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INDIAN NAVY SPECIAL



Interview with
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PM of Poland



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SSBMs-SLBMs: INDIA'S NECESSITY

For India, though the maiden deterrence patrol of Arihant was a historic milestone, it is premature to pop the champagne bottle yet. India has a long way to go. We need additional funds to open a second production line for SSNs, while the first SSBN production line graduates to building larger, more capable SSBNs. In the meantime, it is vital that our scientists design and produce for the 6,000 tonne INS Arihant and her sister SSBNs, an SLBM with a range of over 4,000 km. INS Arihant needs long range SLBMs and India also needs SSNs

This article is being written by me on 10 November 2018, a few weeks before India marks the tenth anniversary of the horrendous 26/11 terror attack on Mumbai by sea-based Pakistani terrorists. Also, the Indian Navy (IN) celebrates its Navy Day on 4 December 2018 and its Submarine Arm Day on 8 December 2018. There has been no sea-borne or land-borne terror attack in the last few years, and the Indian Navy (along with the Indian Coast Guard, Marine Police, Intelligence Agencies) has kept a large number of its ships and aircraft at sea on counter maritime terror and counter piracy operations. Naval ships have showed the Indian tricolour in distant lands and participated in various exercises in Russia, Japan, Pearl Harbour (USA), Australia, South Africa, Oman and ASEAN.

New Acquisitions

While acute shortages continue in conventional submarines, Mine Counter Measures Vessels (MCMVs),



INS Arihant successfully testfires dummy missile.

ship-borne helicopters, the good news is that India is inducting four more Russian origin Talwar class frigates (two to be imported and two to be made in Goa Shipyard Ltd.), while media reports indicated that another Akula class nuclear submarine-submarine killer (SSN) may be contracted for on a 10-year lease from Russia. Also, after decades of wait for a viable Submarine Rescue Capability, some good news came recently when the first of the UK-built DSRV's (Deep Submergence Rescue Vessel) carried out its first test dive-off Mumbai to a depth of 666 m as per media reports. The second DSRV (for the east coast) is expected shortly and two DSRV 'mother ships' (one for each coast) are being built at Hindustan Shipyard Ltd. and should be delivered by 2022-23. On 5 November 2018, Indian Prime Minister Narendra Modi tweeted that the indigenous nuclear-propelled ballistic submarine (SSBN) INS Arihant had completed her maiden deterrence patrol. This article deals primarily with India's need for SSBNs with long range sea-launched ballistic missiles (SLBMs) for strategic deterrence and also the need for SSNs for conventional war fighting tasks at sea, given the growing threats posed by a rapidly expanding and modernising PLAN (Chinese Navy)

in every type of conventional and nuclear submarine in service with the Indian Navy today and also embarked tactical attack nuclear submarines (SSNs) of different types in service with the Soviet / Russian, French and US navies.

Types of Submarines

Conventional subs are difficult to detect, but modern nuclear subs are almost invulnerable as they cannot be detected, and hence are the preferred choice of advanced nations for sea-based nuclear deterrence with ballistic missiles (SSBNs) and also for conventional war (SSN/SSGN) – the submerged SSN fires its weapons (torpedoes and cruise missiles) from its 53 cm diameter torpedo tubes, whilst the SSGN has additional larger tubes of 80 to 90 cm diameter, to launch heavier land attack or anti-ship cruise missiles from underwater. Secondly, all the five nations who operated nuclear subs, before India joined this P5 club are members of the UN Security Council and they (with the exception of France, which was the first to make an SSBN) first made SSNs before making SSBNs (strategic subs), possibly because each had to master the art of underwater SLBM (Submarine Launched Ballistic Missiles).



V ADM ARUN KUMAR SINGH
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India is the only **country** to have made an indigenous **SSBN first** and has yet to make an **SSN**; though we are **operating** a **Russian** built **SSN**

which is adding 25 warships and subs annually to its fleet, and has a permanent presence in the Indian Ocean Region (IOR).

Preamble

I begin this article with a few preambles. Firstly, during my four decades in the Indian Navy, I was associated with or embarked or sailed

Deterrence First

India is only the second country to have made an indigenous SSBN first and has yet to make an SSN; though we are operating a Russian built SSN. Thirdly, SSBNs are not war-fighting weapons but are invulnerable, sea-based, second strike national weapon platforms meant for strategic deterrence (our land-based nuclear

tipped missiles like Agni series and nuclear capable fighter bomber aircraft like Mirage 2000 and SU 30 are detectable by enemy satellites, and can be destroyed in a pre-emptive first nuclear strike by the enemy). On the other hand, SSNs / SSGNs (nuclear powered guided missile submarines) are normal war fighting weapons, which seek out and destroy enemy ships, subs and coastal targets using torpedoes and cruise missiles with conventional warheads. Fourthly, normally all nuclear submarine operating navies have two to three times the number of SSNs/SSGNs as compared to SSBNs. And finally, some countries like North Korea and now Pakistan, are introducing the 'poor man's sea-based deterrent' by using conventional submarines to launch nuclear tipped 1,000 km range SLBMs (North Korea has demonstrated this) or nuclear tipped 500 km range sub launched Babur cruise missiles (Pakistan Navy is getting this capability on eight Yuan class Chinese conventional subs – four



Pak Navy Ship SAIF in 5th PN-PLA(N) Bilateral Exercise held at Shanghai, China.

to be imported and four to be made in Karachi) – the Yuan class subs are not invulnerable as they can be detected, if India invests sufficiently in its ASW (Anti-Submarine Warfare) capability. The Pak Navy has also demonstrated the nuclear tipped 500 km Babur cruise missile firing from its Chinese origin frigates (these ships are easily detectable and can be destroyed in war time).

Arihant on Guard

On 5 November 2018, Prime Minister Modi made a series of tweets about India's first indigenous SSBN having completed her maiden deterrence patrol. Google will show that Project 932 was initiated in the 1970s by India to make a nuclear submarine, and later became the ATV (Advanced Technology Project). I met few members of this Project 932 team in 1982, when undergoing basic training under BARC scientists for our deputation to Vladivostok - USSR (1983-86) for training on a nuclear submarine. My 30 months in Vladivostok, along with another 160 odd submariners, exposed us to the task of mastering nuclear physics, reactor physics,

radiation safety and of course, a year of sea training on the anti-ship cruise missile firing Charlie class Project 670 SSGN submarine which used a PWR (Pressurised Water Reactor) and was later commissioned in the Indian Navy on 5 January 1988 on a three year lease, as INS Chakra (not to be confused with the Russian Akula class Project 971 SSN, also named INS Chakra which was commissioned into the Indian Navy in 2012, and is presently serving on a 10 year lease).

The 30-month (1983-86) nuclear submarine training, in freezing Vladivostok where winter temperatures dropped to minus 32 degrees centigrade, was invaluable, as it laid the foundation of the future nuclear submarine force of India.

Nuke-oriented Infrastructure

The lessons learnt from training (1983-86) in USSR and operating the SSGN INS Chakra in India (1988-91) were put into good use by the ATV project which involved BARC (for the reactor), numerous private companies to make the parts

(pumps, pipes, cables, hydraulics etc.), PSUs (to make propulsion turbine, generators etc.), Larsen & Toubro (Hazira - Gujarat) to fabricate hull sections, which were transported to a new Submarine Building Facility run by the Indian Navy, where the SSBN was assembled and subsequently launched in June 2009, by the wife of former PM Manmohan Singh. The submarine underwent 'fitting out', reactor was then made critical followed by extensive harbour trials and she finally commenced sea trials in end 2014, reportedly commissioned as INS Arihant in 2016 as per media reports (carried out weapon trials), and then completed her maiden 'deterrence patrol' by 5 November 2018. Completion of 'deterrence patrol' means that the INS Arihant is fully ready for her role as a strategic deterrent. This entire process, from steel cutting in about 1998 to completion of deterrence patrol took about 20 years. It is expected that the next lot of SSBNs will drastically reduce this time, based on the experience gained.

‘Triad Logic’

Three more SSBNs are reported to be under construction and should join in a decade to complete the ‘triad’ as four SSBNs are needed to keep one at sea for 2-3 months, with another in port getting ready while the third and fourth undergo short duration and long duration repairs respectively. The Arihant presently is reported to embark 700 km range nuclear tipped SLBMs, while another SLBM with a range of 3,500 km has been undergoing sea trials and should be ready soon. China has 5 SSBNs, each capable of launching 12 JL-2 SLBMs (in first two SSBNs) and 16 JL-2 SLBMs in subs 3 to 5, each JL-2 has a range of 7,000 km, and is expected to carry multiple nuclear warheads (known as MIRVs, so that a single SLBM can hit 3 to 5 targets with nuclear warheads). American, Russian, French and UK SSBNs, have SLBMs with ranges of 10,000 km.

Further Improvements

Clearly, the 6,000 tonne Arihant and her three follow-ons (which maybe slightly larger as per media reports) are insufficient to meet the needs of simultaneously deterring Pakistan and China. An SSBN operating in the northern Bay of Bengal would be 2,500 km from Pakistan and 3,600 km from

5,000 – 6,000 km is in the plans. In addition to the four large SSBNs, India will need a force of six to eight tactical attack nuclear submarines (SSNs) to track Chinese–Pakistani subs and warships prowling the Indian Ocean, and also to patrol the distant waters of the western Pacific Ocean. Media reports do indicate some movement

Navy’s share of the defence budget is at an all-time low of about 12 per cent of the defence budget

Beijing. However, to retain its stealth and avoid detection, an SSBN needs to operate from a larger sea area, and hence would need SLBMs with far greater range than what Arihant and her successors will possess. Press reports do indicate that a much larger SSBN with SLBMs having ranges of

here also, but the same is not reflected in the Indian Navy’s share of the defence budget, which is at an all-time low of about 12 per cent of the defence budget (the defence budget, also in terms of GDP, is the lowest since the disastrous 1962 India-China War). A lot still needs to be done after Arihant has completed her first deterrence patrol. China has realised the importance of undersea warfare and is producing one SSBN or SSN every year, in addition to three conventional subs annually and has invested heavily into unmanned subs.

More Funds Needed

For India, though the maiden deterrence patrol of Arihant was a historic milestone, it is premature to pop the champagne bottle yet. India has a long way to go. We need additional funds to open a second production line for SSNs, while the first SSBN production line graduates to building larger, more capable SSBNs. In the meantime, it is vital that our scientists design and produce for the 6,000 tonne INS Arihant and her sister SSBNs, an SLBM with a range of over 4,000 km. The internet shows that by 1963, the US Navy had tested and inducted the Polaris A3 SLBM (range 4,600 km, with 3 nuclear warheads) on their 5,600 tonne SSBNs. 



PM Modi at the Combined Commanders Conference on board INS Vikramaditya, at Sea, off the coast of Kochi.