

HORIZON OFFSHORE SERVICES

Maritime Strategy · Offshore Engineering · Policy Research · Workforce Intelligence

MARITIME STRATEGY · NATIONAL SECURITY · WORKFORCE

Ships Don't Begin in Shipyards. They Begin With Minds.

America is pouring billions into steel and dry docks - but ignoring the architects who design what goes in them. This is not a workforce problem. It's a national security emergency hiding in plain sight.

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230x	8	35%	600
China's shipbuilding capacity vs. USA	US commercial vessels built in 2024 (China: 1,000+)	Drop in US maritime academy enrollment (last decade)	Naval architect & marine engineer jobs opening annually to 2034

"Let's be clear - ships do not begin in shipyards. They begin with naval architects and marine engineers."

The thesis that Washington is not yet ready to fully confront

HORIZON OFFSHORE SERVICES - RESEARCH PERSPECTIVE

At Horizon Offshore Services, we operate at the intersection of offshore engineering, vessel procurement, ship finance and maritime workforce strategy. Our teams work alongside naval architects, marine engineers, and offshore project managers daily. The talent crisis described in this report is not abstract to us - it is a present operational reality. The erosion of America's ship design pipeline directly constrains the offshore energy, defense, and commercial maritime sectors we serve. This research brief is part of our commitment to elevating the national conversation on maritime human capital, design sovereignty, and long-term industrial competitiveness.

The Uncomfortable Truth No One Is Saying Loudly Enough

When Congress debates American shipbuilding, the camera pans to the shipyard floor — welders, steel plates, dry docks. That framing is **dangerously incomplete**. Every warship, every nuclear-powered submarine, every carrier strike group asset starts as an idea drawn by a naval architect and tested by a marine engineer. Without that intellectual foundation, a rebuilt shipyard is just an expensive empty building.

The United States shipbuilding market is valued at US\$**40.9 billion** in 2026. The naval segment alone is projected to grow from US\$104 billion today to \$128 billion by 2035. Bipartisan momentum is real — the SHIPS for America Act of 2025, reintroduced in April 2025, plus President Trump's April 9, 2025 Executive Order on 'Restoring America's Maritime Dominance' signal political will unlike anything seen in decades.

But political will without intellectual capital is a ship without a rudder. We are investing in the hull and ignoring the brain.

Horizon Offshore Services has observed this dynamic acutely across our project engagements spanning Gulf of Mexico (GOA) offshore infrastructure, naval support vessel procurement, and maritime workforce consulting. The scarcity of qualified naval architects is already extending project timelines and inflating design costs - a warning signal the broader industry cannot afford to ignore.

The Strategic Gap Is Not Where You Think It Is

UNITED STATES		CHINA (PLAN)	
Fleet:	~290 battle-force ships	Fleet:	400+ warships & growing
Shipbuilding capacity:	<100,000 tons	Shipbuilding capacity:	~23 million tons
Naval architects graduating:	Hundreds per year	New orders 2024:	113M DWT (+58.8% YoY)
Maritime academy enrollment:	Down 30–35% (decade)	Design investment:	State-funded at scale
Design pipeline:	Atrophied (GAO confirmed)	Commercial-military fusion:	Fully integrated

A leaked U.S. Navy briefing slide, confirmed as authentic by officials, put it in stark relief: Chinese shipyards have a production capacity of roughly 23 million tons versus less than 100,000 tons in the United States. That is not a gap. That is a chasm that took three decades of neglect to create.

But here is what gets almost zero coverage: **China's advantage began with design, not construction**. The Made in China 2025 initiative explicitly targeted ship design and manufacturing equipment, aiming for a 50% global market share in high-tech ship design. They invested in the minds before the machines.

NATIONAL SECURITY ALERT

The Congressional Research Service has confirmed: limited numbers of ship designers - naval architects and marine engineers - are a central factor in Navy shipbuilding delays. The GAO further verified that 'the Navy's own design force atrophied' over years of neglect. Thirty-seven of the 45 battle-force ships currently under construction face significant delays. The design talent shortage is a direct contributor.

Where Is the Next Generation of American Naval Architects?

There are precisely a handful of institutions that produce America's naval design talent: the U.S. Merchant Marine Academy, six state maritime academies, and a small cluster of universities - Michigan, Maine Maritime, Webb Institute, SUNY Maritime, University of New Orleans, Stevens Institute, Virginia Tech. That is the entire pipeline feeding the design of America's next generation of warships, nuclear submarines, and - if we get serious - nuclear-powered commercial vessels.

The numbers are sobering. The U.S. Bureau of Labor Statistics estimates only about **600 naval architect and marine engineer jobs will open annually through 2034**. That sounds manageable - until you realize that major shipbuilding programs like Virginia-class submarines and Gerald R. Ford carriers require thousands of new specialized hires per year, and that the maritime academies would need to **double their graduates** just to meet current demand, and **triple or quadruple them** if demand grows modestly.

Meanwhile, enrollment at the six state maritime academies has fallen 30-35% over the past decade. The Congressional Budget Office's Eric Labs testified bluntly: engineers who could work in naval design 'can take other jobs' - and increasingly, they are. Remote work opened coastal-city salaries to inland talent. Why tolerate shipyard conditions for moderate pay when *Silicon Valley* will hire you from anywhere?

Horizon Offshore Services actively recruits naval architects and marine engineers on part time basis for offshore infrastructure and vessel design roles. Our technical team report average time-to-fill for senior naval architecture positions has extended from 6 weeks to over 5 months in the past three years - a direct reflection of the pipeline collapse described here. The talent shortage is not a forecast. It is the present condition of the American maritime engineering market.

"If we want to rebuild American shipbuilding, we must also exercise and sustain America's ship design capability."

The argument that must drive policy — not just politics

Intellectual Property Is the Real Strategic Asset

Advanced propulsion. Electromagnetic catapult design. Nuclear reactor integration for submarines and carriers. Stealth hull geometries. Integrated combat systems architecture. This is where America still holds decisive advantages - but only because that knowledge lives in a shrinking pool of highly specialized engineers. Some of them are approaching retirement. Their replacements are not in sufficient supply. We need the old school and pay them more in order to build effective young generation roles and shipbuilding future. This transition is paramount.

Ship design is where intellectual property resides. It cannot be offshored without catastrophic security consequences. It cannot be imported from South Korean or Japanese partners when it involves nuclear propulsion or classified combat systems. The knowledge must be grown, cultivated, and retained inside American institutions - universities, national labs, and the defense industrial base.

THE AUKUS DIMENSION

The AUKUS submarine agreement commits the U.S. to transferring nuclear submarine technology to Australia - a venture requiring not just shipyard capacity, but exceptional naval design and nuclear engineering expertise. If America's own design pipeline is hollow, this commitment becomes extraordinarily difficult to fulfill, and the strategic value of the alliance is diminished before a single hull is laid.

Six Urgent Solutions - Concrete, Not Aspirational

01 Federal Naval Architecture Scholarship Program

Full-ride scholarships for accredited naval architecture and marine engineering programs, tied to a 5-year commitment in defense shipbuilding - modeled on STEM military academies. Target: 2,000 new graduates annually by 2030. Horizon Offshore Services advocates for public-private co-sponsorship of such scholarships, with industry partners committing internship pipelines alongside federal funding.

02 National Ship Design Institute

A federally chartered center - analogous to DARPA for ship design - co-located with existing universities and Navy labs to develop next-gen propulsion, nuclear integration, and autonomous vessel architectures. Horizon Offshore Services supports a commercial offshore engineering component within such an institute to bridge naval and commercial design disciplines.

03 Competitive Naval Architect Pay Reform

Bring naval design compensation in line with aerospace and tech engineering. The GAO has identified pay as the single biggest factor driving talent attrition. A 40–60% salary realignment for design roles is achievable within existing defense procurement reform. Horizon Offshore Services has implemented internal pay benchmarking against aerospace peers to remain competitive for top design talent.

04 Military-to-Maritime Transition Pipeline

Veterans with nuclear, mechanical, and engineering MOS classifications are pre-qualified for accelerated naval architecture programs. Formalize this pathway through the DoD Transition Assistance Program with direct industry placement. Horizon Offshore Services has a standing commitment to prioritize veteran hiring into its engineering and vessel operations divisions.

05 Regional Maritime Design Clusters

The SHIPS Act's regional shipbuilding cluster model must explicitly include design hubs - not just yards. Anchor institutions (universities, community colleges, Navy labs) should be co-located with or contractually tied to regional shipbuilding zones. The Gulf Coast - home to Horizon Offshore Services' core operations - represents an underutilized corridor for precisely this kind of integrated maritime design and build ecosystem.

06 Digital Design & AI-Augmented Engineering

Deploy digital twin technology and AI-assisted ship design tools across the U.S. naval architecture pipeline. Global shipbuilders have achieved over 65% adoption of automation and digital twin technologies. American design programs must match or surpass this. Horizon Offshore Services is currently piloting AI-assisted vessel specification tools in our offshore project engineering workflows - fewer architects can produce more when their tools are world-class.

The History That Should Terrify Us - and Motivate Us

In 1940, the United States had no amphibious ships. By war's end, it had 2,547. When it entered World War II, the U.S. Navy had seven large aircraft carriers. By 1945: 28 large carriers and 71 escort carriers. In five years, American industrial and design capacity built a navy that crushed Imperial Japan.

That capacity existed because of decisions made in the 1920's and 1930's - to fund naval architecture programs, train engineers, develop design methodologies. The combat victory of 1945 was designed in classrooms and drawing rooms a generation earlier.

The decisions we make in 2026 will determine whether an American naval architect in 2040 has the knowledge, tools, and institutional support to design the fleet that protects freedom of navigation through the South China Sea - or whether that battle is already lost, not in war, but in neglect.

"Are we investing enough in the next generation of American naval architects?"

The only question that determines whether everything else matters

The answer, right now, is No. **And we can change that - but only if we stop treating ship design as a downstream afterthought to shipyard construction and start treating it as the irreplaceable upstream investment it has always been.**

ABOUT HORIZON OFFSHORE SERVICES

Horizon Offshore Services VA Group is a specialized maritime project and ship management, marine engineering and strategic financing firm operating across the Gulf of Mexico (GOA), Atlantic Seaboard, and international offshore corridors. Our practice areas include offshore vessel engineering and procurement, naval architecture consulting, maritime workforce strategy, and offshore infrastructure project management. We partner with defense contractors, energy majors, port authorities, and government agencies to solve complex challenges at the intersection of maritime engineering and operational strategy. Horizon Offshore Services is committed to the revitalization of American ship design capability as a matter of both commercial competitiveness and national security.

The yards are the body. The architects are the brain. Fund both - or build nothing that lasts.

Share this with a policymaker. A university administrator. A defense contractor. A young engineer who doesn't yet know that naval architecture is one of the most consequential careers in America right now.

The next generation of naval architects will design the ships that keep this country free. The question is: Will we give them the support to exist?

To learn more about Horizon Offshore Services' maritime workforce and engineering advisory practice, visit horizonoffshoreservices.com

Summary Research Sources: McKinsey & Company (Jan 2026) - 'Helming a Sea Change: Building the Future Workforce for US Shipbuilding'; Deloitte - 'Refit to Rebuild: A Blueprint to Boost US Commercial Shipbuilding Competitiveness'; Congressional Research Service, Navy Force Structure and Shipbuilding Plans; Government Accountability Office; USNI News; Center for Strategic & International Studies (CSIS); Foreign Affairs - 'Does America Face a Ship Gap With China?'; IBISWorld US Ship Building Industry 2025; Fortune Business Insights; U.S. Bureau of Labor Statistics; War on the Rocks - 'A Workforce Strategy for America's Shipbuilding Future' (July 2025); 19FortyFive; Center for International Maritime Security (CIMSEC); SOFREP.

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