



NAVAL  
POSTGRADUATE  
SCHOOL

# **Industrial Assessment Directorate: Impact of the Navy's 30-Year Shipbuilding Plan on US Industrial Base**

Dr. Shelley Gallup  
Information Sciences Department  
May 8, 2024

## Bottom Line Up Front



NAVAL  
POSTGRADUATE  
SCHOOL

- **Objective:** Optimize force structure within the U.S. Indo-Pacific Command's AOR.
- **Focus Areas:** Thorough examination of critical assumptions within the Defense, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) framework.
- **Considerations:** Talent availability, utilization of smaller industrial plants, and overall costs within the shipbuilding industrial base.
- **Emergence from the Literature:** Support for a 500-ship, multitiered Navy to meet challenges of peer nation advances, particularly in distributed maritime operations.
- **Exploration:** Strategic options for integrating smaller ships and autonomous vessels into fleet structure.
- **Anticipated Implications:** Talent management, industrial plant efficiency, and operational costs.
- **Research Goal:** Inform strategic decision-making for the strength and resilience of the shipbuilding industrial base amidst evolving naval warfare landscapes.

# Introduction Problem Statement, Objective



NAVAL  
POSTGRADUATE  
SCHOOL

## • Introduction

- US Navy's insufficient force structure and shipbuilding infrastructure
  - Hendrix (2023) and Lipton (2023) sources of challenges faced by the US Navy.
- Urgency of the situation: Declining shipbuilding output over the years and the reduction in the size of the Navy fleet
- Context: Decrease in ship tonnage output from 1977 to 2005
- Need for effective combat capabilities against near-peer competitors (i.e. China and Russia)

## • Problem Statement

- The core issue lies in the US Navy's inability to match the naval capabilities and capacity of adversaries like China and Russia. While historical examples, such as the rapid expansion of shipbuilding capacity during World War II, demonstrate the nation's potential to ramp up production, current constraints hinder similar efforts. Factors contributing to this limitation include the decline in the number of shipyards and the increased cost of naval shipbuilding compared to commercial shipbuilding (Hendrix, 2023, p. 56). Political and economic pressures have also influenced procurement policies, resulting in the production of powerful yet cumbersome warships ill-suited for contemporary challenges (Lipton, 2023). Additionally, the absence of government subsidies for shipbuilding further impedes industrial capacity expansion.

## • Research Objective

- The overarching research question aims to determine the optimal force structure necessary for effective deterrence and success in war, considering regional influences, peacetime operations, and grey zone deterrence.



- Provides insights into challenges and potential solutions related to the national shipbuilding industrial base.
- Discusses the significance of the National Shipbuilding Research Program and government interventions to sustain shipbuilding capabilities.
- Highlights recommendations from studies, including integrating commercial and defense bases and stabilizing naval build rates.
- Highlights the pivotal nature of force structure decisions and the need for alignment with national strategy, budgetary constraints, and operational requirements.
- Demonstrates gap and need for research to address challenges such as declining Navy construction rates and lack of commercial demand for large ships.
- Demonstrates gap and need for the prioritization of factors such as Defense, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) framework in developing a comprehensive understanding of optimal force structure.
- Demonstrates gap and need for considering critical assumptions and conducting deeper resource analyses into the scholastic discussion.



- U.S. Navy's plans for shipbuilding
- Current State of U.S. Shipyards
  - U.S. Naval Shipyards
  - U.S. Private Shipyards
  - U.S. Builders of Small Vessels



- **Portfolio Optimization of Ships**

- Modeling formulation of ship characteristics and strategic values, including cost, mission use, and military value.
- Objective function of the portfolio optimization model, aiming to maximize the weighted average of strategic values.
- Constraint ensuring the portfolio remains within budgetary limits and meets operational requirements.
- Application of operational, logistical, financial, economic, and strategic value metrics in the modeling approach.
- Informs strategic decision-making to ensure the Navy's readiness and effectiveness in meeting future challenges.



# Conclusion/Summary

---

- Research contributes insights into optimizing force structure within the U.S. Indo-Pacific Command's AOR.
- Addresses the importance of ship maintenance, force structure, and industrial capacity interplay.
- Aims to inform strategic decision-making for the shipbuilding industrial base's strength and resilience.

# Acknowledgements

---

Presenter:

Dr. Shelley Gallup

Co-Authors:

- Dr. Johnathan Mun
- Dr. Thomas Housel
- Dr. Timothy Shives

