

# Analysis of Possible Solutions to Support the Timely Delivery of the Columbia-Class Submarine



NAVAL  
POSTGRADUATE  
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## Abstract

Strategic deterrence is the number one priority of the Department of Defense. In order to prevent a gap in nuclear deterrent capability, the successor to the Ohio class, the Columbia class, must be built according to schedule. However, the Columbia-class submarine has experienced numerous schedule delays which threaten its timely delivery. This thesis conducts a root cause analysis of the issues which have contributed to schedule delays and proposes a way moving forward which minimizes the likelihood of future setbacks. These issues are framed in a fictitious case study and the recommendations to solve the problems are discussed in a follow-on analysis.



Artists rendering of a Columbia-class submarine

## Methods

This thesis first presents relevant background information and a literature review to educate readers on the core principles of strategic deterrence, the role of SSBNs in the nuclear triad, the legacy and capabilities of the Ohio-class submarines, the newly anticipated capabilities of the Columbia-class submarine, the obstacles to the timely delivery of the Columbia-class submarine, the consequences to national security if the Columbia class is delivered late, and some relevant background information regarding possible solutions to support the timely delivery of the Columbia-class submarine.

This information is then consolidated and presented in a fictitious case study that allows students to analyze the scenario and present their recommendations to maximize the probability of on-time delivery for the Columbia class. The thesis concludes with an analysis of the case study as well as conclusions and recommendations for future research.

## Results & Their Impact

- Targeted use of Title III of the Defense Production Act to incentivize expansion of the submarine industrial base. Crucial to maintain production of the Columbia-class and two Virginia-class submarines per year.
- Resume pre-pandemic levels of “intrusive supplier audits” and improve their quality.
- Verify a robust quality assurance program to aid in early identification of substandard work, the recognition of inefficient practices that could be improved, and the verification of safe operations.
- Conduct a life-cycle analysis to evaluate for extending the service life on as many Ohio Class SSBN’s as possible in order to prepare for the risk of a delayed Columbia-class delivery.



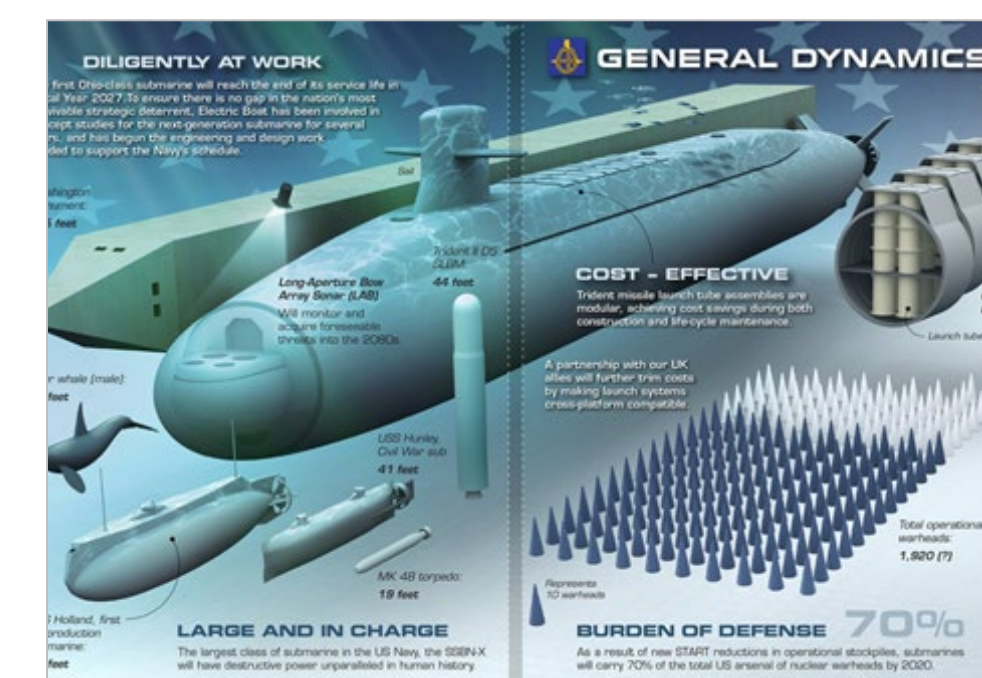
Ohio-class submarine



Missile tubes for the Columbia-class submarine



First cut of steel for the advanced construction on USS Columbia



Columbia-class size and deterrent capability

