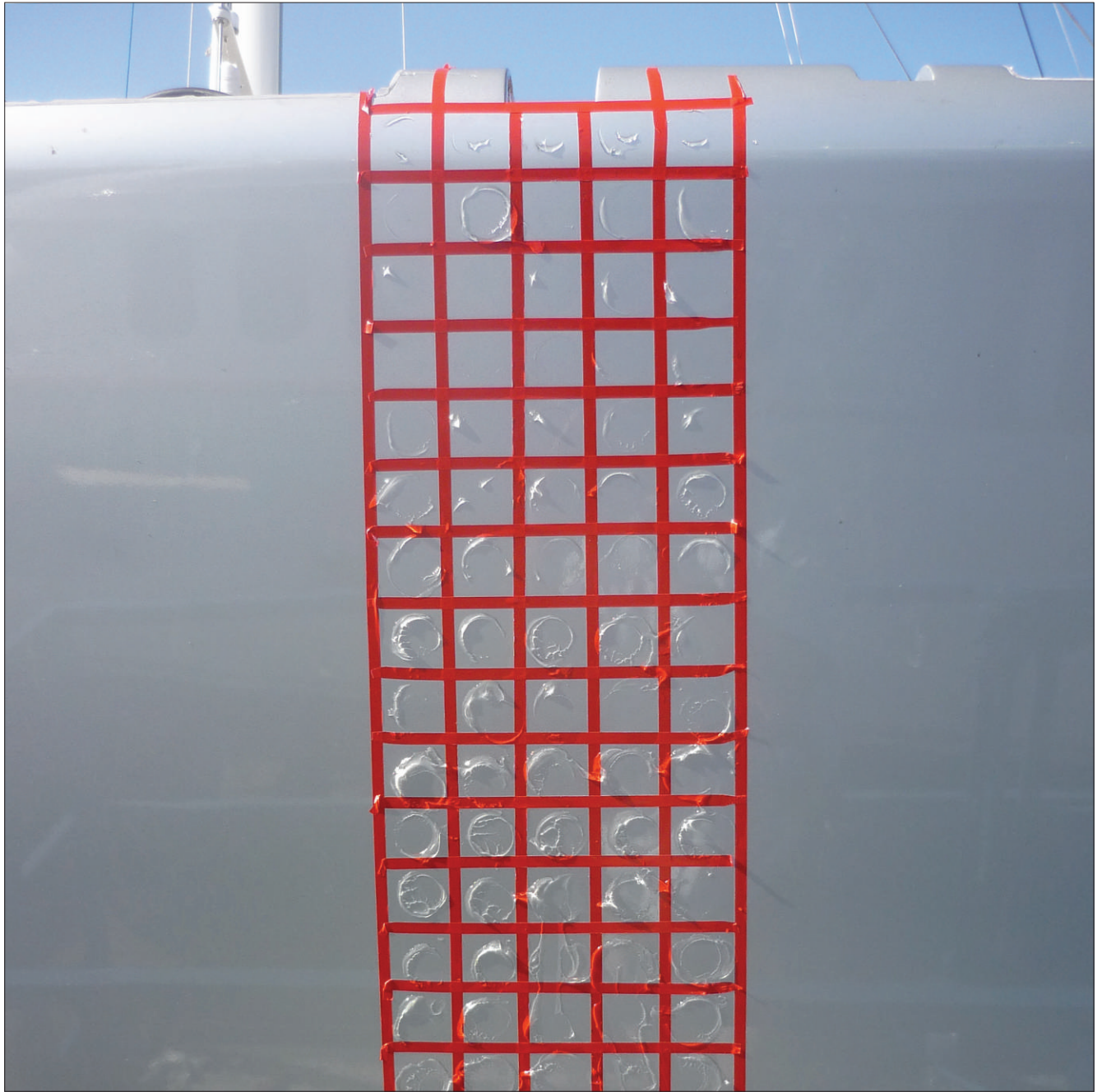


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ULTRASONIC TESTING
MEMBRANE CONCEPT
PILOT BOATS, PART 1
LARGE PROPS

PART 1

H/G-H Pilot Boats



Without fanfare, the pilot boats produced by a design/build venture begun in the late 1970s between two venerable Massachusetts firms—New Bedford-based C. Raymond Hunt Associates, and Duclos Corporation’s Gladding-Hearn Shipbuilding, in nearby Somerset—now dominate the U.S. fleet.

by Paul Lazarus

Artwork courtesy
Hunt/Gladding-Hearn
(except where noted)

Above—A Hunt-designed and Gladding-Hearn-built pilot boat photographed in its operating environment: the shipping lanes. One of an identical pair delivered in 2002 to the Association of Maryland Pilots, the 52.5' (16m) Patapsco is a good example of what the designer and builder call their Chesapeake class—the most popular size among the eight semi-custom pilot-boat classes currently produced by the H/G-H joint venture. In Part 2 of this article, we'll take a close look at Patapsco and her twin, the Patuxent.

For *Nautical Quarterly* issue number 37, published in the spring of 1987, Joseph Gribbins wrote a feature titled “Ray Hunt’s Associates.” Gribbins had previously profiled Ray Hunt himself in a piece titled “New England Archimedes” (NQ No. 25, Spring 1984); his follow-up article offered a close look at the design-and-engineering firm Hunt had founded. (Ray Hunt died in 1978 at the age of 70. See *Professional BoatBuilder* No. 50 for a retrospective titled “The Natural,” a selection of his iconic designs for power and sail.)

The Hunt office—full name, C. Raymond Hunt Associates—has since moved from a rehab’d granite warehouse overlooking Boston Harbor to a restored brick building in New Bedford’s historic district, close by the city’s Whaling Museum. In terms of business strategy, the Hunt office has stopped pursuing sailboat projects,

opting instead to focus exclusively on powerboats in the recreational (custom and production), commercial, and military market sectors. A brief update of the firm’s activities in each of these areas appeared as the lead item in the Rovings column in PBB No. 139.

Here’s some of what has *not* changed since Gribbins’s second article on the Hunt legacy: the founder’s first two hires are still on the job. John Deknatel, who joined Ray Hunt’s design practice in the early 1960s, became president in 1969; and Winn Willard, vice president, arrived in 1970; as principals they remain committed to Ray Hunt’s seminal thinking. Several other Hunt Associates working today at the firm’s top technical level also appeared in Gribbins’s ‘87 feature, namely: Peter Boyce (hired 1973), Stephen Weld (1983), and Craig Obara (1985). That continuity of key

personnel and founding philosophy counts for a lot at Hunt, just as it does at the Gladding-Hearn yard, run by the Duclos family for nearly six decades. We'll discuss G-H in detail in Part 2 of this pilot boats series.

One sign of the strength of the Hunt-Duclos relationship in the years since 1987: two Hunt staffers with formal training in drafting and basic engineering—Robert Provencal (hired 1988) and Joel Neider (1996)—are alumni of the shop floor at Gladding-Hearn. Finally, rounding out the small but productive crew at Hunt Associates is Serene Rousseau (2006), who manages the office along with the firm's well-organized website.

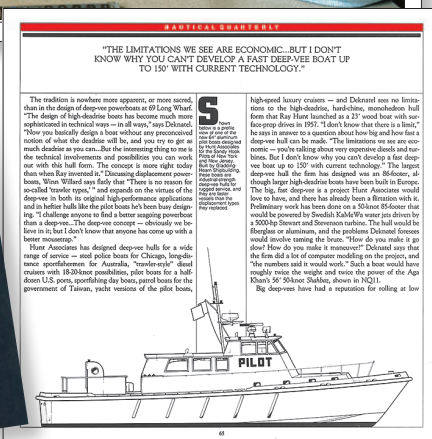
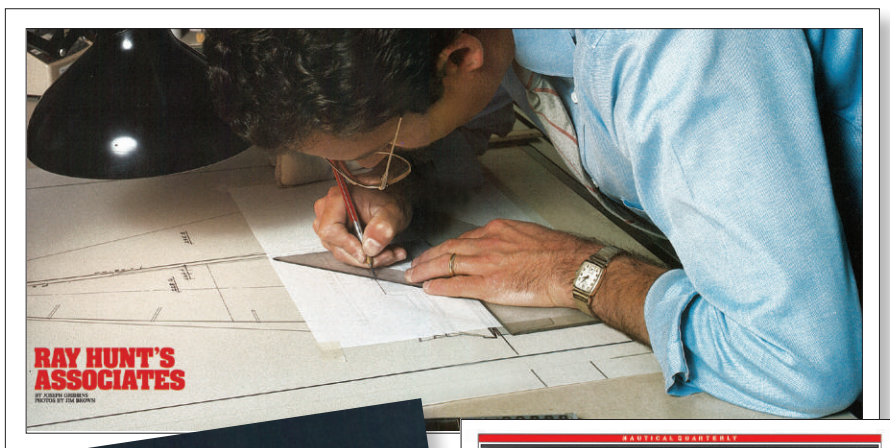
Why invoke a few long-ago articles in a short-lived and now hard-to-find periodical? Because NQ founding editor Gribbins *nailed* those two Hunt pieces. For all the press that Ray Hunt in particular and C. Raymond Hunt Associates in general have garnered over a period of some 50 years, none has been better presented graphically, or written more eloquently, than the NQ pair by Gribbins. Indeed, much of what he reported still obtains—and therefore applies to the PBB article at hand, focusing on the firm's pilot boats.

Ray Hunt, an inventive and intuitive genius, was a secondary-school dropout, albeit from the old and acclaimed boarding school Phillips Academy, aka Andover. John Deknatel, a Harvard alumnus with a degree in architectural science, attended Harvard's graduate school of design and worked in the office of yacht designer Phil Rhodes. Deknatel helped organize Hunt's solo practice, which was growing fast, owing mainly to commissions and contracts involving custom and production applications of Hunt's deep-V hullform. Although Ray Hunt failed to secure a patent for the high-deadrise monohedron hull shape he is widely credited with creating, he was nevertheless besieged with deep-V design requests, thanks largely to his work for Bertram Yachts, whose immediate, and dramatic, successes on the offshore racing circuit popularized the hull type, the brand, and the designer.

Joining Hunt and Deknatel was Winn Willard, with a degree in business

administration from Babson and graduate credits in naval architecture/marine engineering at the University of Michigan. Where Deknatel's talents were in science and art, Willard's contributions to the Hunt cause were his academic business background combined with exposure to Michigan's excellent naval architecture program. Among his duties at C. Raymond Hunt Associates, then as now, Willard took the lead on commercial and military projects; meaning, the pilot-boat business became his responsibility. For which the Hunt deep-V became the hook.

The first pilot boat designed by the Hunt office predated the Gladding-Hearn association. It was a commission for a 36' (11m) fast *launch* from a Newport, Rhode Island, pilot who did some boatbuilding on the side and desired a deep-V shape; it was early in Willard's tenure at Hunt, when virtually every pilot vessel of good size in the country had a displacement hull. Consider the context at the time of Hunt Associates' first contact with the pilotage industry: As recently as the late 1960s, the major pilot organizations in this country maintained comparatively large vessels, referred to in conversation as *cruisers* or *cutters*, that stayed on-station offshore for weeks on end. There they waited, with multiple pilots aboard, for tankers, freighters, container carriers, and the like to hove into view. All oceangoing, heavy-tonnage vessels were required by law to be locally piloted to their harbor destination for loading or unloading their cargo.



The opening spread and a sample page of a feature article published in Nautical Quarterly profiling the Hunt design-and-engineering firm, circa 1986-87. That article is discussed at length in the main text here. Pictured is a Hunt/G-H 64-footer (19.5m)—manually drawn—for Sandy Hook Pilots of New York and New Jersey, delivered in 1985. Elsewhere in that NQ article is a Hunt/G-H combination sportfishing-and-research vessel based on a boat similar to this one, which we'll view in Part 2.

Once a ship was within range, the cutter would dispatch a much smaller craft with a pilot to the waiting ship; the ship would slow down for the hazardous transfer of the pilot from the launch to a boarding ladder (Jacob's ladder) placed over the side of the ship. Launches, as a type, differed from port to port; they were often simply powerboats of expedience, adapted as needed to make the short haul from cutter to ship. For example, one dedicated version of the versatile Dyer 29 (8.8m), the oldest continuous production fiberglass powerboat, was a pilot launch.

Cutters too differed, depending on location. "Up until the late-1960s time frame," says Willard, "all the major pilot organizations in the U.S.—New York, Philadelphia, Galveston, San Francisco, all the big ports—had cruising pilot vessels. New York's, for instance, were fancy: fully crewed by U.S. seamen and outfitted with staterooms. Very expensive." Portland, Maine, and Boston employed big wooden schooners well into the latter half of the 20th century: the 96' (29.2m) *Timberwind*, built in 1931, served Portland's pilots; the 137' (41.8m) *Roseway*, built in 1925, was an on-station vessel for Boston pilots when Willard started with Hunt. These schooners would lower fiberglass semi-dories powered by outboard motors to shuttle pilots. The *Timberwind* was retired from pilotage in 1969, the *Roseway* in 1973, but they continued to work—the former in the tourist trade, the latter now in sail training.

And then Hunt Associates introduced an anomaly, in 1977. Willard says the builder-pilot Don Church, a member of the Newport, Rhode Island-based Northeast Pilots organization, "used aluminum for the hull and plywood for the deckhouse. Fairly crude. Power was one big Detroit 8V-92 diesel in the middle of it, and not a speck of sound insulation. That boat was the loudest thing you'd ever been in."

The real agent for change, though, was Jim Adams, a Delaware pilot whose personal boat was a small Bertram. Seasoned pilots tend to be true *watermen*, a term of respect, especially among commercial fishermen and operators on Chesapeake Bay; Adams certainly qualified. He well understood the difference



Top—The first H/G-H pilot boat, ordered by the Pilots' Association for the Bay and River Delaware, on the ways at Gladding-Hearn Shipbuilding prior to launching, in 1978. A 50' (15.2m) steel hull with an aluminum superstructure, the ruggedly built Hunt deep-V was a game-changer throughout the pilotage industry.

Above—The pilots, in jest, painted fighter-plane shark's teeth on the lower bow, but that add-on became a hallmark of Delaware's ensuing pilot boats. Since 1980, H/G-H pilot boats have been built entirely of aluminum.

between the ride he repeatedly experienced on the existing launches of the Delaware pilots' association, and his own Bertram. Delaware launches at the time were steel boats: rugged, heavy, displacement hulls, with 9–10-knot speeds. Adams began lobbying his organization to, in effect, change horses.

Willard: "So Delaware asked Gladding-Hearn," which already had designed and built about 30 pilot boats, including boats for Delaware, "if the yard could create a steel boat that went fast. Preston Gladding, the yard's naval architect from the beginning, came up with a boat that went about 16 knots. That was better than 8 or 9, but still wasn't quite enough. Jim Adams told his fellow pilots:

'Look, if we want a good, fast sea boat, we need a *Hunt deep-V*.' He pounded that drum for a while. Well, our firm said we could do it, and Gladding-Hearn said they'd do it. Preston Gladding worked on structures and systems; we gave him the naval architecture—a deep-V hull-form, arrangements, deck layout, aluminum superstructure, weight studies. It was a bit of a roll of the dice for all parties: Hunt and Gladding-Hearn hadn't done anything together before," let alone a still-unproven experiment (deep-V pilot boats) in a conservative industry.

Conservative, perhaps, but certainly evolving. For pilot organizations to radically modify, or abandon, their traditional cruiser/cutter business

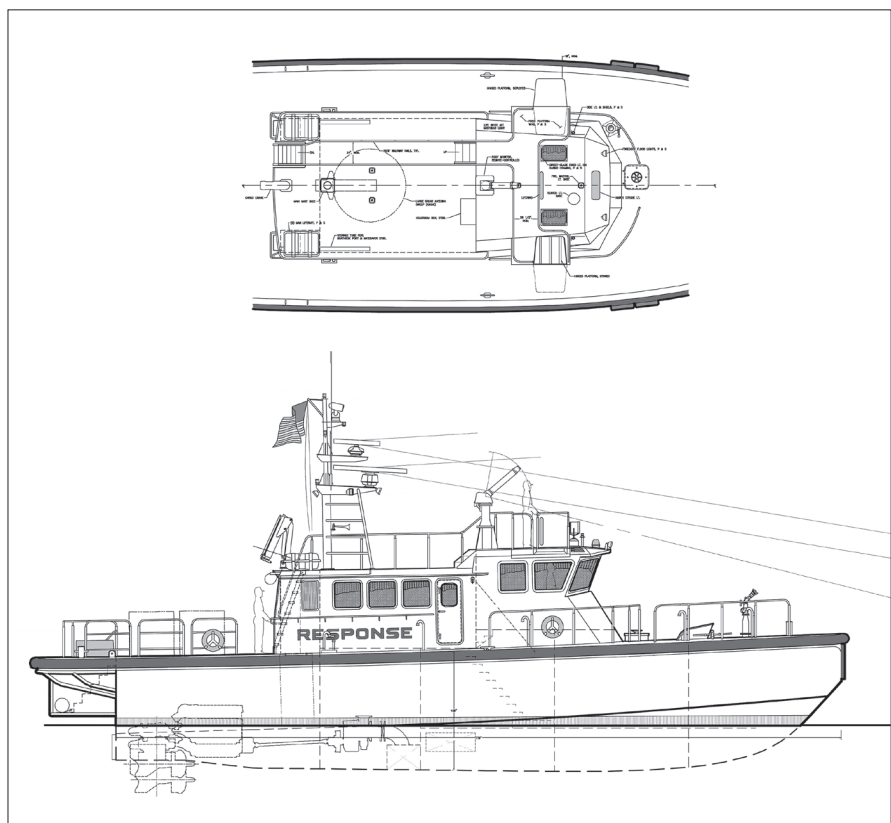
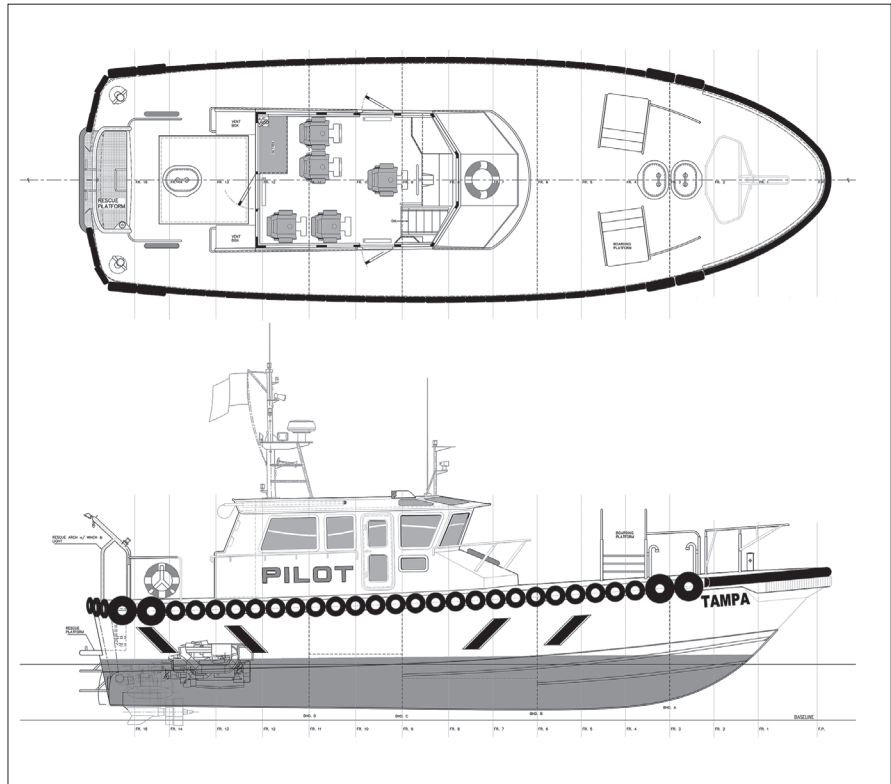
model, utilizing often slow small-craft to shuttle pilots from cutter to ship, they would have to replace it with a much different model, one calling for fast boats with more range, departing from shore bases. The busy Virginia, Delaware, and Maryland pilots, who shared a bay and were neighbors on shore, were willing to change their mode of operation.

“That steel 50-footer [15.2m] for Delaware was the first Hunt/Gladding-Hearn pilot boat,” adds Willard, “delivered in 1978. The boat did 20 knots, which is all we expected. Everyone was happy. One of the pilots had them paint shark’s teeth at the bow, like a fighter plane’s—except as a joke. But it stuck: every Delaware pilot boat since, has them.”

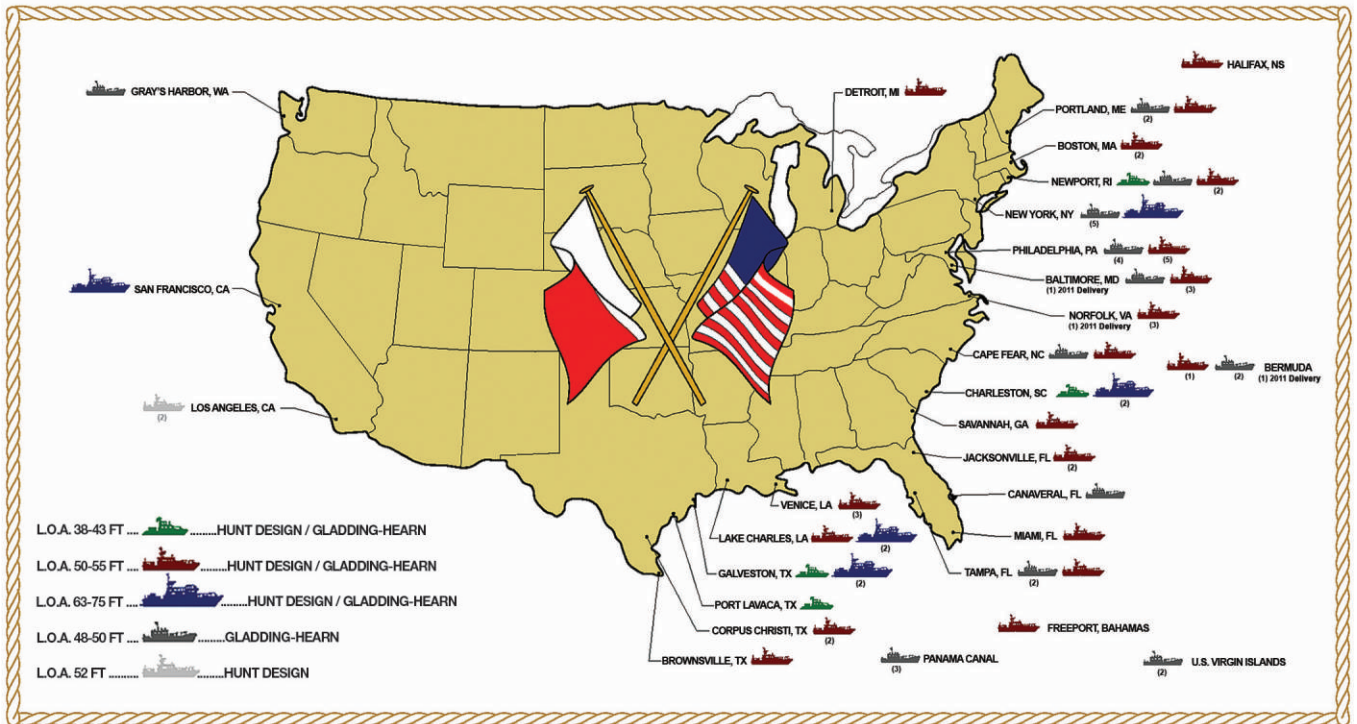
Pilots in the United States constitute a professional community, a society of sorts, concentrated in independent for-profit associations headquartered in major ports scattered along many thousands of miles of shoreline. Given that the first Hunt/G-H collaborative venture performed well in service, says Willard, “word got around that Delaware’s new boat worked. Gladding-Hearn helped spread the word: They’d always urged their customers to go see this boat or go see that boat, as a kind of demo. Anyway, we—Hunt and Gladding-Hearn—did a couple more steel boats right away: one for the Great Lakes pilots, delivered the following year and which is still operating, out of Detroit. Next, Tampa commissioned a design in 1980. We think of that group as our first batch of Hunt/Gladding-Hearn boats.”

Problem was, Willard adds, “we were hampered by horsepower. We didn’t have the powerful engines available today. The old 8-71s had a commercial rating of 270 hp [201 kW], times two [twin-engine installation]. Which is why we fought to keep the weight down, minimize structure in the boat along with everything else. Fortunately, those boats had very little in them. Simply built, tough as nails. They’d go through anything.”

Soon afterward, the Charleston, South Carolina, pilots ordered a pair of boats—matched 55-footers (16.8m), in aluminum. The Charleston pilots, too, wanted to go faster, says Willard. They were already running some older Gladding-Hearn boats, one of which



Two Hunt drawings depicting present and proposed twin-engine H/G-H pilot boats. **Top**—The 53-footer (16.2m) is being built for the Tampa Bay pilots. **Above**—The 64-footer (19.5m) is a multi-mission craft that Professional BoatBuilder previewed at smaller scale in our October/November 2012 issue. It’s shown here configured for a rapid-response role—fires or oil spills, say. Note the pod drives; this drivetrain arrangement improves maneuverability, fuel economy, and engine access while increasing accommodations space.



Note the legend, lower left. This “map” of pilot boats spans the time frame from 1957, when Gladding-Hearn built its first pilot boat (designed by Preston Gladding, co-owner and resident naval architect), to 2010, well into the yard’s relationship with Hunt Design. Despite their year-round operation in often difficult conditions, nearly all these boats remain in service—refitted as needed and perhaps bought by different pilot groups.

had suffered a fire, so the two new aluminum boats “had to be built in a hurry.” These were given sleeping quarters, a galley, and additional crew accommodations up forward. The new boats entered service in 1980.

Like nearly every pilot boat in the lengthy Hunt/Gladding-Hearn list of boats—more than five dozen as of this writing, including a few in build—those early aluminum boats are still in service, though no longer in Charleston. “One’s in Savannah [Georgia] and the other’s in Lake Charles [Louisiana],” says Willard. “They keep getting upgraded, refitted, rebuilt. One of the boats ran over a breakwater. Tore the bottom but got rebuilt. The other ran over an unmarked dredge pipeline in the middle of the night, which opened the bottom of that boat. It too got rebuilt.”

That first pair of all-aluminum Hunt/G-H pilot boats seeded the market, making a strong impression. By the early 2000s, pilots in one port after another up and down the Eastern Seaboard, and around the corner into the Gulf, had ordered Hunt-designed, Gladding-Hearn-built boats. All the boats were series built, not mass produced.

Each pilot organization worked different waters, requiring designs specially suited and outfitted to its coastal environment and the shipping that occurred in its domain. Each organization also had its own culture and history, and a membership and management that changed, however gradually, over time. The net result of these factors, which we’ll discuss in more detail in a moment, was a recognizable product line of boats that varied by region, in much the same way that commercial fishing craft did along the same stretches of American coastline, boats with identifiable features and characteristics rooted in local history and coastal geography.

The first quarter-century of Hunt/G-H pilot boats, transitioning early on from steel hulls to aluminum, yielded what amounts to a “generation” of these vessels, which is how they are referred to in the aggregate by Willard and his Gladding-Hearn counterpart, Peter Duclos, president of the family corporation. Willard and Duclos are developing a third generation. Meanwhile, the second generation—currently active in the marketplace (i.e., plans are drawn, boats are being built)—is subdivided into eight distinct “classes,”

or cohorts, each of which is named for the lead boat or region that lent its name to that class. (A similar convention is employed by the U.S. Navy.) The boat may be designated Gulf class, say, or Chesapeake class, but the nomenclature simply identifies a hull model and general size that vessels in each class share. Were a pilot organization operating in Alaska, for example, to place an order for a boat in one of those two classes, Hunt and Gladding-Hearn can readily vary the profile, layout, and outfit to suit.

Many people research products online, and despite their price tags, pilot boats are no exception. Pilots prospecting for vessels often browse the Hunt or Gladding-Hearn websites, particularly the former, which offers a virtual field guide to the extensive H/G-H product line, complete with particulars for each of the eight classes.

The long arc of Winn Willard’s career at Hunt Associates coincides with the progressive transformation of the U.S. pilotage industry. (Hunt and Gladding-Hearn have strictly limited their involvement in pilot-boat design/build projects beyond our borders. Note that Hunt

has designed a few pilot boats for the West Coast, whose ports exceed any practical delivery range for Gladding-Hearn. This includes Los Angeles, a named active class, whose lead boats, with fiberglass hulls and aluminum houses, were made by Willard Marine [no relation to Winn Willard], a long-time commercial and military builder near L.A., in Anaheim.)

The Hunt deep-V did not, of itself, radically alter the architecture of pilot boats; rather, the gradual adoption of the Hunt hullform by the vast majority of U.S. pilot organizations (Willard estimates the Hunt/Gladding-Hearn product line commands 75%–85% market share) helped accelerate certain trends within the industry that, in turn, have affected the design and

engineering of the boats.

Diesel engines, for example, are substantially improved over what was available for installed power in the late 1970s and early '80s, when the Hunt/G-H collaboration began; so, older boats can go faster via upgrades, and new builds can be designed to take advantage of advanced propulsion systems.

Favorite Size

In italics under the following subheads are Willard's comments and anecdotal recollections regarding the U.S. pilotage industry as he has come to know it, by way of Hunt Associates' longstanding relationship with Gladding-Hearn.

The run of the current class of 51'–53' [15.5m–16.2m] pilot boats, a size that seems universally popular, began in 1980 with the Virginia pilots. They wanted to move ashore as a safety measure, to minimize the time spent on station and the expense of maintaining a cutter/cruiser.

They built two boats in 1980 and have had six more of a similar type

built since. They sold off the early ones. The first, Virginia, was sold to Boston pilots, who ran it for a number of years, and then it was sold to Halifax, Nova Scotia, pilots, and is still working up there. It's a size boat big enough to be comfortable in most sea conditions, fast enough, and economical to buy and to operate. These boats don't have accommodations to speak of, maybe a berth or two and a head down below, and in some cases a coffee pot and a microwave, and four to six seats up in the deckhouse for the pilots.

The early boats at this size weren't that fast: 20 to 22 knots with available horsepower, in those days. But that was fast enough. They didn't want to go much faster then. Today, though, they do go faster, because there's so much more horsepower available.

Since 1980, this class has evolved. It's been tweaked and modified a bit, and each boat's unique to the pilots that run them. They all have slightly different requirements.

We now call it the Chesapeake class. Maryland uses it, Delaware uses it, Virginia uses it. There are actually two variations of this type. One has a slightly lower sheer, though the average guy couldn't tell them apart. And there are minor variations on this theme. I don't know how many boats like that have been built; I'd have to look it up. Thirty or so boats?



Two H/G-H vessels for the Virginia pilots suggest the quintessentially conservative nature of the pilotage business.

Left—The 51-footer (15.5m) entered service in 1982. **Top**—The Chesapeake-class 53-footer, new in 2011, affords better visibility in the wheelhouse, along with many changes: mechanical, electrical, and plumbing systems, crew spaces, and safety features. We'll detail these in the next issue.

Culture Changes

When I first started working with the pilots, I was a kid comparatively; didn't know anything as far as the pilots were concerned. I had to sell myself in order to sell a boat. Now, I'm dealing with the sons of those guys. It's my turn to question them: 'You old enough to be a pilot? Yeah, I guess you are. I knew your father, and I heard all about your grandfather.'

Some of the pilot organizations used to be very localized. Those jobs were passed down from father to son or nephew or cousin. It's much more open now: quotas, if you will, for men, women, different ethnicities. So they've opened up a bit, especially at some of the Southern ports. Pilots today are also more highly trained. A lot of them used to be just local boatmen, watermen, who picked up piloting, learned it the hard way. Now they're maritime academy grads, for the most part, certainly college grads. And many have been at sea, want to come ashore, go home at night, or every other night.

Being a pilot is a coveted job. They're willing to travel a long way. They



The most hazardous part of a pilot's job is the transfer, when he or she boards the ship to be piloted into harbor: the pilot steps from the pilot boat's housetop (if equipped with a partial cage) or deck onto a Jacob's ladder lowered by the ship's crew. The 75' (22.9m) Fort Moultrie is one of a pair of boats delivered by H/G-H to Charleston, South Carolina, pilots in 1999.

might even be New Englanders piloting boats in Oregon. Some pilots commute very long distances: they go to work for two weeks and then go home, wherever home is. Very tough job. Doesn't matter what kind of boats you have, you still have to climb that ladder in all kinds of weather.

I've gone out to ships with the Charleston pilots. They'll come alongside the

ship, the pilot's on the boarding platform on the roof, the boat pulls alongside, the pilot steps right off onto the ladder—and then you're gone. It's that quick.

Does the boat break away once he's on the ladder? That depends on the individual pilot. One guy will say, 'When I get on the ladder, get out of here. Because I don't want the boat grabbing the ladder.' Which can happen; the boat can rise up in a seaway and pin the ladder, and pull the ladder down. Now the pilot is hanging on; so he wants that boat to get away.

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Some pilots, though, have said, 'I'd rather fall off the ladder and land back on the boat than in the water.' Still other pilots have said, 'No way. I want to fall in the water.' They all have different boarding techniques, and it varies from pilot to pilot.

The pilots respect the risk of falling into the water; at the same time I think they all accept it as part of the job. They're extremely careful about how they do their job.

The Deep-V as Boarding Platform

One of the big benefits the pilots discovered, almost inadvertently, with our boats, was that the deep-V hulls make excellent boarding platforms. The pilots were initially after seakeeping, but lo and behold, the hulls turn out to be incredibly stable alongside a ship. The V-bottom, an inherently dynamic shape at sea, with a lot of water moving under it, is more stable than a slower displacement type.

When you come alongside a ship in a pilot boat, it's a strange experience, because you close in on the ship and it

feels like a normal boat coming up against another boat. But at some point the ship is so large, it seems like everything stops. You're reaching the ship's speed, and the ship is a gigantic wall; you feel like you've stopped, but you haven't stopped. The water is rushing by you. And it's getting squeezed between the pilot boat and the ship. That's called a channel effect. A good pilot-boat operator brings the boat in and never touches at all, or barely touches it. Suction will hold the pilot boat against the ship, and there's a tremendous amount of water running between the two. The older displacement boats that had a deep keel under them, they'd heel outward, because the suction on the keel down low would lever the little boat out away from the ship. So the little pilot boat had to angle away from the ship.

In any case, the deep-V tends to be dynamically much more stable. As it's forced down one way, the righting forces pick it up. Whereas on a flat- or round-bottomed boat, at speed, as it heels down, the forces on the bottom try to tip it over. So these boats of ours

turn out to be very stable as boarding platforms—something no one could have predicted, because there hadn't been a deep-V pilot boat before ours.

Pod Drives

Volvo Penta's Inboard Performance System [IPS] is being offered. Or asked for by customers. Frankly, I'm surprised it hasn't been a harder sell, since pilots tend to be pretty conservative, not quick to change. But then occasionally they go off in a new direction: they'll buy something completely different, like a pod drive.

Volvo's been proactive and cooperative; they invited a bunch of pilots to show them the operation [a facility based in Chesapeake, Virginia], then ran them on boats with IPS units. I took a few pilots out on a Hunt motoryacht, an IPS-equipped 52-footer [15.8m], off Rhode Island, and ran it alongside a Hunt/Gladding-Hearn pilot boat of about the same dimension, fitted with a standard shafts-and-props drivetrain. The yacht had C-18 Caterpillars; the pilot boat had C-18 Cats in it. There's a difference in horsepower, however:

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a yacht rating of 1,000 hp [746 kW] versus a commercial rating of 715 hp [533 kW]. The pilots saw that an IPS system equalled the performance of a conventional propeller installation with more horsepower. If they could get by with smaller engines, it would mean less fuel. And that translates: they spend many thousands of dollars on fuel every year. So they'd save money on fuel; they like that. They often buy fuel a couple of years out if they think fuel prices are good; purchase a contract for thousands of gallons, and hope they don't get whacked when the price goes the wrong way.

The pods, from that point of view, might save them some fuel; but there's no great performance gain at lower speeds. Probably more efficient than with propellers. Still, you do get other advantages: lower engine height within the hull, the ability to move the house aft, and powering with smaller engines—12-liter diesels, say, instead of 16-liter diesels. Not to mention greater maneuverability and tracking. Then, all of a sudden, an IPS makes some sense.

Bigger Pilot Boats

The first of our bigger Hunt/Gladding-Hearn boats were actually not much bigger: a 64 [19.5m], for New York, and a 63 [19.2m], for Lake Charles. The reasoning behind a slightly bigger boat was accommodations: overnight

accommodations for the Lake Charles [Louisiana] pilots, for example, who have a long run. The 67' [20.4m] boat we designed for San Francisco doesn't look like it has accommodations, but it does. Those pilots use it mostly as a run boat, because they have bigger vessels,



Lake Charles, Louisiana, pilots took delivery of this H/G-H 63-footer (19.2m) in 1993; as the lead boat in a series, she established what Hunt and Gladding-Hearn designated their Gulf class. The class reflected a then-new trend toward "larger, more seakindly vessel[s] for those pilots who needed to go further offshore or remain on station for short periods of time."

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In the early 1990s, Hunt designed and Gladding-Hearn built a 67-footer (20.4m) for the San Francisco pilots. As Hunt's Winn Willard says, "Those pilots use it mostly as a run boat, because they have bigger vessels, 104-footers [31.7m] that live offshore. They're cruising there; our smaller-bigger boat can now substitute when one of their cruisers has to come in."

104-footers [31.7m] that live offshore. They're cruising there; our smaller-bigger boat can now substitute when one of their cruisers has to come in.

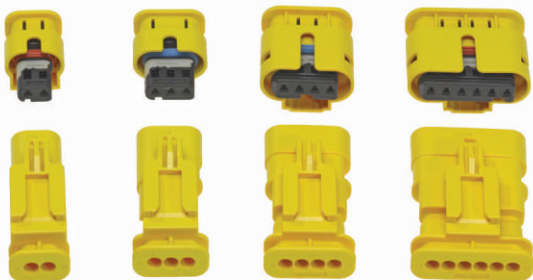
We did not design/build San Francisco's cutters, but we did bid on them. The pilots ended up contracting with a West Coast yard; those were among the last boats built by Marco Marine [a once-major supplier of commercial vessels, in Seattle].

So: New York, 64'; Lake Charles, 63'; San Francisco 67'. The driver in all cases was primarily more accommodations.

Concurrently, another trend in piloting that's come along is this: ships have gotten bigger and faster. Also, ships don't want to slow down any more than they have to. In the old days, when the pilot boarded from a lifeboat—or some other very slow small-craft—the ship had to stop. But now, the ships are much

happier if you can come alongside when they're doing 10, 12, 15 knots. If the pilot can board at that speed, then the ship's not losing any time at all. In reasonable weather, you can do this. But if the weather is nasty and snotty, then the ship will turn to offer a lee, and the pilot can sneak in on the leeward side. Again: if the weather's decent, that ship wants to keep on steaming and wants you to come right up.

Because ships are getting bigger and faster, the pilot boats have to be faster to keep up. Also, bigger ships have deeper draft; as the result of various shipping accidents and spills, the



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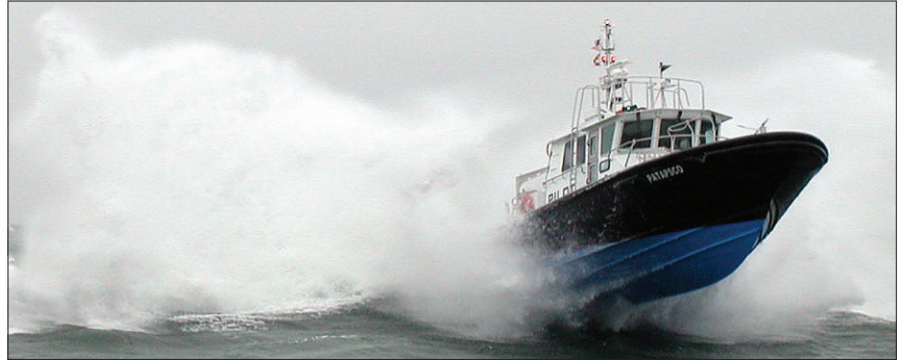
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A graphic demonstration of why the Hunt deep-V, combined with Gladding-Hearn construction, has captured more than three-quarters of the pilot boat market in the Atlantic and Gulf fleets in particular. The boat is the Patapsco; she is shown in profile motoring at low speed on page 34.



pilots are now mandated in many ports to board farther offshore. Thus, the little pilot boats have to go farther out to do the boarding. That drives pilot boat design in two ways: pilots want faster, to get out and back; and they want bigger, to cope with the sea conditions out there.

A Charleston-class 75 [22.9m] is the biggest pilot boat we've done to date. Twenty-eight knots top speed, 100,000 lbs [45,359 kg]. The pilots run the boat in the low 20s, but always tell the helmsman to step on it when they're heading home—even though, officially, they're supposed to be conserving fuel.

Waterjets, Panamax, and Upgrades

Galveston, Texas, pilots bought two 70-footers [21.3m] from us, fitted with big jets. Powered by very understressed 38-liter Cummins diesels, which is about 1,300 hp [969 kW]. Those engines, with jets, are designed to run at full power—and they do: the pilots run those boats full speed once they clear the breakwater.

The engines are happy at that speed. You could generate electricity 24 hours a day with the engine running at that rate. May seem like wicked overkill, but, it's going to be reliable, it's going to last a long time. It's not an engine you'd buy for yachting; it's an industrial engine.

The big pilot boats have arrived for Hunt/Gladding-Hearn because pilots need to go fast and farther offshore. Plus, you now have this new generation of so-called Panamax ships, ships that can transit the recently widened Panama Canal. Those ships are both wider and deeper. That development means more big shipping will be coming to the East Coast, as opposed to being offloaded at ports like Long Beach and Los Angeles. Container ships especially. So all the ports on the

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East Coast either already have dredged, or are in the process of dredging, as much as they can, down to bedrock, where they're blasting away—because they're all hoping for the business.

However, if pilotage is trending toward bigger ships farther offshore, and pilot organizations want to go faster and at the same time be more economical, then those represent competing requirements. Right now, the most popular size among pilot organizations remains the 51- to 53-footers, depending on how the lines fair out.

As for retrofits, the Hunt/G-H boats get upgraded regularly. Or they're sold off, and then someone else upgrades them. One of the Virginia boats went to the Cayman Islands, where it was converted into a multipurpose craft, for line handling, et cetera. Virginia Pilots and some of the other big organizations tend to run a boat for x-number of years, lay it off, advertise, and sell it. Then buy a new one. They get pretty good money for the used boats. Smaller pilot organizations that can't afford a new boat will buy used.

There have been instances where an association will not wait for a boat. They're buying a boat, just not a Hunt/G-H. We give it our best shot, but other people do, too. Generally, once we get a customer they stay pretty loyal. Sometimes they don't: management changes in a pilot group; they have their own ideas, their own friends.

Foreign Sales

We haven't done many boats for overseas. In the U.S. a Hunt/G-H model is the only way to get a Hunt-designed pilot boat. Outside the U.S. is another market, but American-made boats are expensive. Occasionally we receive inquiries from Out There. But Bangladesh? Probably not. They're not going to buy one, though they'll inquire. Australia was a possibility for us for a time; then local politics took over, as it often does.

The 40% Rule and Other Hunt Guidelines

You look closely at all our commercial boats, and you'll see they vary a lot. But we make sure a substantial percentage of the chine length is in the water so you get decent stability. For average use, that's what you want. Because it is waterplane area, and especially waterplane beam, that is the major factor in static, and to some extent, dynamic stability. The farther

apart the chines are, the better they function like training wheels on a bicycle; you don't put training wheels in close, right?

As for chine flats, we vary the angle that the chine takes back to the transom. We vary the width: wider, narrower; depends on what we're trying to accomplish. Almost all our chines are always horizontal unless somebody insists that they have some down angle, but we really don't see the benefit.

Maybe for spray control. Even so, boats go all over the place; giving them a chine with 2° or 3° down-angle—does the ocean know? I'm not convinced.

One thing's for sure: Not every deep-V is created equal. Hunt Associates has been designing, and refining, this hull-form since the 1960s. We have 50+ years of performance data to draw on. **PBB**

About the Author: Paul Lazarus is Professional BoatBuilder's senior editor.



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