



Attack Submarines - SSN

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Description

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Features

Background

With the number of foreign diesel-electric/air-independent propulsion submarines increasing, the United States Submarine Force relies on its technological superiority and the speed, endurance, mobility, stealth, and payload afforded by nuclear power to retain its preeminence in the undersea battlespace.

The Navy has three classes of SSNs in service. Los Angeles-class (SSN 688) submarines are the backbone of the submarine force, with approximately forty now in commission. Thirty of those are equipped with twelve Vertical Launch System (VLS) tubes for firing Tomahawk cruise missiles.

The Navy also has three Seawolf-class submarines. Commissioned July 19, 1997, USS Seawolf-class (SSN 21) submarines are exceptionally quiet, fast, well-armed, and equipped with advanced sensors. Though lacking VLS, the Seawolf class has eight torpedo tubes and can hold up to 50 weapons in its torpedo room. The third ship of the class, USS Jimmy Carter (SSN 23), has a 100-foot hull extension called the multi-mission platform. This hull section provides for additional payloads to accommodate advanced technology used to carry out classified research and development and for enhanced warfighting capabilities.

The Navy continues to build the next-generation attack submarine, the Virginia (SSN 774) class. Twenty-one Virginias have been commissioned to date, and they will replace Los Angeles Class submarines as they retire. The Virginia class has several innovations that significantly enhance its warfighting capabilities, including in littoral -- or coastal -- operations. The class has special features to support SOF, including a reconfigurable torpedo room which can accommodate a large number of SOF personnel and all their equipment for prolonged deployments, as well as future off-board payloads. The class also has a large lockout truck (LOT) for divers. In Virginia-class SSNs, traditional periscopes have been supplanted by two photonics masts that host visible and infrared digital cameras atop telescoping arms. With the removal of the barrel periscopes, the ship's control room has been moved down one deck and away from the hull's curvature, affording it more room and an improved layout that provides the commanding officer with enhanced situational awareness. Additionally, through the extensive use of modular construction, open architecture, and commercial off-the-shelf components, the Virginia class is designed to remain state-of-the-practice for its entire operational life through the rapid introduction of new systems and payloads.

As part of the Virginia-class' third, or Block III, contract, the Navy redesigned approximately 20 percent of the ship to reduce their acquisition costs. Most of the changes are found in the bow where the traditional, air-backed sonar sphere has been replaced with a water-backed Large Aperture Bow (LAB) array which reduces acquisition and life-cycle costs while providing enhanced passive detection capabilities. The new bow also replaces the 12 individual Vertical Launch System (VLS) tubes with two large diameter 87-inch Virginia Payload Tubes (VPTs), each capable of launching six Tomahawk cruise missiles using Multiple All-up Round Canisters (MACs) already employed on SSGNs . The VPTs simplify construction, reduce acquisition costs, and provide for more payload flexibility than the smaller VLS tubes due to their added volume. The Block III design changes will continue on all future Virginias and were successfully proven out during USS North Dakota's (SSN 784) builder sea trials in August 2014. Block III hulls include the eight ships procured from 2008 through and 2013 (SSNs 784-791).

The next major change is the incorporation of the Virginia Payload Module (VPM), starting with the second Block V ship, SSN 803, currently under construction. VPM incorporates four additional large diameter payload tubes in a new hull section located amidships. Due to their location, each VPM payload tube is capable of carrying seven Tomahawk cruise missiles adding 28 missiles per VPM. VPM reconstitutes the ability to host dry deck shelters, further enhancing SOF capability, and allows the Navy to host additional advanced payloads via multiple ocean interfaces. Block V hulls include the ten ships procured from 2019 through 2023 (SSNs 802-811).

Two additional future Blocks, Blocks VI and VII, will leverage Block V modifications and future changes.

General Characteristics, Virginia Class

Builder: General Dynamics Electric Boat Division and Huntington Ingalls Industries Inc. - Newport News Shipbuilding

Date Deployed: USS Virginia commissioned Oct. 3, 2004

Propulsion: One nuclear reactor, one shaft

Length: 377 feet (114.8 meters); 461 feet (140.5 meters) with VPM

Beam: 34 feet (10.36 meters)

Displacement: Approximately 7,800 tons (7,925 metric tons) submerged; 10,200 tons (10,363.7 metric tons) with VPM

Speed: 25+ knots (28+ miles per hour, 46.3+ kph)

Crew: 132: 15 officers; 117 enlisted

Armament: Tomahawk missiles, twelve VLS tubes (SSNs 774-783) or two VPTs (SSNs 784 and beyond, and four additional payload tubes (SSNs 803 and beyond); Mk 48 ADCAP torpedoes, four torpedo tubes

Ships:

USS Virginia (SSN 774) Portsmouth, New Hampshire

USS Texas (SSN 775) Portsmouth, New Hampshire

USS Hawaii (SSN 776) Pearl Harbor, Hawaii

USS North Carolina (SSN 777) Pearl Harbor, Hawaii

USS New Hampshire (SSN 778) Norfolk, Virginia

USS New Mexico (SSN 779) Norfolk, Virginia

USS Missouri (SSN 780) Pearl Harbor, Hawaii

USS California (SSN 781) Groton, Connecticut

USS Mississippi (SSN 782) Pearl Harbor, Hawaii

USS Minnesota (SSN 783) Groton, Connecticut

USS North Dakota (SSN 784) Groton, Connecticut

USS John Warner (SSN 785) Norfolk, Virginia
USS Illinois (SSN 786) Pearl Harbor, Hawaii
USS Washington (SSN 787) Norfolk, Virginia
USS Colorado (SSN 788) Groton, Connecticut
USS Indiana (SSN 789) Groton, Connecticut
USS South Dakota (SSN 790) Groton, Connecticut
USS Delaware (SSN 791) Groton, Connecticut
USS Vermont (SSN 792) Groton, Connecticut
Oregon (SSN 793) – Christened Oct. 5, 2019
Montana (SSN 794) – Christened Sept. 12, 2020
Hyman G. Rickover (SSN 795) – Christened July 31, 2021
New Jersey (SSN 796) – Keel laid March 25, 2019
Iowa (SSN 797) – Keel laid Aug. 20, 2019
Massachusetts (SSN 798) – Keel laid Dec. 11, 2020
Idaho (SSN 799) – Keel laid Aug. 24, 2020
Arkansas (SSN 800) – Construction began March 2018
Utah (SSN 801) – Keel laid Sept. 1, 2021
Oklahoma (SSN 802) – Construction began Sept. 2019
Arizona (SSN 803) – Construction began March 2020
Barb (SSN 804) – Construction began Sept. 2020
Tang (SSN 805) – Construction began July 2021
Wahoo (SSN 805) – Future build
Silversides (SSN 807) – Future build

General Characteristics, Seawolf Class

Builder: General Dynamics Electric Boat Division.

Date Deployed: USS Seawolf commissioned July 19, 1997

Propulsion: One nuclear reactor, one shaft

Length: SSNs 21 and 22: 353 feet (107.6 meters); SSN 23: 453 feet (138.07 meters)

Beam: 40 feet (12.2 meters)

Displacement: SSNs 21 and 22: 9,138 tons (9,284 metric tons) submerged; SSN 23 12,158 tons (12,353 metric tons) submerged

Speed: 25+ knots (28+ miles per hour, 46.3+ kph)

Crew: 140: 14 officers; 126 enlisted

Armament: Tomahawk missiles, MK48 torpedoes, eight torpedo tubes

Ships:

USS Seawolf (SSN 21) Bremerton, Washington

USS Connecticut (SSN 22) Bremerton, Washington

USS Jimmy Carter (SSN 23) Bangor, Washington

General Characteristics, Los Angeles Class

Builder: Newport News Shipbuilding Co.; General Dynamics Electric Boat Division

Date Deployed: Nov. 13, 1976 (USS Los Angeles)

Propulsion: One nuclear reactor, one shaft

Length: 360 feet (109.73 meters)

Beam: 33 feet (10.06 meters)

Displacement: Approximately 6,900 tons (7011 metric tons) submerged

Speed: 25+ knots (28+ miles per hour, 46.3 +kph)

Crew: 16 officers; 127 enlisted

Armament: Tomahawk missiles, VLS tubes (SSN 719 and later), MK 48 torpedoes, four torpedo tubes

Ships:

USS San Francisco (SSN 711) Charleston, South Carolina (Moored Training Ship)

USS Providence (SSN 719) Bremerton, Washington

USS Chicago (SSN 721) Pearl Harbor, Hawaii

USS Key West (SSN 722) Guam

USS Oklahoma City (SSN 723) Guam

USS Helena (SSN 725) Norfolk, Virginia

USS Newport News (SSN 750) Portsmouth, New Hampshire

USS San Juan (SSN 751) Groton, Connecticut

USS Pasadena (SSN 752) Norfolk, Virginia

USS Albany (SSN 753) Norfolk, Virginia

USS Topeka (SSN 754) Guam

USS Scranton (SSN 756) San Diego, California

USS Alexandria (SSN 757) San Diego, California

USS Asheville (SSN 758) Guam

USS Jefferson City (SSN 759) Pearl Harbor, Hawaii

USS Annapolis (SSN 760) San Diego, California

USS Springfield (SSN 761) Pearl Harbor, Hawaii

USS Columbus (SSN 762) Newport News, Virginia

USS Santa Fe (SSN 763) Portsmouth, New Hampshire

USS Boise (SSN 764) Norfolk, Virginia
USS Montpelier (SSN 765) Groton, Connecticut
USS Charlotte (SSN 766) Pearl Harbor, Hawaii
USS Hampton (SSN 767) San Diego, California
USS Hartford (SSN 768) Groton, Connecticut
USS Toledo (SSN 769) Portsmouth, Virginia
USS Tucson (SSN 770) Pearl Harbor, Hawaii
USS Columbia (SSN 771) Pearl Harbor, Hawaii
USS Greenville (SSN 772) Portsmouth, New Hampshire
USS Cheyenne (SSN 773) Portsmouth, New Hampshire

Decommissioned Ships:

Bremerton (SSN 698)
Jacksonville (SSN 699)
Dallas (SSN 700)
Buffalo (SSN 715)

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Point of Contact

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