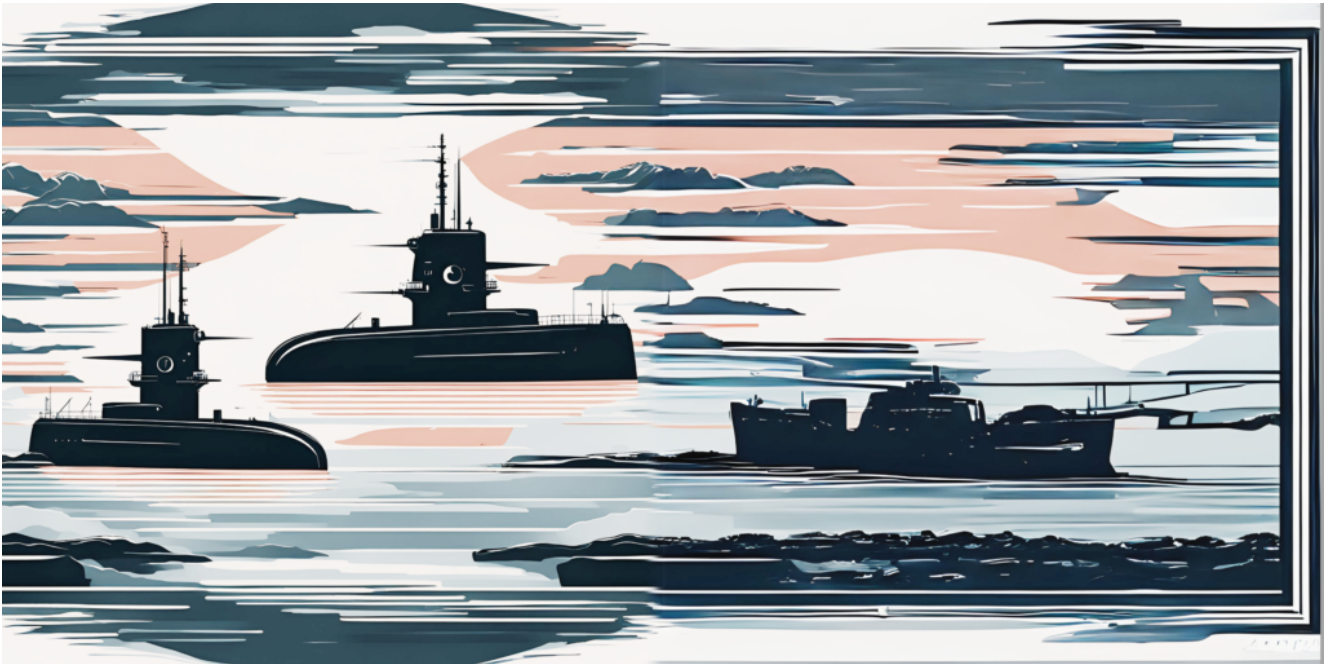


INS Arighaat: India's second SSBN is cause for both celebration and debate

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On 29 August, India's Defence Minister, along with the Chiefs of the Indian Navy and the DRDO, [commissioned](#) the INS Arighaat. The nuclear-powered ballistic missile submarine (SSBN) is the second of the INS Arihant class. While the submarine mirrors its predecessor in size (6000 tonnes), propulsion (83MW light water reactor), and speed, it reportedly has a higher component of indigenously designed and manufactured systems than the first: the INS Arihant. More importantly, the Arighaat mirrors the Arihant in another crucial area; both have four vertical missile launch tubes and both are designed to carry the K-15 Sagarika SLBM of 750-1000km range.

Strategic Significance and Implications

With its commissioning [delayed](#) by at least two years and an overall launch-to-commission time of seven years, the

Arighaat's commissioning raises key questions of doctrine and capability but also teases the forthcoming evolution of India's partnerships for nuclear-powered submarines.

India's expansion of its submarine fleet, in general, is borne out of its concerns about increasing hostile maritime activity in the Indian Ocean and the low numbers of its submarine fleet overall. While Chinese naval presence has generally increased, Beijing has struck key deals with India's neighbors over submarine development, with a new Chinese-built submarine base off Cox's Bazaar in Bangladesh being the closest to home for India. These developments notwithstanding, India's SSBN program (S2- INS Arihant, S3-INS Arighaat, and so on) have all been driven by the logic of nuclear deterrence and the search for the most survivable second-strike capability. Its plans for an SSBN fleet (converted from an initial plan for SSNs) are old, with at least five SSBNs envisaged.

Doctrine

Among the fundamental aspects of a nuclear-armed ballistic missile submarine is that the warheads are [stored](#) on board the submarine in a pre-mated state with the missile in pressurized canisterized siloes. In India's strategic scholarship, the maintenance of the state's nuclear arsenal in a de-mated state (warheads separate from the missile) has historically been one of the planks on which India is characterized as a responsible nuclear power committed to a no-first-use policy. More importantly, it is a continuation of India's adherence to its conceptual view of nuclear weapons in that they are weapons of deterrence and not warfighting. Hence, despite India's latest land-based road-mobile intermediate-range ballistic missiles being stored in a canisterized state, they do not reflect modifications in India's nuclear thought since command-and-control protocols are characterized by robust civilian control. However, in the case of sea-based weapons, the risks of very low-frequency communication and the possibility of submarines being cut off from their command centers (the

civilian leadership) are higher when compared to the air and land leg of a nuclear triad. A key reason for India's apparent comfort with this risk is arguably a continuation of the status-quoist state of civil-military relations.

India's SSN (to SSBN) program was conceived in the 1980s and 1990s as India's entry point into a select club of nations as a matter of prestige. However, the advancement of technologies and capabilities requires adjustments in civil-military relations that can dovetail with such advancement. In any case, despite the technical imperatives of storing nuclear weapons on a submarine, the question of how long India allows its SSBNs to be deployed on "deterrence patrols", remains open.

Capabilities

Indian strategists, including former naval chiefs, have long asserted that India's completion of a credible sea-based deterrent (with at least four SSBNs) will take decades to fulfill. More significantly, the quiet commissioning of the INS Arihant in 2016 did not mean that the submarine was out at sea in the same year, with more drills being completed only by 2018, and the Prime Minister's announcement late that year that the Arihant had completed its "first deterrence patrol". This claim, too, was doubted by [analysts](#), especially since the Arihant's first patrol lasted only [20 days](#).

The more prominent question is the missile delivery capabilities of the SSBN. The K-15 missile—that both the Arihant class vessels are equipped with—is incapable of striking significant targets in China and is only a slight addition to the sufficiency of the air and land-based deterrents against Pakistan. The development of the K-4 missile (3,500 km range) and its subsequent longer-range variants can fulfill deterrence requirements against China while allowing an SSBN to remain in distant waters. India's tests of the K-4 missile in recent years have all been

conducted from submerged pontoons, with a 2017 test from a submarine (presumably the Arihant), reportedly failing. Even with a K-4 missile or its subsequent variants, India will presumably [need](#) 50-60 years for a credible SSBN fleet, protected by SSNs, that allows them to go out on long-range patrol.

The INS Arighaat is indubitably more capable as an SSBN than the INS Arihant, given technological advancements in onboard systems. However, INS Arighaat is as much a technology demonstrator (with potential [tests](#) of the K-4 from the Arighaat) as is the Arihant. The vast landscape of strategic analysis from Indian scholars and practitioners offers a near [consensus](#) on the need for a full complement of SSBNs (at least four) for India to have the ability to establish all-round deterrence at sea.



Future Challenges and Partnerships

The continued expansion of India's sea-based deterrent is only natural given the increasing joint threat from the Pakistani and Chinese Navies. India's Chief of Defense Staff has expressly stated in Parliament that the danger from the Pakistan Navy manifests principally in collaboration with the PLA Navy. However, what is more notable for the expansion of

India's SSBN/SSN fleet is India's choice of strategic partners in the endeavor.

Despite the significant delay in the INS Arighaat's commissioning, its launch-to-commissioning duration was almost identical to that of the INS Arihant. India's priority in terms of capability is to reduce this time frame for the next in the Arihant class – the INS Aridaman. Notably, the Arighaat's reliance on a reactor similar to that of the Arihant indicates [continued](#) use of old Russian/Soviet designs to some degree. Notwithstanding the reactor design of the future third submarine of the same class, India's efforts to break from older technology and rely on Western collaboration for its new submarines have been evident across the last decade. Even as the Indian Navy struggled to find partners for Project 75-I, its fresh deals with France for newer Scorpene diesel-attack submarines under the older Project 75 show increased mutual trust and understanding of operational needs. This is further [evident](#) in India's interest in collaborating with France for its new SSNs – by 2021, India had [cleared](#) INR 40,000 crore for new submarines, which are to include at least six nuclear attack vessels under Project 75 Alpha (by 2030).

New Delhi's 2021 call for proposals also unveiled a model where domestic firms can collaborate with foreign firms to produce "high-end" military platforms in India for the first time. With a small reactor and limited missile [capability](#), the INS Arihant is already set to be [followed](#) by a more advanced SSBN of the S-5 class, with production scheduled to begin in 2027. Given India's increasing collaboration with France for SSNs, it is reasonable to assume that India will look beyond Russia to diversify partnerships for its future SSBNs; [recall](#) that Russia had to opt out of the Indian Navy's Project 75-I. More importantly, a crucial long-term question is whether India will seek stronger strategic partnerships for docking rights for its SSBNs, should it indeed look to undertake robust patrolling in distant waters.