



SGT Robert Brower, PBR Captain, Army 458th Transportation Company, Cat Lo, South Vietnam 1969

Patrol Boat, River Republic of Vietnam 1968-69

**A Nexus between the U.S. Navy, Hatteras Yacht Company,
United Boatbuilders, and the Author**

**Northwest School of Wooden Boatbuilding
Research Project 2018-2019
3rd Quarter Submission
Joel T. Leavitt**

Acknowledgements

Michael Glova, LNO Commander, Naval Surface Force Atlantic, for tracing historical U.S. Navy PBR technical drawings back to, and initiating contact with, Puget Sound Naval Shipyard.

J.C. Mathews, Deputy Public Affairs Officer, Puget Sound Naval Shipyard, for prosecuting my request for release of those technical drawings.

Jeff Jewell, Whatcom Museum, for providing the 1966 paper "Development of a Fiberglass River Patrol Boat" presented to The Society of Naval Architects and Marine Engineers by Charles True, Supervisor of Shipbuilding, U.S. Navy.

Todd Warger, Whatcom Museum, for his article "Vietnam War River Patrol Boat Innovator: Art Nordtvedt and the PBRs" published in the Journal of the Puget Sound Maritime Historical Society, June 2014.

SGT Robert Brower, Boat Captain, Army 458th Transportation Company out of Cat Lo, South Vietnam, for providing a treasure trove of original drawings, photos, and documents given to him by Charles True (USN, Seattle) and Art Nordtvedt (Uniflite, Bellingham).

All the individuals and organizations contacted during my research who, without fail, provided either supporting information or yet another lead to someone who might be able to do so.

And, finally, to CAPT Ronald Harrell, USN, Retired. Ron, if not for you, I could be sitting on a Caribbean beach sipping a Cuba Libre instead of writing this research paper at NWSWB. Thanks Ron.

Q1 PBR Research Project

Introduction, Background, and Primary Research

Let me begin by saying that I was never in the U.S. Navy. I was Army. Specifically, I was a Combat Military Police Officer assigned to the 720th and 560th MP Companies in the Republic of Vietnam. My story begins in 1968 in Saigon and the Mekong Delta.



The author on patrol in the Mekong River Delta 1968

First introduced to the general public in the 1979 movie *Apocalypse Now*, the PBR was described as “a type of plastic patrol boat, a pretty common site on the rivers”. (*Apocalypse Now*, 1979)

But the real-life story of the Patrol Boat, River began in 1965 when the U.S. Navy distributed specifications for a boat capable of navigating the knee-deep waters of the Mekong Delta. Because they needed the boats quickly, the Navy took the unprecedented step of soliciting bids from pleasure boat manufactures, knowing that they would already have the expertise to produce small, fast boats. (*The Gunboats of Vietnam*, 1996)

Initial research suggests that the procurement and build history of PBRs is not currently well documented in a single source. All I know at this point is that the U.S. Navy, Hatteras Yachts, and United Boatbuilders were all involved.

The objective of this research paper is to document PBR history from time of the initial Navy requirement through end of production, including my own service on PBRs following the 1968 Vietnam Tet Offensive.

Research is expected to extend over four quarters, *Q1* being used to establish contacts within the U.S. Navy and Army/Navy organizations with the goal of obtaining historical documents and drawings pertinent to Mark I and Mark II PBRs deployed in Vietnam.

Q1 research is complete with this edition.

Q2 will describe the origin of the PBR and attempt to document the history of prototype and production builds. **Q2 research is complete with this edition.**

Q3 will attempt to provide official scale drawings and specifications obtained from U.S. Navy and Naval contract architect sources. I have identified these sources in *Q1/Q2* and I am currently working with NAVSEA to obtain public release of these drawings. **Q3 research is complete with this edition.**

Q4 will document the U.S. Army's involvement with PBRs in Vietnam, including my personal history and observations.

Q2 PBR Research Project

U.S. Navy PBR Specifications, Prototype, and Production Builds

In early 1962, the RAND Corporation completed a study for ARPA (now the Defense Advanced Research Projects Agency or DARPA) on growing Viet Cong activities in the Mekong River Delta of South Vietnam. The report stated that the Viet Cong had infiltrated the Delta, and that there was a risk of Mekong waterways becoming an incursion route for the North Vietnamese Army into South Vietnam. (RAND Corporation, 1962)

Three years later, in January 1965, the Weapons Planning Group of the Naval Ordnance Station at China Lake, California, released the report "Revolutionary Warfare on Inland Waterways: an Exploratory Analysis". This report appears to be the first reference to possible use of water-jet propulsion to support shallow water warfare operations. The report also expressed an urgent need for production of suitable craft, and suggested pleasure boat manufacturers as possible suppliers. (Weapons Planning Group, 1965)

Less than a month later, on 1 February 1965, Naval Advisory Group, Military Assistance Command Vietnam, published a staff study entitled "Naval Craft Requirements in a Counter Insurgency Environment", apparently based on the China Lake study. (NAVADGRP-MACV, 1965)

Author's Note: I later worked briefly with MACV in Saigon, and this sounds very much like a case of MACV saying to stateside command "Why the Hell didn't you tell us about this option sooner?"

In the MACV study, Captain William Hughlett Hardcastle Jr noted, "Counter Insurgency water operations are difficult, demanding, and unique. A prevalent belief has been that (such) craft can readily be obtained from existing commercial and naval sources when needed. Unfortunately, no concerted effort has been made to develop..."

In essence, the Navy had not cared about small, shallow draft patrol craft before, and had been caught short. Captain Hardcastle had listed the requirements for a Counter Insurgency craft as:

1. Reliable and sturdy
2. Non-wooden hull, with screw and rudder protection against groundings
3. Self-sufficient for 400-500 mile patrol
4. Speed of 20/25 knots
5. Small high-resolution radar (Range up to 4-6 miles.)
6. Reliable long-range communications equipment, and equipment compatible with Army and Air Force equipment
7. Quiet operation
8. Armament for limited offense
9. Sparse berthing, no messing
10. Fathometer, accurate from 0-50 feet
11. Small, powerful searchlight

When word went out that the Navy needed a boat about 50 feet in length that was fast and could carry suitable weapons, Commander Cabell Seal Davis Jr of the Navy Ordnance Department was tasked to find something quickly. (Todd Warger, 2014)

Commander Davis had a GS-14 on staff who also worked with ARPA. This civilian recalled that a boat builder on the Gulf Coast, Sewart Seacraft, was building water taxis used to service oil rigs in the Gulf of Mexico.

A few days later, Commander Davis and Rear Admiral Sunshine, along with a lawyer and contract specialist, went to visit Sewart Seacraft in Berwick, Louisiana. The Navy immediately bought rights to drawings of a Sewart Seacraft 50 foot boat with modifications to include a gun tub, ammo lockers, bunks, and a small galley.

As required by Congress, the Navy then used these drawings to solicit bids from other boat builders. Hatteras Yacht Company's owner Willis Slane and his Naval Architect Jack Hargrave, along with other manufacturers, attended a bid solicitation meeting in Washington D.C. in late 1965.

My research suggests that Slane and Hargrave attended the meeting mistakenly believing that they were there to bid on the 50 foot boat earlier described by Captain Hardcastle. However, that contract had already been awarded to Sewart Seacraft to build the PCF Mk I Patrol Craft, Fast. The PCF, or "SWIFT" boat as it came to be known, was later made famous by a controversy regarding Navy service by Senator John Kerry.

When it became clear during the meeting that the Ordnance Department was now looking for a shallow draft boat in the 30 foot range, Hargrave was said to have turned to Slane and indicated that, with a pair of water-jet pumps, Hatteras could meet those specifications with their current 28 foot hull.

Slane was then said to have stood up and said, "Excuse me Captain, I have just put into production a very fast, broad-beamed hull, 28-feet long, that might do the job." When asked when the Navy could expect a formal proposal from Hatteras, Slane reportedly responded, "Proposal, hell! I haven't got time for that paperwork stuff. I'll build the damn boat and then you can come down next week and ride in it."

True to his word, Slane had a prototype in the water, running at 30.5 knots with a 165-mile range a week later. They were ready to show off the prototype design to the Navy, and took one of the boats to Washington D.C. for a demonstration. That was the original PBR prototype built by Hatteras.

Meanwhile, word of the Hatteras / Ordnance Department prototype reached Art Nordtvedt at United Boatbuilders in Bellingham, Washington. Having previous experience with Navy contracts, Nordtvedt contacted Fred Joest at the Navy Bureau of Ships (now NAVSEA) and questioned why BuShips Small Boat Division was not involved, and where the Hatteras contract had originated.

The project subsequently moved from Ordnance to BuShips Small Boat Division where Joest generated a circular of requirements. The circular stated that the boats were to have the following principle characteristics:

- Length overall 27 to 31 feet
- Beam, maximum not to exceed 12' – 6"
- Draft, full load, maximum not to exceed 2' – 5"
- Speed, full load not less than 25 knots
- Endurance, full load 150 nautical miles at 25 knots
- Propulsion..... diesel engines with water jet pumps
- Electrical system 24 volts D.C.

Further requirements were:

1. The basic hull to be an existing commercial design of proven performance
2. The fiberglass reinforcement to consist of at least 40% woven roving and the laminating resin to be fire retardant
3. The boat to be capable of operating in a "State 3" sea
4. Sufficient buoyancy foam to float the boat in a fully loaded condition
5. All materials other than radios, weapons, and armor, to be furnished by the contractor

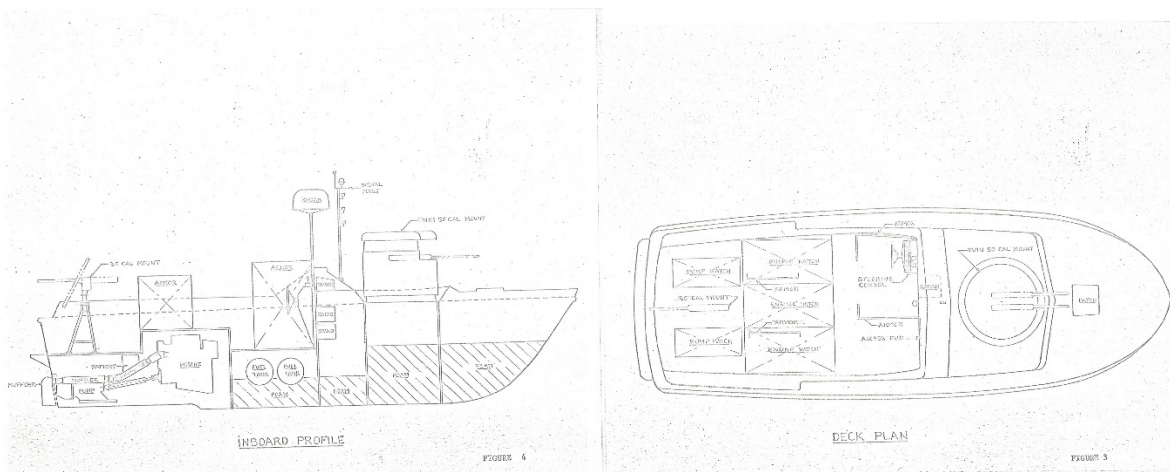
BuShips received bids from United Boatbuilders, Hatteras Yacht Company, Bertram Yachts, Boston Whaler, Chris-Craft, and Bay Shipbuilding in Wisconsin.

United Boatbuilders submitted a low bid of \$3,916,380.00 for 120 boats plus spares, and the Navy awarded the contract to Uniflite on 29 November 1965, only 10 months after first publication of the China Lake study. United's successful proposal consisted of the following principle components: (Charles True, 1966)

Hull	United Boatbuilders	31' Uniflite
Engines	General Motors Corp	Model 6V-53N (220 H.P.)
Jet Pumps	Jacuzzi Brothers Inc.	Model 14WJ
Radar	Raytheon Corp.	Model 1900 N
Engine Controls	Morse Instrument	Model MK, Push-Pull Cables
Engine Mounts	Vibration Eliminator	Type MER
Alternators	Delco Remy	30 Amp
Bilge Pump	Marine Products	50 GPM – Belt Driven
Fuel Tanks	Allcraft	80 Gal. (Monel)
Mufflers	Submarine Research Lab	Type S.R.L.
Mufflers	VanVetter Inc.	316 L Cres
Batteries	MS-35001	12 V 100 AH

In addition to the 120 completed boats, the contract included United's procurement of the following items:

- a. 48 Diesel engines
- b. 48 Propulsion pumps
- c. Onboard spare parts (one set per boat)
- d. Operational spare parts (one set per boat)
- e. Maintenance spare parts (one set each 10 boats)
- f. 7 Sets engine overhaul tools
- g. 16 Trailers
- h. 120 Cradles
- i. 120 Hoisting slings



1965 Contract inboard profile and deck plan drawings

The contract required United to deliver 120 PBRs by April 1, 1966, just four short months away. To tool-up for the accelerated delivery schedule, United fabricated four one-piece tilting hull molds and four deck molds alongside the Uniflite 31' production line in Bellingham.

Using production line techniques, the layup of a hull was accomplished in 30 man-hours. Installation of longitudinal stiffening, bulkheads, and buoyancy foam followed while the hull cured in the mold. Two days after start of lay-up, the hull was released from the mold and placed in a wheeled cradle for movement along the assembly line.



Moving along the assembly line, prefabricated deck sections, fuel tanks, propulsion pumps, engines, and all other components were installed. These assembly line techniques resulted in a complete boat, ready for trials, leaving the plant eight days after start of the basic hull laminate.



By the end of PBR production in 1968, more than 750 boats had been delivered to the Navy. PBRs not left in Vietnam at the end of the war continued to be used in later years to patrol areas such as the Panama Canal Zone. Today, only a handful of the hulls still exist, mostly in museum settings.



PBR 31 running alongside a Uniflite 31 in Bellingham, Washington circa 1966



For an extended description of PBR development history, download:
[Journal of the Puget Sound Maritime Historical Society June 2014](#)



For a very complete description of Mark I PBR production, download:
[Society of Naval Architects and Engineers Development of a Fiberglass River Patrol Boat](#)

Q3 PBR Research Project

Official U.S. Navy PBR Scale Drawings

I began trying to locate official PBR drawings when I first started this research project in November 2018 with initial inquiries directed primarily to archives, historical associations, and libraries.

Although everyone I contacted tried to be helpful, none of them had access to PBR drawings or documents. Then I thought to call CAPT Ron Harrell to ask if he had any ideas. I had worked with Ron about 5 years ago as an R/V Captain for The Nature Conservancy on Palmyra Atoll.

Ron introduced me to Mike Glova, LNO Commander, Naval Surface Force Atlantic, who located the drawings at Puget Sound Naval Shipyard. Mike then introduced me to J.C. Mathews, Deputy Public Affairs Officer at Puget Sound.

The drawings were classified "*DISTRIBUTION STATEMENT D: Distribution authorized to DoD and DoD contractors only; Critical Technology. WARNING: This document contains technical data whose export is restricted by the Arms Export Control Act.*" J.C. offered to pursue declassification if I made a formal request, so on January 25, 2019 I sent J.C. the following letter:

January 25, 2019

From: Joel Thomas Leavitt
Northwest School of Wooden Boatbuilding
42 N WATER ST, PORT HADLOCK, WA 98339-8706

To: COMMANDER
ATTN CONGRESSIONAL AND PUBLIC AFFAIRS OFFICER CODE 1160
PUGET SOUND NAVAL SHIPYARD & IMF
1400 FARRAGUT AVE STOP 2072
BREMERTON WA 98314-2072

Referred By: Michael Glova
CIV NAVSEA - PMS 443
LNO Commander, Naval Surface Force Atlantic
LNO Commander, Naval Surface Squadron 14

Good Day,

As a Vietnam veteran who served on PBRs (Patrol Boat, River) during the period 1968 – 69, and as a current student at the Northwest School of Wooden Boatbuilding, I am researching the history of US Navy Mark I / Mark II PBRs circa 1960 - 1980.

Mr. Glova has been assisting my project and has located design drawings and specifications pertinent to my research. It is my understanding that Mr. Glova has made initial contact with your office to provide detail of both my research and the drawings I seek.

This letter is a request for your office to officially review the documents indicated on the following page, to determine if they are available from your office, and to make a determination as to whether they are releasable.

I await your determination and response.

Very respectfully,
Joel Leavitt

On April 2, 2019, Puget Sound Naval Shipyard provided me with all available USN PBR scale drawings along with the following message:

“Mr. Leavitt - Our security team determined that the previous classification no longer applies to these documents. Providing them to you constitutes public release of these drawings, and there are no restrictions on their use.”

Interestingly, there is a bit of a classification backstory. All the received drawings were stamped “CLASSIFIED”, and contain the following notation: “These markings were applied by JEDMICS on 02-JUN-2011 and supersede any other sensitivity markings.”

JEDMICS is the DoD Joint Engineering Data Management Information and Control System and, according to LNO Commander, Naval Surface Force Atlantic, “A few years ago, all drawings in the JEDMICS system had to have updated (classification) markings assigned to them.”

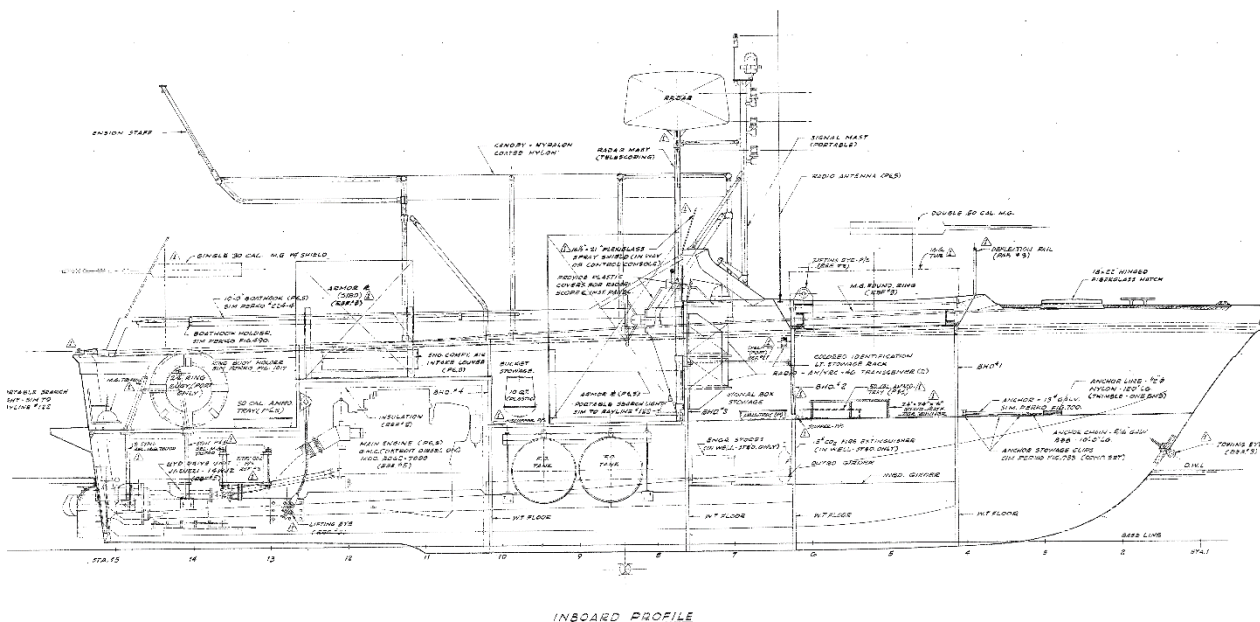
Now while one might reasonably assume that drawings from the 1960s would have been *declassified* during that review, it appears that they were instead *classified* for the first time in 2011.

As mentioned on the Acknowledgements page, Bob Brower provided me with original USN and Uniflite drawings on April 19, 2019. Those drawings were original 1960s paper blueprints of the electronic copies provided by Puget Sound, and not a single one of those original drawings was marked classified.

All drawings are now marked “DISTRIBUTION STATEMENT A: Approved for Public Release; Distribution Unlimited”. The actual drawings are quite large, but a sample inboard profile is reproduced below.



For full USN PBR scale drawings, additional PBR documentation, and photographs visit: [The PBR Drawing, History, and Photo Archives](#)



Q4 PBR Research Project

U.S. Army PBRs in the Republic of Vietnam

...preview

"The only true obscenity is war." Henry Miller, Tropic of Cancer

"Let me tell you something - let me reveal the one great truth about war, and it is this. Ultimately, all war stories are bullshit. I have never heard a true war story, and I have never told one, and neither have you." Nelson DeMille, Word of Honor

"A memory is not simply an image produced by time traveling back to the original event - it can be an image that is somewhat distorted because of the prior times you remembered it. Your memory of an event can grow less precise even to the point of being totally false with each retrieval." Neural Correlates of Reactivation and Retrieval-Induced Distortion, Journal of Neuroscience August 2012

"Mea culpa, mea culpa, mea maxima culpa" The Confiteor

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