Ohio Class Submarine United States of America

[115](http://www.naval-technology.com/projects/ohio/##)

**Key Data**

* **Crew**15 officers plus 139 enlisted crew members
* **Length**560ft
* **Beam**42ft
* **Displacement, Submerged**18,750t
* **Displacement, Surfaced**16,600t
* **Speed** Over 25kt
* **Depth** Over 800ft

The Ohio Class submarines serve the United States Navy as the virtually undetectable undersea launch platforms of intercontinental missiles. The Electric Boat Division of General Dynamics, based at Groton, Connecticut, has built 18 Ohio submarines, commissioned between 1981 and 1997.

The submarines of the Pacific Fleet are based at Bangor, Washington, and those of the Atlantic Fleet at King's Bay, Georgia. The submarines spend 70 days at sea followed by 25 days in dock for overhaul.

**Ohio SSGN submarine conversion**

Under the requirements of the Strategic Arms Reduction Treaty, START II, which was agreed in June 1992, the number of strategic missile submarines was limited to 14 from the year 2002. Rather than decommissioning these four submarines, the US Navy has converted them to SSGNs (conventionally armed nuclear-powered) submarines.

"Ohio Class submarines are virtually undetectable undersea launch platforms for intercontinental missiles."

In September 2002, Electric Boat received a contract for the conversion of USS Ohio (SSBN 726), Michigan (727), Florida (728) and Georgia (729). The submarines have been refitted with up to 154 Tomahawk TLAM (land attack) or Tactical Tomahawk (block IV) missiles and are also be capable of conducting special operations missions with accommodation for Northrop Grumman advanced SEAL delivery systems (ASDS), mission control center and 102 special operations troops.

General Dynamics Advanced Information Systems is modifying the Trident fire control system for the Tomahawk weapon control.

Northrop Grumman Electronic Systems is adapting the missile launch tubes, developing a multiple all-up round canister (MAC) which provides storage and launch of up to seven Tomahawk missiles from each of the submarine's 22 missile tubes. The SSGN submarines are also fitted with the Raytheon AN/BYG-1 combat data system.

USS Ohio began conversion in November 2002, which was completed in January 2006, when the ship rejoined the fleet following sea trials in December 2005. USS Florida began the SSGN conversion in July 2003 and rejoined the fleet in April 2006. USS Michigan returned to service in June 2007. USS Georgia was delivered from conversion in December 2007 and returned to service in March 2008. SSBN's USS Pennsylvania and USS Kentucky have shifted homeport from Kings Bay to Bangor to balance the strategic force.

In November 2007, USS Ohio left for final trials off Hawaii before beginning its first operational deployment as an SSGN in the western Pacific Ocean.

In January 2003, USS Florida took part in Naval Sea Systems Command (NAVSEA) experiment 'Giant Shadow' to test the capabilities of the new SSGNs. The experiment included validation launches of two Tomahawk missiles, the first ever launch of a UUV (unmanned underwater vehicle) and insertion of a navy SEALs force. The SSGN will have the capacity to accommodate 66 SEALS.

Related Suppliers

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Calzoni S.r.l. (former Riva Calzoni) is an Italian Company, part...

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**Advanced SEAL delivery system (ASDS)**

The Northrop Grumman advanced SEAL delivery system (ASDS) is a submersible for the delivery of US Navy SEALs and combat gear to the shore. Each Ohio SSGN has had its two forward-most missile tubes converted into ASDS capable lock-out chambers. ASDS is equipped with multiple sonars, GPS/ inertial navigation, communications and electronic support measures (ESM). It has also been fitted to Los Angeles Class submarines USS Charlotte (SSN-766) and the USS Greeneville (SSN-772) and is to equip the Virginia Class SSNs.

In March 2008, USS Michigan successfully completed the operational evaluation of ASDS across a range of operational conditions.

**Trident missiles**

The Ohio Class submarine is equipped with the Trident strategic ballistic missile from Lockheed Martin Missiles and Space. The Trident was built in two versions, Trident I (C4), which is being phased out, and the larger and longer-range Trident II (D5), which entered service in 1990.

"The Ohio Class SSGNs are conventionally armed nuclear-powered submarines."

The first eight submarines, (SSBN 726 to 733 inclusive) were equipped with Trident I and the following ten (SSBN 734 to 743) carry the Trident II. Conversion of the four Trident I submarines remaining after START II (Henry M Jackson, Alabama, Alaska and Nevada) to Trident II began in 2000 and completed in 2008.

Lockheed Martin received a contract in January 2002 for the production of 12 Trident II missiles for the four submarines.

The submarine has the capacity for 24 Trident missile tubes in two rows of 12. The dimensions of the Trident II missile are 1,360cm long with a diameter of 210cm, and the weight is 59,000kg. The three-stage solid fuel rocket motor is built by ATK (Alliant Techsystems) Thiokol Propulsion.

The US Navy gives the range as 'greater than 7,360km' but this could be up to 12,000km depending on the payload mix. Missile guidance is provided by an inertial navigation system, supported by stellar navigation.

Trident II is capable of carrying up to 12 MIRVs (multiple independent re-entry vehicles), each with a yield of 100kt, although the SALT treaty limits this number to eight a missile. The circle of equal probability (the radius of the circle within which half the strikes will impact) is less than 150m. The Sperry Univac Mark 98 missile control system controls the 24 missiles.

**Torpedoes**

The Ohio Class submarine is fitted with four 533mm torpedo tubes with a mk118 digital torpedo fire control system. The torpedoes are the Gould mk48 torpedoes.

The mk48 is a heavy weight torpedo with a warhead of 290kg, which has been operational in the US Navy since 1972. The torpedo can be operated with or without wire guidance and the system has active and/or passive acoustic homing.

Range is up to 50km at a speed of 40kt. After launch the torpedo carries out target search, acquisition and attack procedures delivering to a depth of 3,000ft.

**Ohio countermeasures**

The Ohio Class submarine is equipped with eight launchers for the mk2 torpedo decoy. Electronic warfare equipment is the WLR-10 threat warning system and the WLR-8(V) surveillance receiver from GTE of Massachusetts.

The WLR-8(V) uses seven YIG-tuned and vector-tuned superheterodyne receivers to operate from 50MHz up to J-band. An acoustic interception and countermeasures system, AN/WLY-1 from Northrop Grumman, has been developed to provide the submarine with an automatic response against torpedo attack.

"The Ohio Class submarine is equipped with eight launchers for the mk2 torpedo decoy."

**Sensors**

The surface search, navigation and fire control radar is BPS 15A I/J-band radar. The sonar suite includes: IBM BQQ 6 passive search sonar, Raytheon BQS 13, BQS 15 active and passive high-frequency sonar, BQR 15 passive towed array from Western Electric, and the active BQR 19 navigation sonar from Raytheon. Kollmorgen Type 152 and Type 82 periscopes are fitted.

The Ohio submarines are being upgraded with the Lockheed Martin AN/BQQ-10(V4) sonar processing system under the acoustic-rapid commercial-off-the-shelf insertion (A-RCI) program.

**Propulsion**

The main machinery is the pressure water reactor GE PWR S8G with two turbines providing 60,000hp and driving a single shaft. The submarine is equipped with a 325hp Magnatek auxiliary prop motor. The propulsion provides a speed in excess of 18kt surfaced and 25kt submerged.