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JOINT FORCES STAFF COLLEGE
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**The Criticality of Maintaining a Lead in Shipbuilding
Over Near-Peer Competitors**

Juan Vives

Commander, U.S. Navy

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Over Near-Peer Competitors**

By Juan Vives

Commander, U.S. Navy

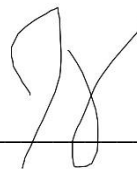
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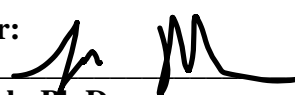


Thesis Advisor:

Signature: _____

Jon Mikolashek, Ph.D.


Professor



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Eric Fowler, Colonel, USA

Director, Joint Advanced Warfighting



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Abstract

The U.S. is in a Great Power Competition with the People's Republic of China and the Russian Federation. If war ever breaks out among the competitors, it will primarily be fought at sea. The greatest credible and persistent deterrent to conflict and war in the Pacific Ocean against the PRC and Russia that the U.S. can have is a robust and healthy military shipbuilding industry and more ships.

The U.S. Navy is shrinking while the People's Liberation Army Navy (PLAN) is growing larger with no signs or intent to slow down in the coming decades. While the U.S. Navy's inventory is more advanced, technical superiority is insufficient to deter the PRC from initiating conflict or war.

PRC's grand strategy and PLAN tactics highlight the importance of the U.S. in maintaining a physical presence of ships in the vast expanses of the Pacific Ocean. The U.S. must reverse the trend of atrophy in the shipbuilding industry so that it can put ships to sea more quickly than it does now. The U.S. also must make smarter decisions when it comes to acquiring new classes of ships and should also investigate foreign military sales as a way to boost the shipbuilding industry.

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Table of Contents

Introduction.....	1
Chapter 1: Historical Example.....	7
Chapter 2: Current State of Fleets.....	11
Chapter 3: Analysis.....	24
Chapter 4: Recommendations and Way Ahead.....	29
Conclusion.....	33
Bibliography.....	37
Vita.....	40

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Introduction

The United States has been in Great Power Competition for several years now, facing off against who is generally considered to be its near-peer competitors: the People's Republic of China (PRC) and the Russian Federation, with the PRC identified as the pacing challenge. The competition may or may not escalate to war or kinetic conflict. It has been said that the best way to win a war is to win it without having to fight.¹ In other words, the best way to win is to have the best deterrent. The best way for the U.S. to win the Great Power Competition is never to fire one round or kill a single enemy combatant. In this sense, winning means emerging as the leading industrial and technological power and maintaining the existing world order. The U.S. can emerge triumphant from the Great Power Competition by having credible and persistent deterrents. If war ever breaks out, it will primarily be fought at sea in waters close to the PRC and Russia. The U.S. cannot afford to have its military-industrial base stall or fall behind its adversaries, specifically shipbuilding. The U.S. needs to maintain dominance in the shipbuilding industry and build more ships to strengthen deterrence in the Pacific Ocean further and ensure its national security.

Deterrence is not a new concept; states continuously look for new and effective ways to gain an advantage over friends and enemies. Dissuading enemies and adversaries from taking offensive action against them is a way to maintain an advantage. The cost of being one of the leading global powers is constantly having to defend that position against would-be competitors, whether they compete directly by playing by the established rules or indirectly by changing the rules. Maintaining deterrence is recognized at the highest levels of the U.S. government and is outlined as a priority in the current global security environment.² This is not likely to change in the immediate future.

The U.S. emerged triumphant from the Cold War—its last great power competition—partly by its vast economic means; the U.S. outspent the Soviet Union during a long and intense arms race that spanned decades. The attempt of the Soviet Union to try to keep up with U.S. defense spending was one of the many causes that led to the dissolution of the Soviet Union, effectively ending the Cold War with the U.S. claiming victory.³ In today's more closely connected and globalized economy, counting on economic means to win a competition may not work as effectively. Despite a highly globalized and interconnected economy, several countries have placed economic sanctions on Russia today because of the nature of its unprovoked invasion and war in Ukraine. Almost two years on, Russia continues waging the war without signs of slowing down.

History has shown that the economy plays a role in winning a war, but a large economy does not necessarily act as a deterrent. Imperial Japan took a calculated risk with its decision to go to war with the U.S. in 1941. Aware of the economic potential and its impact on a protracted war, plans proceeded to attack the U.S. before it entered World War II. The U.S. emerged as the victor, but an attack still took place. A large economy cannot be counted on to be a viable deterrent.

If it comes to military size, the U.S. may not win and will not likely deter war. The U.S. cannot match the numbers that the PRC and Russia have. The PRC and Russia have militaries larger than the U.S. when considering the active force and reserves. The PRC alone has an active military twice the size of the U.S.⁴ Further complicating the numbers is that U.S. forces are spread worldwide. In contrast, Russian and PRC forces are more concentrated in their own regions.

The U.S. is and has been one of the world's most technologically advanced nations, and yet other state and non-state actors act continually against it. The benefits of advanced technology can easily be circumvented using non-conventional and asymmetric weapons—both effective. Being more technologically advanced than adversaries cannot be counted as a deterrent.

The U.S. has used its nuclear weapons program as a deterrent since the 1940s—however, the ability to count on the program as a deterrent is fading. The U.S. cannot count on its nuclear weapon inventory to deter the PRC or Russia from kinetic conflict or war. Nuclear weapons no longer act as a viable deterrent against the participants in the Great Power Competition since all competitors (U.S., PRC, and Russia) possess them. When the U.S. was the only state in the world in possession of nuclear weapons technology it was an effective deterrent. Nowadays, the U.S. is just one of a growing group of states in possession. It can be argued that a state that possesses nuclear weapons will only deter other states from choosing to conduct a large-scale or total war. Limited military action or conflicts will not surpass the threshold that would warrant the use of nuclear weapons in retaliation. The advantage of having nuclear weapons can only be effectively leveraged against an opponent that does not have the technology. Nuclear weapons, then, cannot be counted on to act as a viable deterrent.

Maintaining a robust shipbuilding industry is the most effective method of deterrence in the western Pacific Ocean. Ships matter because they can provide what nothing else can in the vast Pacific Ocean—physical presence. Even in today's modern society and rapidly advancing technological landscape, the power and importance of physical presence cannot be overstated or replaced. A military unit's presence has a greater impact than a sensor can. It is the primary

reason the U.S. sends warships to loiter a country's coast as one of the first responses to a crisis or conflict.

The Chinese seem to have heeded advice from naval theorist and strategist Alfred Mahan. He taught us long ago that a navy was necessary a necessity for a country to have and maintain, whether it is to defend its own shipping or to help execute its aggressive plans.⁵ Currently, a standing navy is also maintained due to its other capabilities besides attacking and defending, like non-combatant evacuation operations and humanitarian aid and disaster relief missions. The PRC's navy—the People's Liberation Army Navy (PLAN)—has been growing for several years now.

The PRC seeks to keep the large area surrounding its sea borders clear of its adversaries. As Mahan said, a nation should build "a navy which, if not capable of reaching distant countries, shall at least be able to keep clear the chief approaches to its own."⁶ However, the PRC seeks to include areas well past the internationally recognized maritime boundaries – twelve miles beyond the physical border into the sea. While the PRC is looking to achieve a true blue-water navy, this paper will focus on its regional aims.

If war is to break out between the U.S. and the PRC, only the U.S. has the capability to take the fight to the PRC. The PRC recognizes this and has set up a defensive perimeter in the western Pacific Ocean. The PRC's anti-access/area denial (A2/AD) strategy is based on the capability of their ships, coastal defense missiles, and anti-ship ballistic missiles. The Department of Defense has produced joint concepts for operating in such an environment, like the Air-Sea Battle concept, but physical presence on the U.S. Navy's part is still needed to execute it.

If it is to affect strategic plans and decisions abroad, the PRC needs to expand their sphere of influence beyond regional waters. And it is- the PRC does not have static plans. Besides planning to provide for essential presence and self-defense, the PRC aims to project power beyond its immediate waters. PRC is committed to building a “world-class” military by 2049. Nested in this goal is a massive increase in its shipbuilding program. Today, the PRC already has the largest navy in the world, totaling 355 ships in 2021.⁷ In only two decades, it has tripled the size of its navy—an alarming pace, even when not considering the short time frame.⁸ It is projected to reach 440 ships by 2030.⁹

Not only does the PRC have greater numbers than the U.S. when it comes to ships, but they are more regionally concentrated. The U.S. Navy operates in every part of the world by design and strategic necessity, so fewer ships are spread thinly and generate less force concentration—including the western Pacific Ocean. If conflict were to occur with Japan, the reaction of the U.S. would be to pull resources from other theaters to bring to the western Pacific Ocean. Since the U.S. Navy (and military as a whole) operates to maximize the resources and balance them with a calculated risk, this would put the U.S. in a strategically untenable situation. Taking from the already minimally allocated resources in other theaters to bring to the western Pacific Ocean will put the strategic situation at risk in the shorted theater. The disbalance in forces may encourage another state to act and take advantage of the region’s relative lack of U.S. forces. This places a greater emphasis on the need to increase the number of active warships significantly.

All this matters because the size of the U.S. Navy fleet is decreasing. The U.S. is failing to even keep up with normal ship replacement cycles. The challenges faced by reality and

industry mean that turning this trend around will take over a decade. The time is now to begin building more ships.

Chapter 1: Historical Example

Prior to attacking Pearl Harbor in 1941, Imperial Japan recognized the danger that the U.S. represented to it and its regional goals on account of the industrial capacity of the U.S. and its untapped potential. Imperial Japan decided on a strategy of regional naval supremacy, which necessitated rendering the U.S. Pacific Fleet incapable of slowing down the Imperial Japanese military. The U.S. Navy posed the greatest threat to Imperial Japan's plans. It delivered a devastating blow to the U.S. Navy that December day, but if the U.S. Navy had more ships in inventory, then the attack might have been avoided.

The Allied victory in World War I brought about an excess of warships for the U.S. As such, the U.S. Navy experienced a drawdown after WWI. The global situation and post-war uneasiness hinted at a potential arms race between the Allies. To prevent such an event after the largest war the world had seen up to that point, the Washington Naval Treaty of 1922 was signed among the major powers. By signing the treaty, the U.S. was to limit the tonnage and inventory of aircraft carriers and capital ships. A series of congressional acts were passed in the 1930s extend the limitations on the number of ships built by the U.S. The London Naval Treaty of 1930 would limit surface combatants' tonnage, number, and gun size, not to include capital ships and submarines. The Second London Naval Treaty of 1936 was an extension of the 1930 treaty, and it continued to limit the navies of the major world powers to prevent war from breaking out again.

Even with the established treaty limits, the U.S. was not quick to rebuild its Navy. In the years leading up to 1934, the U.S. Navy was well below the limits imposed by the previous treaties. In 1934, the Vinson-Trammell Act was enacted to build the U.S. Navy up to the total limits allowed by the treaty.¹⁰

Until 1936, Imperial Japan had been a signatory to the aforementioned treaties as it wanted to be a major global power player—not merely a regional one. 1936 Imperial Japan abrogated the earlier treaties and refused to agree to the 1936 terms.¹¹ As a result, the U.S. The Naval Act of 1938 was a monumental step taken by the U.S. to increase the size of the Navy, both by total tonnage and number of vessels, above the previously agreed-to treaty limits.¹² With the war in Europe in full swing, the U.S. passed the Two-Ocean Navy Act in 1940 to almost double the size of the Navy.¹³

The acts enacted in the latter half of the 1930s enabled the U.S. shipbuilding industry to build many ships to prepare for possible war. However, it did not come in time to avoid the attack on Pearl Harbor. Shipbuilding capacity and its potential failed to deter an attack, but only due to timing. After deciding to attack, Imperial Japan knew that the more the attack was delayed, the more ships the U.S. would have, decreasing Imperial Japan's chances of success in the long run.¹⁴ It knew it could not win a protracted war.

The U.S. shipbuilding industry in the period between the world wars may not have deterred Imperial Japan from attacking the U.S., but it played a critical role in winning the war. The shipbuilding output was so vast that once it reached its full capacity, it was recognized that the massive shipbuilding program the U.S. started in the 1930s carried the Allies through the beginning of the war.¹⁵ More ships inevitably mean more success when it is needed. The U.S. recognized the importance of having a large fleet and the role it plays in wartime. It just did not recognize that importance in time.

Failing to keep up means inevitably being behind by the time something happens that requires a defensive response. A reaction may not be enough to keep the U.S. out of “hot water.” U.S. shipbuilding came too late to be a credible deterrent to attack by the Empire of Japan. If the

increase in shipbuilding in the late 1930s would have been any slower, the entire war in the Pacific theater could have conceivably been lost. Conversely, had the U.S. Navy been built up more quickly, the attack on Hawaii might not have happened. Though the goal of Imperial Japan on 7 December was to knock out the Pacific Fleet in one large-scale and pre-planned attack, having more ships in inventory would have necessitated spreading them more. Multiple bases on the West Coast would have been required to house the additional vessels. In order for Imperial Japan to render the Pacific Fleet incapable of conducting offensive operations in the Pacific Ocean, it would have had to coordinate surprise attacks on multiple bases simultaneously so that one base would not alert another. This strategy would have been excessively risky and nearly impossible for Imperial Japan to execute, given the requirements for coordination across long distances and maximizing radio silence.

Today, the U.S., the PRC, and Russia openly state that they do not desire an open or widespread conflict and that they are actively working on preventing one because it is to no one's benefit that one begins. However, the U.S. has been paid lip service in the past when similarly contentious regional tensions were being felt. In 1941, the U.S. was led to believe by Imperial Japan that it was working diplomatically to avoid conflict with the U.S. while, in the background, it was planning, preparing, and staging for the infamous attack. Few in 1941 thought that an attack on the U.S. by Imperial Japan would happen, or that an attack on the then-territory of Hawaii was even feasible. However, it still happened, leaving many asking, "How could we have prevented this?" History has shown that history tends to repeat itself—especially when we do not heed its lessons that were more often learned the hard way with blood, sweat, and tears.

There is no guarantee today that the U.S. will not be attacked, even if it is making diplomatic or economic advances with competitors or potential adversaries. Today, we know how to prevent such a thing from occurring again. The U.S. will always be at risk of an attack from its adversaries unless a credible and persistent deterrent is in place.

Chapter 2: Current State of Fleets

Status of U.S. Naval Ships and Shipbuilding Industry

The breakdown of the active component of the U.S. Navy as of 14 February 2023 is as follows:¹⁶

67 Submarines

14 Strategic, Nuclear Powered

53 Tactical, Nuclear Powered

122 Principal Surface Combatants

11 Aircraft Carriers, Nuclear Powered

19 Cruisers

70 Destroyers

22 Frigates (LCS)

89 Patrol and Coastal Combatants

8 Mine Warfare Ships

2 Command Ships

31 Principal Amphibious Ships

0 Landing Ships

145 Landing Craft

13 Logistics and Support

The breakdown of the inactive component of the U.S. Navy as of 14 February 2023 is as follows:¹⁷

1 Principal Surface Combatant

1 Frigate (LCS)

4 Principal Amphibious Ships

4 Logistics and Support

These inactive ships are in a temporary status that requires between 60 and 90 days to be brought back to active status.

The active U.S. Navy forces are spread throughout six major fleets: Second Fleet (Northern Atlantic Ocean), Third Fleet (Eastern Pacific Ocean), Fourth Fleet (Caribbean Sea, Central America, and South America), Fifth Fleet (Red Sea, Arabian Gulf, and Arabian Sea), Sixth Fleet (Mediterranean Sea), and Seventh Fleet (Western Pacific Ocean and Indian Ocean). The makeup shows that the U.S. Navy's primary role is to execute global power projection via presence and amphibious operations.

The breakdown of the U.S. Coast Guard as of 14 February 2023 is as follows:¹⁸

334 Patrol and Coastal Combatants

65 Logistics and Support

It is wise to consider what the U.S. Coast Guard could provide to the situation in the USINDOPACOM region. It is a maritime service that already operates in the USINDOPACOM region. By contrast, the PRC uses the China Coast Guard in the region to help defend its sovereignty claims. To further expand the China Coast Guard's role in the region, the PRC passed special legislature in 2021 that allows its ships to patrol more aggressively and take more aggressive actions when needed.¹⁹ CCG ships can, according to Chinese law, legally open fire on foreign vessels that are within waters that the PRC claims and not internationally recognized waters. The PRC argues that this is defense by way of offense.²⁰ CCG ships are well-suited for more aggressive patrols since many of their ships are armed and highly capable. Most U.S. Coast Guard ships are also armed with weapons larger than crew-served, but they use their weapons strictly defensively.

The role of the U.S. Coast Guard in the USINDOPACOM region will grow larger in the coming years. The 2022 Indo-Pacific Strategy outlines ten core lines of effort to effect U.S. goals in the USINDOPACOM region. The first of those lines of effort is “Drive New Resources to the Indo-Pacific,” which includes the specific goal of expanding U.S. Coast Guard presence and cooperation in the region.²¹ The goal is to share the burden the U.S. military deals with in the region with another service that has ready assets with ready assets.

The U.S. Coast Guard is taking significant steps to increase interoperability with the U.S. Navy and other allies and partners in the USINDOPACOM region. A U.S. Coast Guard cutter took part in the biannual Rim of the Pacific exercise, making several significant first-time accomplishments that shed positive light on the future of the role the U.S. Coast Guard will play in deterring the PRC. The cutter stepped out of its law enforcement role, participated in activities, and led military events, which will aid the U.S. Navy in the long run.²² It is becoming clear that the U.S. is treating the U.S. Coast Guard as more of a paramilitary force, much like the PRC treats the CCG.

On the surface, using U.S. Coast Guard assets in the USINDOPACOM region seems like a good idea, meaning using existing resources to provide solutions today to a problem that is likely to be persistent. However, this move is likely to have difficult consequences in the long term. The U.S. Coast Guard, much like the U.S. Navy and the rest of the U.S. military, does not operate with an excess of equipment or resources because of budgetary constraints. The U.S. Coast Guard has the number of ships it requires to complete its many missions today. Expanding the mission set of the U.S. Coast Guard will mean requiring more operational use of existing hulls, which will cause additional stress on said hulls while requiring additional maintenance. This will likely wear out the U.S. Coast Guard fleet while it struggles to execute more missions

with the same number of ships, which has been happening to the U.S. Navy for several years with no immediate resolve.

Even if the U.S. Coast Guard had an excess of ships in its inventory, it suffers from a manpower shortage to crew its ships. The service is in the midst of prioritizing which mission sets in 2024 will receive ships, manning, and resources. To help ease the impact of shortages, the U.S. Coast Guard is reducing the number of cutters it will operate in 2024.²³ This puts further at risk the initiative of sending more ships to the USINDOPACOM region to boost its presence. Of the eleven delineated missions of the U.S. Coast Guard, “Defense Readiness” is the seventh in priority.²⁴ Defense of the homeland will always be a more important mission for the U.S. Coast Guard before diverting resources outside its waterway. Using the U.S. Coast Guard to provide additional presence in the USINDOPACOM region is not a viable or sustainable long-term solution.

The breakdown of the of the U.S. Military Sealift Command (MSC) as of 14 February 2023 is as follows:²⁵

- 16 Logistics and Support (Fleet Oiler)
- 21 Logistics and Support (Special Mission)
- 14 Logistics and Support (Prepositioning)
- 12 Logistics and Support (Service Support)
- 18 Logistics and Support (Sealift)
- 16 Logistics and Support (Fleet Ordnance and Dry Cargo)
- 14 Logistics and Support (Expeditionary Fast Transport)
- 6 Logistics and Support (Dry Cargo and Tankers)

The U.S. Maritime Administration (MARAD) administers ships placed in reserve that can quickly be brought into active service. Its breakdown as of 14 February 2023 is as follows:²⁶

60 Logistics and Support

There has been much concern about the status of the U.S. shipbuilding industry and its ability and capacity to ramp up. Defense contractors have been merging since the collapse of the Soviet Union. In 1990, the U.S. had eight domestic prime contractors that built ships; today, it is down to two. As recognized by a recent U.S. Department of Defense report, “Consolidation and market concentration generally lead to reduced competition and creates sourcing risk.”²⁷ Having fewer shipbuilders the U.S. creates a long-term risk of being able to respond to a Pearl Harbor-like event that requires the U.S. to build ships to respond.

The U.S. Navy is required annually to submit a report on how many ships it plans on building and retiring in the next 30 years. The plan for fiscal year 2024 outlined three alternatives that each will increase the fleet size, but to different levels.²⁸ The first alternative peaks in 2039-2024 with 331 ships, the second in 2039 with 331 ships, and the third in 2053 with 367 ships. The first two alternatives are put together with the same budgetary constraints, but they differ because the first alternative has more ships before the peak than the second alternative; the second alternative has more ships after the peak than the first alternative. These two seek to point out that there are limited resources and that the ships can be built sooner or later, but sooner will come at the cost of later and vice versa. The difference in numbers between the first two alternatives is that the second alternative favors a larger fast attack submarine force and a larger combat logistics force while procuring fewer surface combatants. The third alternative shows a relatively steady growth until the peak and surpasses 331 ships by 2037. All three alternatives have in common a transition period after 2024 where the force shrinks from 293 ships and does

not sustainably remain about that level again until 2031. This shows that the U.S. Navy will be particularly vulnerable in the next decade. Accompanying tables show that the cost of growing and maintaining a larger fleet is highly dependent on funding received from the government. Unsurprisingly, the third alternative costs more year over year.

Allies are important to any country's economic and military defensive strategies. The U.S. has been taking novel steps in the right direction by leveraging its allies' work in the shipbuilding industry. The U.S. is contracting outside of US-owned shipyards to build warships for it. The upcoming Constellation-class frigate will be built by the U.S. subsidiary of Italian shipbuilding giant Fincantieri. The new frigate is based on the existing FREMM (French for "European multi-purpose frigate") design operated by France, Italy, Egypt, and Morocco. By using and modifying an existing design, the U.S. Navy will avoid waiting several years for a design to mature before the ship class can consistently provide presence and security, as with the LCS program. The U.S. Navy also stands to gain enhanced interoperability and greater logistical support when deployed outside the U.S., which is when and where it is needed the most. This move represents a great return on investment.

The move is not unprecedented. The Independence-class littoral combat ships are being built by the U.S. subsidiary of the Australian shipbuilding company Austal in stateside shipyards. Besides these examples, the U.S. has never purchased warships built outside the U.S., though it is a common practice for other countries. Before the Independence class, the U.S. had not contracted foreign companies to design or build warships, whether the shipyard was located overseas or stateside.

Global commitments in the last two decades have strained the existing U.S. Navy inventory. In the face of decreasing ship numbers, deployments have been extended from the

usual six months to sometimes eleven months. Lengthening the sustainment phase of the ship lifecycle has placed greater strain on the hulls and systems, exceeding the design operations-to-maintenance ratio. U.S. commitments to allies and partners worldwide will not be decreasing soon. The U.S. needs more ships.

Status of PRC Naval Ships and PRC Shipbuilding Industry

The breakdown of the active component of the PLA Navy as of 14 February 2023 is as follows:²⁹

59 Submarines

6 Strategic, Nuclear Powered

53 Tactical

6 Nuclear Powered

47 Conventionally Powered

92 Principal Surface Combatants

2 Aircraft Carriers

7 Cruisers

42 Destroyers

41 Frigates

142 Patrol and Coastal Combatants

57 Mine Warfare Ships

0 Command Ships

11 Principal Amphibious Ships

49 Landing Ships

60 Landing Craft

153 Logistics and Support

These forces are spread throughout three major fleets: Northern Theater Command (Yellow Sea, Bohai Sea, and Sea of Japan), Eastern Theater Command (East China Sea and Taiwan Strait), and Southern Theater Command (South China Sea). The force's current makeup shows that the PLA Navy's primary role is defense of the homeland with a capability for amphibious operations. It has an increasing number of assets capable of conducting force projection.

The maritime component of the PLA as of 14 February 2023 is as follows:³⁰

25 Patrol and Coastal Combatants

255 Landing Craft

22 Logistics and Support

These forces are structured to assist the PLA specifically with amphibious operations instead of conducting patrolling and presence operations.

The breakdown of the China Coast Guard (CCG) as of 14 February 2023 is as follows:³¹

546 Patrol and Coastal Combatants

2 Landing Ships

27 Logistics and Support

The CCG is a formidable and competent force. It currently operates the largest maritime law enforcement fleet in the world. Its involvement in PRC's larger vision and mission is concerning due to the capabilities of their ships. Some of its ships are ex-PLAN ships specifically converted for their missions. Many of its newer ships can operate farther from shore and for longer periods, making the ships more independent and more capable.³² As its ships

operate longer and further from shore support, they will likely improve their efficiency and effectiveness.

Like the geographical comparison of the PLAN to the U.S. Navy, the CCG patrols waters primarily surrounding the PRC mainland, whereas the U.S. Coast Guard patrols the waters surrounding the U.S. mainland and its overseas territories. The CCG can devote all of its forces and resources to furthering the PRC's regional goals while conducting defense of the homeland. At the same time, the U.S. Coast Guard must balance its forces and resources to cover its many responsibilities. Unlike the U.S., the CCG can attain greater force concentration without needing a long logistical support chain,

Though the two aircraft carriers that the PLAN currently has in commission pale compared to the eleven the U.S. has, the lower number should not be mistaken as being considered a weakness or disadvantage in any way. The U.S. maintains eleven aircraft carriers in commission to balance the designed life cycle maintenance requirements with the ability to maintain the mandated availability to support deployments and unexpected contingency operations. Aircraft carriers are assets intended to be used for presence and force projection, and they are so expensive that only a few countries possess them. The PRC does not need as many carriers because its carrier operations have been more local and focused on maturing the warfare area for the PLAN.

Aiding the PLAN and the CCG in various military roles is the People's Armed Forces Maritime Militia (PAFMM). It operates on various civilian vessels, including fishing boats and oil tankers.³³ Its numbers are difficult to ascertain. Its units are organized locally around towns and villages and can vary in composition and mission.³⁴

The PRC already has the largest navy in the world. Its bench is even deeper when counting the CCG and the PAFMM. The PLAN, the CCG, and the PAFMM work and coordinate closely to patrol and safeguard Chinese territorial waters and its excessive maritime claims. The PRC works to maintain a constant presence in disputed areas.³⁵ Since it has three different maritime services to use, two of which are the largest of their kind, the PRC is likely to be successful in the long run.

PRC's defense and shipbuilding industry has come a long way in the last thirty years. It has matured and expanded at an unprecedented rate. The PRC learned many lessons from observing the US-led coalition that fought Iraq in the first Gulf War in 1991. Some of the lessons involved how the U.S. Navy could conduct multi-domain operations and support joint operations far from U.S. shores. The PRC has since invested heavily in long-range expeditionary capabilities: nuclear attack submarines, aircraft carriers, cruisers, big-deck amphibious ships, heavy-lift aircraft, and global command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) coverage); all those capabilities are useful whether operating in the Taiwan Strait or deep within the second island chain.³⁶ Though the long-term goal of the PRC is to have a blue-water navy capable of power projection globally, it presents a large regional threat that cannot be ignored today.

The PRC is already the world's top shipbuilder by tonnage. Yet, it is increasing its capacity and capability to build naval ships of all classes. On top of that fact, the PRC designs and builds its own marine propulsion systems, weapons, and sensors, making the PRC extremely efficient and self-sufficient when it comes to producing finished ships.³⁷ Whether those systems are as advanced, efficient, or reliable as Western systems is yet to be seen. It is known that the PRC can produce ships quickly and on its own to provide a presence where it needs to. Presence

means deterrence, so those systems do not need to be as reliable, advanced, or efficient as Western systems.

Status of Russian Naval Ships and Shipbuilding Industry

The breakdown of the active component of the Russian Navy as of 14 February 2023 is as follows:³⁸

51 Submarines

11 Strategic, Nuclear Powered

40 Tactical

19 Nuclear Powered

21 Conventionally Powered

31 Principal Surface Combatants

1 Aircraft Carrier

3 Cruisers

1 Nuclear Powered

2 Conventionally Powered

11 Destroyers

16 Frigates

128 Patrol and Coastal Combatants

43 Mine Warfare Ships

2 Command Ships

0 Principal Amphibious Ships

20 Landing Ships

26 Landing Craft

281 Logistics and Support

Russian Navy forces are dispersed throughout four major regional fleets: the Northern Fleet (Atlantic Ocean and Arctic region), Pacific Fleet, Baltic Fleet (Baltic Sea), Black Sea Fleet; and the Caspian Sea Flotilla. The force's current makeup shows that the Russian Navy's primary role of the is defense of the homeland. It does not have many assets that could be used for force projection or expeditionary operations, showing that it intends to operate in waters closer to the Russian mainland. While the majority of these ships are from the Soviet era, they maintain a formidable capability through their more modern missile inventory and technology. Despite this, Russian Navy forces pose little threat in the Western Pacific Ocean, starkly contrasting PLAN forces.

The Russian invasion of Ukraine that started in 2022 has not been kind to the Russian Navy. Two key vessels lost to Ukraine are a Slava-class cruiser and an Alligator-class landing ship. The relative staleness of the Russian shipbuilding industry means that neither of these losses will be replaced soon. This situation will likely be exacerbated by sanctions imposed on Russia because of its ongoing war.

The breakdown of the maritime portion of the Border Guard Service as of 14 February 2023 is as follows:³⁹

205 Patrol and Coastal Combatants

34 Logistics and Support

Russian naval forces are likely to do one of two things in the coming years. First, Russian Navy forces will keep doing what they have been in recent years: they will conduct independent deployments in waters close to the U.S. to execute intelligence gathering operations and to test U.S. reactions to the ships' presence. Second, they will patrol more in waters closer to and

including the Arctic, which is of greater strategic importance to Russia than anything in the Pacific Ocean.

Chapter 3: Analysis

The U.S. Navy did not reach its current state overnight. Several missteps have contributed to the process. Some missteps have been related to incorrectly ascertaining how many ships would be required to meet national objectives. An example is the LCS program. Some missteps have been related to shipbuilding programs that have not delivered as expected and have financially set back the service. Examples are the LCS program, the Zumwalt-class destroyers, and the Gerald R. Ford-class aircraft carriers.

The target number of ships the U.S. Navy needed was reduced drastically after the collapse of the Soviet Union. It was understandable since the purpose of the 600-ship Navy was to deter the Soviet Union in the first place. Since then, the number of ships in inventory has continually trailed the target of ships needed. The shortsightedness of the U.S. allowed the PRC to catch up and surpass the U.S. in naval inventory.

The 55 hulls planned to be the LCS-class were supposed to be a solution to dwindling U.S. Navy inventory and expanding shipbuilding and designing costs. LCSs were supposed to provide greater and more flexible capabilities for less money, utilizing the ‘mission packages’ concept that could be swapped in and out when and as needed. LCSs were supposed to be able to do all while requiring a smaller crew. The LCS program has been a failure from the beginning, plagued with engineering plant challenges and mission modules that never paid off, along with delivering a platform that does little more than provide presence while being exceptionally vulnerable. Significant program risks were accepted to get the ships into production more quickly. Many risks paid off, and now the U.S. Navy is decommissioning several of the earlier built hulls to save money in the long run; none had more than fifteen years of operational service, and few had any deployments that contributed to their share of the Navy-wide mission.

Another misstep for the LCS program has been the manning. Each ship originally called for a crew of 40, which was a tremendous benefit compared to another small combatant of roughly the same size; the Oliver Hazzard Perry-class frigates required a crew of roughly 200. This was effected by a revolutionary and unique manning model, where the LCS would only receive more senior Sailors and no first-time enlistees. Additionally, most maintenance would be accomplished by contractors instead of Sailors, lessening manpower requirements. That estimate of 40 proved to be short-sighted in the long run, as manning has slowly increased. Additionally, because of the unique engineering plant and integrated bridge/Combat Information Center Concept, many crewmembers must have extensive training prior to reporting to their ships. The LCS investment did not pay off.

Unfortunately, this is not the only time this has happened to the U.S. Navy.

Another program that has not paid off as intended is the Zumwalt-class destroyer. The class was initially intended to have 32 hulls. As time passed, the untested technologies to be part of the ships grew more expensive, affecting the program heavily. Skyrocketing costs led the class to be truncated to just three in order to recuperate funding. With only three hulls to share the costs of the class, use of the large-caliber gun that was designed for it became prohibitively expensive. Thus, preventing Zumwalt-class destroyers from executing one of their primary missions and reasons for existence: naval surface fire support. The U.S. Navy decided to spend more money on upgrades to the already proven Arleigh Burke-class design. Ultimately, the U.S. Navy is left with three ships that carry fewer missiles than Arleigh Burke-class destroyers and with no large-caliber guns, yet are larger.

Yet another black eye for the U.S. Navy has been the Gerald R. Ford-class aircraft carriers. The design can be described as too ambitious, incorporating several untested

technologies intended to save the U.S. Navy money in the long run. The class is unlikely to be truncated or canceled since the Nimitz-class aircraft carriers are quickly reaching the end of their usable service lives, and they cannot be extended due to the limits of their nuclear power plants.

These programmatic missteps were unforeseeable to a certain extent, but it drives the point that U.S. Navy processes are not in such a place that will ensure the rapid delivery of combat-capable ships when the time comes. The U.S. Navy needs to review and overhaul the process of designing and building ships. It also needs to make better risk decisions on which system programs to implement and which should be allowed to mature more before implementing. It is understandable that some system programs can be developed as the class itself is being developed and that this practice can help save time and effort later in the shipbuilding process. However, the U.S. Navy has not yet found the happy point where risk meets payoff. The U.S. Navy must focus more on using tested and proven technologies until another tested and proven successor is available and within reasonable cost.

The problem the U.S. Navy faces today was best stated in the 2020 tri-service maritime strategy encompassing the U.S. Navy, the U.S. Marine Corps, and the U.S. Coast Guard.

"China's and Russia's revisionist approaches in the maritime environment threaten U.S. interests, undermine alliances and partnerships, and degrade the free and open international order. Moreover, China's and Russia's aggressive naval growth and modernization are eroding U.S. military advantages. Unchecked, these trends will leave the Naval Service unprepared to ensure our advantage at sea and protect national interests within the next decade."⁴⁰

The strategy outlines five overarching themes to impulse the U.S. towards reaching its goals: generate integrated all-domain naval power, strengthen our alliances and partnerships, prevail in day-to-day competition, control the seas, and modernize the future naval force. These

common themes are what the U.S. maritime services have agreed on as the way ahead to counter the PRC and Russia and deter them from furthering their goals. The common requirement among these themes is a navy with a healthy, active roster. None of these themes can be accomplished if the U.S. Navy does not have enough ships to commit to all these missions concurrently.

Integrated all-domain naval power is a concept that capitalizes on the synergy of complementary abilities of the naval services, but it can only be truly effective if there are enough afloat units to synergize. Relationships with allies and partners are only maintained by physical presence; the best way for a country to show an ally or partner that the relationship is serious is by committing actual forces to exercises and events. Prevailing in day-to-day competition requires combat-credible forces to be in theater. Control of the sea only occurs when an afloat asset is patrolling on the seas; control does not happen as a reaction. The U.S. Navy must modernize to keep up with the advances of the PRC and the PLAN, but it should use technology to make smaller and more capable vessels that can provide a persistent presence.

The U.S. currently has eleven aircraft carriers in commission, and two are being built. They are either deployed globally or in an extended maintenance availability. The complexity of today's aircraft carrier is beyond anything imaginable sixty years ago—before the age of the nuclear-powered supercarrier. All U.S. nuclear-powered aircraft carriers have been built by the same shipyard: Newport News Shipbuilding. The nature of the work is highly specialized and controlled. However, if one aircraft carrier is lost in battle or is damaged enough to require specialized maintenance to its nuclear power plant, it would take the U.S. years to be able to replace it since the most specialized work is only done in one shipyard. This is especially concerning when the PRC is developing weapons specifically meant to target U.S. aircraft carriers.

The PRC's aggressive naval growth is eroding the U.S. Navy's advantage. The U.S. must counter with its own naval growth.

Chapter 4: Recommendations and Way Ahead

Fortunately, the U.S. has a few options to reverse the trend of a shrinking Navy. The U.S. must sell more ships to allied nations, focus on fewer platform diversity, diversify complex aircraft carrier maintenance and shipbuilding skills, and invest more in uncrewed surface vessels (USV).

The recent deal struck between Australia and the U.S. as part of the AUKUS technology sharing partnership is a step in the right direction for the U.S. Selling Virginia-class fast attack submarines to Australia is good for the shipbuilding industry, as it limits the atrophy of skills required to build such complex platforms as nuclear-powered submarines. The move also benefits the U.S. because the maintenance and upkeep that U.S. platforms need can now be done in Australia. Mid-deployment upkeep and emergency repairs can now be accomplished in Australia if the need arises or if a situation precludes a return to a U.S. shipyard. This allows U.S. submarines to spend more time in the USINDOPACOM theater, deterring potential PRC action.

The U.S. Navy sells lots of weapons and technology to allies and partners, both to keep the U.S. defense industry moving and producing to keep contractors funded and employed, but also enables and enhances interoperability and simplifies logistics. One key piece of technology that the U.S. exports is the Aegis Weapon System, which is currently used by the navies of Australia, Japan, Norway, the Republic of Korea, and Spain. However, by allowing the export of only the technology, the U.S. missed out on an opportunity. Save for the Spanish and Norwegian ships, all other Aegis-equipped ships are roughly the same size and displacement as the U.S. Arleigh Burke-class destroyers. Additionally, those ships use most of the same weapons and engineering systems. The U.S. could have built and sold ships to their allies to further benefit

interoperability and compatibility and improve and extend contractor knowledge and experience. Selling a proven ship class to allies and partner would allow the exploitation of the economies of scale, which would benefit the U.S. and its allies and partners.

The U.S. Navy needs to focus on building more hull but in fewer classes. When plans for a Littoral Combat Ship (LCS) were made known, General Dynamics and Lockheed Martin both submitted their version to the U.S. Navy for consideration as the finalists. The winning design would later become a class of 55 hulls. The U.S. Navy later elected to split the LCS class, with both designs winning contracts. Having two LCS designs, however, was a bad idea. Lifecycle maintenance and upkeep are expensive for any ship class. By having two LCS designs instead of just one, the Navy must have additional contracts for maintenance, training, and logistics. On the personnel side, Sailors selected for the LCS program must be divided into one of two programs since the ships have different radars, weapons, and engineering plants. The ‘tribal’ knowledge accumulated when serving on one class of ship would not easily be able to be transferred to the other.

If hostilities break out between the PRC and the U.S. in the Pacific Ocean, U.S. aircraft carriers will be targeted. The U.S. needs to recognize that having only one shipyard capable of working on highly specialized nuclear work is a potential bottleneck on resources for the U.S. that could shift the advantage to the PRC should it sink or heavily damage an aircraft carrier. The U.S. must prepare and plan for a potential loss of a carrier now.

The U.S. is taking positive steps to open this bottleneck. In fiscal year 2023, the U.S. Navy provided industrial base funding to “increase infrastructure, reduce production risk, help stabilize the more than 350 critical suppliers, and help enable recruitment, training, and retention of the skilled production workforce.”⁴¹ This funding will enable the non-nuclear shipbuilding

industrial base to provide any excess capacity to relieve the at-capacity nuclear ship-building infrastructure. This type of funding must be continuous if the U.S. naval shipbuilding industry is to survive.

Building more ships is a good move, but it is not enough. Sailors need to be recruited, trained, and retained. They must be paid well enough to stay in the naval service long enough to man the extra ships being built and to retain their knowledge to benefit subsequent generations. “Tribal knowledge” is important to keep around as much as what is taught in schoolhouses. The U.S. Navy has had difficulties with manning in recent years, especially where it counts the most—at sea. Between 5,000 and 6,000 more Sailors are needed at sea to get the 100% goal of 145,000.⁴² Despite many initiatives to increase manning levels, the U.S. Navy is still falling short.

Luckily, greater numbers of ships do not necessarily depend on having more Sailors. Newer and more ships can be built; greater numbers can be attained by producing more uncrewed ships. The U.S. must continue to invest in USV technology and expand the mission set. Since uncrewed vessels do not need systems to support and house a crew, they can be built to be more efficient in size. They can be built smaller, so they can be built with fewer materials and more quickly. Though a loss would still require a cost to replace, they are more expendable since no human lives are lost; no experience or skill set is lost.

In 2021, the U.S. Navy released its Unmanned Campaign Framework, detailing how increasing the use of unmanned technologies will enable the U.S. to gain advantage over the PRC and Russia.⁴³

An additional benefit of increasing the use of USV technology to create a deterrent is that no new or additional shipbuilding technology needs to be developed or matured. Since USVs will not be nuclear powered, they can be built at any shipyard willing to take the contract.

Conclusion

The U.S. is the global economic and democratic leader. By that virtue, the U.S. is and must continue to be the state that deters the PRC and Russia from conflict with any other state or further destabilizing the existing world order. It also is the leading state in the world in terms of power projection. Other allies in the USINDOPACOM region, like Australia, are increasing their efforts and spending to be a more credible regional force, but the Royal Australian Navy is not the U.S. Navy. It is not equipped, manned, or funded like the U.S. Navy. Despite being a long-time ally of the U.S., the Royal Australian Navy does not have the experience that the U.S. Navy has. No other military is as mobile as that of the U.S. That power projection enables the U.S. to lead, keeping antagonistic autocratic states and their destabilizing actions in check. If the U.S. does not have a credible deterrent, the entire world stands at-risk of falling to the actions of the PRC and Russia. The U.S. Navy needs more ships so it can have that credible deterrent. The U.S. needs to have a persistent presence in the USINDOPACOM region to keep the PRC from initiating a conflict. The U.S. cannot hope to control those waters if it is not present in them. That presence must be visible and credible, especially when the PRC is consistently present and capable.

The U.S. is already starting to move in the right direction in some areas, but it needs to continue to push past the present and into the future. There has been movement within the U.S. government to impulse the U.S. Navy out of its precarious situation. While the U.S. Navy requested funds in the FY 2022 defense budget for the acquisition of eight ships, Congress increased their funding to procure thirteen ships instead.⁴⁴ Congress repeated this move in the FY 2023 defense budget when the U.S. Navy requested funding to acquire eight ships but received funding to acquire thirteen ships instead.⁴⁵ It is refreshing to see Congress backing shipbuilding

goals and putting action into word, but even at that rate it will be challenging to grow the fleet beyond 300 ships.

Congress found itself in an eerily similar position in 1933. The General Board of the Navy addressed incoming President Roosevelt with a thinly veiled call to action regarding the state of the Navy, as it had been in a state of neglect recently. The Navy had experienced great atrophy in the decade and a half following WWI, especially compared to the other major powers of the time.⁴⁶ Most were building their navies up to the treaty limits, while the U.S. Navy was not. “Present preparedness must not be sacrificed to an illusory future readiness. National emergencies cannot be foreseen and must be met by existing forces.”⁴⁷ Tomorrow’s Navy cannot be counted on to solve today’s problems; this has never changed. Contingency operations have stressed U.S. Navy ships for several years now. Meeting increasing global requirements demonstrates that the U.S. Navy will always need more ships. Investing in more ships will increase readiness and capabilities in areas other than warfighting, as the world has seen how U.S. Navy ships respond to emergencies and catastrophes worldwide. In the 1930s, the U.S. Navy grew the fleet to unforeseen levels, which played a favorable role in the following decade.

The U.S. Navy was in a similar situation in the late 1970s when the Soviet Union built more ships and quickly eclipsed the U.S. fleet. To meet the threat, the U.S. implemented a plan that saw the rapid growth of the U.S. Navy in the 1980s.

The time has passed for the U.S. to take action to rebuild its Navy. The U.S. must be ready today for tomorrow’s national emergencies, which tend to be inevitable and unpredictable. Bold moves like those taken in the 1930s and 1980s are needed today to jump-start the process. It should be easier today to build a 600-ship navy, as the U.S. Navy does not need fifteen carrier strike groups and the accompanying defense and support ships. Today’s 600-ship navy can easily

comprise more and smaller warships capable of conducting presence operations, aided by numerous uncrewed vessels to support them. Today's 600-ship navy does not need technological innovations or unproven concepts.

Tomorrow will be too late.

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Vita

Commander Juan Vives is a career Surface Warfare Officer in the U.S. Navy. He has served on numerous ships that have sailed around the world. He holds a Master of Science degree in Management with a specialization in Naval Operations and National Security from the University of Maryland Global Campus and a Bachelor of Science degree in Mathematics from Jacksonville University.