

RUSSIA'S KILLERS OF THE DEEP ATTACK BOATS IN TRANSITION

CHIEF ANALYST **USMAN ANSARI** OUTLINES HOW RUSSIA'S FEARSOME NUCLEAR-POWERED AKULA ATTACK BOATS REMAIN DEADLY OPPONENTS EVEN AS NEW VESSELS BEGIN TO DISPLACE THEM IN THE ORDER OF BATTLE.



The Project 971 Shchuka-B (Pike-B) submarine - dubbed the Akula by NATO - was the most capable nuclear-powered attack boat (SSN) to enter service with the Russian Navy in the final phase of the Cold War. It helped close the military technology gap with the West during the endgame of that undersea contest. Those that remained in service after the end of the Cold War became the backbone of the Russian Federation's attack boat fleet and, for all the passing of years, they remain dangerous opponents. In Russia's order of battle, the Pikes have been eclipsed by the even more formidable Yasen Class nuclear-powered guided-missile submarine (SSGN). Development of the Yasen was delayed by Russia's 1990s economic meltdown. Though based on the Pike and Lyre (NATO - Alfa) SSN designs it is not by any means a

dated or inferior design. A combination of stealth, powerful sensors, a huge amount of new technology and design features, plus cutting-edge weaponry make the Yasens almost as good as the best Western submarines such as the UK's Astute or the USA's Seawolf and Virginia SSNs. The maiden Baltic voyage of the lead Yasen Class boat, Severodvinsk, in July - to take part in Russia's annual Naval Parade in St. Petersburg - gave the West a look at the new foe (known as the Severodvinsk Class by NATO). Accompanying the Severodvinsk on the voyage from the Northern Fleet in the Arctic to the Gulf of Finland for the parade was the Pike/Akula II SSN RFS Vepr, a boat making her second visit to the Baltic.

THE Pike/Akula design was essentially a development of the Barrakuda (NATO - Sierra) titanium hull SSN, using the same

base design, but with different materials. The main difference was the Pike/Akula had a steel hull, allowing more of them to be built. Like the Barrakuda/Sierra, it benefitted from two types of very effective sound isolation techniques to reduce the acoustic signature produced by pneumatic and vibration sources of sound. This involved mounting equipment, such as turbine generators and main engines, on what were essentially large rubber blocks and also suspending them from rubber cords (to isolate them from the hull and prevent them radiating high and low frequency sound into the surrounding water). The Pike/Akula also featured a high degree of automation, including a fully automated torpedo room. The sensor suite was a development, or version of, similar systems found in the Shchuka (NATO - Victor III) SSN,

but with the addition of a wake homing system. As it was considerably quieter than the Shchuka/Victor III, the Pike/Akula sensor suite was far more effective. The first of fifteen completed Pike/Akulas was commissioned in December 1984, much to the shock of Western analysts who were not expecting such an advanced Soviet design for another decade at least. Nevertheless, though advanced and very capable in comparison to preceding Soviet types, the Pike/Akula demonstrated room for improvement, some of which was implemented on individual boats as they were built. Four have been decommissioned, however - mainly for financial reasons - though the lead boat was essentially only ever a long-serving operational test bed for the class. One incomplete boat was used as the basis for the first of the new Borei Class (NATO -

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The Yasen Class nuclear-powered guided-missile submarine (SSGN) RFS Severodvinsk, making her debut in the Baltic. Left, above: RFS Vepr, a previous visitor to the same seas on her return, summer 2022.

**All Photos:
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A close-up look at RFS Severodvinsk, lead boat in the Russian Navy's new class of SSGNs. Right: Old generation attack boat RFS Vepr, also in the Baltic in July 2022.





Dolgorukiy) ballistic missile submarines. The remainder have been upgraded and will ensure Russia retains sufficient operationally effective SSNs until enough Yasen boats have entered service.

THE Improved Akula I submarines that began entering service in the 1990s were far quieter. This was in part because they fully benefitted from advanced computer-controlled milling equipment - acquired via Japan - that enabled considerably more precise production of their propellers. They also featured more advanced sensors in addition to the still quite impressive existing suite, most noticeably a towed array sonar. They should be considered the main representatives of the Pike/Akula family. They have been cycled through an overhaul programme from 2015 onwards, which is now delivering the final boats to receive the work back to service. There is only one Pike/Akula II, the aforementioned Vepr, which is notable for being three metres longer, to accommodate additional acoustic signature reduction measures. She is believed to have been the first Russian attack boat design to generally close the gap with Western counterparts, such as the US Navy's Los Angeles Class SSNs. Russia's economic implosion during the 1990s curtailed the Akula II programme though, with two hulls laid down languishing incomplete until they provided the basis for two Borei SSBNs. There is also only one Akula III, the Gepard, commissioned in December 2001 and which features an even more enlarged sail plus a new towed array sonar housing. The acoustic signature has been further reduced.

THOUGH its sensors may not be equal to those on Western submarines, the reduction in acoustic signature over preceding Russian SSN types for the Pike/Akula enabled the Russians

to detect and track Western ballistic missile submarines (SSBNs) for the first time. On the other hand, Western submarines had been able to track the noisy Russian boats for many years. Contemporary Western ballistic missile subs were both quieter and could hear any prowling Soviet SSNs in the vicinity before being detected themselves. Trailing Western SSBNs was regarded as such an accomplishment that, in 1996, the commander of the Improved Pike/Akula I boat Tigr, was awarded a medal for reportedly detecting and trailing an American SSBN. Two Pike/Akulas - likely Tigr and Gepard - reportedly operated off the USA's east coast in 2006. It was reputedly the first time Russian submarines had done that since the end of the Cold War in 1991. In 2012 the USN claimed another Pike/Akula had spent a month operating in the Gulf of Mexico. Incidents like those and modification of the design to fire the Kalibr Land-attack Cruise Missile (LACM) highlighted that the Pike/Akula submarines continued to pose a considerable threat. The USN's Los Angeles Class boats and the RN's Trafalgar SSNs are being retired but the Pike/Akula will likely be around for some time yet. While it may have suffered from poor operational readiness rates in the recent past, as the class-wide upgrade programme draws to an end this will likely no longer be the case. The Pike/Akula design still has its flaws, however. The spinners - small propellers - used for manoeuvring or position-keeping when deployed are actually quite noisy and, upgraded or not, the Pike/Akulas are still fairly expensive to keep operational.

THE Yasen/Severodvinsk SSGN is a more multi-role design. It is a leap rather than an incremental evolution. Lead boat Severodvinsk, laid down in 1993 and commissioned in 2013, is the sole Project-885 boat, with the subsequent vessels being of the

modified (and some nine metres shorter) 885-M/Yasen-M design. Kazan and Novosibirsk were commissioned in 2021, with a new boat expected to commission roughly every year for the rest of this decade. Like its Western counterparts, the Yasen/Severodvinsk is also a single-hull design unlike the majority of Soviet/Russian Cold War designs. The most obvious features include a powerful spherical sonar and flank array on the Yasen and conformal array on the Yasen-M that, along with a towed array delivers extremely potent detection capabilities, vertical-launch tubes - eight VL tubes on Severodvinsk and ten on the Project-885M - for a wide range of anti-ship, anti-submarine and LACM. Under development is a 4,500km range Kalibr-M and the hypersonic Zircon missile. There has reputedly been a test firing of the latter from RFS Severodvinsk recently. The Yasen/Severodvinsk has a higher degree of automation that reduces the crew to 85 (in RFS Severodvinsk) and 64 submariners in Yasen-885M boats. A new generation KTP-6 monoblock reactor in the Yasen-M boats does away with a separate steam generator, enabling further size reduction. It will only need refuelling once during the lifetime of a boat, leading to higher availability. It is also significantly quieter, as the coolant is capable of circulating without the use of noisy pumps. More advanced acoustic signature reduction measures perhaps 'under some circumstances' enable the Yasen-M to approach parity with current Western submarines. Perhaps the main threat posed to the West by the Yasen/Severodvinsk SSGNs is their long-range strike capability, which means they may not need to actually break out into the North Atlantic in order to achieve a decisive effect in any future conflict. They could target nodal points such as major ports, or

inland targets such as bases and command and control infrastructure, from within the Arctic/High North in line with current Russian doctrine. Satellite or other aerial targeting information may also allow them to attack carrier battle groups or convoys in a similar way. This will require a more aggressive NATO Anti-submarine Warfare (ASW) response in the areas close to Russia where the Yasen/Severodvinsk boats can be expected to prowl. Those zones - bastions - will be covered by land-based Russian assets, be they aircraft or missiles, and also major units of the Northern Fleet tasked with protecting its strategic/nuclear deterrent assets. At the same time, Pike/Akula submarines could still break out into the Atlantic to either undertake a classic hunter-killer role, or strike critical targets from comparatively close range. The Severodvinsk/Yasen will not be delivering unique strike capabilities as such, because the forthcoming Virginia Class Block V submarine of the US Navy will actually carry more cruise missiles and will eventually also be equipped with hypersonic missiles. However, the Yasen/Severodvinsk SSGNs will deliver those capabilities sooner. If it can be claimed to have one flaw though, it is that the latest Russian SSGN is expensive. For that reason a more affordable submarine is reportedly being designed, the Laika/Husky. It will supposedly be a more direct replacement for the Akula, entering service around the end of this decade. The Laika/Husky will be a more modular multi-role design, though, borrowing features from the Yasen/Severodvinsk, such as the vertical-launch tubes, from which it may also be able to fire ballistic missiles. In the meantime the Pike/Akula and Yasen/Severodvinsk boats allow Russia to maintain a credible conventional deterrent against its main Western opponents.