

India's Submarine Arm



Towards a Nuclear Fleet

INS Chakra, India's sole nuclear attack submarine, seen during TROPEX 2014

One of the first Asian navies to operate a credible submarine arm, the Indian Navy (IN) currently operates nine Russian-built *Kilo*-class (Project 877EKM 'Paltus') and four German-built Class 209 Type 1500 *Shishumar*-class diesel-electric submarines. However, the IN has remained strongly focussed on a possible nuclear submarine fleet for long because of the inherent rapid speed and "unlimited" range and endurance achieved by a nuclear powered fleet to encompass the Indian Ocean Region (IOR) with dominance.

Efforts of the IN to secure a nuclear-powered hunter-killer submarine (SSN) in its fleet may be traced back to 1984 with reports of discussions with erstwhile Soviet Union on the supply of more advanced, possibly nuclear-powered submarines and the training of IN crews in the Soviet Union. Vice Admiral Tahiliani, then Vice Chief of Naval Staff, took a leading role in talks in Moscow in September 1984, after which official sources stated that the defence relationship had taken on "a new dimension" indicative of possible access to nuclear-powered submarines.

Meanwhile, a design of the Rubin Central Maritime Design Bureau at St Petersburg, the first Russian Type 877EKM *Kilo*-class diesel-electric hunter-killer (SSK) submarine *INS Sindhughosh*, entered Indian Navy service in 1985. The submarine is a robust single-shaft vessel with an albacore/teardrop shaped double hull (a prominent feature of SSN types) with a seven-blade fixed-pitch propeller. The Type 877EKM has a displacement of 2,300 t surfaced and 3,950 t submerged and a maximum diving depth of 300 metres. Top speed is 17 knots when submerged. Reputed to be a 'black hole' for excellent stealth capabilities, the bow planes are positioned close to the midship to improve the performance of the MGK-400 sonar. To reduce the submarine's acoustic signature, the flooding ports have been removed from the fore body and the hull is covered with rubber 'cluster guard' anechoic anti-sonar protection tiles to reduce the risk of detection. The combat information system consists of a multipurpose MVU-110EM computer which allows for five targets to be tracked simultaneously, two automatically and three manually. In 2015, at the naval

exercise *Malabar* between the navies of India and the United States, Type 877EKM *INS Sindhuvaj* reportedly managed to track USN *Los Angeles*-class SSN USS *Corpus Christi* and score a simulated kill without being detected.

The Type 877EKM has six 533 mm torpedo tubes and carries 18 heavyweight torpedoes (six in the tubes and 12 on the racks), with an automatic rapid loader. Two targets can be engaged simultaneously. Two of the launch tubes can fire the TEST-71MKE TV electric homing torpedo, which has an active sonar homing system with TV guidance which allows the operator to manually switch to an alternative target, and can manoeuvre in two axes. It weighs 1,820 kg with a 205 kg explosive charge.

The submarine is also fitted with UGST wake-homing torpedoes, weighing 2,200 kg with a 200 kg explosive charge. It has a range of up to 40 km, and a depth of search of up to 500 m. The tubes are also capable of deploying 24 mines.

The Indian vessels are fitted with the 220 km-ranged Novator 3M-54E1 Anti-Ship Missile (AShM) with a 450 kg High Explosive (HE) warhead as part of the