the fast ferry market, Bent Hammel pointed out, "A 50% growth from 1988 to 1990 was followed by stagnation in 1991 and a significant decline in the market in 1992. By February 1st this year orders booked for 1993 deliveries had already surpassed the 1992 output. It is therefore reasonable to believe that the industry will experience new growth in 1993.

Over the past five years the market for passenger ferries between 25 and 35 metres has been stagnant. There has been a growth in the market for passenger ferries larger than 35 metres. However, the peak in 1990 was followed by decline in 1991 and new growth in 1992. 'Rough water' vessels came back on the market in 1989 with the Boeing Jetfoil built under license. Kawasaki delivered 13 such vessels from 1989 to 1991, but had no deliveries in 1992. In 1989 SWATH vessels entered the 'rough water' market sector. 1992 saw two SWATH deliveries.

"Geographical shifts in demand have been very significant over the past five years. Europe had declined from representing half the fast ferry world market in 1988 to representing only a quarter in 1992. There has been a significant growth in the Asian and American market while the Australian market has been stable over the period.

"The most focused technological challenge is, however, the requirement for passenger comfort at high speeds in rough water. The ultimate passenger comfort will be achieved, we believe, with catamarans flying above the waves with submerged, computer controlled foils below the waves.

"We have developed our 40m Foil Cat to carry 420 passengers comfortably at 45 knots in 3.5m significant waves. It has taken us a lot of effort, time and money. Today we are finally able to launch the 40m Foil Cat for sales with deliveries in late 1994.

DB CATAFOIL

Nigel Gee of Nigel Gee and Associates released at the 9th High-Speed Surface Craft Conference the first details of the trials of DB Catafoil. The 36m yacht, Chief Flying Sun, was launched in South Africa in March last year, delivered to its owner in Monte Carlo in July and remained in use until October, when it was laid up for the winter. It was due to return to the owner this summer.

The vessel was described by Nigel Gee as "a foil assisted catamaran using passive design to gain some of the benefits of a lowered resistance by the use of foils, but in leaving buoyant hull structure in the water, simplify production and control problems and minimize the draught.

"The foils support approximately one-third of the total vessel displacement. Because the remaining two-thirds is still carried on the buoyant sidewalls, there is no need for a complex control system in order for the vessel to remain stable in pitch, roll and heave.

"Considering ferry versions of the Catafoil, Nigel Gee revealed that the cost of building a 36m vessel capable of carrying 350 passengers had been estimated by a number of

European shipbuilders who are being considered for a license build and the figures submitted averaged out at £3.9 million.

"This figure of approximately £11,000 per seat for a vessel capable of operating at 42 knots", he said, "is extremely competitive. DB Catafoil Ltd believe that the 36m Catafoil is the best solution for those operators who require speeds between 35 and 45 knots.

"DB Catafoil Ltd have already produced outline designs for a range of vessels based on the 36m Catafoil cross section. These range in length from 32m to 40m.

"DB Catafoil Ltd are currently at the preliminary design stage of a 60m car ferry based on the same concept as the existing 32m-40m range. Such a vessel would be capable of carrying typically 60 cars and 400 passengers at speeds in excess of 40 knots. This vessel would also be gas turbine powered.

"DB Catafoil Ltd are currently undertaking preliminary design studies to establish the best form of hybrid foil assisted design. At this early stage it is believed that a semi-SWATH hull form with foil assistance will provide the most economic and sea kindly solution in this speed range. *(Editor's Note: Seems we have heard about this before. Reference Hybrid Hydrofoil and Techno Superliner.)*

"Studies of the potential car ferry market have shown that demand will exist for even larger vessels, perhaps up to 140m in length capable of carrying much larger numbers of passengers and cars at speeds of between 40 and 50 knots in open sea conditions such as those found in the North Sea.

"Use of ride control systems as optional extras for Catafoils is also being considered. The favoured method is the installation of trailing edge control flaps on the fixed foils. The fitting of control flaps will further improve motions of the Catafoil, particularly in higher sea states.

REFURBISHING OLD HYDROFOILS

Chris Jenman, of Global Maritime, started his presentation at the 9th High-Speed Surface Craft Conference by pointing out that aircraft manufacturers target the world's top airlines and tend to sell in batches. These operators, in turn, sell high quality planes to smaller airlines, who also have a market for their redundant fleets with the national carriers of small or emerging independent states.

This mechanism, he said, is at present missing from the marine world and no movement at the bottom of the market will impact throughout the market if operators are unable to sell their existing vessels.

According to Chris Jenman, "The question of what happens to fast ferries when they become old is answered by looking at hydrofoils. Though some craft have been scrapped as being beyond economic repair, the majority of hydrofoils manufactured since the early sixties are still around, operating on routes worldwide.

"On the Hong Kong to Macau route, the hydrofoils were replaced by Jumbocats and Jetfoils but, with the recent opening up of southern China and 1997 fast approaching, some of the hydrofoils are having a new lease of life.

"The hydrofoils themselves have proven to operators over the years that they could be both reliable and cost effective in operation. For some time most operators held onto their hydrofoils after the introduction of catamarans, as a back up until confidence was gained in their new craft.

"An RHS 140 hydrofoil approximately 20 years old could be purchased for a sum in the region of US$160,000 and the small RHS 70 for considerably less. At these prices we feel these vessels have a role to play in establishing new routes, at low risk and costs to test the market, especially at a peak season when the weather is kindest and passenger numbers highest.

"We have witnessed the commencement of new routes by old hydrofoils establishing a safe fast service between Hong Kong and China. We are confident that other new routes could be established and that these hydrofoils could operate successfully for another ten years after refurbishment."

Global Maritime, he revealed, has located approximately a dozen hydrofoils that are available for immediate delivery at prices ranging from $150,000 to $500,000. Add to this refurbishing costs of $200,000-$300,000 and craft could be returned to service for a total expenditure in the region of $350,000-$800,000.

ANOTHER VIEWPOINT

The existing and future position of the fast ferry industry was also considered in a presentation by Max Martin of International Maritime Transportation Advisory Services. He broke down the market into two segments, high speed passenger craft and large car ferries.

"As far as new designs are concerned, we have certainly had our fill of variations, particularly in the area of foil assistance. There definitely seems to be a resurgence in foil borne craft and the utilisation of foil technology.

"It does surprise me that projects which often commence with the objective of utilising foil technology to 'assist the craft' often end up being totally foilborne. Therefore, I wonder whether any true advances have really been made.

"What of the future? I see more, if not all, catamarans being fitted with an active ride control system. The efficient yards will continue to prosper.

"The next generation of Russian hydrofoils appears to offer an attractive proposition with vessels capable of laden speeds in excess of 38 knots, which are diesel powered with an active foil that works successfully in seas up to 3.5m significant.

"With better seakeeping, more operators will consider longer and longer routes and, in that respect, the potential in the Asian market is truly enormous.

NEW HYDROFOIL IN VIETNAM

Until recently, traveling from Ho Chi Minh City to the beach at Vung Tau, 60 miles away, required a land trip that took anywhere from two to four hours because of the condition of the roads and the traffic. Now a Russian-built hydrofoil leaves every morning at 8 A.M. from the docks of the Saigon River and arrives 90 minutes later at the French resort, Cap St. Jacques. The 112 foot craft is crewed by Russians and has a snack bar. After visiting some of the temples and sandy Bai Sau beach, the passengers can return at 4 P.M. First class tickets are about $9.

SPECIAL FEATURE.....
PHM DECOMMISSIONING

Since first learning of plans to decommision the PHMs, many IHS members have been active, through numerous telephone calls and letters, in making their Congressmen and others aware of the Navy's plans. This initiative was spearheaded by Jim Wilkins, Chairman of the Congressional Liaison Committee. A sampling of the results of this effort, along with the eventual happening itself, in the form of letters, messages, and speeches are included here for our members to appreciate.

Letter from William J. Crowe Jr., Admiral, U.S. Navy (Ret.); 20 April 1993:

Dear Senator Nunn:

It has been brought to my attention by members of the International Hydrofoil Society that as part of our overall naval force reductions, the USN has directed the early decommissioning of all six of the PHM hydrofoil missile combatants in the U.S. Navy inventory. While fully understanding the fiscal pressures contributing to this decision, I am concerned about the resultant loss of expertise and capability in the employment of small combatants in the littoral area that figures so prominently in the new Navy white paper "From the Sea."

I also understand that the Navy is considering offering the PHM Squadron through FMS for sale or lease to several of our Desert Storm coalition allies in the Gulf, including Kuwait. Such an approach might allow us to "have out cake and eat it too" by preserving these valuable littoral warfare assets in friendly hands while removing the operating and maintenance cost burden from the Navy budget.

From my experience as former Chairman and former Commander of the Middle East Force, I can see the strong arguments in favor of this course of action and at the same time all the difficulties entailed in making it happen. During the Kuwait escort mission 1987-89, the on scene commander and I both tried to get these eminently well-suited hydrofoil combatants deployed in to the Gulf. As you may recall, however, this need was overshadowed by the invaluable role that were then playing in the counter narcotics effort in the Caribbean. Nevertheless, their unique ability to operate in a mine infested and anti-ship cruise missile environment, against both conventional and unconventional forces (such as the high-speed Iranian gunboats) without putting large numbers of U.S. Navy personnel at risk, was then and is now unmatched by any other asset. I am sure that VADM Doug Katz, the current U.S. Navy commander in the Gulf, would greatly appreciate having the PHMs in the friendly Gulf naval order if battle today.

It is certain that the capability represented by the PHMs will be of use as a deterrent and a stabilizing force in the Gulf region, whatever friendly or moderate Arab regime operates them. In addition, their continued employment will preserve some continuity of expertise in this important warfare area, a factor which could be of considerable use if we elect to further develop similar platforms in the future.

If there is any way that I could help in bringing this process along, I would very much like to offer you my assistance.

With warm personal regards.

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Letter from: Jerome H. King, Jr., Vice Admiral, U.S. Navy (Ret.); 16 April 1993:

Dear Senator Nunn,

The Navy has taken major steps toward dismantling the Hydrofoil Program. I am reliably informed that the six ships (PHMs) now in commission have been ordered to stand down, and that the schedule calls for decommissioning of all these ships by mid-December of this year. If these actions are not soon reversed, irreparable damage will have been done to this unique program which provides the Navy with capabilities not available with any other type of ship now in commission.

The wartime mission of these ships in anti-ship warfare where their high-speed, maneuverability, and Harpoon missile installations make them formidable all-weather fighters. They have particular value in coastal waters, toward which current naval doctrine has purportedly given increased attention.

The peacetime PHM mission has been to counter drug trafficking in South Florida. Operating from their base in Key West, they have turned in a remarkable record of actual capture of drugs and smugglers, using their high speed as a trump card. Slower vessels on this mission regularly have lower success rates as smugglers often outrun them, or jettison their cargoes to avoid arrest.

In my view, the Navy is on a course that in a short time is likely to be seen as an expensive blunder. The ships' crews have unique training and experience. Existing shore-based support structure for these ships is specialized and highly effective. Once the program is dismantled, it will be difficult to reassemble.

Such steps should be taken only after careful comparison with other programs competing for Defense dollars in these stringent times. Whether that careful comparison has been made within the Department of Defense I cannot say, but the stakes are such that your committee might well wish to review the situation. If that is so, I recommend that immediate attention be given to the issue, as the Navy's decommissioning actions are moving swiftly.

****

Letter from Senator Sam Nunn; May 5, 1993

Dear Admiral Kelso:

I understand that the Navy intends to retire the PHM patrol hydrofoil missile combatants very soon. This raises several questions in my mind about why the Navy is taking this action and how the Navy will replace the capability these vessels provide.

1. Why is the Navy retiring these small combatants that would seem to have much wartime utility in littoral areas?

2. What forces will the Navy substitute for the PHMs in the counter narcotics mission that they have been performing well?

3. Wouldn't it be useful to have these vessels operated by an ally?

4. Why are the ships being retired so quickly that it will not be possible to enter into a lease or sale agreement with an ally before they have been struck?

I have heard from a number of people, including Admiral Crowe, about the pending Navy actions. I hope that you will provide me with the answer to these questions at your earliest convenience.

****

Letter from Admiral Kelso to Senator Sam Nunn; 2 June 1993

Dear Mr. Chairman:

Thank you for your letter of May 5, 1993, concerning our plans to retire the ships of the Patrol Combatant Missile Hydrofoil (PHM) class.

In answer to your questions:

1. Why is the Navy retiring these small combatant that would seem to have must wartime utility in littoral areas?

To meet our budget reductions, we have had to consider options across all warfare areas. Clearly, we must make vertical cuts, deleting entire programs and the associated equipment, personnel and infrastructure. Concerning wartime utility in the littoral battlespace, PHMs have not been used due to single-mission capability, high maintenance costs and a unique logistic tail which requires contractor support.

2. What forces will the Navy substitute for the PHMs in the counternarcotics mission that they have been performing well?

While PHMs have assisted in the counterdrug effort, their achievements have been in interdiction and apprehension operations, which are not Department of Defense missions. In light of the magnitude of the fiscal reductions which we face, we were unable to justify continuation of these operations by PHMs. There are no plans to replace these craft; alternatives to perform these missions could include United States Coast platforms, Special Operations Command assets (both smaller craft and the new Coastal Patrol (PC) boats), and other combatants, such as frigates and destroyers.

3. Wouldn't it be useful to have these vessels operated by an ally?

Certainly it would be useful for our allies to operate these ships. However, their availability has elicited no offers to date. Operating and maintenance costs of the PHMs, which require substantial shore support, may well be prohibitive for most of our allies.

4. Why are the ships being retired so quickly it will not be possible to enter into a lease or sale agreement with an ally before they have been struck?

The PHMs are to be decommissioned beginning in July 1993 in order to conserve scarce operating and maintenance funds. This action does not preclude the possible future sale or lease after inactivation and stowage.

Our budget finances only those operational capabilities deemed crucial to our success in meeting future missions with fewer resources. We are committed to maintaining robust and ready forces.

As always, if I can be of further assistance, please do not hesitate to contact me.

Letter from Jerome J. Fee, President of ASNE, to ADM Frank B. Kelso II, USN, CNO; 14 June 1993

Dear Admiral Kelso:

I know you have received numerous inputs prior to making you decision to decommission the six PHMs, and ASNE does not intend to enter that debate. As a strong voice for the maintenance and improvement of the profession of naval engineering in this country, ASNE is very concerned that the U.S. Navy maintains the technological edge which has made this country the strongest military power in the world.

In spite of our great strength, we have seen world leadership for many U.S. Navy developed technologies slip away to other nations. Some recent examples have been surface effect ship (SES) technology, which has almost been totally lost to foreign countries and, to a lesser extent, SWATH technology, where Japan and other countries have already overcome our once insurmountable lead.

Since the U.S. Navy is removing its entire inventory of hydrofoils from service, I believe the Navy needs to take a hard look at the technology and make quick decisions on how we can ensure that our technological base for designing, building and operating hydrofoils is not lost. One possibility you may want to consider is to select one or two of the PEGASUS CLASS for R&D test ship status. Another approach would be to design and build a prototype of a newer and more modern large hydrofoil.

It would be a mistake to let leadership for another U.S. developed technology slip away to some foreign navy. Hydrofoil craft have many advantages, and it is almost a certainty that once again we will be trying to catch up in a field that we developed. If we let that happen it may very well come back to haunt us.

Letter from ADM Kelso to Jerome J. Fee, 21 July 1993

Dear Mr. Fee,

Thank you for your letter of June 11, 1993, regarding the decommissioning of PEGASUS class PHMs.

The decision to decommission the PHMs was driven by past considerations in what is becoming the most dramatic naval downsizing since the late 1940s; and regrettably, Navy is faced with making some extremely difficult choices. I am confident, however, that our design and technology efforts will continue to pace international naval developments.

Although the test ship concept you speak of has appeal, full scale operating test vehicles are costly. In today's high technology world, computerized weapon/platform simulations, in conjunction with full scale development of major components, promises to provide even greater data at lower costs.

PHMs will soon be put in long term storage. Their honorable service to our country has greatly expanded our vision of what is technically feasible. I look to the American Society of Naval Engineers to work with us to keep the future promising and aggressively expand our technological frontiers.

NAVAL MESSAGE **12 JULY 93**

FROM: CNO WASHINGTON DC

SUBJECT: PHMRON TWO DECOMMISSIONING

1. FOR MORE THAN A DECADE, PHM SAILORS HAVE REMAINED EVER VIGILANT AND READY TO DEFEND OUR NATION AND OUR NATIONAL INTERESTS. FROM HAWAII, TO THE CARIBBEAN, TO NOVA SCOTIA, PHMS HAVE NEVER BEEN RELUCTANT TO "FLY" IN HARM'S WAY AND HAVE CARRIED OUR FLAG PROUDLY WHILE PROJECTING AMERICAN POWER IN THE DEFENSE OF DEMOCRACY.

2. IN THE COURSE OF OPERATIONAL EMPLOYMENTS COVERING PERIODS OF BOTH PEACE AND HOSTILITIES, FROM PARTICIPATION IN OPERATION URGENT FURY TO AGGRESSOR TRAINING FOR OUR MIDDLE EAST DEPLOYERS, PHMS HAVE PLAYED MANY VITAL ROLES. OVER THE LAST TEN YEARS, THEY HAVE SET AN ADMIRABLE RECORD IN COUNTER DRUG OPERATIONS, SEIZING OVER 220 THOUSAND POUNDS OF MARIJUANA AND 11 THOUSAND POUNDS OF COCAINE. THESE SHIPS, REPRESENTING ABOUT 3 PERCENT OF THE SURFACE NAVY, HAVE ACCOUNTED FOR OVER 28 PERCENT OF ALL SURFACE NAVY-ASSISTED DRUG SEIZURES. YOUR IMAGINATION, DETERMINATION AND PRIDE HAVE MAINTAINED YOUR SHIPS AS WELL-HONED, HIGHLY VISIBLE AND EFFECTIVE MEANS OF PROJECTING NATIONAL POWER.

3. THE DECOMMISSIONING OF ANY U.S. WARSHIP IS A SAD OCCASION FOR ALL THOSE WHO HAVE FAITHFULLY SERVED HER. THE FINAL DAYS ABOARD AND THE DECK LOG ENTRY TO SECURE THE LAST WATCH HAVE A SPECIAL SIGNIFICANCE ONLY UNDERSTOOD BY THE DECOMMISSIONING CREW. THE PHMS WILL NO LONGER BE IN SERVICE BUT THEY WILL LIVE ON IN THE MEMORIES OF THOSE WHO TOOK THE BATTLE TO THE ENEMY AT FOILBORNE SPEED.

4. TO THOSE OFFICERS AND MEN WHO WALK THE PHM DECKS FOR THE LAST TIME AND PARTICIPATE IN THE DECOMMISSIONING CEREMONIES OF THE "FLYING GRAY TERRORS," YOU BROUGHT A NEW DIMENSION TO SURFACE WARFARE AND HAVE SERVED YOUR COUNTRY WELL. YOUR HAVE GIVEN THESE PROUD SHIPS A SPECIAL, HONORED PLACE IN OUR NAVY'S HISTORY.

5. LAND THE SHIP! WELL DONE AND GODSPEED.

COMMODORE BUSCHMANN'S ADDRESS AT PHM DECOMMISSIONING-30 JULY 1993

Admiral Mauz, Admiral Fowler, Commanders, Commanding Officers and Distinguished guests, I want to personally thank you for attending the decommissioning ceremony this morning.

I and my commanding officers, seeing so many of the familiar faces of the people who have supported these great ships throughout their lives, would like to recognize each one individually this morning. Unfortunately, in order to carry out my orders to decommission an entire class of ships in a single day, each speaker has been allowed only a brief period for remarks (with the exception of our guest speaker Admiral Mauz of course). I am certain the captains and crews of the ships will recognize you privately after the ceremony for all you have done.

As sorry as I am to have to decommission these ships, we are indeed fortunate to live in an era when we can feel secure reducing our forces. This was not true of the times during the Cold War, when a ship named PEGASUS was commissioned in July of 1977. Sadly, a ship whose time had come, must now go.

While I am certainly sad to say goodbye for the final time to the ships I have served with twice, as a member of the commissioning crew in TAURUS and now as the commander, I feel I have been blessed to have been associated with them, and more fortunate yet to have known the men who have sailed, or more appropriately, flown these ships.

I can not help but believe the word, "camaraderie", was created for hydrofoil crews. Twenty five men, living in close quarters for up to a month at a time, moving through fifteen foot seas at over forty knots, all certain there were only a handful of men in the Navy who could do their job, know the meaning of the word "camaraderie". Every time they returned to port and saw the envious looks on the faces of other sailors watching, pointing, obviously wishing they too could fly, reminded them just how special they were to be hydrofoil sailors. The closeness within the crews is impossible to express, it is something which had to be experienced.

Today as the six commissioning pennants are ceremoniously lowered for the final time, these great ships will once again be no more than hull and machinery, the "camaraderie" they have known throughout their lives will leave with the last man down the brow. But, ships are only what the men who sail them choose to make of them. I am comforted knowing that as each of these men depart for their next assignment, they take to those commands not only some sea stories and a few mementos, but that sense of "camaraderie", that realization of how good something can be if you are willing to commit yourself totally to it, which they will spread throughout the fleet.

Ladies and gentlemen, I have the great honor of introducing our guest speaker Admiral Mauz.

ADM. MAUZ's ADDRESS AT PHM DECOMMISSIONING-30 JULY 1993

Admiral Fowler, Commodore Buschmann, Mrs. Bulkeley, distinguished guests, ladies and gentlemen, and especially men of PEGASUS, HERCULES, TAURUS, AQUILA, ARIES and GEMINI.

It is a privilege to be here at the Naval Amphibious Base as we honor these six ships that have served the nation so well for a total of over seventy-three ship-years.

This may be the first time we have retired an entire class of ships on the same day. I sure as heck don't want to do this very often. Despite their similarities, each of these ships is unique. I would like to spend a couple of minutes on each ship because of their own special personality.

PEGASUS — The winged horse of Greek mythology — always associated with speed and grace. And in Navy history, USS PEGASUS was the first flying surface combatant. Commissioned in July 1977, she set the record for the fastest transit of the Panama Canal, 2 hours and 41 minutes, a record that has yet to be broken. PEGASUS was also first to intercept and seize a high speed, drug-laden vessel.

HERCULES — Mythological Greek Super Hero — Known for great courage and strength. USS HERCULES, commissioned in January 1983 also displayed great skill when she became the first hydrofoil to act as plane guard for an aircraft carrier. She also set the record for the most drug busts by a surface ship; twelve drug runners, a record that still stands.

TAURUS — The Bull — Tenacious and aggressive. USS TAURUS, commissioned in October 1981, engaged in combat operations of Grenada in 1983, proving the versatility of these fast warships. A key player in several operations with UNITAS, our operations with South American Navies.

AQUILA — The Eagle — Swift and Sleek. Commissioned in June 1982, USS AQUILA has shown both speed and endurance. She once transited from Key West to Nova Scotia in less than five days. Later she led the way for PHM operations in the Yucatan Channel.

ARIES — The Ram — Steady and sure. USS ARIES was commissioned in September 1982 and has conducted over 5,000 hours of foilborne operations and traveled over 200,000 miles. ARIES also participated in combat operations off Grenada.

GEMINI — Castor and Pollux, special protectors of sailors and warriors. Commissioned in November 1982, USS GEMINI has a history of operating with a wide variety of forces including ships from Venezuela and Columbia, U.S. Customs Service vessels and even U.S. Army Apache helicopters.

These are special ships, unlike any other in our fleet. The exterior differences are obvious but it's what is inside that really makes them distinct. Not the engines or the fire control system or the galley or the weapons, but it is the crew, that's different. Small ships have special chemistry and men that are capable of doing almost any job on the ship. Because there is a small crew, each man must be trained in several different areas. Fire control men fix the navigational position, cooks handle mooring lines, OS's drive the ship, ET's serve chow and so on. Everyone does maintenance and everyone cleans the ship. The crew is tight, they all know each other, they all help each other, they are shipmates, and the crews from all these hydrofoils know they are a special breed. These six crews truly represent what Admiral Horatio Nelson called a "band of brothers".

In the past years these ships have had a number of important missions. You could always find them in fleet exercises, playing the crucial role of adversary or orange forces. By so doing, these six ships contributed to the battle readiness of our deploying battlegroups in a positive and tangible way. In the last FLEETEX, Vice Admiral Flanagan, Commander of the Second Fleet, lamented the absence of PHMs. They really pose a tough problem for the battlegroup commander.

Because of their size, we have been able to send these ships into east coast ports that don't normally get to see a Navy ship. They brought the Navy to a large segment of America and helped convince a lot of young men and women to make the Navy their choice. Additionally they visited dozens of ports in Central and South America, demonstrating American professionalism, good will and our way of life.

When the time came to flex our military muscle in Grenada, three of these ships were called on to provide a rapid response combat force for coastal patrol and surveillance.

The most important mission these six ships have conducted in recent times is the counter-narcotic mission in the Caribbean. While not a true combat mission, it nevertheless involved these ships in the war on drugs. Coca leaf production has been on the rise since 1987 and the cartel traffickers have been innovative in figuring out ways to get the drugs to America. They're even using submersible craft these days. The drug war strikes so close to the very moral and social fabric of our nation. The Biden report of late 1992 shows over 3 million hard core cocaine and heroin addicts in our country. There have been over 900,000 crack-cocaine babies born in America in the last three years. These six ships have contributed significantly in dealing with this far reaching and devastating problem. Drugs are a national security problem, PHMs have helped.

There are, of course, many other dimensions to national security. I must tell you that there are many millions of Americans out there who don't understand just how much our national security is affected by events that occur far away in some remote region of the world. I hear "the Cold War is over. We won! What do we need a Navy for?"

Our national security is far more complex than dealing with a series of specific military threats. Now and in the future our security will depend on less well defined threats — including those that could affect our economy. Our economy affects the very fabric of our society, whether we grow, remain static or perish will be determined by the strength of our economy.

Yet our economy is susceptible to actions of a few fanatics in far away places. When Saddam Hussein invaded Kuwait, the price of oil shot up from $19 per barrel to over $40 per barrel. That rise in the price of oil rippled into a $60 billion shock to our economy in the first year after the invasion. The total cost in lost U.S. productivity is about $200 billion. The global economy lost a trillion dollars. We are still paying for it in terms of a lasting recession.

There are other concerns that demand American attention. Regional stability and the proliferation of weapons of mass destruction immediately come to mind. Worldwide unrest and crises will demand American presence and that means the U.S. Naval forces.

The Navy/Marine Corps Team has become the premier force in defending our national interests around the

world. Forward deployed ships and aircraft are the mainstay of our forward presence. I believe the relative utility of naval forces in national security will increase. Our country needs a strong Navy. We are unique in the world. And we bring flexible and responsive forces to any region where we have vital interests. I therefore believe that the future of the sea services is bright — we will remain a large, powerful service. This downsizing will end.

But it is still hard to retire these six fine warships. They could have years of service left. Their sensors and weapons systems are modern and proven. And they are fast — a tremendous advantage in any scenario. For all their attributes, we must reduce the size and cost of our Navy, and so we must lay up the engines and seal the ports of these PHMs. Other ships will take your place in the line, but they will lack your special flair.

Captains and crews, you have done a fine job operating your ships and now in preparing them for this retirement. You can all be proud of what you and your predecessors have accomplished. With your Caribbean operations, you more than many, have contributed in a positive way to the future of America. Your record will remain as a testimony to the professionalism and dedication of the men who manned these small tough dashing ships. Well done to you all. Thank you.

TALK ON THE OCCASION OF THE PHM DECOMMISSIONING - John R. Meyer, President, International Hydrofoil Society:

Admiral Mauz, Commodore Buschmann, Ladies and Gentleman.

I have been fortunate to be part of the PHM team through the Carderock Division, Naval Surface Warfare Center's technical support of NAVSEA over the last several decades. I also have the honor to be President of the International Hydrofoil Society.

The IHS is a professional association dedicated to fostering the development of hydrofoil technology and to stimulating the commercial and military applications of that technology. Some of our members from abroad have been and are currently in the forefront of commercial hydrofoil developments in such countries as Italy, Norway and Japan.

Many of our members are proud to have been part of the Navy Hydrofoil development program dating from the 1950s "SEA LEGS", many subsequent Navy Hydrofoils including HIGH POINT, TUCUMCARI, FLAGSTAFF, and PLAINVIEW — and all through the PHM program. For these reasons, the IHS followed the PHM program from its beginnings with keen interest. It was our hope that your ships, operating in the Fleet, would demonstrate the military advantages of speed, agility and seakindliness in heavy weather, that these earlier developmental hydrofoils exemplified. This, we hoped, would lead to follow-on PHMs, and eventually, larger, multimission hydrofoils.

The PHM track record over the past 15 years has in fact demonstrated those advantages continuously and conclusively. To all PHM hydrofoilers - past and present: your astonishing records during numerous Fleet exercises and especially, counter-drug operations have quantified the difference between having a high speed capability and not having one.

Although PHMs, like many other Navy ships, are being retired early, this retirement is generated by budgetary considerations. No one has ever said - no one can ever say - that these ships' performance has been less than superb. To quote a recent letter from Admiral Kelso, "Their honorable service has greatly expanded our vision of what is technically feasible".

But new technology does not succeed without some up-front, hard work and dedicated effort on the part of the users. It is this hard work and dedication I want to recognize today. You took a new ship technology and a unique support concept, applied your skill and imagination and made that technology and concept work so well. I know this from personal experience on many occasions with you on board your ships, and working with the MLSG and Squadron staff.

I don't know if we will have hydrofoils in our Navy in the near future. Perhaps as we explore the real requirements of littoral warfare, the high speed and small size of ships like PHM may begin to make sense to decision makers. Let us hope so! One thing I do know, however, is that if the Navy does consider building hydrofoils again, it will be because you have given the Navy the confidence that such ships can be operated, supported and maintained. You have done a tremendous job, and we in the International Hydrofoil Community are grateful for your accomplishments

The Society has asked me to commemorate your service by the presentation of this plaque, which I ask Commodore Buschmann to accept on behalf of all the PHM hydrofoilers - past and present.

The plaque reads:

PRESENTED TO
PATROL COMBATANT MISSILE (HYDROFOIL)
SQUADRON TWO
ON THE OCCASION OF ITS DECOMMISSIONING
30 JULY 1993

"WELL DONE"

"WELL DONE" Commodore, that says it all

From: Commander Patrol Combatant Missile Hydrofoil Squadron Two; 02 August 1993

Mr. John R. Meyer President, International Hydrofoil Society

Dear Mr. Meyer,

Thank you for attending the decommissioning ceremony of the six PHM Class ships and attending the reception on 30 July 1993. Your eloquent remarks and the beautiful plaque you presented are greatly appreciated. The plaque will been sent to the Navy Historian for appropriate exhibition in the chronicle of these Navy ships.

The decommissioning of the hydrofoils marked a day

in history that we all regret. The six Hydrofoils will always live in the memories of those of us who have had the privilege to be associated with them since their conception.

Again, thank you for attending the ceremony and the special recognition you provided my Squadron.

Sincerely,
Roger L. Buschmann

During the last days of the PHM preservation and subsequent decommissioning, members of the IHS Board drafted a letter to President Clinton in an effort to get the PHMs back into the drug interdiction fight with civilian crews. Jim Wilkins (Chairman of the IHS Congressional Liaison Committee) sent the following letter:

27 August 1993

The President of the United States
The White House
1600 Pennsylvania Avenue
Washington, DC 20500

Dear Mr. President,

Some of the country's most potent assets in keeping drugs off the streets of our country have been removed from the drug intervention inventory - and it appears that you are the only one who can do what is necessary to put them back into the fight.

There not only is a cost effective and efficient way to do so, but doing so will meet the expressed goals of your Administration to encourage the use of military technology for civilian applications and to provide important jobs in the civilian sector.

The assets are the six high speed Hydrofoils, called PHMs, which were operated by the Navy from 1983 until their decommissioning on 30 July 1993. They, alone of all the assets used for drug interdiction from the sea, have the necessary speed, maneuverability and staying power to catch, fight if necessary, board and retrieve drugs from the many ships and craft being used by the drug smugglers. According to the Navy's own official press release announcing their retirement from operation, these ships have captured more than 225,000 pounds of marijuana and nearly 12,000 pounds of cocaine, with a street value estimated at over $1.2 billion dollars. This is about 4 times the PHM acquisition cost or about 6 times the cost of operating the PHMs over the 10 year period. This remarkable success rate is attributed to the PHMs' high speed (15 to 25 knots faster than other Navy surface ships) and to its unusual agility and capability to operate at high speeds, even in very rough water. High speed allows rapid response to short notice taskings and much shorter intercept times. This equates to fewer escaped targets and a higher percentage of contraband confiscated. Agility allows the PHMs to outmaneuver evasive targets and force their early surrender, as has been amply proven.

Since drug interdiction is not a Navy mission, these ships, manned by Navy crews and supported by Navy maintenance teams, were operated as part of the DOD's Joint Task Force 4, the multi-service command responsible for counter-drug activity in the Caribbean. U.S. Coast Guard teams rode the PHMs and did the actual boarding and inspection duties whenever necessary, since that is the USCG's mission. The Navy decided that they could no longer afford to use their dwindling funds to operate and maintain ships that are primarily used by other organizations. Perhaps understandably, none of the other agencies were willing to take on the Navy's cost of maintaining this capability at the expense of other parts of their own existing operating budgets.

However, there is another way to maintain the capability, at considerably less cost. Four PHMs would be sufficient to maintain two or more ships available at any time for a drug interdiction mission. At most, two crews would be required for operation. The Navy needed only 25 men to operate each of these ships, but also needed to keep a force of maintenance crews and vans available should the squadron have to be deployed. By operating these ships with minimum sized civilian crews, under contract to the Coast Guard, Military Sealift Command, DEA or some other appropriate agency, it would be possible, for a fraction of the current expense, to:

- Retain our most effective at-sea drug inter diction capability,
- Convert military assets to civilian use, yet
- Maintain their ultimate conversion back to military use should that be required, and
- Demonstrate an innovative example of military/commercial cooperation.

In an earlier letter to Mr. Lee P. Brown, dated April 29, 1993, I suggested that the Navy be required to keep the PHMs in active service, rather than lose this uniquely cost effective technique for maintaining an essential element of our country's drug interdiction capability. In his reply to that letter, Mr. Gary F. Crosby, of the Office of National Drug Control Policy, essentially restated the Navy's reasons for decommissioning the PHMs. Among the Navy's arguments is that "there are sufficient USN and USCG resources in the area to carry out the missions previously assigned to the PHMs". What that says, in essence, is that having AEGIS cruisers and destroyers, FFGs and existing USCG assets in the Caribbean (all of which were there when the PHMs were being so effective) will be sufficient to accomplish what the PHMs have been doing. That is like saying that there are enough bombers in the inventory to carry out the missions assigned to fighter aircraft. The USS Vincennes episode demonstrated the inefficiency, inadequacy and the ultimate possible calamity of using a major warship for fighting smaller faster opponents. That was certainly not a cost-effective solution, nor will the attempted use of AEGIS cruisers, DDGs and FFGs for carrying out PHM missions be cost effective.

Mr. President, as a past President of the International Hydrofoil Society, and as a citizen concerned about the magnitude of the drug problem in our country today, I urgently request the opportunity for my colleagues and me to brief personnel of your Administration on this issue. Our Briefing will include an outline of a plan to allow at least

some of the PHMs to be operated, by civilian crews, so that our country does not lose their effectiveness in the war against drug smuggling.

For additional information or clarification, I can be reached by phone on (410) 266-7689.

Very Respectfully,

Dr. James R. Wilkins Jr. Capt., USN (Ret.)

cc: Honorable Lee P. Brown (ONDCP)
Honorable John H. Dalton, Secretary of the Navy
ADM. John W. Kime, Commandant, U.S. Coast Guard
Mr. Brian Sheridan, Deputy Assistant Secretary of Defense for Drug Enforcement Policy and Support
Senator Sam Nunn
ADM. William J. Crowe, Jr. USN (Ret.)

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DSB WITHDRAWS WESTAMARIN FOILCAT

(From Fast Ferry International-April 1993)

Danish State Railways (DSB) announced last month that the Westamarin Foilcat 2900 that had been leased since November and operated by its subsidiary Dampskibsselskab Oresund on a new route between Arhus and Copenhagen was to be withdrawn with effect from April 1.

The company reported that the primary reason for its decision has been the mechanical unreliability of the vessel, which had made it difficult to attract passengers from the air services linking the two Danish cities.

Westamarin West has responded by publishing details of the operational record of the Foilcat 2900. The route is approximately 120 nautical miles long, the service was introduced on November 30 and two return journeys a day were scheduled on Monday-Friday plus one on Sundays.

In just over four months, the vessel completed 300 single trips at a technical reliability rate of 90%. Mechanical problems accounted for the loss of 36 services, of which two involved the electro-hydraulic control systems, seven involved the electronic flight control system and 27 involved the propeller units.

According to Westamarin West, "With the exception of the downtime on the propeller units, the systems researched and developed for Foilcat were well within acceptable regularity.

"The propeller units are standard products that have had some teething problems, but not of the hydrodynamic kind (cavitation). The propeller problems have now been solved by the supplier and most of them were directly related to the very high speed range of 44-47 knots."

The company also point out that the weather during the period was extremely harsh, resulting in 25 trips being cancelled because conditions exceeded the operating limitations imposed on the service of winds from an unfavourable direction exceeding 20 metres per second with waveheights of over 3.5m.

Westamarin West also points out, however, that "Foilcat 2900 has offered her far too few passengers the best comfort even under extremely tough conditions and seasickness is an unknown word on board."

The company's parent company Swede Ship, announced at the end of March that it was negotiating with a number of potential operators with the aim of returning the vessel to service within a few weeks.

HYDROFOIL VIDEOS

IHS has been fortunate to obtain the cooperation of a number of commercial hydrofoil fast ferry manufacturers around the world. They have sent us videos varying from Kawasaki's well-established JETFOIL operations, to tank tests of Hitachi's foil assisted catamaran, WINGSTAR30, Mitsui's radio controlled model of HYPERCAT operating in an outdoor maneuvering and seakeeping tank, Westamarin's FOILCAT 2900 rough water trials, and the elaborate launching ceremonies interspersed with operations of Mitsubishi's new SUPER SHUTTLE 400 foilcat. Together with some RHS-200 video footage taken some years ago while undergoing USCG sponsored trials, they make interesting viewing and a real shot in the arm for hydrofoilers world-wide.

Plans are to put all of these videotapes together for showing at our meetings. Also IHS is cooperating with the SNAME SD-5 Panel on High Performance Marine Vehicles to assemble a video on HPMVs in general.

By J. Meyer

CONFERENCE PROCEEDINGS

Proceedings of the Ninth International High-Speed Surface Craft Conference are now available in a bound volume plus seven loose papers. The prices are 90 pounds UK for the UK and Europe and 105 pounds UK for overseas. The proceedings may be obtained from:

High Speed Surface Craft Conference
68 Kings Road, Kingston upon Thames
Surrey KT2 5JB, United Kingdom

GROUNDING INCIDENT

(From Fast Ferry International-April 1993)

A grounding incident occurred on March 21 involving Aliscafi SNAV's Rodriquez RHS 160F hydrofoil Alijumbo Messina. While operating a service between the two Eolian islands of Lipari and Vulcano, it ran aground on rocks off Vulcano.

Four of the 50 passengers on board were injured and taken to a hospital on Lipari. Damage to the foils and hull of Alijumbo Messina was reported to be extensive and the vessel was still stranded on the rocks three days after the accident.

TWO JETFOIL ACCIDENTS REPORTED IN ASIA

(From Fast Ferry International-July/August 1993)

Local newspapers in Asia have reported two accidents involving Boeing Jetfoil hydrofoils in the past two months in Japan and Hong Kong. On June 15 *Ginga*, a Jetfoil 929-115 operated by Sado Kisen Kaisha, ran aground at 0900 towards the end of a crossing from Niigata to Ryotsu. Visibility at the time of the incident was said to be approximately 300 metres. There were 241 passengers on board, 11 of whom were injured.

30 YEARS AGO

In the May 1993 issue of Fast Ferry International, an interesting section was titled "30 Years Ago". The part on Hydrofoils follows:

Hydrofoils were making the news all over the world. A PT.20 had just left the Rodriquez yard in Messina on delivery to Mr. Robert O. Philip, President of the Tourist and Travel Corporation of Manila where; "The craft will be used for a commuter service in Manila Bay."*

In the Mediterranean: "Olympia Enterprises Co. Ltd of Malta have recently formed a limited liability company to acquire and operate a PT.50 hydrofoil. This will be in service between Malta and Syracuse with a daily run return service. The trip to Malta will take 2 hours 30 minutes and the charge will be £4 return."

The Japanese were also busy on the hydrofoil front. Hitachi had just delivered the first Supramar PT.50 from its Kanagawa yard. "The craft, which is equipped with radar, is to he placed in service towards the end of April on the Seto inland sea route between the Osaka-Kobe district, Sakate and Takamatsu. Seats are provided for 110 passengers."

Elsewhere in the country, the six principal hydrofoil manufacturers - Hitachi, Ishikawajima-Harima, Mitsubishi, Shin Mitsubishi, Shin Meiwa and Uraga - had jointly published a booklet detailing the latest news of hydrofoils in Japan. This contained, "Fifteen different hydrofoil designs with seating capacities from 4 to 168 which are either under development or in production in Japan at the present time."

Back in Europe and the English Channel, or La Manche should you prefer, was once again providing a challenge for a proponent of fast ferries, "A paper examining present-day hydrofoils with particular regard to their possibilities for connecting the United Kingdom with the Continent was read to the Academie de Marine in Antwerp on 4th April by M.C. Pringiers, Cie Maritime Belge. **

"He put forward a plan by which three boats, each seating 120 passengers, would handle the traffic. In August, the peak month, all three would be in service with departures every two hours."

The report concluded: "The plan called for a craft of 55 tons, with incidence control, and powered by gas turbines. Crew would he four officers with two men and stewardesses. Three crews would he provided. Initial outlay required would be £1.4 million."

*Editors Footnote: *This was the first of several PT.20s that went to Manila. They were used to carry sightseers to Corregidor from downtown Manila. This trip was very popular with U.S. visitors to the Philippines.*

***At this time the Grumman Corporation was working with Cie Maritime Belge to find a partner in Europe to build the commercial hydrofoil, "Dolphin". Oh, we grow old so fast!*

HIGH POINT - 30 YEARS AGO

(From Fast Ferry International-June 1993)

In perusing the headlines of the early 1960s it is almost impossible to avoid the topic of spies and May 1963 was no exception. In Moscow a court sentenced the British businessman Greville Wynne to three years in prison and five in a labour camp after he was found guilty of carrying information for the British and United States intelligence services. His Russian contact, Colonel Oleg Penkovsky, was less fortunate and was sentenced to death.

Meanwhile, fictional spies were also making the headlines with the second James Bond film, *From Russia With Love,* getting huge audiences despite a rather cool public reception for the first, *Dr. No,* the previous year. The high tech theme of the Bond films was carried on into real life as the US Navy commissioned *PCH-1 High Point,* its first hydrofoil patrol craft. *Hovering Craft & Hydrofoil* reported, "With the recent commissioning of the US Navy's PCH-1, interest in the naval application of the seagoing hydrofoil is everywhere widening.

"The theoretical advantages of the hydrofoil over conventional patrol craft for such specialised work as anti-submarine patrol and minesweeping are well known. From all reports, the PCH-1 has already helped to establish that the anticipated advantages can be realised and several senior officers of the United States Navy have openly intimated that they are eagerly awaiting the day when whole flotillas of hydrofoils are placed at their disposal."

In winding up this opening piece the magazine boldly, if not entirely accurately, declared; "The US Navy has led the way in the past with the development of the iron-clad warship, the submarine and naval air power. Viewed against this background and bearing in mind the quality and quantity of technological effort the U.S. Navy has put into its development, the future of the military hydrofoil seems to be assured."

That the U.S. Navy was serious about hydrofoils can be in no doubt as it was also reported in the May issue that; "The United States Navy's hydrofoil *Fresh 1,* designed and built by the Boeing Company under a contract with the Navy's Bureau of Ships, flew on its foils for the first time in public on May 15th. "The 53 ft jet-propelled research craft raced down its Puget Sound test course at more than 60 miles an hour. It is expected to reach approximately 90 miles an hour on its present foil system and 115 miles an hour after other foil systems have been installed. "

Elsewhere in the United States *Commutaboat 1,* a hydrofoil manufactured by International Aquavion (GB), had just completed a 300 mile journey from Philadelphia to Huntingdon in 14.5 hours at an average speed of 20.7 knots. According to the report, the vessel encountered 7 to 8 ft waves and 20-25 knot winds, "The 22 foot nine-passenger craft is identical to the craft recently purchased as a ship's launch for the M.V. Benarty, and is powered by twin 100 hp Mercury outboards."

However, America was not the only place where new hydrofoils were being used. "Viking Norway Israel Shipping Company has inaugurated a hydrofoil service between Haifa, Israel and Famagusta with a 58 ton PT 50, built in Mandal, Norway by Westermoen Hydrofoil A/S, that will carry 100 passengers at a speed of 34 knots. The distance between Haifa and Cyprus will be covered in four hours and one of the effects of the new service will be to reduce the cost of travel between Britain and Israel. It will connect with night flights between London and Nicosia."

HYDROFOILS 30 YEARS AGO

(From Fast Ferry International-July/August 1993)

The People and Projects section of the combined June-July 1963 issue of *Hovering Craft & Hydrofoil* reported that; "The Viking Norway Israel Shipping Company's 100 passenger hydrofoil the Alei-Gal began its regular Haifa-Famagusta service in mid-June." It goes on to report that the 160 mile voyage is completed in four hours and passengers are offered a cheaper return ticket.

"The craft has a crew of seven and passengers are able to watch film shows or take light meals in two snack bars or shop in a duty-free shop. Each passenger is permitted 30 kilos of personal luggage. The craft leaves Haifa in the morning and comes back during the afternoon of the same day after an hour's stop in Cyprus."

Meanwhile, Japanese yards were once again in the news with a visit of Baron Hans von Schertel of Supramar to Hitachi Zosen for trials of the PT.50. "At a press interview he said that though no one yet knew how big a hydrofoil could possibly be constructed, he believed that it was possible to build a hydrofoil up to 1,000 tons displacement."

Across in the United States hydrofoils were certainly in favour in mid 1963. In a report which came from a paper, Gas Turbines for Unconventional Craft, presented by G.L. Graves and R.S. Carleton from the Department of the Navy at a National Aeronautical meeting in Washington DC it was reported that; "Harpy - the Hydrofoil Advanced Research Project - envisions a high-speed 500 ton craft powered by aircraft gas turbines such as the Pratt and Whitney FT4 or the General Electric LM 1500. It will use the results of the U.S. Navy's current hydrofoil programmes."

The use of gas turbines was highlighted elsewhere in the magazine; "Construction will start shortly on a 75 passenger hydrofoil for Northern Hydrofoil Lines Inc. The initial run will be from Seattle to Victoria, with other services planned for boats of the same design. "The design is by Gibbs & Cox, construction by Maryland Shipbuilding and Dry Dock Co., and General Electric will provide main engines, transmission and control systems. The two main engines are LM-100s, located in sponsons." Details of the craft and the prospects for the building and operation of hydrofoils in the United States were give in another paper - Commercial Hydrofoils - presented at the National Aeronautical meeting.

And finally there was a report of hydrofoils which had a human interest slant. "Soon after setting out from Port Washington, on the north shore of Long Island on July 15th, the hydrofoil *Albatross* operated by American Hydrofoil Lines stopped to rescue Mr. Samuel Goldwyn, the film producer, and his wife and guests from a cabin cruiser which had caught fire. Then, as the *Albatross* resumed its journey up the East River, Mr. Ira Dowd, President of American Hydrofoils Inc. fell overboard. The maiden journey took 1 hr 35 minutes, but it is expected the hydrofoil will make the journey from Port Washington to Wall Street in less than an hour. Initial commuters will be charged $100 a month for this daily service."

NEW YORK SELECTS PREFERRED FAST FERRY OPERATORS

(From Fast Ferry International-June 1993)

The governor of New York, Mario M. Cuomo, has announced that three groups have been selected to begin negotiations, with a High Speed Ferry Task Force formed by the state, to develop new and enhanced high speed ferry service in and around New York City."

The three companies, recommended to the governor by the Task force, are:

- New York Fast Ferries/Scandinavian Marine Group, an alliance of United States and Norwegian companies involved in operations, vessel design and shipbuilding;
- Port Imperial Ferry Corporation. the largest privately owned ferry operator in New York Harbor, who currently operates medium speed monohulls between four locations in New Jersey and Manhattan;
- TNT Hydrolines, the only company currently running fast ferries in the New York area, this operates two Incat 24m catamarans from locations in Brooklyn and New Jersey to Manhattan.

Fast ferry routes being considered include: Staten Island-West Midtown Manhattan, Hunters Point-East 34th Street, Brooklyn Army Terminal-East 34th Street or Lower Manhattan, Rye Playland-East 34th Street or Lower Manhattan, Yonkers-Lower Manhattan, and Tappan Zee Bridge-Yonkers-West Midtown Manhattan.

Referring to the project, Mario Cuomo said, "Our waterways are an important transportation corridor with enormous potential. High speed ferry service offers an environmentally sound and cost effective alternative transportation route to reduce traffic on our crowded highways. We are eager to make this service a reality."

The High Speed Task Force "was established to encourage reduced automobile use, increased mobility, improved air quality, and to promote economic development." It comprises personnel drawn from the State Urban Development Corporation. the State Department of Transportation, the State Thruway Authority, the Port Authority of New York and New Jersey, the New York City Economic Development Corporation, the Metropolitan Transportation Authority, the New York City Transit Authority and the New York City Department of Transportation.

KOLKHIDA HYDROFOIL

(From Fast Ferry International-July/August 1993)

One of Alilauro's Kolkhida hydrofoils, *Alieolo*, has been leased this summer by Sin Fly, an aviation company based in Sardinia, and is being operated in the northeast of the island on another local service beween La Maddalena, on the island of Isole Maddalena, and Olbia. The journey time is approximately one hour and four return crossings a day have been scheduled. The hydrofoil is also operating a return service each afternoon between La Maddalena and S. Teresa di Gallura on Corsica.

THE NEWSLETTER

INTERNATIONAL HYDROFOIL SOCIETY

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

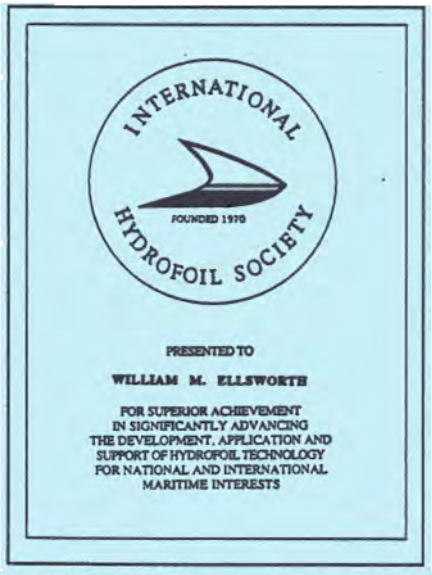
Editor: Robert J. Johnston | WINTER 1993 | Co-Editor: John R. Meyer

IN THIS ISSUE.....

1994 DUES

ALL MEMBERS ARE NOTIFIED THAT MEMBERSHIP DUES FOR 1994 ARE TO BE PAID
Please send your $20.00 check made out to IHS to:
CAPT. John W. King, USN (Ret.)
4313 Granada Street
Alexandria, VA 22309 USA

AWARD PLAQUES PRESENTED AT THE IHS DINNER MEETING ON NOVEMBER 12, 1993



THE PRESIDENT'S COLUMN

This Winter 1993 Newsletter provides an opportunity to reflect on the happenings within the Society and the world of hydrofoils, both military and commercial. Your Board of Directors has, ever since the Society was founded in 1970, had its most active year. Board meetings were held every month, three dinner meetings were enjoyed in February, April and November, and a once-in-a-life-time all-out effort was made by the Congressional Liaison Committee to dissuade the U.S. Navy from decommissioning the PHM hydrofoils. The Board drew upon its own resources and those of their many colleagues, both within and outside the IHS, to place the case for the PHMs before people in high places. We, as a Society, can be proud of these accomplishments in spite of the outcome. The Fall 1993 Newsletter highlighted much of this effort, but I want to share with all IHS members a letter (see next column) that I sent to Mr. Fred L. Thomas, of Thomas Enterprises, Inc. in which the Society recognized the very special efforts of our members Cam Mixon and Patsy Jackson for their contributions to this effort.

The PHMs have been decommissioned, but there has been an unofficial query from the Taiwan government indicating an interest in the Foreign Military Sales possibility of these ships. Also as can be seen in an article on page 10 of this Newsletter, the Japanese Navy has under acquisition two military hydrofoils based on the Sparviero/Tucumcari designs. Otherwise there appears to be no military hydrofoil activity anywhere in the world. But to compensate for this, "technology transfer" to the commercial sector outside the U.S. has run rampant! The international hydrofoil community as a whole is alive and well both in the form of "conventional" hydrofoils, albeit many of the newer craft are in the form of catamarans, and "hybrid" hydrofoils. The accomplishments of 1993 have been significant, but I'm certain these will be outdone by the promises of the next several years as has been highlighted in the last several Newsletters.

Although the IHS is an international organization, many of us in the U.S. realize that other countries are passing us by in the commercial hydrofoil arena. This is of deep concern and we hope that hydrofoil and other High Performance Marine Vehicle applications will find their way into the U.S. fast ferry market. In this connection, there are several IHS members who also serve on the Society of Naval Architects and Marine Engineers (SNAME) SD-5 Panel on Advanced Marine Vehicles, where one of the many items on the agenda is the encouragement of commercial utilization of HPMVs in the U.S. A "White Paper" describing the attributes of the various High Performance Marine Vehicles is being prepared to brief potential operators. The IHS and the U.S. Hovercraft Society are cooperating and contributing to this effort. We will keep IHS members posted on these developments.

John R. Meyer
President

IHS MEMBERS RECOGNIZED FOR PHM EFFORT

10 August 1993

Mr. Fred L. Thomas
Thomas Enterprises, Inc.
2550 Huntington Avenue, Suite 205
Alexandria, VA 22303-1400

Dear Mr. Thomas;

In January of this year, the U.S. Navy announced that it was preparing to decommission the PHM hydrofoils. As long time proponents of hydrofoils in general, and PHM in particular, members of the IHS Board of Directors felt that this was not in the best, long-term interests of either the Navy or the hydrofoil community as a whole.

Consequently, a Congressional Liaison Committee of the Society was formed with Dr. James R. Wilkins, Jr. as chairman. It wasn't long afterward that Cam Mixon came to the forefront of the many activities that followed. His efforts, along with the support of Patsy Jackson, have been invaluable in making the numerous contacts to attempt a reversal of what later became a firm decision on the part of the Navy to decommission the PHMs on 30 July 1993.

The purpose of this letter is bring to your attention the laudable efforts of both Cam and Patsy. On behalf of the IHS Board of Directors and its many members, I want to pass onto you our thanks and appreciation for the support that your company has provided all during this unfortunate turn of events.

Sincerely,
John R. Meyer
President

BELGIAN JETFOILS ARE TO MOVE TO RAMSGATE

(From FAST FERRY INTERNATIONAL, October 1993)

Regie voor Maritiem Transport, the state-owned Belgian cross-Channel company that currently operates as Oostende-Dover Line, is to transfer all its services from Dover to Ramsgate effective January 1, 1994. The move follows a decision by RMT to conclude an operational and marketing arrangement with Ramsgate based Sally Ferries rather than renew its existing one with P&O European Ferries.

According to Sally UK Holdings, "the agreement will mean that the joint venture will be one of the largest services on the short sea routes, carrying in excess of 4.5 million passengers a year. The company also reports that "significant investment would be poured into improving facilities at Port Ramsgate both for the increased number of passengers and vessels".

Sally UK presently operates two passenger/vehicle ferries, which make five return crossings a day on the Ramsgate-Dunkerque route, and three freight ships. RMT's contribution will be three passenger/vehicle ferries and two Boeing JETFOIL 929-115 hydrofoils. The move to Ramsgate will mean that the London-Belgium/Germany train/JETFOIL/train services will lose one of their biggest operational advantages, the direct connection between the vessels and the trains at Dover Marine station. However, British Rail had already announced that this would disappear next September as it intended to close the station once the Channel Tunnel was opened.

THE FOLLOWING CITATIONS ACCOMPANIED THE AWARD PLAQUES PRESENTED AT THE NOVEMBER IHS DINNER MEETING

Countess Juanita Kalerghi Rothman

Countess Juanita Kalerghi Rothman is a true pioneer and admired journalist of the hydrofoil industry. We tend to recognize with honors the inventors and developers of the hydrofoil. But there is another aspect of our industry which is equally important. The public must be educated to understand what is being developed in high speed surface craft in order to gain acceptance of innovative craft and for the industry to grow. Without a doubt Juanita Rothman was the first person to recognize that need and to do something about it. In October 1961 she published the first issue of "Hovering Craft and Hydrofoil". At that time very few knew the difference between a hovering craft and a hydrofoil or could even recognize one or the other. Today even grade school children can stand up and tell you the difference between the two craft. One can attribute that educational process to have begun when Countess Juanita Kalerghi, as she was known then, started the publication of "Hovering Craft and Hydrofoil".

It is now thirty-two years later and the magazine initiated in 1961 has grown and flourished on a continuing basis. That fact alone makes the initial concept of the publication noteworthy and significant. As the industry expanded the scope of the magazine changed along with its name. While Juanita Kalerghi was still the publisher and editor, the magazine's name changed to "High Speed Surface Craft". Today it is known as "Fast Ferry International".

In addition to her editorial and publishing accomplishments, Countess Kalerghi recognized the value of conferences and exhibitions to disseminate information regarding craft and builders of hydrofoils and other high speed marine vehicles. The Countess initiated, organized, and managed the first such conference and exhibition ever held in this field. The first High Speed Surface Craft Conference and Exhibition was held in England. Under her direction, others were held including one in Amsterdam, Holland. These conferences again demonstrate her foresight in providing information on the subject. Although Juanita Rothman is no longer directly involved, these conferences and exhibitions initiated by her are now held on a periodic basis. The ninth of these was held in Singapore this past March.

The International Hydrofoil Society (IHS) recognizes Juanita Rothman as one of the main organizers of our society. Cooperating with the late Commander Mark Thornton, it was Countess Kalerghi who provided the energy, determination and resources to him to initiate IHS and to sustain it through difficult times. For this, IHS expresses its eternal gratitude and appreciation. Juanita Kalerghi served on the managing Council of IHS in London and on the Society's first Board of Directors in the United States.

One of the major accomplishments of Juanita Rothman was her recognition by the first President of IHS, Baron von Schertel. On the occasion of the First International Conference of IHS held in Canada in 1982, the Baron prepared a paper on the subject of the development of the European hydrofoils. The Baron asked Countess Kalerghi to present the paper to the conference. The Baron honored her unique talents and abilities by requesting her to read his paper to the delegates.

For Countess Juanita Kalerghi Rothman's major contributions to the growth of the hydrofoil industry and for her devotion to the International Hydrofoil Society, she is considered most deserving of this special recognition by the International Hydrofoil Society.

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William M. Ellsworth

Mr. William M. Ellsworth has been associated with the development of hydrofoils, particularly military hydrofoils, since the early 1950's. His perseverance as well as his technical and managerial skills contributed greatly to the success of the U.S. Navy's hydrofoil program. During the 1960's he was responsible for undertaking the task of turning two marginal operating hydrofoils (High Point PCH-1 and Plainview AGEH-1) into reliable test craft. The data collected and experience gained from these two craft formed the design basis of the U.S. Navy's PHMs. These PHMs became the most successful military hydrofoils that have been placed in service.

Mr. Ellsworth's marine career began with the David Taylor Model Basin's (DTMB) Hydromechanics Laboratory. It was from this assignment in the early 1950's that he represented DTMB as a consultant to the Office of Naval Research which managed the U.S. Navy hydrofoil program. From 1958 to 1964 Mr. Ellsworth worked with Cleveland Pneumatic Industries. He was general manager of its Systems Engineering Division and, in 1961 became a corporate Vice President. In 1964, Mr. Ellsworth returned to DTMB as the technical manager of the Hydrofoil Development Program Office. Recognizing the need for a more formal organization to test, evaluate and develop military hydrofoils, Mr. Ellsworth conceived the Hydrofoil Special Trials Unit (HYSTU) which was established at the Puget Sound Naval Shipyard in Bremerton, Washington in 1966. With the establishment of HYSTU under William Ellsworth's management, the High Point and Plainview were assigned to HYSTU. This establishment, along with the two hydrofoils, formed the basis for the technical and operational development of the U.S. Navy's hydrofoils.

Recognizing Mr. Ellsworth's capabilities in developing advanced ship types, in 1971 he was made the head of the newly established Systems Development Department at the then named David Taylor Naval Ship Research and Development Center (DTNSRDC). At the same time he was appointed Associate Technical Director of DTNSRDC for systems development.

After a very successful career at DTNSRDC, Mr. Ellsworth's accomplishments were recognized by being awarded the Distinguished Civilian Service Award, Presidential Meritorious Rank, and the David Taylor Award for

Scientific Achievement. Also, he received an Honorary Life Membership in the American Society of Naval Engineers and was awarded the ASNE Gold Medal for 1973.

Although he retired from civil service in 1983, this by no means ended Mr. Ellsworth's activities with hydrofoils and other advanced marine vehicles. His responsibility of editing the 1985 Naval Engineers Journal, "Modern Ships and Craft", authorship of "Twenty Foilborne Years" and the success of the 1992 High Performance Marine Vehicle Conference are examples of his recent accomplishments.

Mr. Ellsworth was a charter member of the North American Section of the International Hydrofoil Society. For many years he was an active member of the Board of Directors of IHS after the leadership of the international organization was moved to the United States. Mr. William M. Ellsworth's many accomplishments and his devotion to the development of hydrofoils are most deserving of special recognition by the Society.

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FALL DINNER & MEETING PROGRAM

"HPMVs, SNAME Activities and World-Wide Developments" by Ken Spaulding

Ken opened by saying that he would show some slides of U.S. prototypes from the 1960s and 70s, followed by a summary of AMV activities in the country today. A photographic sampling of the remarkable developments in offshore fast passenger and car ferries was then presented and some thoughts provided on the future of AMVs in the US. Finally a summary of the current activities of the SNAME Advanced Surface Ships and Craft Panel (SD-5) was presented.

During the 1960s and 70s, the U.S. sustained full scale development programs in four AMV areas; Hydrofoils, SES, ACVs and SWATH. The PHMs, LCACs, SES-200 and the T-AGOS 19 Class are results of this investment. The LCACs are still in production and a number of Navy and commercial SWATHs are under construction. PHMs, however, are now retired and there is virtually no Hydrofoil activity in the U.S. There are very few SES operating here and none are currently contracted.

The technology which we developed has moved offshore. Even if the primary market for fast ferries is overseas there is a potential for export of U.S. built AMVs. We have a very broad industrial base of large and small shipyards, who are currently suffering from the Defense phasedown. Our labor rates are now lower than those in Japan and Northern Europe.

In December 1992, 180 companies around the world were operating 688 fast ferries, including 256 hydrofoils. One has only to peruse a recent issue of Fast Ferry International to comprehend the magnitude and rapid expansion of this market. The current emphasis is on much larger fast passenger/car ferries. Examples are the 74m Wavepiercers, the Rodriquez AQUASTRADA and the two, 1500 ton payload, HSS contracted to Finn Yards by Stena Line.

There is, as emphasized by the 1984 UMTA study, an inherent resistance to fast ferries in the U.S. infrastructure. With respect to AMV exports, however, we are far from a "level playing field" with our foreign competition. Maritime nations in both Western Europe and Asia are actively supporting their fast ferry markets with R&D programs, active government marketing, and subsidies in various forms.

The future of AMVs in the U.S. is not particularly promising. SWATHs are doing well and production of LCACs will continue into 1997. Several U.S. design firms (Band, Lavis Associates, Maritime Dynamics Inc., SWATH International etc.) are securing significant overseas business, but not for AMVs to built in the U.S. There are a number of Federal and State planning and development efforts (Intermodal Surface Transportation Efficiency Act, Dual-Use Technology Transfer, Urban Harbor Institute etc.) which are addressing improvement of the surface transport infrastructure. Ferries, and particularly fast ferries, play a notably small role in the current scenarios. It is clear that introduction of AMVs into the U.S. transportation planning process will be uphill all the way. Of importance is that the community work together, preserve their credibility, and take advantage of whatever "openings" may present themselves.

The Society of Naval Architects and Marine Engineers SD-5 Panel now has 43 members, representing a broad spectrum of the Advanced Marine Vehicle community, including 5 members of the IHS Board. There are currently 13 active subgroup activities including:

- o SES & Hydrofoil T&R Bulletins
- o AMV Type Comparison & Comparison Methodology
- o Annotated AMV Bibliography
- o Interface with Regulatory Codes & Bureaus
- o UMTA Study Update
- o AMV Design Tools Bulletin
- o Student AMV Competition
- o AMV Video, Slide & Text Information Compilation
- o Fast Ferry Economic Analysis

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WELCOME NEW MEMBERS

LCDR John W. Peterson, USN - John is a former Commanding Officer of USS Hercules (PHM-2). It was during his tour aboard Hercules that the ship won top honors for the numbers and value of narcotics seized. Previously he had served aboard BRISTOL COUNTY (LST 1198), USS ENGLAND (CG 22), USS GARY (FFG 51) and USS CALLAGHAN (DDG 994). Currently LCDR Peterson is assigned to the Surface LCDR Branch at BUPERS in Washington, D.C..

Stanley Siegel - Stan resides in San Diego, CA. He was involved in the PHM program as the NAVSEA Assistant Program Manager from 1975 through 1979. His current interest includes promoting high speed ferries in California.

Thomas P. Gallagher - Tom resides in Bowie, MD and is retired from NAVSEA, but is still interested in hydrofoils. While at NAVSEA, he worked on the designs of PHM-1 and later the PHM-3 Series hydrofoils.

GEORGE MEINAS

By Bob Johnston

Now that the cold war is over and the Russians are being considered as a partner to NATO, a story about an interesting gentleman can be told. This story involves a bit of international intrigue affecting both military and commercial interests. The principal of this intrigue is a man named George Meinas.

George was trained by the German Army in the field of espionage prior to World War II. However as the events of the war developed, there was a greater need for combat personnel than for secret agents. As a result Meinas was assigned to the Russian front. As the Russians began to advance on the German Army, George was badly wounded and was sent back to Germany for recovery. As a result of his wounds, he was declared unfit for further military duty. In seeking suitable war-time employment, he went to work for the Sachsenberg Shipyard in Dessau-Rosslau, Germany. This was the yard that was engaged in building the von Schertel hydrofoil designs for the German Navy.

George's wounds, not being completely healed, resulted in partial but temporary incapacitation. As such he was assigned to the engineering office as a technical draftsman. George Meinas was there when the VS-6, the hydrofoil minelayer, and the VS-8, the hydrofoil tank transporter were building and testing.

At the conclusion of World War II, the Sachsenberg Shipyard was located in that part of Germany that was the Russian Zone. Several of the hydrofoil personnel were retained by the Russians to work on their hydrofoil program. George Meinas was captured after escaping to East Berlin and sent to a camp near Leningrad. There hydrofoil hydrodynamic and research programs were conducted. During this time period the Russians developed a hydrofoil design manual. While George was not a key participant in these efforts, he was well aware of what was going on including the designing, building, and testing of hydrofoil models.

After careful planning and organizing, George Meinas and his family were able to escape the Russians and get to Western Germany bringing with him the Russian design manual. With no home or furnishings, he was granted refugee status and transported to Chile. In Chile he made the acquaintance of Helmut Kock. (See the IHS Newsletter Spring 1993). As quoted in that Newsletter, George Meinas and Helmut Kock teamed using Meinas' personal knowledge and the material he had in his possession. With this information and Helmut's boatbuilding capability, several hydrofoil models were built and tested.

In the meantime as is true of most hydrofoilers, Meinas needed money to support their development effort. One of his assets was the Russian Hydrofoil Design Manual. This manual he offered for sale to the U.S. Navy. The time frame was late 1953 when the Navy was engaged in evaluating the feasibility of the hydrofoil concept. When asked, the Navy's position was that they were interested in the manual. But the question became what was such material worth. Before that question could be answered some knowledge of the content would have to be known.

George Meinas related his experiences in trying to negotiate a sale to the U.S. George refused to loan the manual for evaluation. At one point he and his secretary were invited to a fancy dinner at a Chilean hotel. He was requested to bring the manual with him to be displayed. The invitation was to have dinner and then go to a hotel room where the manual would be exhibited and discussions would take place regarding the sale. Meinas became suspicious of the proceedings and rather than bringing the manual, he stuffed his briefcase with newspapers. On top of the newspapers he placed a hand drawn cartoon of a little boy sticking out his tongue.

Upon arrival at the hotel the briefcase was checked and they proceeded to dinner. Everybody sat down together in a very friendly mood and ordered their meal. George and his secretary were encouraged to choose the most expensive food and wine. During the first course the host excused himself to go to the restroom. When he returned, he was in a foul mood. He urged everyone to speed up the dining process, did not order anymore wine, and cancelled the plans for the afternoon meeting. Obviously he had found the cartoon with the boy's tongue looking at him.

Some time passed before friendly relations were re-established. After all agreed to conduct an evaluation on a business-like basis, Meinas was again invited to attend a meeting and to bring the manual with him. This time he did bring the manual with the intention of not letting it out of his eyesight. The manual was presented for perusal and to establish authenticity. Things were moving in a very friendly manner with drinks offered to all present. George accepted a drink and after the first sip he knew he was in trouble. The drink was loaded with knock-out drugs. When George revived he was alone in the room, had a terrible headache and the manual was gone.

That is how the Russian Hydrofoil Design Manual got to the United States. It was turned over to the U. S. Navy for evaluation and to determine the value for payment to George Meinas. The manual was determined to be authentic with very little back-up information or data. The foil system described was essentially the system that later appeared on the commercial hydrofoil Raketa. Much of the design technique relied on the surface effect for augmenting height stabilization. Essentially no test or trial information was contained in the manual. After a sincere effort was made by Navy personnel and several other experts in the field to establish a monetary value for payment, it was determined that the value was equivalent to a good textbook. This information was sent to Meinas and of course he was bitterly disappointed. Some years later when the author of the evaluation letter met George Meinas and was recognized as the author, that disappointment was strongly expressed by words and gestures.

Back in Chile, Helmut Kock and George continued to experiment with hydrofoils and developed a design for a hydrofoil supported sports boat. In 1955 the two of them decided to move to the United States to build and market a 16 foot, outboard powered, hydrofoil; see Figure 1 of the

Helmut Kock story in the Spring 1993 Newsletter. They came to Miami, Florida and received monetary support from the local Lutheran Church. Miami Shipbuilding agreed to provide them, at no cost, space to build their prototype. The shipyard's personnel became quite impressed with the skill and effort the two of them displayed in building the hull and the shaping of the foils. Helmut Kock started with blocks of aluminum and using primarily hand tools changed these blocks into foil sections. While the yard personnel were instructed not to interfere or become involved, it was hard not to help these two industrious builders with their project. Miami Shipbuilding did undertake the extension of the outboard engine and arranged space for them at the Miami Boat Show to display their hydrofoil.

As the time for the opening of the Boat Show came closer, several of the yard's mechanics and engineers volunteered their own time to help meet the deadline for entry into the Boat Show. They had become caught up in the Meinas/Kock perseverance and enthusiasm.

All entries had to be on the Boat Show's floor by noon on the day preceding the opening of the show. As the opening date came closer there was quite a scramble to get the boat finished, painted and ready to display.

Finally about midnight on the night before the boat had to be on the floor of the show, the 16 foot sports hydrofoil was completed. Everyone let out sighs of exhaustion and relief as the finishing touches were made to he paint job. As everyone stood admiring the finished result, George Meinas announced: "now we shall test the boat". All present were shocked.

No amount of persuasion or arguments could change his mind. It was strongly suggested that the testing be done after the show was over. But George persisted, stating that he would not show a boat that had not been tested. Finally the Shipyard reluctantly agreed to provide support for the test run. At about 4:00 AM, eight hours before the deadline of entry into the show, at the crack of dawn, the Shipyard's tug left the yard for Biscayne Bay with the sparkling, new hydrofoil in tow.

Helmut and George had agreed that Meinas would be the test pilot. With a final check the hydrofoil was cut loose from the tug and the outboard started. After a short hullborne run, the boat took-off and flew beautifully. The cheers and congratulations rang out over the Bay. A number of take-offs and turns were made and the decision was made to return to the Shipyard and on to the show. George chose to fly the boat back and took-off heading towards the Miami River and the Shipyard. As the hydrofoil was passing one of the small waste material islands at the entrance of the Miami River, and was in the foilborne mode, the boat took a hard turn and slammed into the island. With heavy hearts the crew pulled the boat off the island and towed it back to the Shipyard.

A survey showed that a steering cable fitting had failed. There was no apparent damage to the foils and only the paint on the hull had been damaged. Back in the paint shop went the boat and clean-up and quick paint job were undertaken. The 16-footer arrived at the boat show looking quite new and unblemished at just ten minutes to noon, just making the deadline.

Much interest was shown in the Meinas/Kock hydrofoil. Appointments were made for after the Boat Show for anyone desiring a ride or were interested in investing in the product line or in buying one of the boats. Several hundred appointment tickets were distributed during the show. Everyone who was involved thought the showing had been most successful.

When the show was over, George made the statement that for the show he did not want to display his latest concept of foil design. And now Helmut and George would modify the foils to that concept. The appointments for rides and further marketing would be put on hold. So back to work they went making changes to the foils. When the changes were completed it was back to testing. Now the boat didn't fly as well as before the show. So a series of further modification were undertaken and tested with no material improvement in performance. The boat never performed as well again as it did on that eventful morning before the boat show opened. Not being able to meet their commitments for the appointed rides and with time moving on, their backers and supporters began to loose patience. George's finances ran out and another hydrofoil project came to a sad ending.

George Meinas disappeared after this and was not heard from again. As the years went by it became known that the real design talent and hydrofoil know-how rested in Helmut Kock. It was with pleasure that IHS could publish his autobiography relating his many hydrofoil successes in the Spring 1993 Newsletter.

Footnote: This story has been put together from information gathered over many years from people who knew George Meinas in Germany, Russia, Chile and the United States. The author was a participant in several of the events described.

STENA FAST FERRY DEVELOPMENTS

(From MARINE LOG and MARITIME REPORTER, September 1993)

The Fast Ferry has been lifted to a new plane of power and capacity with Stena AB's order for a pair of HSS (High-speed Sea Service) vessels from Finnyards for its Irish Sea route. The 40 knots-plus catamaran design evolved by the Swedish operator will exploit a deadweight capacity of 1,500 metric tons, reportedly five times greater than that of any high speed ferry currently in service.

Stena managing director Dan Sten Olsson says that "the commercial significance of this project can be compared with the aviation industry's transition from propeller-driven aircraft to the era of the jet engine."

In fact, the Stena order hasn't come out of the blue. Around the world, designers and builders of high speed craft have, for some time now, been targeting markets long the preserve of traditional hulls. One well publicized example of this is Japan's Techno-Superliner project that started in 1989. That project has been working on two alternative designs. One is a hydrofoil type and the other an air cushion based concept, with the aim of coming up with

a vessel operating at 50 knots, with a cruising range of more than 500 miles and a payload of 1,000 metric tonnes. It is believed that the same consortium of European yards that has been cooperating on the E3 tanker is now working on a high speed vessel design that will "leapfrog" the Techno-Superliner. A number of individual European yards have also been eyeing this new market. They include France's ACH (Ateliers et Chantiers du Havre), Italy's Rodriquez and Spain's Bazan.

And what is the USA doing about this? Read on..... ARPA, an agency in the Department of Defense, is executing the 1992 Congressional mandate to channel billions of dollars into the defense industry for commercial transition assistance.

The ARPA objective for the Shipbuilding Industrial Infrastructure is to assist the U.S. shipbuilding industry with the development of technologies, processes and products to become internationally competitive; that is, a national shipbuilding infrastructure capable of providing the most competitive commercial ships for export as well as affordable military ships.

In order to accomplish this objective, ARPA seeks proposals in two areas:

1. Technology development projects for ship design and construction incorporating innovative, breakthrough developments of ship and/or shipbuilding technologies and processes for specific international markets. These projects are intended to address the Defense Appropriations Act of 1993, which stated that Technology Reinvestment Funds for shipbuilding should "...establish and implement viable opportunities for conversion of the defense-oriented shipbuilding industry to market driven commercial production activities."
2. Regional Maritime Technology Centers to foster a regional critical mass of industry, state and municipal government and institutions of higher learning and vocational training. Such centers would promote shipbuilding education and training, market analysis and ship/shipbuilding technology development, demonstration and transition.

What will ARPA look for?

The original version of H.R. 2547 proposed establishment of a Maritime Science and Technology Office (MSTO) within ARPA to conduct shipbuilding manufacturing and related technology investigations to support the industry on a cost-sharing basis. According to an ARPA position paper, "proposals for shipyard technologies should result in increasing shipyard productivity and reducing ship construction costs without reducing required ship performance." Possible technologies could include "computer-integrated manufacturing, design, and construction simulation, digital preconstruction, flexible automation and robotics, real-time physical measurement, process modeling, advanced welding, and surface preparation and coating." ARPA would be looking, in particular for "technologies that directly result in decreasing the overall time of ship construction (i.e., directly impacting those areas in the critical path of the ship construction process), or that significantly reduce man-hours and material costs."

ARPA anticipates that project proposals for penetrating specific markets "such as RO/RO, bulk-cargo, double hull tanker, refrigerated cargo, automobile carriers, and ferries would come from teams that might include shipyards, potential shipowners, operators, equipment and material suppliers, as well as breakthrough technology developers."

Proposals should "address performance of a detailed market analysis and targeted marketing plan, innovative design concepts that satisfy the projected market demand, integrated with innovative-build strategies that facilitate U.S. construction at competitive costs and schedules, a required technology development plan for the ship and shipbuilding process, and innovative financing packages for ship construction, including any requirements for Government backing (e.g., performance bond guarantee, mezzanine financing, or loan guarantees.)"

Typically, projects would run for 18 to 24 months, producing "a detailed market analysis; an innovative and integrated ship design and construction strategy that will lead to a competitive entry into the identified market; an innovative build strategy that will lead to competitive construction; a plan for any required technology, facility, and skill development; a financial plan; and a marketing plan fully ready to be demonstrated, marketed, and applied to a long-range follow-on production of ships."

ARPA's position paper also notes that "innovative ship design concepts ... could include advanced propulsion systems, new ship architectures, improved maneuverability, improved cargo handling, and ship automation."

NEW YORK CONFIRMS FAST FERRY OPERATORS AND ROUTES

(From FAST FERRY INTERNATIONAL, October 1993)

New York Governor Mario M. Cuomo last month announced that the state's high speed ferry task force is discussing the introduction of a network of routes serving Manhattan with three companies.

The governor's office reported, "Port Imperial Ferry Corporation has secured the task force's endorsement to enter into negotiations to operate a new route from Long Island City/Hunters Point to East 34th Street. Port Imperial is also working closely with the State Thruway Authority to develop new ferry services to Rockland County that would relieve congestion on the Tappan Zee Bridge.

"The task force has recommended that Scandinavian Marine Group - an alliance of prominent American and Norwegian firms specializing in operations, vessel design and shipbuilding - be allowed to negotiate a contract to operate new routes from Staten Island to the West Side of Midtown Manhattan and from the Brooklyn Army Terminal to Lower Manhattan. The Scandinavian Marine Group intends to build its ferries at the Derecktor Shipyard in Mamaroneck, Westchester County.

"The task force is also negotiating with TNT Hydrolines for enhanced service on the firm's existing routes from Pier 11 in Manhattan to Bay Ridge, Brooklyn and New Jersey."

According to the governor, "One of the key initiatives of my New, New York economic revitalization program is the creation of high speed ferry service in New York City. These ferries will reduce traffic congestion, cut air pollution, reduce wear and tear on our roads and bridges, and create jobs."

The New, New York project is a $25 billion economic development, designed to create 300,000 jobs, that is targeting infrastructure and transportation throughout the state.

Earlier this year, the Department of Transportation revealed that "New York State has asked for proposals from firms interested in developing and operating a high speed ferry service between Shoreham, Long Island, and New Haven, Connecticut. The object is to have the private sector invest in the project.

"The planned service has grown out of a concern over a number of years that the economic development of both states has not reached full potential because of limited access across Long Island Sound.

"The Request for Proposals says that the developer selected shall be responsible for obtaining any necessary permits, meeting all environmental requirements, negotiating site leases, developing terminal and access facilities on land and water, obtaining vessels, marketing, financing and establishing service schedules and fares.

"Each proposal from a private developer will also have to contain development and operating cost estimates, along with revenue estimates which demonstrate long term financial feasibility.

"The two States, as sponsors of the project, will help in securing permits, putting together economic development packages and lending political support working out necessary arrangements.

"Improved ferry service has been under intensive scrutiny since a cross-Sound bridge proposal by Governor Nelson A. Rockefeller in 1972 was found to be environmentally unsound and Governor Hugh L. Carey rejected another bridge proposal in 1980.

"While modern ferries have been added at Port Jefferson and Orient Point in the past 15 years, additional services and landside access facilities are still necessary to improve access to economic and recreational markets on Long Island and in Connecticut. The high speed ferries plying the 23 mile route would accommodate large commercial vehicles. It is expected that state-of-the-art vessel technology will permit crossings in under one hour, including loading and unloading. In addition to reducing travel time for trips between Long Island and New England, the ferry service will reduce highway congestion and shipping costs and help both States meet the requirements of the Federal Clean Air Act."

MORE ON JAPAN'S TECHNO-SUPERLINER PROJECT

(From MARITIME REPORTER, September 1993)

According to the Japan Ship Exporters Association, the Technological Research Association of Techno-Superliner recently began construction of two Techno-Superliner prototypes to evaluate R&D results.

The Techno-Superliner R&D project was begun by the association in 1989, aiming at development of high-speed sea transport at about 50 knots. The association will complete the TSL-F type and TSL-A type prototypes in March and June 1994, respectively, for experiments at sea. The former is a multi-support ship type using hydrofoils; the latter is a multi-support type using air pressure (air cushion).

The TSL-F R&D has been promoted by the joint efforts of Kawasaki Heavy Industries, Ltd. (KHI), Ishikawajima-Harima Heavy Industries Co., Ltd., NKK Corp., Hitachi Zosen Corp. and Sumitomo Heavy Industries, Ltd. Construction is now underway at KHI Kobe Works.

The TSL-A R&D has been canducted jointly by Mitsubishi Heavy Industries Ltd. (MHI) and Mitsui Engineering and Shipbuilding Co., Ltd. (MES). The fore section of the TSL-A is now being built by MES, and the aft section by MHI.

Principle particulars of the prototypes are:

TSL-F:

Length, o.a. .....56 feet
Breadth, molded.: .....20 feet
Main engine: .....Gas turbine
Propulsion system: .....Waterjet pump

TSL-A:

Length, o.a.: .....230 feet
Breadth, molded.: .....62 feet
Main engine: .....Gas turbine
Propulsion system:.....Waterjet pumps

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DEVELOPMENTS IN GERMANY

Recent correspondence from Dr. Volker Bertram in Germany, at the Institut fur Schiffbau, Hamburg, reveals some interesting information and developments that other IHS members may appreciate.

Dr. Bertram announced that he and Mr. Mohr (co-author of HPMV-92 paper on this subject) will be invited on 25 January 1994 for a workshop on Hydrofoil Small Waterplane Area Ship (HYSWAS) technology by Entwicklungszentrum fur Maritime und Industrielle Technik (EMIT) (Development Center for Maritime and Industrial Technology) which is the "think tank" of the Bremer Vulkan, Germany's largest shipbuilding corporation owning about 80% of Germany's shipbuilding capacity. Seemingly they are interested lately in fast ships ranging from SWATH to "Wingships". EMIT is completely private - owned 100% by Bremer Vulkan - and despite its title (and original intention) has focussed completely on maritime topics. The "workshop" is a closed workshop of the corporation with Dr. Bertram and Mr. Mohr as the only invited speakers. Unfortunately, there will be no proceedings. He will advise people of the U.S. Navy's latest project with the HYSWAS demonstrator. He will also advise them to join IHS if they are seriously contemplating the HYSWAS. His aim is to inspire them to apply for research and development funds from the European community to

develop a prototype HYSWAS.

Dr. Bertram also writes that he has basically finished writing a German article on HYSWAS technology with John Meyer as a coauthor. He has called some people to place it in a German journal (Schiff and Hafen). It will be printed in February 1994. He added that he included a short remark concerning the U.S. Navy HYSWAS demonstrator (see item on page 9 in this Newsletter).

Dr. Bertram requested a copy of "Twenty Foilborne Years" which he will donate to the University library. His new lecture on fast ships is very popular with students and such a book would be very welcome and appreciated.

Dr. Bertram goes on to say that the next steps to promote HYSWAS in Germany will be a presentation at the University of Berlin (10 December 1993) and the Institut (7 January 1994) plus hopefully sometime in between at the EMIT workshop. Mr. Mohr has also contacted an Israeli shipyard interested in building a fast ferry between Tel Aviv and Venice. The Mediterranean Sea is quite notorious for seakeeping problems it poses for ferries. If Dr. Bertram can arrange a trip to Israel from a joint research project between Haifa and Hamburg next year, he would like to use the opportunity to give a HYSWAS presentation there. In January 1995 the 4th Pan American Conference on Applied Mechanics (PACAM) will be hosted in Buenos Aires. He proposes to write a paper for this conference on HYSWAS technology.

Dr. Bertram closed his latest letter with a note that in September 1995 the third FAST conference will be held in Travemuinde near Hamburg. He suggested that a paper on the HYSWAS demonstrator be given at that time.

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HITACHI ZOSEN LAUNCHES FIRST "SUPERJET-30" FOIL-ASSISTED CATAMARAN

(From MARITIME REPORTER September 1993)

Hitachi Zosen Corporation launched the first of seven "Superjet-30" high speed foil-assisted catamarans from its Kanagawa Shipyard. Christened *Trident Ace* in the launching ceremony, the catamaran is scheduled to be delivered to Fuke Kaiun Co., Ltd. later this year.

Hitachi Zosen received orders for seven Superjet-30s last year. Companies that ordered from Hitachi Zosen were Fuke Kaiun Co., Ltd., which ordered three, Setonaikai Kisen Co., Ltd., which ordered two, and Ishizaki Kisen Co. Ltd., which also ordered two vessels.

The Superjet-30 is a high-speed passenger ship designed with passenger comfort in mind, as well as the ship's economy. It is a hybrid-type vessel with fore and aft hydrofoils between the demi-hulls. The catamaran structure also makes wide deck areas and spacious passenger cabins possible, while the ship benefits from the fuel economy characteristics of the hydrofoil configuration. Two diesel engines provide the propulsion for the catamaran through two waterjet drives. Thus, the catamaran features excellent maneuverability, as well as low noise and vibration levels. The Superjet-30 is about 103 feet long, with a breadth of 32 feet and a depth of 11 feet. Its maximum passenger capacity is 160 and its top speed is approximately 38 knots. The hulls and superstructure are made completely of corrosion-resistant aluminum alloy. "Based on Hitachi Zosen's extensive experience in building aluminum vessels and the high level of its technology, the catamaran is highly rated for its quality."

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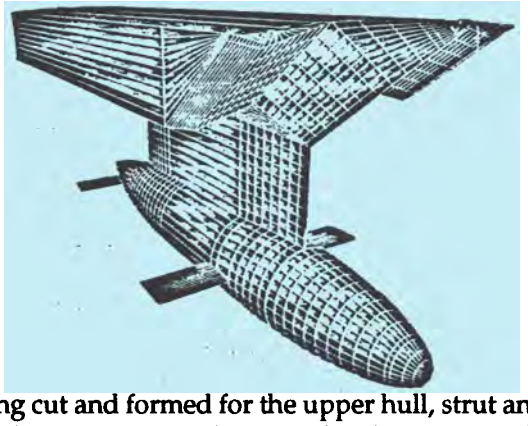
MARITIME APPLIED PHYSICS CORP. AWARDED HYSWAS CONTRACT

Carderock Division, Naval Surface Warfare Center has awarded a contract to Maritime Applied Physics Corp. (MAPC) for Phase II of the Hybrid Hydrofoil (Hydrofoil Small Waterplane Area Ship) demonstration project under the Navy's Small Business Innovative Research program. The objective of the project is to build a craft that offers an affordable technology demonstrator of the HYSWAS concept while concurrently providing a near-term alternative for the U.S. Navy's emerging need for an unmanned, high-speed, rough-water-capable craft that is deployable from another vessel in support of Remote Minehunting System requirements of its Mine Warfare program.

The craft will carry a mission payload of 2500 pounds. It uses an "airplane" foil configuration with a large set of foils 9-feet aft of the bow and a smaller set of foils at 23 feet aft of the bow. The span of the main foil is 10.6 feet while the upper hull has a beam of 12 feet. When foilborne, total lift is distributed between the buoyancy of the craft's lower hull and strut, and the dynamic lift from its foils.

The HYSWAS is actively controlled by an automatic foil and rudder control system. The control system receives sensor input from accelerometers, engine tachometer, foil position sensors and a height sensor. The control system is similar to those presently in use on small SWATH vessels. The seakeeping performance of this small craft is predicted to be exceptional. Modeling indicates acceptable motions and slamming through 6 foot seas at 30 knots and through 8 foot seas at 20 knots.

Phase II involves the construction of a 27 foot, 12 ton, 35-knot Hybrid Hydrofoil. The 21-month fabrication, shop test and builder's trials started in December 1993. Bath Iron Works is a major subcontractor who will provide all the



plating cut and formed for the upper hull, strut and lower hull. Automatic control system development work will be performed by Dynamics Technology, Hawaii. The vessel will be assembled at MAPC, Laurel, MD.

The Hydrofoil Small Waterplane Area Ship (HYSWAS) was conceived at the Center in the 1970s to increase the range, endurance and payload capability of hydrofoil ships while retaining their superior seakeeping characteristics. HYSWAS research and design efforts were vigorous at the Center during the 1970s, but tapered off in the 1980s. During that period the technology was adopted in Europe and Japan. The United States Navy has prepared designs that vary in size from 180 to 2000 long tons; although, no craft have yet been built. Under a Phase I SBIR contract in 1992, MAPC extended the range of design experience down to a 12 long ton craft that can be eventually used by the U.S. Navy in an unmanned configuration as an autonomous or remotely controlled mode. The Navy functions of the proposed 12-ton vessel fall under the category of PICKET duty and could potentially include mine countermeasures, signature generation, standoff sensing, remotely controlled decoy, and remote reconnaissance .

The present 27-foot HYSWAS was conceived and designed for three purposes: a) to demonstrate HYSWAS hull form technology, b) for direct U.S. Navy application in unmanned mission applications, and c) to serve as a catalyst for commercial development of HYSWAS craft. The Phase I HYSWAS design provides a small and relatively inexpensive manned HYSWAS demonstrator while concurrently offering the Navy a craft that has direct mission applications. Since this design was developed in anticipation of the eventual use or the craft as an unmanned vessel that is operated in conjunction with the surface fleet, the size of the craft was constrained such that it could be hoisted and stowed onboard a surface combatant, and also could be constructed at moderate cost.

Commercial, or Dual-Use Technology Transfer, applications envisioned for HYSWAS technology include high-speed passenger transport, high-priority intermodal cargo movement, and specialized functions such as geophysical research, offshore platform supply, and oceanographic/environmental research. As mentioned elsewhere in this Newsletter, the Japanese government is currently providing support for ship designs fashioned after HYSWAS as fast cargo vessels as part of their TECHNO-SUPERLINER program.

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AMV ACTIVITIES IN JAPAN IN 1993

(From SNAME SD-5 Panel Newsletter)

Hikaru Yagi of Mitsui has provided the following summary of this year's activities:

General-1993 has been a notable year for AMV developments in Japan. In addition to production of conventional semi-planing high speed craft, several new concepts have been introduced. These include several Foilcat and fully submerged foil monohulls for commercial and military applications. In September 1994, the new Kansai International Airport will open in Osaka Bay, in western Japan. Although there will be a bridge connection, several passenger ferry routes will be established. Numerous AMV candidates are expected to be proposed for these services.

Examples of AMV Developments in Japan in 1993

Foilcats - The "AQUAJET SUPER I" and "SUPER II" (by Miho) entered service in March and June between Osaka/Kobe and Awaji Island. These craft, powered by MTU diesels with KaMeWa waterjets, are high speed catamarans with partial support from two foils. Foil control is manual.

The "RAINBOW" (by Mitsubishi) is a catamaran hullform with fully submerged foils. This craft is powered by diesels and has a fully automated control system. The Rainbow entered service in April between the Oki Islands and Sakae-Minato. Service on this route will be discontinued between December and February.

"TRIDENT ACE" is also a Foilcat. It is powered by two diesels and Niigata waterjets. Service has just been initiated between Osaka and Awaji Island. Six of these craft are to be constructed. The first three will have manual foil controls with an automated system introduced on the fourth of the series. [ED Note: MR article on page 9 reported 7 craft.]

Submerged Foil Monohulls - Patrol Guided Missile Boats "PT 1" and "PT 2" (by Sumitomo) were delivered to the Japan Military Self Defense Force on 22 March. These craft, based on the Italian Sparviero/Nibbio Class, were built under license from the Italian firm. A third craft is under construction.

Semi-Planing High Speed Catamarans - "VENUS" (by Mitsui), the fifth of this class of high speed diesel/waterjet catamarans entered service in July between Osaka and Tokushima. Trim tabs are utilized for ride control.

UKRANIAN HYDROFOILS FOR SALE

Jean Buhler has sent the Newsletter a page from the November 1993 issue of "Boats and Harbors" running an add for the sale of five, new 27.6 meter (92') VOSKHOD 2 hydrofoils. The add proclaims that these high speed, efficient, craft provide the most comfortable ride available on water. They come with Caterpillar or MTU 1,000 HP Diesel with capacity for 68 passengers. Also listed is a 42 meter, 35 knot, 250 passenger hydrofoil. The VOSKHOD hydrofoils are offered for $1,200,000 each. More information can be obtained by calling the Florida Yacht and Ship Brokers at Ft. Lauderdale, Florida, (305) 467-1122.

IHS COASTERS AVAILABLE

Your IHS Board has designed a medallion which has been be part of an Award Plaque. The 3 and 1/2 inch, ceramic Medallions also serve as "Coasters" and make a great addition to IHS member's and friend's coffee tables. They are available for sale in sets of four at a price of $12.00 per set plus $2.95 for mailing. After you receive your coasters we would like to have your opinion on having a similar medallion placed on coffee mugs, and made available for purchase.