



LITTORAL ANTI-SUBMARINE WARFARE in 2025

The Wayne E. Meyer Institute at the Naval Post Graduate School (NPS) and the Systems Engineering and Analysis (SEA) curriculum exist in part to address multi-discipline Joint US Defense issues through the efforts of a diverse team of students and faculty members.

The SEA team's task is to provide unbiased engineering insights into contemporary warfare challenges and provide possible solutions. The SEA teams do not design, engineer or test individual system components instead they study larger problems as a whole and quantifiably compare competing system architectural solutions in terms of performance, schedule and cost. Previous teams have tackled such diverse macroscopic studies as Sea Basing and Joint Expeditionary Logistics (SEA-6) and Maritime Domain Protection (SEA-7). The current project study addresses Littoral Anti-Submarine Warfare (ASW) in 2025 (SEA-8).

SEA-8 used an adaptation of the Systems Engineering Design Process (SEDP) to guide them in their Littoral ASW study. In accordance with SEDP principles, SEA-8 conducted an in-depth problem definition study, generated five competing alternative architecture solutions and analyzed those solutions via modeling and simulation against the backdrop of a real world "defense of island nation" scenario.

SEA-8 used physics-based models to input key ASW performance parameters into a higher level, entity-based, Monte Carlo simulation model. Through this high level model, SEA-8 was able to create a digital battle space where red and blue forces meet, and the results of those interactions are recorded. Modeling performance comparisons were conducted, and the analysis of that data provided SEA-8 with valuable insights into each of the alternatives as well as into the future conduct of littoral Anti-Submarine Warfare. Subjects of the study are listed below:

- Unmanned Underwater Vehicles (UUVs) effectiveness when conducting ASW
- Underwater Joint Engagement Zones (UJEZ) and future ASW operations
- Remote underwater sensors and their clandestine insertion outside of enemy harbors
- 10/30/30 construct and the use of non-traditional methods to seize the initiative
- Kill chain timelines and their impact upon ASW asset capabilities
- Persistent and pervasive systems and their impact in the underwater battle space
- Standoff weapons and unmanned tracking systems
- Areas of future study

SEA-8 will present the details of this study during a formal unclassified brief on 7 December, 2005 starting at 0800 and ending at 1200. Following a break for lunch, SEA-8 will offer three hours of informal breakout sessions from 1330 until 1630 where more in-depth questions concerning littoral ASW Logistics, Prosecution, Platform Development, Modeling and C4ISR will be fielded by the SEA-8 students. In addition a SECRET US ONLY brief that addresses SEA-8 Littoral ASW conclusions and their applicability to future real world security concerns will be held.

The Wayne E. Meyer Institute and the Systems Engineering and Analysis Department at NPS would like to thank you for your interest and continued support. We look forward to your attendance and encourage your thoughtful comments and critique on this important topic, Littoral Anti-Submarine Warfare in 2025.