



**Delhi Policy Group**

Advancing India's Rise as a Leading Power



# DPG POLICY BRIEF

## The Return of INS Vikrant

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*IAC-1 Vikrant during Sea Trials. Source: Indian Navy*

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by  
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## Contents

Introduction .....	1
Survivability in an AA/AD Environment .....	1
Utility of Aircraft Carriers .....	5
Should India Have Aircraft Carriers? .....	7
Conclusion .....	9



## The Return of INS Vikrant

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### Introduction

A quarter century after being decommissioned in 1997, INS Vikrant will soon take birth again, commemorating India's 75<sup>th</sup> Independence Anniversary. Her predecessor was inducted in 1961, in the heyday of naval aviation, eight months before the US Navy brought into service the world's first nuclear powered aircraft carrier, USS Enterprise. Two decades earlier, the Imperial Japanese Navy had launched the aircraft carrier era through its strike on Pearl Harbour, eliminating battleships of the US Pacific Fleet and drawing the US into World War II. The Fleet Air Arm turned the tide thereafter, both in the Pacific where it became the primary instrument of maritime warfare, as well as in the Atlantic, where it accounted (along with land-based aircraft) for 250 German submarines<sup>1</sup> and made the seas safe for convoys.

The new INS Vikrant, however, is being inducted at a time when anti-ship missiles have proliferated and doubts are being raised about the survivability of aircraft carriers. Three questions in particular are of relevance. First, can aircraft carriers survive in the era of Anti-Access/Area Denial (AA/AD) strategies? Second, do they retain their utility? Third, will India's interests be better served by an aircraft carrier or its own AA/AD capability, centred on the peninsula and offshore island territories?

### Survivability in an AA/AD Environment

The AA/AD threat encompasses a variety of land-based manoeuvring ballistic missiles, land-based or ship-launched cruise missiles or aircraft (manned and unmanned), ships or submarines equipped with torpedoes and/or cruise missiles, and mines. Surface, air and underwater challenges to accessing specified areas have been around at least since WW II. Similarly, cruise missiles, launched from land, submarine, ship or aircraft, have been in use for over five decades. The handicaps of submarines in fulfilling the nation's maritime interests or engaging surface forces have been elaborated by this author in an earlier paper<sup>2</sup>. The new developments are Anti-Ship Ballistic

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<sup>1</sup> U-boat Fates – U-boat losses by cause, <https://uboat.net/fates/losses/cause.htm>

<sup>2</sup> Lalit Kapur, "Operationalising SAGAR: Bridging the Gap Between Policy and Execution," <https://www.delhipolicygroup.org/publication/policy-briefs/operationalising-sagar-bridging-the-gap-between-policy-and-execution.html>



Missiles (ASBMs) and hypersonic missiles<sup>3</sup>. But do these truly add so significantly to the ever-present AA/AD threat as to spell the end of aircraft carriers?



IAC-1 Vikrant during Sea Trials. Source: Indian Navy

China's Dong Feng 21D (DF-21D), described as the world's first anti-ship ballistic missile, is launched from a road-mobile launcher and has an operational range of about 1500 Km. It has a claimed accuracy of about 20 metres (CEP)<sup>4</sup> and a manoeuvring warhead weighing about 600 Kg. The Dong Feng 26B (DF-26B), on the other hand, is a two stage solid fuel ballistic missile with a range of about 4000 Km, capable of reaching Guam from mainland China. This range, if the missile is launched from Gwadar, Tibet or China's Yunnan province, suffices to cover the entire Indian Ocean north of Diego Garcia. It too is believed to have a manoeuvring warhead, making it capable of homing in to strike moving ships<sup>5</sup>. Russia has operationalised the 3M22 Tsirkon, a hypersonic cruise missile with a speed of Mach 6-8 and range of 250-600 miles that has been successfully tested from a variety of surface ships, as

<sup>3</sup>"Is the Era of Carrier Groups Over? China's DF-21D and DF-26B Missiles May Have Ensured That", <https://www.firstpost.com/explainers/explained-is-the-era-of-carrier-groups-over-chinas-df-21d-and-df-26b-missiles-may-have-ensured-just-that-10999531.html>

<sup>4</sup>Missiles of the World – China – DF-21 (CSS-5), <https://missilethreat.csis.org/missile/df-21/>

<sup>5</sup>Missiles of the World – China – DF-26, <https://missilethreat.csis.org/missile/dong-feng-26-df-26/>



well as from a submarine in October 2021<sup>6</sup>. Russia has also fielded the Kinzhal, a manoeuvring air-launched ballistic missile derived from the Iskander SRBM, with a speed of Mach 10 and a range of 1200 miles when launched from the Mig-31<sup>7</sup>. Speculative reports describe China's YJ-21 Eagle Strike ship-launched hypersonic cruise missile, tested from a Type 055 destroyer in April 2022, as a derivative of the CM-401 SRBM<sup>8</sup>.

The credibility of deterrence posed by any new weapon depends on a balanced assessment of its claimed capability. Mere possession has never proved sufficient to deter the use of proven platforms, much less bring about the end of an era. Thus, aircraft continue to be used despite the prevalence of Surface-to-Air Missiles (SAMs). Similarly, main battle tanks continue being used despite the widespread presence of Anti-tank Guided Missiles (ATGMs). Peacetime claims are one thing; reliable utilisation in war against thinking and shooting adversaries is something quite different. So how much difference will ASBMs or hypersonic missiles make, today or in the foreseeable future?

Without manoeuvring capability, ballistic missiles can strike a static point with reasonable accuracy. Their trajectory, however, is predictable and Ballistic Missile Defence (BMD) systems have come into use to counter them. To be effective against a moving ship, manoeuvring ASBMs need two indispensable elements: a reconnaissance and targeting architecture that locates the target and brings the missile to its vicinity and a homing system. A third element in determining their efficacy is target defences.

China's reconnaissance architecture is still under construction and has a long way to go, particularly in the Indian Ocean. Over-the-horizon radars cannot provide the positional accuracy required to enable engagement of moving ships. Satellite passes are predictable and can be evaded. Long range maritime patrol aircraft become vulnerable when tactical air, such as from an aircraft carrier, is available to the defender. Targeting systems can be spoofed or otherwise disrupted, introducing inaccuracies that impact on the missile's ability to reach close enough to the target for its homing window to function. Homing systems, whether radar, IR or electro-optical, are limited by the superheated surface which ionises the air surrounding missiles moving at

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<sup>6</sup> Congressional Research Service, "Hypersonic Weapons: Background and Issues for Congress", updated May 5, 2022, P 15

<sup>7</sup> Ibid.

<sup>8</sup> China Test-Fires New YJ-21 Hypersonic Missile, <https://www.navalnews.com/naval-news/2022/04/china-test-fires-new-yj-21-hypersonic-missile/>





hypersonic speeds (Mach 5.0 or higher)<sup>9</sup>. Some reports indicate that the DF-21D and DF-26 warheads must reduce speed to around Mach 2 before their homing heads can work. This reduced speed brings them within the engagement envelope of contemporary anti-missile systems.

Notably, China's DF-21D and DF-26 missiles have so far been tested only against static targets, where homing capability is not required. There are unverified media claims of these missiles having been successfully tested against a moving target in August 2020<sup>10</sup>. No official Chinese outlet has confirmed this claim<sup>11</sup>. Given the importance to China of deterring the US in the Western Pacific, the absence of an official claim speaks for itself. Effectively, the capability of hypersonic missiles against moving ships remains unproven.

Ship-borne anti-missile defences are of two types, kinetic and electronic. Earlier US seaborne kinetic systems based on the Standard SM-3 were designed to intercept ballistic missiles in their mid-course phase, meaning that interceptor missiles would have had to be launched almost simultaneously with the missile they were supposed to intercept in order to succeed. However, the Standard SM-6 that entered service in 2013 and has since been exported to Japan (with Australia as another potential customer) is designed to intercept manoeuvring ballistic missiles in the terminal phase. It, or an equivalent system, would give India credible kinetic capability against ASBMs. Moreover, electronic countermeasures have proved their efficacy against cruise missiles both before and after they lock on. There is no reason to suppose they will not be equally effective against hypersonic ones.

The inescapable conclusion is that a rigid outlook questioning the survivability of aircraft carriers (and other surface ships) in the face of manoeuvring ballistic or other hypersonic missiles is not justified. High mobility, heavy armour, compartmentalisation and concentrated defences give aircraft carriers a marked edge over static runways. This has historically enabled them to operate even in a relatively confined space like the Mediterranean, as during the Malta convoy operations by the Alexandria-based Force H during WWII. That other great powers do not subscribe to the view that the aircraft carrier era had ended

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<sup>9</sup>SIPRI, "A matter of speed? Understanding hypersonic missile systems", <https://www.sipri.org/commentary/topical-background/2022/matter-speed-understanding-hypersonic-missile-systems>

<sup>10</sup>"China's 'aircraft-carrier killer' missiles successfully hit target ship in South China Sea, PLA insider reveals", <https://www.scmp.com/news/china/military/article/3109809/chinas-aircraft-carrier-killer-missiles-successfully-hit-target>

<sup>11</sup>"Chinese Ballistic Missiles Fired Into South China Sea Claimed to Hit Target Ship", <https://thediplomat.com/2020/11/chinese-ballistic-missiles-fired-into-south-china-sea-claimed-to-hit-target-ship/>



is conclusively indicated by the construction plans of the US, the UK, Russia, France, South Korea, Japan and even China, among others.

## Utility of Aircraft Carriers

“The function of the fleet, the object for which it was always employed, has been three-fold: firstly, to support or obstruct diplomatic effort; secondly, to protect or destroy commerce; and thirdly, to further or hinder military operations ashore”, said Sir Julian Corbett<sup>12</sup>. Aircraft carriers and the tactical air power they provide are indispensable for all three functions. Their presence (or absence) could be as decisive at sea as it was on land during the Battle of Longewala in 1971, when four Hunter aircraft based at Jaisalmer destroyed 37 attacking tanks and over 200 other vehicles and helped Major KS Chandpuri hold off an attack by an overwhelmingly superior Pakistani force<sup>13</sup>, making the difference between victory and defeat.



INS Vikramaditya Exercising with Other Ships in the Arabian Sea.

Source: Indian Navy

In the first role of supporting or obstructing diplomatic effort, the carrier is of inestimable value in a show of force intended to deter, to reassure friends and partners, and for HADR. The USN has, for example, regularly maintained

<sup>12</sup>Sir Julian Stafford Corbett, “England in the Seven Years’ War: A Study in Combined Strategy”, Longmans, Green, and Co. 1907, P 6.

<sup>13</sup> Maj Gen KS Bajwa (Retd), ‘Battle of Longewala’, <https://usiofindia.org/publication/usi-journal/battle-of-longewala-2/>





Carrier Strike Groups in the Western Pacific. That these have been effective in deterring China's moves to subordinate Taiwan is evident from the outcome of the Second and Third Taiwan Straits Crises, as also during the last one month, despite China's ire at the Pelosi visit to Taiwan. The reassurance provided by US ships and aircraft has enabled East and Southeast Asian countries to resist coercion and take positions based on principles, equity and justice, rather than on the fear of China's power. Whether the relative peace and stability that has prevailed in the Western Pacific after Vietnam would have been possible but for this deterrence and reassurance poses a compelling question. And for HADR, the sheer size and facilities on board an aircraft carrier make it an unbeatable asset, able to provide large volumes of food, water, electricity, transportation and medical care. The quintessential requirement in the 'diplomatic' function is visible presence, with the proverbial 'big stick'. AA/AD can neither provide presence nor, given its limitations as highlighted above, the big stick. Other surface warships could, but without integral air, their capability to deal with attacking aircraft, ships and submarines, and thus their deterrent impact, is far lower than that of an aircraft carrier.

Similarly, in the commerce function (protection of own commerce while destroying that of the enemy), the presence or absence of integral air power available at short notice spells the difference between success and failure. Tactical air power provided by aircraft carriers, both fixed and rotary wing, serves a critical function in the location and prosecution of submarines. Shore-based air power cannot perform this task. Even if the numbers of maritime patrol aircraft available are increased a hundredfold, they cannot replace helicopters equipped with dunking sonars and anti-submarine torpedoes in submarine probability areas along the vast distances commercial traffic must cover. Carrier-borne air power enables location and destruction of threatening enemy surface combatants at ranges where adversary weapons cannot even be brought into use, minimising the element of chance. And against attacking enemy aircraft, integral air provides a vital component of the layered defence that acts as an effective shield, one sufficient to keep the adversary at bay. None of these functions can be performed by AA/AD, or even by surface platforms alone. Nor can they be performed by shore-based aircraft, except perhaps within about 250-300 km of an air base. The carrier thus becomes a strategic asset, a mobile air base that defends all vessels in the area against attacking aircraft throughout long sea routes, not just in the vicinity of land.

Coming to furthering or hindering operations ashore, the only distant operations that can be planned and executed without tactical air (provided by aircraft carriers) are peacetime ones. The examples of Operation Pawan and Cactus may have lulled India into complacency. These were executed when



the adversary could not mount any possible air opposition. Future operational planning must factor in a great power adversary (China) with its own aircraft carrier battle group providing a potent presence in the Indian Ocean. The absence of tactical air will result in an insurmountable handicap, one that would cause the country and its regional aspirations grave damage.

Aircraft carriers bring to bear three essential attributes: air power (for defensive or offensive purposes), platform size, and survivability. The missions for which they can be tasked include a show of force, deterrence, reassurance, HADR, surveillance/reconnaissance (acting as the eyes and ears of the fleet); fleet protection (Air Defence, Anti-Submarine and Anti-Ship Warfare, protection of trade); strike (both at sea and on land); providing Humanitarian Assistance & Disaster Relief (HADR) and other aid to civil power. The reality is that a platform that can perform these roles more effectively than the aircraft carrier on 71% of the planet's surface that is water has not yet been conceptualised.

### Should India have Aircraft Carriers?

Will AA/AD centred on the Andaman and Nicobar Islands as well as the Indian Peninsula be more effective than aircraft carriers in serving India's interests? This question implicitly acknowledges that a Chinese Carrier Battle Group will act coercively in the Indian Ocean in the years ahead and seeks to determine the better strategic option to counter it. The answer must be provided by Indian strategic planners based on the current geo-strategic environment and national interests going ahead, and not by foreign commentators. The first section of this brief has already established why AA/AD capability does not deter. The issue then comes down to fighting capability, where aircraft carriers provide the essential edge.

The world is transitioning between a unipolar era and a multipolar one. The Indian Ocean, India's strategic backyard, has acquired profound strategic importance. An adviser to Japan's former Prime Minister acknowledges "The reason why Shinzo Abe expanded the geographic horizon from Asia-Pacific to Indo-Pacific was primarily because he wanted to include India, being aware that the Indian Ocean would be the industrial highway of the 21<sup>st</sup> century. And given the fact that if there is any country in the world that feels very much responsible of (sic) the peace and safety and prosperity in the Indian Ocean Region, it is India ..."<sup>14</sup>. The near universal recognition of the strategic and economic potential of India and the importance of the Indian Ocean is evident

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<sup>14</sup> Professor Tomohiko Taniguchi, Special Adviser to the Cabinet of Prime Minister Shinzo Abe, <https://www.sundayguardianlive.com/news/without-india-modi-quad-not-fly-former-abe-adviser>



from the renaming of the US Pacific Command as the Indo-Pacific Command, and the Indo-Pacific strategies of the US, the UK, France, Germany, the Netherlands, the EU, Japan, Australia and ASEAN. Even the Russian maritime doctrine of July 31, 2022<sup>15</sup> speaks of “creating conditions for a naval presence in the Asia-Pacific region” and “development of strategic partnership and naval cooperation with the Republic of India”. It is not India's ability to defend itself that provides this attraction; it is its regional capability and potential.

India's capabilities, outlook and aspirations have evolved. The ideologically driven and poverty-stricken third world country of the mid 20<sup>th</sup> century is giving way to a modern nation with acknowledged great power potential and the aspiration to be one of the poles of the future world order. India's outlook has changed, from a dogmatic focus on territorial defence and non-alignment, to becoming a confident regional power, willing to assume responsibility for regional security, and engaging with others both to the East and West in pursuit of its national interests. There is understanding now that “outcomes can be decided as much on the field as at conferences”<sup>16</sup>. India shares “with the international community the objective that a multi-polar world should have a multi-polar Asia at its core”<sup>17</sup>. It has enunciated its first integrated ocean policy (SAGAR)<sup>18</sup>, the primary element of which is, “We will do everything to safeguard our mainland and islands and defend our interests. Equally we will work to ensure a safe, secure and stable Indian Ocean Region that delivers us all to the shores of prosperity”<sup>19</sup>. And India is engaging with various partners, including the Quad nations, ASEAN, France, the UK, the EU and the Gulf nations, in its quest to ensure a secure, stable and prosperous region.

The role of maritime power in fulfilling India's aspirations cannot be minimised. Even a third world nation will fight to defend its territory – the example of Vietnam in 1979 speaks for itself. But mere defence of territory (which AA/AD could, to some extent, provide) will not impart the capability to secure commerce, shape the regional environment, assure regional or global partners, or contribute effectively to Indian Ocean security. That can only be done by the assured (not occasional) availability of tactical air along the global highways passing through the Indian Ocean, which in turn can only be provided by aircraft carriers. The need is for at least one operational carrier on

<sup>15</sup> Russian Federation Naval Doctrine Approved, <http://en.kremlin.ru/acts/news/69084>

<sup>16</sup> External Affairs Minister's Speech at the 4<sup>th</sup> Ramnath Goenka Lecture, 2019, [https://mea.gov.in/Speeches-Statements.htm?dtl/32038/External\\_Affairs\\_Ministers\\_speech\\_at\\_the\\_4th\\_Ramnath\\_Goenk\\_a\\_Lecture\\_2019](https://mea.gov.in/Speeches-Statements.htm?dtl/32038/External_Affairs_Ministers_speech_at_the_4th_Ramnath_Goenk_a_Lecture_2019)

<sup>17</sup> Ibid.

<sup>18</sup> Text of the PM's Remarks on the Commissioning of Coast Ship Barracuda, 12 March 2015, <https://www.pib.gov.in/newsite/erecontent.aspx?relid=116881>

<sup>19</sup> Ibid



the western and eastern seaboard at all times. This will necessitate a force level of at least three and perhaps more, as can be determined only once data on their maintenance cycle becomes available.

"Critics believe carriers to be too expensive and too vulnerable. These arguments are raised anew in times of peace – then in every war the carrier's decisive use in combat ends the discussion for the next decade or so"<sup>20</sup>. These words from a former US Navy Secretary sum up the argument even the USN has faced through the years. India, with its hitherto entrenched continental mindset, is bound to face this argument time and again, not just due to domestic inter-service competition for budget shares, but also due to the innate desire of existing and potential great powers to hinder India's search for true strategic independence. The incontrovertible fact that a nation without strong maritime capability cannot be a great power has been recognised not just by the West, but by traditional continental powers such as Russia and China. It is time for India to acknowledge this reality.

## Conclusion

It is often forgotten that China's AA/AD strategy is designed for territorial defence, to prevent US interference in what China considers is its own territory. It is not intended to provide global, or even regional influence. That influence is provided by maritime power, including aircraft carriers – China already has three and is building more. It has formally articulated, "The traditional mentality that land outweighs the sea must be abandoned, and great importance has to be attached to managing the seas and oceans and protecting maritime rights and interests"<sup>21</sup>. The white paper goes on to state, "It is necessary for China to develop a modern maritime military force structure commensurate with its national security and development interests, safeguard its national sovereignty and maritime rights and interests, protect the security of strategic SLOCs and overseas interests, and participate in international maritime cooperation, so as to provide strategic support for building itself into a maritime power"<sup>22</sup>.

Though India announced its intention of "doing everything to safeguard our mainland and islands and defend our interests" two months before China issued its Military Strategy White Paper in 2015, the difference lies in the fact that China has moved more purposefully towards developing a modern

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<sup>20</sup> John F Lehman with Steven Wills, "Aircraft Carriers: Missions, Survivability, Size, Cost, Numbers", Naval War College Review, Vol 74 (2021), No. 4, Art.4

<sup>21</sup> China's Military Strategy White Paper, May 27, 2015, [http://english.www.gov.cn/archive/white\\_paper/2015/05/27/content\\_281475115610833.htm](http://english.www.gov.cn/archive/white_paper/2015/05/27/content_281475115610833.htm)

<sup>22</sup> Ibid.



maritime military force structure commensurate with its national security and development interests. India, on the other hand, still remains handicapped by persistent (and motivated) debate about the maritime force structure required seven years after it articulated SAGAR. The construction of IAC-1 has been completed, but an endless debate about the need for IAC-2 continues. It is time for India to accept that it is impossible to have a modern maritime military force without sufficient and assured availability of tactical air, through an aircraft carrier. It is also time to shed the defensive continental mindset and go in for the only platform that can provide a mobile dome of air power across the entire zone of India's maritime interest.

The commissioning of IAC-1 INS Vikrant marks an important step forward in achieving India's vision of itself as a consequential regional power. India cannot, however, rest on its laurels and continue procrastinating in deciding about IAC-2. It must move purposefully towards execution of its declared maritime vision, and towards building the foundational requirement – decisive maritime power which incorporates the assured (and not occasional) availability to its maritime sword arm of tactical air power.

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