India's Undersea Nuclear Deterrence
Impact on Indian Ocean Region's Strategic Stability

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Abstract

India is pursuing an expansive naval modernization program, aimed at transforming its maritime force into a blue water navy and to exert influence far from its coastline into the high seas. The major Indian motivation behind its naval expansion is to keep the external powers out, project power in the Indian Ocean (IO) and protect its Sea Lanes of Communication (SLOCs). In its bid to assure its dominance in the Indian Ocean, India has opted to carry the nuclear competition to the Indian Ocean by developing a strategic submarine as an Assured Second-Strike platform. This development has, apart from putting India into the league of the few advanced states with a strategic submarine, provided India with the tools to exercise greater sea-control and, in turn, accentuate Pakistan's strategic anxieties. Although it is claimed that the strategic submarine allows India to consolidate its second-strike capability, however, such a capability with one nuclear armed adversary in a nuclear dyad destabilizes deterrence. Moreover, recent shifts in India's strategic debate about the necessity of not abiding to a No First Use (NFU) points to new challenges. These new shifts in India's nuclear doctrine, coupled with the strategic submarine program, would make preemptive counterforce an attractive option, increasing the likelihood of crisis instability as well as undermining South Asian strategic stability.

Keywords

Nuclear deterrence, Anti-submarine warfare, naval strategy, inadvertent escalation, India-Pakistan, strategic stability

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Introduction

The Indian Ocean strategic waterways carry the bulk of global trade and about 36 key littoral states and an additional 20 peripheral states depend on it.[1] It contains important straits through which the global energy trade takes place. Some 17 million barrels of oil pass through the Strait of Hormuz per day and some 15.2 million barrels through the Strait of Malacca. India and Pakistan have been entangled in a complex deterrence relationship for over two decades now. However, the introduction of nuclear weapons at sea has added a new dimension to their strategic competition. India's development of a nuclear submarine has changed the dynamics of the strategic balance in the Indian Ocean (IO).

A stable nuclear deterrence relationship demands assurance against any surprise attack, which is achieved by developing a capability to strike back, ensuring the assured destruction of enemy's strategic capabilities after absorbing a surprise attack/strategic first strike. This notion is known as the assured second-strike capability. Although a credible second-strike capability can be achieved through hardened silos for strategic missiles or mobile rail launchers, the best option is to develop a nuclear submarine, that has long endurance and can stay underwater undetected, ensuring an assured capability to strike back (assured second strike) in case of a nuclear first strike. Furthermore, a nuclear submarine provides deterrence stability, by complicating the success of a surprise attack, given the both adversaries in a nuclear dyad have this capability. In case one side lacks such a capability, it creates new pressures for surprise attack/ pre-emption.

The South Asian nuclear dyad presents a complicated scenario, where India's introduction of nuclear weapons to sea poses strategic stability challenges for the region. The South Asian sea-

based deterrence is in its early stages now. The use of noisier platforms like SSBNs, acquisition of advanced anti-submarine capabilities, offensive doctrines, as well as the use of dual use platforms for strategic roles, present a unique set of operational and stability challenges for these geographically contiguous nuclear powers that share maritime boundaries.

Robert Jervis in his seminal work on Nuclear Revolution underlined the presence of mutual vulnerability (the ability to absorb a first strike and strike back) as the bedrock of a stable deterrence. He propagated that "total war could not occur in the absence of the belief that war is imminent and inevitable and that, as terrible as striking first would be, receiving the first blow would be even worse."[2] He further explained that the only possibility of an all-out war would be through preemption, "…loss of control, and each side's belief that the other is about to strike."[3] Thus, with each side having a survivable second strike force, any incentive to strike first would be lost, as such a strike would invite positive retaliation/destruction of one's own forces; i.e. "as long as both sides believe that all-out war would result in mutual devastation, first-strike incentives are negligible and crisis stability is relatively easy to attain."[4]

During the Cold War, this capability for second strike was developed first through land-based arsenal, suitably concealed and placed in hardened silos and by keeping the strategic bombers airborne on long deterrent missions. Later, however, the nuclear submarines turned out to be the most suited option in this regard. The uncertainty of taking out the entire undersea nuclear deterrent of the adversary helped maintain strategic stability as well as assured retaliation against such a strike. This assurance (against a disarming first strike) played an important role in keeping the nuclear deterrence stable.

In South Asia, when India introduced nuclear weapons to sea, it tilted the nuclear balance in India's favor, forcing Pakistan to take remedial measures to restore the nuclear balance, as well as address the increasing the strategic instability. The Indian motivation for development of an assured second-strike platform can be traced back to its desire to project power in the Indian Ocean and to assert its dominance in the farthest reaches of it. The Indian Maritime Security Strategy makes clear the Indian aim to exercise sea-control.

The global military powers, especially the United States and France among others, have helped India through assistance in defence technology, arms transfers, as well as communications and logistics agreements, to arm it against increasing Chinese presence in the region.[5] The Indian Maritime Security Strategy makes clear that the purpose of the Navy during conflict would be to terminate the conflict on terms favorable to India, and in an effort to achieve this aim, it would develop as a multi-dimensional force with a full spectrum capability, maintain effective deterrence and warfighting capabilities and conduct effective network operations. The strategies employed in conflict would include "maritime manoeuvre, maritime strike, sea control, sea denial, SLOC interdiction, SLOC protection, coastal and offshore defence, information warfare, and escalation management."[6] According to the IMSS, "India is developing sea-based nuclear deterrence, in accordance with its nuclear doctrine. The Indian Navy will operate the SSBN to reinforce nuclear deterrence."[7]

This paper makes an attempt to understand the Indian motivations in moving towards developing a naval nuclear deterrent, in light of its nuclear doctrine and maritime strategy, and then lay out the possible implications that the introduction of naval nuclear deterrence would have on the strategic stability in South Asia.

Indian Strategic Motivations

The Indian Ocean is the most significant body of water from a geostrategic perspective. Half of the world's container traffic and 70% of the oil travels through the Indian Ocean.[8] It comprises several key choke points and straits like Malacca, Mandeb and Hormuz, which facilitate the wide-ranging trade between South West Asia and South East Asia. Also, a major portion of the world's population resides close to its littoral.[9] For this reason, the term 'Indo-Pacific', first used in 2007, is gaining traction in the US and Indian strategic discourses, warranting a more prominent Indian role in the region.[10] Indo-Pacific is emerging as the new center for economic and military influence – replacing the Euro-Atlantic.[11] Several U.S. official documents make reference to 'Free and Open Indo-Pacific'.

India perceives Indian Ocean as the Indian lake – most immediate of its sphere of interest.[12] It has over 7500 KM of coastline and shares maritime borders with multiple Indian Ocean states.[13] The ocean holds great importance in terms of its economic survival – 90% of India's trade by volume takes place through the seas.[14] Its aims, however, are not limited to securing the vital Sea Lanes of Communication (SLOCs). India is pursuing an expansive naval modernization program, aimed at transforming its navy into a blue water navy and to exert influence far from its coastline into the high seas.[15]

To meet the goal of global preeminence, development of a blue water navy is essential for appropriate power projection.[16] Indian naval mindset is inspired by the Monroe Doctrine, which declared all of the Americas as US immediate sphere of interest. In line with this thinking, India sees South Asia and the Indian Ocean as its strategic backyard and wants to keep the external powers out.[17]

Moreover, India's nuclear doctrine stipulates for India to acquire a nuclear triad. A triad, including a sea leg, can provide India an

Assured Second-Strike Capability. India sees such a capability essential in order to deter, as its doctrine contains a No First Use (NFU) policy.[18]

In this regard, some analysts write,

> "sea-based deterrence has a prominent place in India's strategic maritime formulations. It is built around the notion that credible deterrence through the dispersal of platforms/payloads can offer survivability and provide an assured retaliatory second-strike capability. These formulations resonate in Indian strategic thinking and are exhibited in the quest to develop a robust sea-based nuclear deterrent. 'No first use' of nuclear weapons is the stated policy of the Government of India. In that context, Indian naval planners and strategists view a nuclear submarine as critical, and have argued that [a nuclear submarine] is much more than just a submarine with a nuclear reactor ... it is the arbiter of power at sea."[19]

In line with these aspirations, India is pursuing a range of conventional and nuclear capabilities.[20] In order to consolidate its second-strike capability, navy aims to build and operate a flotilla of 5 to 6 nuclear armed submarines, deployed for Continuous At-Sea Deterrence (CASD).[21] Moreover, it aims to establish sea control covering all its major SLOCs, stretching from Strait of Hormuz to the Strait of Malacca.[22] For this purpose, navy aims to procure and operate at least 3 aircraft carriers.[23] The approach undertaken by the Indian navy demonstrates that instead of going for a defensive posture through a sea denial strategy, the navy aims to project power and establish sea control through carrier battle groups (CVBGs). A strategic submarine is a preeminent part of this strategy of sea-control. The utility of an efficient naval force was realized early in 1971, when Indian first carrier strike force allowed India to dominate Pakistan in the war.[24]

In its pursuit to achieve the great power status, India is working towards free and open seas, through ensuring freedom of navigation and access to the international waters like all the other major powers. In pursuit of the aforementioned goals, India is acquiring naval capabilities to become the third largest fleet in the world and assume a respectable position in the international community.[25]

The geopolitical realities of the region are facilitating Indian goals. With each passing day, China is growing in military and economic salience and emerging as a challenge to the United States on the global scene. China's economic rise is also translating into an enhanced presence in the Indian Ocean Region (IOR), through a network of ports and bases, that India and United States see as increasingly threatening.[26] United States sees India as an important player in this great power competition for keeping China at bay. Therefore, United States is reinforcing India's force structure and has proclaimed it as the 'net security provider' in the IOR.[27]

Meanwhile, the Indo-US cooperation is strengthening. In 2016, US declared India as a major defence partner. Both states signed the Logistics Exchange Memorandum of Agreement (LEMOA), which will allow them to use each other's naval bases for refueling and resupply and Communications Compatibility and Security Agreement (COMCASA), which will facilitate greater communications interoperability between the Indian and American militaries. United States and India are also likely to strengthen their Anti-Submarine Warfare (ASW) capability in response to China's growing submarine force.[28] India is strategically placed between the Arabian Sea, Indian Ocean and Bay of Bengal, which makes it an important player in tracking the movements of submarines and ships, as well as enhances its offensive capabilities.

Indian ambitions to become a regional hegemon have inspired its military expansion into the naval domain. Making the Chinese

presence in the Indian Ocean as a pretext, India is fast modernizing its naval force structure. It is increasing the role of its navy in the military equation with an aim to project power in all dimensions, be it land, air or sea.[29] The major Indian motivation behind naval expansion is to keep the external powers out, project power and protect its SLOCs. Sea control through carrier capabilities is vital for power projection – hence India's grand ambitions to operate three carriers battle groups.[30] Lastly, India has opted to carry the nuclear race to the Indian Ocean in line with its nuclear doctrine, which claims to have a policy of no-first use of nuclear weapons.

India's Naval Aspirations in light of its Maritime Doctrine and Strategy

There are multiple documents in the Indian naval literature that throw light on the evolution of Indian naval mindset. India's maritime doctrine was first issued in 2004, and was revised in 2009. Indian Navy issued its first maritime military strategy in 2007 and later revised it in 2015. The two major documents, encompassing India's naval doctrine and strategy, are:

- Ensuring Secure Seas: Indian Maritime Security Strategy, 2015[31]
- Indian Maritime Doctrine 2009, updated online version, 2015[32]

Both the doctrine and the strategy contain distinct features, but there is considerable overlap in the conceptual framework and underlying vision. The doctrine is more didactic in nature, providing a conceptual framework to basic naval principles and operations that can be used by not just the naval officials, but by policy makers, scholars and researchers alike. The strategy, on the other hand, lets the reader into the strategic mindset of the Indian Navy.[33]

The revised strategy clearly indicates a shift from freedom of using the sea to that of 'shaping' a favorable environment to ensure

'secure seas', as well as calling for a more assertive posture for the Indian navy. It declares the 21st century as the 'century of the seas' for India and emphasizes upon indigenization, self-reliance and the need for the rapid modernization, to expand its reach to the blue waters as its core principle. In tandem with it, the doctrine highlights the shifting geopolitical competition from Europe to Asia and renewed need for India to strengthen its naval power to assume a prominent role in the great power competition in the Indian Ocean.[34]

The IMSS recognize a greater role for the Indian navy and serve as the rationale for its modernization and expanded outlook.[35] The doctrine draws upon the colonial lessons – where the European powers were able to dominate India through exercising control on the seas – to justify an enhanced role for the Indian navy.[36] The principles of war such as offensive action, concentration of force, surprise and asymmetry have been officially embraced in the doctrine.[37] Most importantly, the doctrine recognizes the seas as a medium for power projection, and stipulates that those controlling the seas can be truly dominant and assertive. The doctrine envisions for Indian navy to be able to exert control in three dimensions below, on and above the surface, and to be able to impact events on land in all situations.[38]

Both the doctrine and the strategy expand India's areas of maritime interest to as far as South China Sea in the east, and Mediterranean Sea in the West. Moreover, the two documents in synergy lay down the foundation for the Indian navy to transform into a blue water navy and to have a reach to the large expanse of the oceans.[39]

'Sea control' is highlighted as a goal for the Indian Navy in both IMD and IMSS. It aims to establish such control through procuring aircraft carriers and enhancing amphibious capabilities. Aircraft carriers are recognized as critical tools for sea control and power projection and the Indian Navy aims to operate at least 3 aircraft

carriers.[40] More so, the doctrine also prescribes for Indian navy to have battle space dominance and exercise sea denial. On the other hand, the strategy lays out that the Indian navy will enhance its capability to exercise amphibious operations for both defensive and offensive purposes.[41]

The doctrine prescribes four major roles for the Indian Navy: Military, Diplomatic, Constabulary, and Benign with military being the primary role. The major military objectives highlighted in the document are deterrence against conflict, coercion and decisive military victory in case of war, and ability to influence affairs on land all to be achieved by effective sea control.[42]

In spirit of deterrence, the naval strategy lays down the foundation for India's under sea nuclear leg, for establishing a second-strike capability in line with its No First Use (NFU) policy, stipulated in its nuclear doctrine. Moreover, exercising effective deterrence at sea to ensure survivability of Indian nuclear arsenal has been highlighted as the central mission of the Indian navy. Other missions like SLOC interdiction and amphibious operations are mentioned as well all in line with establishing effective sea control.[43]

To strengthen sea control, tasks such as Anti-Submarine Warfare, Anti-Surface Warfare and Anti-Air Warfare are endorsed for the Indian Navy in its policy documents. It is prescribed both in the doctrine and the strategy that the navy, in order to exercise sea control and project power, must turn itself into an intimidating force and maintain its combat power and readiness at the entire spectrum of conflict.[44]

Most interestingly, the strategy recognizes India's role as the 'net security provider' in the Indian Ocean and uses the term 'Indo-Pacific' multiple times in an attempt to give credence to the concept of Indian and the Pacific Ocean as a single geopolitical entity.[45] It

goes as far as explaining the transformation of India's 'Look East' policy to 'Act East' policy as a precept for India to exert influence across the Indo-Pacific.[46]

The major constituent strategies in the overall maritime strategy are strategy for deterrence and strategy for conflict. Strategy for deterrence incorporates the indispensability of India's need to deter all aggression against it and it states that India will utilize both conventional and nuclear platforms to achieve that. As a part of strategy for conflict, the IMSS suggests that India will incorporate various measures such as maritime maneuver, maritime strike, sea control, sea denial, SLOC interdiction and SLOC protection.[47]

Lastly, both the doctrine and the strategy highlight the need for Indian Navy to cooperate and collaborate with other navies in the region, purportedly to enhance security for all and establish itself as key player in the Indian Ocean. The strategy highlights the prominent initiatives taken by India in this regard, such as multilateral naval exercise hosted by the IN termed as 'MILAN', evolution of the 'Indian Ocean Naval Symposium' (IONS) and India's increasing involvement in the 'Indian Ocean Regional Association' (IORA).[48]

India's maritime strategy and doctrine appreciate naval power as the key for a nation's prestige. They connect India's growing naval capabilities with its need to exercise deterrence, project power and tackle emerging threats for achieving the role of a regional policeman. Lastly, they lay down the foundation for India's venture into establishing nuclear deterrence at sea.[49]

Indian Naval Capabilities

India is pursuing an ambitious modernization plan with 'indigenization' as its inherent principle. Indian navy's status has considerably elevated in the last few decades. Moreover, the Indian

shipbuilding industry has also advanced at a quick pace.[50] As explained earlier, the primary tenets of Indian maritime strategy are sea control and power projection and, for that purpose, the naval expansion has revolved around building and procuring air craft carriers and nuclear-powered submarines.[51]

India aims to acquire a minimum of 3 aircraft carriers carrying 150 aircraft, of which, at least, two would remain constantly operational at sea. It already possesses two aircraft carriers INS Vikramaditya and INS Vikrant. INS Vikramaditya is fully operational while INS Vikrant is expected to be commissioned by 2022. The third one, INS Vishaal, potentially the crown jewel of the Indian navy, is still in the conceptual phase.[52]

The Indian fleet consists of 14 operational diesel-electric and 2 operational nuclear-powered submarines. Out of the two nuclear powered submarines, it has a ballistic missile submarine (SSBN) and nuclear-powered attack submarine (SSN) each. None of the diesel-electric submarines are equipped with Air Independent Propulsion (AIP) technology yet. However, the Indian Navy now plans to retrofit all its Kalvari class non-nuclear attack submarines with AIP by the year 2023.[53]

India is deeply motivated to achieve a robust naval nuclear capability. The first SSBN, INS Arihant, was commissioned in 2014. India plans to build around 6 to 8 SSBN's to make deterrent patrols for continuous at sea deterrence (CASD). The INS Arihant has the capacity to carry 12 Sagarika (K-15) submarine launched ballistic missiles (SLBMs), with a range of around 700 km, bringing targets in Southern Pakistan into India's reach. Another missile, K-4, with a range of 3500 KM, was tested from Arihant in 2016 with success.[54] Arihant commenced its deterrent patrol in 2016 quietly according to some reports, however, in late 2017, the submarine propulsion suffered after an accident, in which the hatch on the rear side of the submarine was left open, leading to the flooding of the propulsion

chamber.[55] The construction of two more Arihant class vessels has already commenced.[56]

The development of SSBN's can be a lengthy process, and India is still weighing its options till it develops a flotilla of 5 to 6 boats, for Continuous at Sea Deterrence (CASD). In the meanwhile, with just one strategic submarine, Indian Navy cannot conduct CASD. The IMSS refers to a strategic submarine to be deployed as part of the Carrier Task Force (CTF), comprising a Carrier Battle Group(s) (CBG) with "integral Anti-Air Warfare (AAW), Anti-Surface Warfare (ASuW) and Anti-Submarine Warfare (ASW) capability, Surface Action Groups (SAG), and Underway Replenishment Groups (URG), supported by land-based aircraft," as an essential component of its sea-control strategy.[57] The deployment of INS Arihant alongside a Carrier Battle Group (CBG) during the Balakot-Rajouri crisis, points to this operational strategy of conflict being already employed by India. One possible explanation could be that the navy might have anticipated this deployment as a means to leverage a favorable outcome of the limited conflict at land.[58]

Currently, India operates nuclear-powered attack submarine, INS Chakra II, a Russian Akula class submarine obtained on lease and expected to stay in the Indian fleet till 2022. In March, 2019, India inked the deal with Russia to lease another Akula class nuclear submarine for a decade. India will receive the new vessel, known as Chakra III, in 2025. Akula is equipped with modern quieting technologies allowing it to conduct missions without being detected. It has the capacity to carry 28 nuclear capable cruise missiles. Akula class submarines will massively enhance India's offensive capability in the Indian Ocean.[59]

Moreover, India is planning to build six Kalvari-class diesel-electric attack submarines inspired by the French Scorpène-class submarines, equipped with AIP and Exocet – an anti-ship missile. The first of this class was commissioned in 2017. Also, in February

2015, Indian Government sanctioned the building of six nuclear-powered attack submarines indigenously. To bolster its submarine edifice, India has built a new submarine base near Karwar, and is also building another by the name INS Varsha.[60]

India currently operates 14 missile guided frigates from four different classes the Shivalik class, Talwar class, Brahmaputra class, and Godavari class. Frigates are extremely useful for anti-ship and anti-submarine warfare, giving India an edge in both sea control and sea denial. The Shivalik class, which succeeded the Talwar class, will be equipped with anti-ship and nuclear capable BrahMos supersonic cruise missiles.[61]

In the expansion effort, navy is duly supported by the United States; for instance, the navy signed and activated Logistics Exchange Memorandum of Agreement (LEMOA) with the United States, which will allow it to use their facilities for refueling.[62] India has also increased its involvement in the Quad, a four-country alliance between India, Japan, Australia and the United States, to counter China's rise in the maritime domain. In November 2020, it participated in the Malabar naval exercises in the eastern Indian Ocean.[63] Later, in April 2021, India joined France for the first time, along with the Quad, to hold naval exercises.[64]

India is extending its reach in the Indian Ocean through diplomatic initiatives and active engagement with the littoral states; particularly with Seychelles, Mauritius, and Sri Lanka. In its bid to increase its reach in the Western Indian Ocean and North Arabian Sea, and enhance its maneuverability, India has entered into logistical agreement with France, similar to that of naval logistics agreement it had concluded with the US.[65] The Varuna joint naval exercises between India and France were the largest ever exercises conducted in 2019, which focused on ASW missions apart from developing interoperability between the two navies.[66]

The exercises reflected India's increasing strategic footprint in the Western Indian Ocean and Arabian Sea, which it considers its primary area of interest apart from the choke points leading to and across the Indian Ocean.[67] India has long been strengthening as well as enhancing its presence in the Western Indian Ocean, through establishing a chain of several ports and bases, including Mauritius and Seychelles, Chahbahar (Iran), Duqm naval base (Oman), and the signal intelligence facility near Ras-al-Hadd, Oman.[68] This growing strategic footprint of India in the Western Indian Ocean heightened strategic concerns in Pakistan. Recent developments have also made apparent that India might be turning Andaman and Nicobar Islands in a strategic fortress. India's 'Maritime Infrastructure Perspective Plan – 2025' highlighted developing island territories as the primary aim.[69]

Indian navy is now considered the fifth largest navy in the world. Its shipbuilding industry is progressing at a fast pace and most of the ships are built indigenously. India hosted International Fleet Review in 2016 to demonstrate its naval supremacy.[70] The growing capabilities advance its maritime strategy of sea dominance and self-assuming the role of a regional security provider.[71] These capabilities will assist India in transforming its brown water navy focused on coastal defense to a blue water navy exerting sea control and projecting power. Moreover, when these capabilities are coupled with Indian maritime strategy of using sea-power for SLOC interdiction and its employment as a tool to leverage the result of land conflict, one understands that India aims to use its maritime force as a coercive tool and to leverage it as a bargain to influence the outcome of a conflict on land.

Impact on Strategic Stability

The oceans are a key theatre for international politics, given how they connect the world through trade and enable a state to exercise

economic, geopolitical and strategic influence in the world. IN's operational and technological developments as well as cooperation with other states, aided with doctrinal transformation towards strategic offensive dominance, reinforces their thinking of exercising sea-control and projecting power in and beyond the Indian Ocean; a strategy which is in line with Mahan's stipulation of command of sea. Former Indian Naval Chief, Arun Prakash, reinforced this strategic vision while speaking at the National Defence College of India, where he stated that, "The IN has weapons of formidable range and our naval forces are deployed across vast distances from the Arabian Sea to the Bay of Bengal and the farthest reaches of Indian Ocean". Zafar Khan posits that the 'Indian strategists' plan to massively increase in its naval capability, not only to contain China but also to assert its predominant role in the Indian Ocean region.[72] The strategic submarine program of India essentially caters to its strategic design of achieving sea control and therefore is a source of strategic anxiety for Pakistan. It has allowed India to consolidate its second-strike capability and create strategic instability.[73] The INS Arihant has altered the strategic balance in the region in India's favor, accentuating Pakistan's fears of security of SLOCs during peacetime and crises.

Moreover, United States, along with other major powers like France and Russia, is bolstering Indian naval build up and transforming its navy into a blue water navy in the region to counterbalance China. Problematically, such initiatives make Pakistan vulnerable whether it has achieved anything of substance against China remains questionable, as India does not share a sea border with China.[74]

Restoring the balance

Historically, India's military might has remained focused on Pakistan, while the former has only engaged in border conflicts

with China in 1962 and 2020. With the introduction of an assured sea strike capability into the mix of battle groups comprising aircraft carriers, amphibious capabilities and state of the art ISR capabilities, the tenuous balance of power between India and Pakistan has been disrupted. Currently, Pakistan Navy (PN) lacks capability to match India's fast paced modernization effort.[75] PN is brown water navy and Maritime Doctrine of Pakistan (MDP) divides its area of interests into three categories. PN's primary area of interest is the North Arabian Sea, which includes Pakistan's vital maritime interests including the SLOCs. Western Indian Ocean is the extended area of interest, whereas the strategic area of interest is "dictated by the evolving contemporary strategic needs."[76]

India's introduction of nuclear weapons in the Indian Ocean altered balance of power in the region. Assured/credible second-strike capability with both adversaries in a nuclear dyad brings stability and reduces the incentives for arms racing and war. However, in South Asian deterrence equation, such a capability with India would undermine deterrence and incentivize India to opt for a punitive strategic counterforce strike against Pakistan. These fears about the survival of its nuclear arsenal have promoted the development of a strategic second-strike force that can provide Pakistan an assurance against a decapitating first strike. Such a capability would also provide a survivable and concealed nuclear deterrent force. In Pakistan's nuclear doctrine, a nuclear submarine would ensure survivability of the country's nuclear arsenal, giving it a credible second-strike capability.[77]

As regards PN's strategic thought, it has mainly been India-centric in its threat orientation. The overall PN strategy was offensive sea-denial strategy, in which the submarines and maritime patrol aircrafts played a fundamental role. Pakistan's submarines play the sea-denial role and become part of the offensive punch to the navy.

A nuclear capability at sea would augment the sea-denial role of PN against Indian naval superiority to deny India the control of sea.[78]

Sea control allows a force to use the seas for achieving its own goals and deny the use of the same to the adversary. This can be a decisive element in wars.[79] With the IN's sea-control strategy, it would be able to inflict an effective naval blockade against Pakistan during a crisis– indeed the memories of naval blockade in the Bay of Bengal during the 1971 war and similar intentions for Karachi in the Kargil War are still fresh in the minds of Pakistani strategic planners.[80] Indian ambitions to act as a 'net security provider' will enable it to control the SLOCs and act as a power to the detriment of other actors in the region especially Pakistan.[81]

During the Cold War, the nuclear weapons at sea contributed to arms race stability as the second-strike capability was assured, and enhanced crisis stability by removing the incentive for a first strike. However, the Cold War lessons cannot be applied directly to South Asian nuclear equation, given the geographical proximity of nuclear armed neighbors that have festering land disputes and have fought several wars and overcome crises.[82]

India-Pakistan relations are afflicted with an action-reaction syndrome. It is well-known that Pakistan's pursuit of nuclear weapons was a response to India's acquisition of nuclear weapons. India's decision to nuclearize the Indian Ocean has initiated an arms race in the maritime domain.[83] When India accentuated its drive to nuclearize the Indian Ocean, Pakistan took measures to restore the nuclear balance, alongside enhancing its ASW capabilities to tackle India's SSBN.[84]

In 2012, Pakistan established a Naval Strategic Force Command and the ISPR Press release while explaining its purpose stated that, it would "perform a pivotal role in development and employment of the Naval Strategic Force. The Force, which is the custodian of

nation's 2nd strike capability, will strengthen Pakistan's policy of Credible Minimum Deterrence and ensure regional stability."[85]

The primary rationale for the development of Pakistan's second-strike capability has been ensuring survivability alongside warding off the Indian conventional threat to achieve a credible deterrent. Analysts have suggested that Pakistan may mate the naval version of its land-based Babur cruise missile with nuclear warheads and place them on its Khalid Class conventional submarines, which could be "armed to carry nuclear tipped cruise missiles."[86] Iskander Rehman in this regard says that, "Pakistani commanders mentioned the precedent set by Israel's alleged decision to place nuclear-tipped cruise missiles aboard conventional submarines and suggested that their country should follow suit."[87]

In January 2017, Pakistan test launched Babur-III sea-variant of Babur-II GLCM, reinforcing these claims. However, the operationalization of the submarine would require several retrofits in the submarine's tubes to house the missiles. For the development of a potent deterrent force, the submarine's tube, currently designed for Exocet SM39 anti-ship missiles, would have to be retrofitted for Babur-3. "Having already demonstrated its capability to miniaturize nuclear warheads, by testing the Nasr missile, the Babur cruise missile system reliably serves the purpose of completing Pakistan's nuclear triad."[88]

India's current diesel-electric submarine fleet is not equipped with Air Independent Propulsions unlike Pakistan's Khalid class boats. Thus, INS Arihant will provide Indian fleet with the stealth and maneuverability to threaten Pakistan on the nuclear front. The development is extremely problematic as sea is the only area allowing the nuclear platforms on the both sides to interact.[89]

Counterforce Temptations and Strategic Instability

New Delhi is currently enhancing its strategic and conventional precision-strike capability for targeting deep within Pakistan's territory for pre-emptive counterforce. Cruise missiles are the leading capability being developed in this regard. In a Russo-Indian joint venture, India has developed subsonic cruise missile BrahMos with a range of 290kms for its land, sea and air forces. It is currently developing supersonic version of this missile with a speed of Mac 6 and a Scramjet engine with an extended range. Brahmos would be deployed on India's Su-30s[90] extending its reach for counterforce roles. India is also indigenously developing another sub-sonic cruise missile Nirbhay with a range of 1000 kms, capable of carrying a 300kg warhead.[91]

Moreover, satellites are considered to be the most potent tool for ISR and successful counterforce. Hence, they are dubbed as a country's eyes in the sky. India has a rapidly growing space program, with an increased focus on dedicated military satellites for surveillance, reconnaissance and communication. Currently, it is operating approximately six to eight dedicated military satellites. These satellites have varied missions, ranging from signals intelligence (EMISAT), i.e. detection of enemy radars to that of communication satellites, which the Indian air force is using to upgrade its existing ground control stations to satellite-control for military UAV.[92] The use of satellites seeking situational awareness and precision armed unmanned aerial platforms would make counterforce an unavoidably attractive option.[93] On March 27, 2019, India carried out testing of anti-satellite weapons technology (ASAT), targeting one of its own satellites in the lower earth orbit.[94] This ASAT capability would augment India's capability to target the enemy's military satellites as well as long-range strategic missiles. The Indian space agency has launched 104 satellites from a single rocket, demonstrating the capability of its ballistic missiles to carry

multiple warheads, also known as MIRVs (multiple independently targetable reentry vehicle).[95]

With the emerging technologies entering the military domain, India is also investing in the field of autonomous underwater vehicles (AUVs) varying in designs and sophistication. The Indian Defence Minister claimed in the parliament in 2015 that Defence and Research Development Organinzation ((DRDO) had acquired the capability to design different types of unmanned underwater vehicles (UUV), for civilian and military applications. UUVs will give the Indian navy far greater reach and offensive capability, as they can be deployed for use in the places not accessible to the personnel. In case of unmanned aerial vehicles (UAVs), India has the ambitious plans to acquire 500 UAVs to deeply enhance its situational and maritime domain awareness (MDA).[96] These recent developments in the Indian arsenal, space and precision-strike capabilities create incentives for a pre-emptive counterforce by India, generating new pressures for Pakistan's nuclear posture and for strategic stability in the region.

The 2019 Balakot-Rajouri crisis demonstrated how a future crisis could escalate in the naval domain. During the crisis, it was reported that an Indian Kalvari class submarine attempted to penetrate Pakistani territorial waters, which was forced to surface by Pakistan Navy, but allowed to leave Pakistan's territorial waters while remaining on surface. However, had Pakistan chosen to attack that submarine, and had it been Arihant, it could have led to a nuclear response from India.[97] Furthermore, during the same crisis, Indian Navy deployed its nuclear submarine as part of a carrier battle group in the North Arabian Sea, reinforcing Pakistan's threat perception about Indian coercive strategy to leverage the result of the ongoing crisis on land through offensive deployments, as well as, reinforcing its thinking about counterforce targeting.[98]

There are no confidence building measures or agreements in place to preserve stability and harmony in the congested waters of the Arabian Sea, to prevent such close naval encounters in the future.[99] Moreover, it is also apprehended that an assured second-strike capability might motivate India to revise its No First Use (NFU) policy and to take a pre-emptive action against Pakistan in the confidence that its undersea nuclear arsenal is insulated from Pakistan's counter attack. Recent shifts in India's strategic debate about the necessity of not abiding to a No First Use (NFU) points to new challenges.[100]

According to some analysts, India's NFU doctrine serves two purposes; i.e. project it as a 'more civilized citizen of the world'[101] and address the so-called threat of pre-emption from China. Although China subscribes to NFU policy, however, India doesn't believe in Chinese NFU. The Indian strategists argue that the "NFU is related to an assured second-strike capability and that the survivability of second-strike capability can only be achieved through completion of the third leg of their triad. In light of this rationale, India kept modernizing its triad in the last decade."[102] This modernization program not only lowers the nuclear threshold but also enhances the probable employment of 'nonconventional weapons'.[103]

Several statements from Indian officials further deprecate India's NFU claim.[104] Furthermore, the developments in India's nuclear triad, technological advancements like MIRVs, ballistic missile defense (BMD) and satellite program etc. reinforce India's growing interest in moving away from an assured retaliation posture to that of a counter-force targeting strategy.

Currently, India is not in a position to undertake a counterforce strike against Pakistan successfully; however, given the advancements in India's strategic arsenal, a shift in its strategic posture from massive retaliation to counter force targeting is

evident. The extensive missile development program ranging from short range missiles to that of intercontinental ranges, and arming these with multiple warheads; pursuit of an ambitious missile defence shield both indigenously as well as with international collaboration; development of indigenous Intelligence, Surveillance and Reconnaissance (ISR) capabilities as well as enhanced collaboration with the United States for sharing of data for maritime domain awareness are all steps in this direction.[105] These components when clubbed with the strategic submarine program would increase India's confidence to carry on a preemptive strike against Pakistan and take out the rest of the incoming missiles through the Shield (BMD) and then take out the remaining arsenal through its sea-leg. Such an undertaking is greatly risky for deterrence stability.

Command and Control Implications

There will also be command and control implications to placing nuclear weapons at sea. Keeping warheads and delivery systems demated is not an option at sea. India's nuclear arsenal has remained strictly under civilian control, but some sort of delegation of authority will be necessitated in order to ensure survivability. This makes the situation extremely dangerous and contributes highly to crisis instability; there are high chances of undersea platforms losing communication links to the authorities in an event of crisis and coming under 'use or lose' pressures when in interaction with Pakistan's anti-access and area-denial (A2/AD) infrastructure.[106]

The operationalization would also mean determining with whom would the control of the submarine's strategic weapons rest during peace and times of crisis. Up till now, India's nuclear command and control has been centralized and projected to the world as being under civilian control. However, a nuclear submarine could

essentially change that to military control. Moreover, India's current communication infrastructure would have to be made robust and survivable, including an extensive network of Very Low Frequency stations (VLF) as well as satellite footprints to ensure continued interaction with its strategic submarines during crises.

Inadvertence Risks

The utilization of dual-use platforms for naval operations would lead to blurring between conventional and nuclear assets, and can lead to extreme strategic ambiguity, especially during crises.[107] India's Brahmos and Dhanush programs are also an outcome of commingling of conventional and nuclear platforms. Such commingling is extremely risky, intensifying crisis instability, as it makes it difficult to determine in the fog of war whether the platform being targeted is conventional or nuclear. If a nuclear platform is targeted, it can lead to inadvertent escalation with a possible strategic exchange being the ultimate eventuality.[108]

Each nuclear dyadic relationship has its unique set of characteristics as well as challenges. The Cold War adversaries were separated by thousands of miles, while in South Asia, India and Pakistan are maritime neighbors operating in increasingly congested waters. This makes their naval nuclear assets vulnerable to the adversary's ASW and multiply the chances of inadvertent escalation in the event of a crisis.[109]

ASW platforms, such as the maritime patrol aircraft, aid navies in the detection of subsurface platforms and relay such information to surface and sub-surface platforms. India's P-8 I Poseidon would be armed with precision targeting platforms like supersonic cruise missiles, which would enhance the risk of targeting submarines carrying nuclear weapons. As of the year 2019, Indian Navy operates 8 maritime patrol aircrafts with the US clearing the sale of additional 6 in May 2021.[110] This would bring the total number to

14, alongside plans to induct long endurance unmanned platforms. Compounding the challenge is the commingling of platforms in the sub-surface domain. Both India and Pakistan operate attack submarines that can carry dual use cruise missiles. Any inadvertent targeting of a platform carrying a strategic weapon mistaken to be a conventional platform can lead to sudden escalation.

Conclusion

As noted before, India considers the Indian Ocean as 'Indian lake'. With its strategic objective of asserting its hegemony in South Asia and beyond, it has been given the role of the 'net security provider' in the Indian Ocean. In its effort to assert power in the IO, and as a partner of the United States in the so-called Indo-Pacific strategy, India is modernizing its navy to become a blue water force, as well as to assert sea-control in the Indian Ocean region (IOR). India's naval strategy reinforces the notion of maritime dominance by creating a formidable force for strategic coercion, SLOC interdiction and possible counterforce. Washington is therefore arming India heavily (to stand up to China's rise as a strategic bulwark) through cooperation in the naval domain, leading to strategic instability in South Asia.

The introduction of nuclear weapons at sea by India is partly explained by its approach to gain prestige and become a part of the exclusive club of states that have strategic submarines; but mainly it is meant as a strategic deterrent against both Pakistan and China.[111] However, given the current Indian submarine capability and reach, it is more threatening to Pakistan than China. The introduction of strategic submarine has seriously damaged the strategic stability in the region. Given that the strategic stability is a combination of arms race stability and crisis stability; where the arms race stability denotes a lack of motivation to build up arsenal and crisis stability entails lack of incentive to use nuclear weapons

first, adding the naval element to the South Asian nuclear equation/competition has not contributed to either. The assured second-strike capability can enhance strategic stability only when both adversaries in a nuclear dyad have it - reducing the chances of a surprise attack and strengthening deterrence.

This nuclearization of IO has changed the balance of power in the region, apart from creating a new set of operational and strategic challenges for the South Asian stability. Infested with a history of conflicts and crises, a nuclear submarine with one nuclear armed adversary in a strategic dyad increases chances for strategic offensive posturing in the maritime domain as well as threatens the survivability of the adversary's strategic forces that lacks such a strategic second-strike force.

Moreover, the nuclearization of the IO has exposed the South Asian region to crisis instability. A mixing of conventional and nuclear platforms will have a mixed impact on deterrence stability. Ambiguity can in some cases be stabilizing by deterring the adversary from targeting of conventional platforms that might carry nuclear warheads or just the opposite. However, putting nuclear weapons on sea-based platforms would expose them to constant risk of close encounters and accidents/inadvertence. Finally, challenges could emanate out of targeting of each other's communication infrastructure during crises, which could lead to precipitating a crisis in the event of communication breakdown with the command center.

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