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## Russia Launches a New Borei-A Class Submarine

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The *Knyaz Pozharsky* SSBN (Ship Submarine Ballistic Nuclear) was launched on December 23, 2016 to enter service in 2018. It was laid down in 2012 to become the fourth submarine in the series of eight *Borei*-class SSBNs and the first submarine of the improved *Borei-A* (*Borei-II*) Project.

The Russian Navy currently operates three *Borei*-class submarines: the Yuri Dolgoruky is operational in the Northern Fleet while the *Vladimir Monomakh* and the *Alexander Nevsky* are part of the Pacific Fleet. These SSBNs are intended to replace the Project 941 *Typhoon*-class and Project 667 BDRM *Delta IV*-class vessels.

A *Borei*-class sub has a length of nearly 170 meters (557.7ft), a width of 13.5 meters (44.3ft), and a displacement of 24,000 tons. It can dive to a maximum depth of about 480 meters (1,500ft) and yields a submerged speed of roughly 30 knots. A submarine can operate autonomously for 90 days. It has a crew of 107 people, including 55 commissioned officers.

The primary armament is the Bulava (RSM-56) intercontinental ballistic missile (ICBMs) – a sea-based variant of the Topol-M SS-27 ICBM, carrying six to 10 warheads with a yield of 100kt-150kt. A *Borei* A-class submarine can carry up to 20 ballistic missiles compared to 16 carried by the *Borei* class predecessor. The missile is 12.1m long, weighs a total of 36.8 metric tons and has a diameter of 2.1m (including the launch container).

One *Borei*-class submarine can carry 120-200 hypersonic, independently maneuverable warheads. An operational range is over 8,300 kilometers (5,157 miles). A missile can be launched on-the-move and/or to launch them from under the Arctic ice. The Bulava can conduct evasive post-launch maneuvers and deploy a variety of countermeasures and decoys to defend against interception. Its independently targeted re-entry vehicles are protected against both physical and electromagnetic-pulse damage to ensure that they can reach their targets intact.

A *Borei*-class submarine also has eight 533-mm forward torpedo tubes, nearly 40 torpedoes, torpedo mines and missile-torpedoes, including six of the RPK-2 Viyuga (SS-N-15) missiles, each capable of carrying a payload of a Type 40 torpedo or 90R nuclear depth charge. The missile has an operational range of 45km traveling at a subsonic speed of Mach 0.9.

The sub has a compact, hydro-dynamically efficient hull for reduced broadband noise and uses pump-jet propulsion to reduce noise and provide the submarine with a higher tactical ‘silent speed’ and increased maneuverability. This makes the boat more difficult to detect.

The sub boasts smaller hulls and cons, improved acoustics and lower sound levels. Experts in antisubmarine warfare believe that Russia is the only country in the world that can build a nuclear submarine capable of evading US detection.

The *Borei*’s sonar system can detect targets at a distance 50 percent farther than that of *Virginia*-class submarines of the United States Navy. This system is a complex of digital devices providing communications, acquisition and detection of targets and a range of auxiliary functions.

The submarine is powered by an OK-650 nuclear reactor, AEU steam turbine, a shaft and a propeller. The *Borei*-class submarines are the first in Russia to run on the single-shaft pump jet propulsion system providing high performance instead of twin propulsion system. In addition,

these boats have two hinged thrusters and retractable horizontal bow planes with flaps for enhanced maneuverability.

US experts hold an opinion that the Borei-class SSBN is an impressive platform which «*contains the best of modern submarine technology, including advanced sound-silencing and pump jet propulsion similar to that found on the US Virginia class*».

Business Insider placed *Borei*-class submarines among the «11 incredible weapons systems» used by the Russian military.

Currently, there are about 70 operational submarines of different classes with the Russian Navy. They incorporate the most advanced technologies of the Russia defense industry, including hulls made of special steel alloys and titan for increased stealth capabilities, reliable underwater missile launchers and sophisticated sonar systems.

The arrival of the *Borei*-class submarines will enable the Russian Navy to resume strategic patrols in southern latitudes that have not seen a Russian missile submarine in 20 years.