



The LCSS (H) concept was born of the forecasted submarine shortfalls coinciding with the construction of the OHIO replacement submarines. To maintain a submarine force near the currently required 48 fast attack submarines, the LCSS (H) was designed to be a low cost ship to supplement the VIRGINIA class submarines in some littoral missions. To further reduce the costs and minimize the design effort, which will coincide with the OHIO replacement design, as many of the VIRGINIA class features as possible were utilized. These common components consist primarily of the torpedo room, sail, sonar dome and equipment, command and control stations, and radio room in addition to the hull diameter and floating deck design. The key features and capabilities of the submarine were prioritized based on a survey of submarine line officers representing 165 years of combined experience.

The LCSS (H) is a hybrid submarine meaning that all operating power can come from the reactor or from the battery for short period of time. In addition, battery power can be used to supplement the submarine's speed to provide a sprint speed of nearly 21 knots as compared to the 15 knot sustained speed. This design provides for several advantages. The first advantage is a short engine room due largely to the slow speed and the elimination of main engines. The Integrated Propulsion System also allows more effective use of the large hull diameter, for this displacement submarine, to minimize the engine room length.

The primary mission set for this submarine consists of the littoral missions: Intelligence, Surveillance, and Reconnaissance (ISR), Anti-Submarine Warfare (ASW), Anti-Surface Warfare (ASuW), Mine Warfare (MIW), limited STRIKE, and very limited Special Operations Forces (SOF) support. These missions are consistent with the project thesis of supplementing the VIRGINIA submarines and not replacing them. Combatant Commanders can utilize the LCSS (H) to perform the above missions when the expanded mission set and/or capabilities of a VIRGINIA class submarine are not required.

To enhance the littoral operational capability of the LCSS (H), the submarine is equipped with several key features. To increase maneuverability at low speeds, a pump driven hovering system is used. A vertical bow thruster was also included although plans were made to accommodate bow planes vice the thruster if required. A five-bladed propeller was also used for three reasons. The first reason was to enhance slow speed maneuverability in general and backing specifically. Second, the slow speed of the submarine should allow the design of a very quiet propeller. Finally, the propeller was planned to further reduce the cost of the submarine as a whole.

The overall cost of the submarine was estimated to be \$1.44 billion dollars (FY05) using a weight based cost model. However, this type of costing may not capture all of the cost savings associated with utilizing a simplified design without several costly components such as a thin line towed array, vertical weapons tubes, and propulsor. Additional cost savings are possible based on the similarity to VIRGINIA class submarines and the continuation of those learning curves.

The LCSS (H) was designed as the frigate of the submarine force to accomplish vital tasking that does not always require the full capabilities (and cost) associated with a VIRGINIA class submarine. This submarine is less expensive to construct and requires less manning which is critical to maintaining 48 fast attack submarines during the coming decades.