Centre for Air Power Studies

Centre for Air Power Studies ISSUE BRIEF

14/23

05 September 2023

RISING TO THE STARS: ASSESSING THE INDIAN AEROSPACE POWER

Sreyash Pratap Singh

Research Intern, Centre for Air Power Studies

Introduction

As Chandrayaan 3's Vikram lander made a successful soft landing on the south pole of the Moon, the Indian Space Research Organisation (ISRO) has propelled India into an elite league, becoming only the fourth nation ever after the USA, Soviet Union, and China, to achieve a successful soft landing on the Moon and only the first nation to achieve a successful landing on the south pole of the Moon. While celebrating this remarkable achievement, it's important to acknowledge that the vast potential of space exploration for military applications continues to await its full realisation.

The IAF's forward-looking perspective underscores the notion that the concept of airpower should transcend its conventional boundaries and be perceived as aerospace power, encompassing the multidimensional domain of space.

The latest edition of the IAF Doctrine (IAP 2000-22) has brought to light a noteworthy emphasis on the pivotal role of aerospace in congruence with airpower.[1] This strategic integration indicates a transformative shift in the focus of the Indian Air Force's (IAF) vision, specifically geared towards utilising the vast potential of space to ensure the safeguarding of India's sovereign interests. The IAF's forward-looking perspective underscores the notion that the concept of airpower should transcend its conventional boundaries and be perceived as aerospace power, encompassing the multidimensional domain of space. The fusion of these two important elements can emerge as a decisive factor in shaping the outcomes of contemporary and futuristic military engagements.

Space as Global Commons: A Strategic Imperative

The Indian Space Policy facilitates a robust space ecosystem by advocating open access, equitable sharing of benefits, and active involvement of governmental and non-governmental entities in various space undertakings.

The notion of space as a global common underscores the principle that outer space is a shared resource, free from territorial claims, and open for exploration and peaceful use by all nations. This concept aligns with India's commitment to international cooperation and responsible space activities. The Indian Space Policy of 2023[2] reinforces this principle, advocating collaboration, open access, and equitable distribution of benefits derived from space endeavours. It provides the framework for a vibrant space ecosystem, encouraging both government and non-government entities to engage in diverse space activities. India, as a spacefaring nation, has recognised the importance of space as a global commonality and has actively contributed to the principles and practises that support this concept.

The Indian Space Policy explains just how vital the concept of global commonality is. It mirrors this principle, embodying a commitment to international collaboration and responsible space ventures. The policy facilitates a robust space ecosystem by advocating open access, equitable sharing of benefits, and active involvement of governmental and non-governmental entities in various space undertakings. By endorsing the notion of space as a global common, India underscores its dedication to fostering a cooperative and inclusive approach to space activities, thus contributing to the sustainable and peaceful exploration of space.

IAF Doctrine: Charting the Course for Space Quest

The establishment of the Defence Space Agency (DSA) in 2019 with the main motive to address all defence space requirements, including the protection of all its space assets and a better-militarised space[3] for India's sovereignty, sheds light on just how important a concern capitalising on space dominance is. The IAP 2000-22 has given a good try at addressing the rising importance of the aerospace domain in modern warfare. It realises that there is a push needed for India to use the space domain for military purposes in multiple roles. A similar view has been put forth by the present Chief of Defence Staff, General Anil Chauhan, in his address at the Indian Space Agency (IsPA) in April 2023.[4]

As our reliance on space continues to expand, space-based resources will become focal points that may be targeted both in times of war and in situations falling short of full-fledged conflict. This shift is leading to the evolution of concepts related to projecting power, ensuring protection, and selecting targets within the realm of space. The latest updates in the IAF doctrine have intelligently emphasised the utmost significance of the aerospace domain, thereby demanding a fundamental change in India's approach to safeguarding against potential threats from adversaries. As the IAF occupies a prominent

position in strategic thinking and innovation, it becomes imperative for the organisation to recognise the importance of aerospace and to adopt a more holistic and synergistic perspective that integrates air, space, and cyber capabilities seamlessly.

We find ourselves on the brink of an era defined by advanced forms of warfare,[5] wherein the aerospace domain assumes a critical role. Unmanned aerial vehicles, commonly known as drones, have emerged as essential tools in modern warfare, not only sparing human lives but also proving exceptionally efficient and effective, as evidenced by their deployment in the ongoing conflict between Russia and Ukraine. However, this is just one facet of a broader transformation that is poised to extend into the vast expanse of space itself. The aerospace realm is witnessing a convergence of technologies that promise to revolutionise military operations on a global scale. Satellite systems, which include communication, navigation, and surveillance, have transcended their initial civilian applications to become linchpins of modern defence strategies. As the trajectory of warfare is on the cusp of extending into the aerospace realm, it is an opportune moment to capitalise on this potential shift.

Elevating Strategies: China's Ambitious Pursuits in Expanding Low Earth Orbits for Space Dominance

China recently unveiled a bold initiative to establish a ground-breaking satellite constellation in the Very Low Earth Orbit (VLEO), consisting of 300 satellites that will encircle the planet by 2030. This constellation is designed to deliver rapid remote sensing and communication services, marking a remarkable technological feat. The first satellite is scheduled for launch December 2023, signifying China's determined foray into the realm of advanced space capabilities.[6] The China National Space Administration (CNSA) plans to deploy 300 VLEO satellites that shall make up the constellation, eventually creating a highly responsive global communication network capable of providing rapid connectivity within a 15-minute timeframe. As the project evolves and advances toward its culmination after 2030, it is even speculated that this responsiveness might further evolve, potentially shortening the response window to an astonishing 10 minutes. China's VLEO technology capability is both highly commendable and a cause of severe concern for India.

Although China asserts that its visionary endeavour is intended solely for civil and non-military applications, the ramifications of such an initiative could transcend these stated intentions. Reports from sources like the Global Times highlight that these satellites possess the capability to capture and relay critical information during emergencies, facilitated by inter-satellite transmission and intelligent data processing.[7] This data is then transmitted through an independent network to Earth-bound terminals, which could encompass various platforms, including moving vehicles and portable devices. These revelations hint at a broader scope for the project beyond civilian utilities.

The implications of such an audacious move by the Chinese state are already being felt. Reports on the deployment of a swarm of surveillance satellites to spy on two significant military training operations involving the United States and Australia have surfaced.[8] It is noteworthy that the purview of this vigilance extends beyond the precincts of the Talisman Sabre theatre, encompassing the noteworthy QUAD naval military exercise – the Malabar exercise of 2023. Since August 10, 2023, hundreds of low-orbit satellites have been tracked, completing thousands of flights at much lower altitudes over the Australian continent, focusing on the activity of warships around Sydney.[9] Clearly, these revelations hint at a broader scope for the project beyond civilian utilities. On one occasion, the Royal Australian Air Forces P-8 Poseidon[10] was deployed to make contact with a Dongdiao Class Auxiliary General Intelligence (AGI) vessel of the People's Liberation Army Navy (PLAN) that transpired deep south into the Shoal Water Bay, trying to collect sensitive information on the international Exercise Talisman Sabre, which is about 6,625 km from Shanghai. These incidents vividly capture the boldness shown by such actions, symbolising China's growing influence in space. It's a clear example of how the Chinese are establishing control over outer space, which is likely to have a significant impact worldwide.

As India navigates the complex interplay between air, space, and cyber capabilities, it has the unique opportunity to not only safeguard its sovereignty but also to establish itself as a formidable force in the emerging era of aerospace dynamics.

India's Strategic Response

The implications of China's strides in VLEO satellite deployment necessitate prompt action by India's space agencies, such as the DSA. Scrutinising and comprehending this technology is crucial for safeguarding and potentially leveraging it as a strategic advantage in the military domain. Collaborative efforts involving institutions like the ISRO, the Defence Research and Development Organisation (DRDO), and public sector undertakings (PSUs) could yield a formidable response to China's endeavours. In essence, China's grand undertaking in VLEO satellite constellations stands as a testament to innovation but simultaneously fuels geopolitical concerns. As this race for advanced space capabilities unfolds, it is imperative for India to assertively harness its expertise and resources to ensure its national interests and security are well-positioned in this evolving space-age landscape.

Forging a Strategic Path Ahead

As India navigates the complex interplay between air, space, and cyber capabilities, it has the unique opportunity to not only safeguard its sovereignty but also to establish itself as a formidable force in the emerging era of aerospace dynamics. The imperative for a comprehensive, collective perspective that encompasses both spatial and aerial

dominions has been a longstanding clarion call. Presently, India's policies appear confined to a stance of observant restraint, a posture seemingly conflicting with the narrative of its ascent as an imminent global powerhouse. The exigency has arisen for a paradigm shift—a transition from a posture of reactive deliberation to one of proactive assertion—a transformation demanding a meticulous tapestry of strategic cogitation. In the public theatre of global discourse, India has adroitly projected itself as an ascendant force, a notion substantiated by its ever-growing economic prowess and scientific achievements. However, time has ripened for a congruence between public portrayal and strategic action, underscoring the pressing requirement for the convergence of persuasive rhetoric and tangible reality.

Notes:

[1] "Doctrine of The Indian Air Force", 2022, https://indianairforce.nic.in/wp-content/uploads/2023/01/2MB.pdf. Accessed on August 27, 2023.

[2] "The Indian Space Policy of 2023", https://www.isro.gov.in/media_isro/pdf/IndianSpacePolicy2023.pdf. Accessed on August 24, 2023.

[3] Dinaker Peri, "We are seeing militarisation of space, steady progress towards weaponisation: Chief of Defence Staff", *The Hindu*, April 11, 2023, https://www.thehindu.com/news/national/we-are-witnessing-militarisation-of-space-and-steady-progress-towards-weaponisation-cds/article66725336.ece. Accessed on August 16, 2023.

[4] Ibid.

[5] Doug Cameron. "Pentagon Prepares for Space Warfare as Potential Threats From China, Russia Grow" *The Wall Street Journal*, March 28, 2023, https://www.wsj.com/articles/pentagon-prepares-for-space-warfare-as-potential-threats-from-china-russia-grow-62a0623b. Accessed on August 15, 2023.

[6] Deng Xiaoci. "State-owned aerospace giant to build 300-satellite constellation at Very Low Earth Orbit by 2030 for better, more economic remote sensing services" *Global Times*, July 12, 2023, https://www.globaltimes.cn/page/202307/1294211.shtml. Accessed on August 14, 2023.

[7] Deng Xiaoci. "State-owned aerospace giant to build 300-satellite constellation at Very Low Earth Orbit by 2030 for better, more economic remote sensing services" *Global Times*, July 12, 2023, https://www.globaltimes.cn/page/202307/1294211.shtml. Accessed on August 14, 2023.

[8] Heena Sharma, "Hundreds of Chinese satellites spying on US-Australia military exercises", WION, August 21, 2023, https://www.wionews.com/world/hundreds-of-chinese-satellites-keep-watch-over-us-australia-military-exercises-626928. Accessed on August 21, 2023.

[9] Smruti Deshpande. "Chinese spy over Malabar naval exercise off Australian waters with 'over 300' satellites" *The Print,* August 19, 2023, https://theprint.in/defence/chinese-spy-over-malabar-naval-exercise-off-australian-waters-with-over-300-satellites/1721403/. Accessed on August 21, 2023.

[10] Andrew Greene, "First image emerges of RAAF's encounter with Chinese spy ship during Talisman Sabre", ABC News, July 24, 2023, https://www.abc.net.au/news/2023-07-24/first-image-of-australian-encounter-with-chinese-spy-ship/102637528. Accessed on August 21, 2023.

Centre for Air Power Studies

The Centre for Air Power Studies (CAPS) is an independent, non-profit think tank that undertakes and promotes policy related research, study and discussion on defence and military issues, trends, and development in air power and space for civil and military purposes, as also related issues of national security. The Centre is headed by Air Marshal Anil Chopra PVSM AVSM VM VSM (Retd).

Centre for Air Power Studies
P-284, Arjan Path, Subroto Park, New Delhi 110010
Tel: +91 11 25699130/32, Fax: +91 11 25682533

Editor: Dr Shalini Chawla e-mail: shaluchawla@yahoo.com
Formatting and Assistance: Ms Radhey Tambi, Ms Khyati Singh and Mr Rohit Singh