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## 60TH ANNIVERSARY ISSUE





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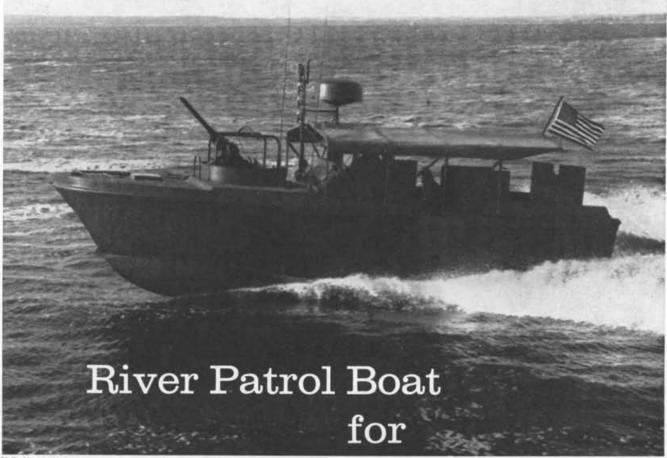
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Photo by Beckner Photo Service Inc.

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U.S. Navy photo

The U.S. Navy's new patrol craft for policing the Mekong Delta. An unconventional craft for fighting an unconventional war. Only 31' long, she has diesel power coupled to water jet pumps for shallow water operation. A completely equipped little battle wagon, she mounts twin fifty calibers forward, a single 7.6 m.m. aft and armor protection for the crew. The canopy is not for sun protection. It is intended to bounce off grenades for "close in" engagements



Hatteras prototype hull hits a hard-over turn at full throttle. Unobstructed bottom permits hull to quickly reverse direction



### VIET NAM

Private industry helps the Navy develop a new type of tactical craft

By BOUGHTON COBB JR.

The MILITARY EFFORT in Viet Nam is drawing on resources from all parts of our economy. A great diversity of equipment is being required to fight this strange war half way around the world, and each branch of our armed services appears to be coming up with special vehicle and weapon requirements. The adaptability and utility of helicopters has received great attention; the employment of slow but maneuverable World War II propeller driven bombers is notable, and now the Navy has come up with a special little patrol craft designed to deal with Viet Cong movements in the Mekong Delta.

These new river patrol craft have received considerable national publicity in magazines and newspapers. Readers may recall an especially vivid write-up in "Time" entitled, "Policing the Dragons." But as is often the case, there is a story behind the story. What has not been given general recognition concerning these patrol boats is the imaginative and dedicated effort given by certain pleasure boat industry members during the program.

The writer was fortunate enough to be associated with certain phases of this interesting development. I have talked to no one involved with the PBR program who is not ad-

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U.S. Navy photo

Aerial photo of the model basin shows the half-mile building which houses three towing tanks, including the one used for testing "Antiope." The adjacent buildings house wind tunnels, water tunnels for propeller testing, the Water Channel used for underwater flow photos, and huge wave tank

predictions for yachts. Yachting will carry a further article on this subject when the results have been evaluated next summer.

(Before Spun Yarn picks up his pen to cite this flagrant example of Government spending, we should perhaps explain the use of the Navy's facilities for these tests. Unlike many other countries which have large, separate towing tanks for naval and merchant purposes, the U.S. has only one large facility which is owned and operated by the Navy, but which is also responsible for testing on a commercial basis to fulfill the needs of the merchant fleet. The cost of testing "Antiope" was underwritten by The Society of Naval Architects and Marine Engineers, with financial assistance from members of the 5.5-Meter Class Assn. and interested naval architects. Contributions to further additional sailing yacht research by the Society Technical and Research Program may be sent to the Technical Administrator, The Society of Naval Architects and Marine Engineers, 74 Trinity Place, New York, N. Y. 10006. They are tax-deductible.—Eds.)

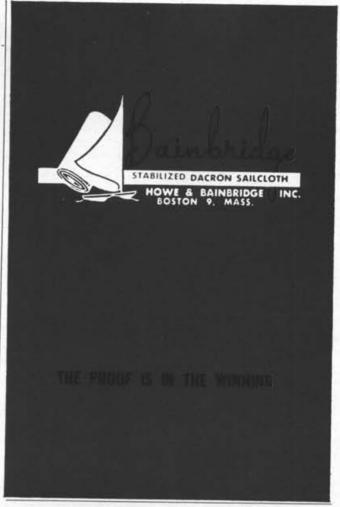
#### RIVER PATROL BOAT FOR VIETNAM

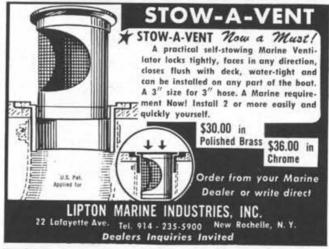
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miring of the effort of one man, Willis Slane, the late president and founder of the Hatteras Yacht Co. Willis died in the fall of 1965 while his PBR candidate prototype was being evaluated by the Navy. The final design which is pictured on page 65 is in a very real sense a memorial to his initial effort.

In the early part of 1965, the Navy determined that they needed new types of coastal intercept craft to patrol the vast reaches of the Mekong Delta area where the Viet Cong were bringing supplies ashore to supply their troops. Not having the most suitable craft in their inventory to do this job, the Navy announced they would borrow a number of the U.S. Coast Guard's 82-footers. A group of these craft were properly modified, armed and shipped over. Willis Slane followed these proceedings in the newspapers with interest. He was concerned about the war and its escalation. Having flown the Hump in China during the second world war he had a better than average appreciation for the nature of the conflict and its difficulties. He put two and two together-and wondered whether perhaps certain of his basic stock fiberglass hulls might be immediately useful for patrol craft conversion. As was typical with him, action soon followed his thoughts. He gained an audience with the Navy fleet operation group concerned with this phase of the Viet Nam war.

His timing was most opportune as they were indeed seeking new design concepts that could be made available quickly. Willis came to the meeting prepared to show what could be done with his 50' cruiser hull converted to a fast gun boat. But, "no," the officers said that they had an aluminum hull model worked out and in procurement to satisfy this size requirement. What they seemed to need was a small, maneuverable craft that could quietly cruise the very shallow delta area and be fast enough to overtake







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Intent on the demonstration of his jet hull, Willis Slane shouts orders to his crew. Arthur G. Eldredge from the Navy Department stands by in the background

the Viet Cong sampans, which skimmed ashore with supplies every night. Slane considered these requirements for a minute and then said, "I have just put into production a very fast, broad-beamed hull 28' long that might do the job. If we could drive her with the new water jet pumps, it would be possible to eliminate all vulnerable underwater parts such as struts, shaft, propeller and rudder and allow high speed operation in only a few inches of water."

The naval officer group immediately responded with enthusiasm to the proposal. They were familiar with water jet propulsion units, but had never adapted the principle to any of their operational hulls-perhaps this was the proper type hull application. Further details were discussed and finally it was determined that a prototype evaluation was necessary. Slane then went into a huddle with his naval architect, Jack Hargrave. Quick estimates were made on loads, speed-range and so on. Willis Slane said, "I believe I can provide you with a hull and propulsion system which will meet your requirements and I am prepared to build a prototype at my cost to prove it." It was a magnanimous offer which was well received. Willis then asked, "When would you like to have the boat?" There was a pause in the answer in deference to his original generous offer, then one of the officers made the obvious comment that the program was particularly urgent. Slane then announced that with luck, he would have the boat in the water and ready for testing in less than two weeks.

The meeting closed shortly thereafter on a note of great cordiality. I felt that I had witnessed quite an extraordinary demonstration of how private industry is capable of working

with our complex defense establishment.

Willis flew home from Washington that night fired with enthusiasm over the project. He was determined to fulfill his dramatic promise of a finished boat in ten days. It is true that the basic hull was available from the production line but, beyond this, the machinery and most all portions were of unique and special design. Everything had to go together properly. He got back to the plant on a Friday night and went to work. Twelve days later, the boat was in the water and ready for preliminary trials.

The demands of the boss and his project turned the plant upside down, but the men realized the importance of the program and they gave their all. Key suppliers jumped to Slane's assistance. Special turbo supercharged diesels came from Daytona. Turbo Power Division of Indiana Gear Works supplied the all important water jet pumps. The Morse Control organization adapted their steering system to the peculiarities of the jet drive. A wood deck and cockpit was fitted to the fiberglass hull. The paint was barely dry when she was hoisted aboard a truck for the 200-mile overland trip from High Point, N.C., to Morehead City.

Willis ran preliminary trials on the craft himself before notifying the Navy. The boat measured up in every respect. With a light load, she exceeded 33 knots. Slow speed maneuvering required some practice. Without a rudder and

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the positive control of propellers, the boat handled quite differently. However, its turning characteristics at speed were spectacular. This can be seen in the accompanying photographs.

Representatives from the Pentagon, Bureau of Ships and a naval adviser fresh from the Viet Nam theater journeyed to Morehead City to evaluate the boat. Suppliers of the major and featured components were on hand to answer questions and implement any changes. The experts were all reasonably familiar with water jet propulsion and how it has been adapted in recent years to a variety of special purpose pleasure and commercial craft. But they were all surprised to view the rather dramatic performance in Slane's 28-foot hull. Her ability to make a crash stop by reverse deflection of water jets and high speed "end for end" turns are not maneuvers one would attempt to duplicate in a conventional propeller driven hull. Perhaps the boat's most useful feature was her ability to run in very shallow water. At planing speed she drew less than ten inches. When nosed up onto a beach, the powerful jets could back her off with little difficulty.

For a number of months, Willis had been in poor health. Having always driven himself hard at anything he was doing, he put forth an extraordinary personal effort on this project. In October, several weeks after the trials, he succumbed at his home in High Point.

The Navy was impressed by this interesting boat and purchased her for test and evaluation. Based upon her indicated potential, the Navy developed a performance specification for a complete military gunboat of 28' to 31' l.o.a. The Hatteras Boat Co. and other builders of similar stock fiberglass cruisers were invited to submit proposals to build gunboats to the Navy specification. The basic boat for all proposals was to be one of the company's standard hulls thus insuring immediate production capability and avoiding the pitfalls of a completely new untried design.

As usual the Navy wanted a lot for its money. The re-

quirements called for a small, fast craft with armament consisting of a twin .50 cal machine gun in an armored turret and a single .30 cal machine gun, plenty of ammunition, and heavy armor protection for the control station. Radio, radar and boarding party equipment were also required. All of this, along with a requirement for diesel engines and water jet propulsion, provided a sizable challenge to designers and builders of pleasure boats generally concerned with more pleasant features such as live bait wells, fighting chairs, dinettes, etc. To add to the challenge, the Navy wanted their boats in a hurry; 120 boats in less than six months.

A number of firms submitted proposals and a contract was awarded to United Boatbuilders Inc., of Bellingham, Wash. This company is a leading West Coast boat builder, selling nationally its line of Uniflite fiberglass boats 17' to 40' in size. It is also a major Navy contractor, having built



Slane demonstrates crash stop capability by reversing jet pumps when moving forward at full speed







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The same hull in pleasure boat guise, United Boatbuilder's Uniflite 31

in fiberglass to naval design and specification many craft as varied as 15' outboards, 52' gas-turbine-powered patrol boats and the 44' sailing yawls of the Naval Academy fleet. United Boatbuilders, under the leadership of their energetic president, Art Nordvedt, with a team of dynamic leadingmen, signed a firm fixed price contract for nearly four million dollars to give Navy what it needed. The contract was signed on Nov. 29, 1965 and the first boat was in the water before Christmas. By mid-April all 120 boats had been delivered to the Navy. These boats designated PBR (Patrol Boat River) are a slightly modified version of United's standard 31-foot Uniflite cruiser. The PBR is powered by twin GM 6V53 diesel engines rated at a maximum of 220 hp. each at 2800 r.p.m. driving a 14" diameter mixed flow waterjet pump manufactured by Jacuzzi Bros. of Richmond, Cal. Weighing in fully loaded at 14,500 lb., a good 50% more than their pleasure boat sisters, the little diesel-powered PBR's are real fighting boats in the PT boat tradition, contributing significantly to our Navy's presence in the river and delta regions of Viet Nam.

In a recent issue of the "New York Times" the distinguished military expert, Hanson W. Baldwin, made the following first hand report on the U. S. Navy's new river patrol operation in Vietnam:

"The Navy's unique river patrol craft in Vietnam are beginning to interrupt Vietcong lines of communication and supply in the Mekong delta's maze of waterways. What the Navy calls a PBR (Patrol Boat, River) was a recent hero in an engagement in the river and canal operations in South Vietnam. The boat is the backbone of Operation Game Warden, the Navy's river patrol which was established last spring. The patrol force, also called Task Force 116, supplements the work of the Navy's Coastal Surveillance Force.

"The job of the river patrol force is to prevent the Vietcong from using the waterways as supply routes and lines of communication. United States Navy forces supplement the work of the South Vietnamese navy, the maritime branch of the Vietnamese national police force and the Vietnamese customs service. Each boat is manned by a junior officer and three enlisted men and mounts two heavy machine guns and one light one. The boats have been supported in their river patrols by helicopter gun ships, which base on the LSD (Landing Ship, Dock), or LST (Landing Ship, Tanks) mother ships.

"In addition to patrolling day and night to deny the enemy the use of the waterways, the patrol craft can also support the South Vietnamese river assault groups, or RAG's."

"A whole new science of landlocked, shallow-water operations is being developed in Vietnam, with the Navy, the Marines and the Army all participating. It has been described by the Marines, who have developed a new doctrine for it, as 'Riverine' operations—defined as 'those operations necessary to achieve and or maintain control of a waterway system and its contiguous areas or to deny their use to the enemy.'

"The river patrol boats are a combat version of a commercially built, plastic-hulled, high-speed craft originally designed for pleasure craft. About 100 of the 31' boats have been ordered. The river patrol was initiated last spring with 16-of them based at Catlo, and operated from an anchored LSD.

"The plastic hulls of the river patrol boats are immune to the wood-boring teredos or worms that quickly sieve wooden hulls in the tropics.

"The craft are propelled by twin 220-hp. diesel engines, which drive hydro-jets, or water jets-the first vessels in the Navy, except for experimental versions—to use jet propulsion. Thus, the propeller is eliminated and water sprayed under pressure from directional nozzles at the stern gives the river patrol boats great maneuverability and a speed of better than 25 knots

"Even more important, the propulsion system is ideal for shallow waters. The boats can be driven through most vegetation and mangrove roots without damaging or plugging the propulsion system."

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#### A SPORT FISHERMAN FROM THE PACIFIC COAST

(Continued from page 59)

Wood-Freeman dual station automatic pilot, Apelco AE-160 M High Seas, Konel KR-132 and Webster citizen band radiotelephones, Apelco dual station automatic direction finder, Apelco MS-602 depth sounder, Apelco DA-1 fish detector, sea temperature gauge, pyrometer gauges to determine exhaust temperatures, wind gauge, and both engine and bilge alarm systems.

Helandik is powered with twin VT-8-370 N.P. Cummins diesel engines, which give her a top speed of 19 knots

and a cruising range of over 1,000 mles.

Two 7.5 kw. Kohler diesel generators supply auxiliary power and a Douglas D-10 water evaporator assures ade-

quate fresh water supply on extended passages.

Her hull is characterized by a deep forward section gradually rounding to the transom and, according to her builder, "her full length inset chines stabilize rolling, increase speed, eliminate squatting and add to her steering control and efficiency.'

From a fisherman's point of view we question the utility of the forward fighting chair on a vessel of this size. Let's hope their catches made from this location prove us wrong!

#### Additional specifications—"Helandik"

55' l.o.a. x 16'6" beam x 4' draft

Displacement: approximately 51,000 lb.

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#### 1967 BOATS BETTER EQUIPPED

► Following examination of the 1967 boats at the Marine Trades Exhibit in Chicago, Coast Guard officers reported considerable efforts by most boat builders in meeting Coast Guard regulations. With enforcement of compartment ducting requirements beginning June 1, 1967, a few ventilation shortcomings continue, however. Increased conformance with proper navigation lighting regulations was evident, though there were some violations in this area as well. When purchasing a boat, the buyer should ensure that it is equipped in compliance with Coast Guard and state safety regulations. Copies of these requirements are readily available from the Commandant (CHS-2), U.S. Coast Guard, Washington, D.C. 20226, and the respective state boating offices.



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If you'll take a moment to drop us a line, we'd be delighted to send you an illustrated brochure that points out more of the TARTAN's virtues and versatility.

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