

'Black Holes in the Ocean'

110 Years of Russian Submarine Prowess

The previous articles in this series (see Vayu II and III/2016) covered the early history of Soviet submarine development. This final feature now examines Russian underwater warfare capabilities as they evolved through the Cold War and through to the present day.

Development and testing of Russian conventionally powered submarines passed another milestone on 17 November 2016, when Russian submarine *Sankt Peterburg*, the lead ship of the *Lada*-class (Project 677) fired a cruise missile at a sea-going target in one of the Northern Fleet's test ranges. Although the weapon type was not reported, it was confirmed that the launch was performed while the submarine was submerged, and that the missile hit the assigned target.

News of this first successful missile test must be encouraging for Russian sales managers at Rosoboronexport, which is promoting the *Amur 1650* export variant of the *Lada*-class in India and other Asian countries. Unfortunately in the case of India, the Project 75(I) competition for six conventional submarines seems to have been stuck somewhere between the RFI and RFP.

Project 677 is the most recent conventionally powered submarine developed by the Rubin design house, responsible for a majority of Russian

submarines developed over the past 115 years. The lead ship – designated *Sankt Peterburg* (Saint Petersburg) with pennant number B-585 – was laid down at the Admiralty Shipyards in 1997, launched in 2004 and demonstrated publically for the first time at the IMDS 2005 marine show. After trials in Baltic waters with numerous repairs and modifications in the process, she was commissioned in 2010. Today, this ship represents the most advanced diesel-electric submarines ever made in Russia.

Having completed all possible testing in the shallow waters of the Baltic Sea, *Sankt Peterburg* headed to the Arctic. After an uneventful 1,900-mile ferry, the boat arrived at a naval base on the Kola Peninsula in October 2013. She received positive comments on her handling qualities and her ability to withstand rough seas. Up north, *Sankt Peterburg* was subjected to testing in deep waters. Operational trials continued through 2014 and 2015. Last year, she successfully dived to the maximum advertised depth, to verify hull strength and check for proper functioning of on board systems. Rubin has also reported about torpedo launches and release of mines during trials.

Following sonar tuning at sea, *Sankt Peterburg* “demonstrated high efficiency in detection of various low-noise targets,” thanks to the superb performance of the new ‘Lira’ sonar suite, with an L-01 quasi-conformal antenna in the nose section, a towed array, and a host of other sensors. This sonar system is described as “the most powerful and advanced ever installed into a combat-capable diesel-electric submarine.”



Sankt Peterburg at sea (photo: Rubin)

At the same time, however, some of the new equipment was malfunctioning or not performing as promised. The SED-1 permanent magnet motor (PMM) worked fine at low and medium power, but failed to propel *Sankt Peterburg* to her maximum advertised underwater speed of 21 knots. The issue is to be resolved on series boats by replacing the motor with a more advanced model from the Russian firm Electrosila. There are other areas of concern that are to be addressed, but Rubin says the remaining issues are minor and that *Sankt Peterburg* is on track to complete operational trials later this year.

In a number of interactions with the media in the first half of 2016, Russian Naval officials stated that the Navy is committed to the *Lada*-class. They confirmed that orders for completion of two more boats remain in place. The nose and rear sections of B-586 *Kronshadt* have been mated, while sections of B-587 *Velikiye Luki* are being pre-outfitted. The first boat will be completed in 2018, followed by the other in 2019. An even more interesting piece of information came from Alexander Buzakov, CEO of Admiralty Shipyards : he stated recently that the Russian Navy is expected to place an order for a fourth *Lada*-class boat shortly.