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Issue Brief

Integrated Rocket Force: A Timely Idea

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Summary

The recent successful test-firing of the Pralay surface-to-surface ballistic missile and its inclusion into the Defence Acquisition Council's (DAC) final list has given impetus to the likely creation of an Integrated Rocket Force (IRF). The force, when created, will fulfil two requirements: demonstrate India's non-contact war waging potential and create an effective instrument of deterrence by denial against China along the Line of Actual Control (LAC).

The Chief of the Army Staff, General Manoj Pande, in his latest press conference held on 12 January 2023, as part of the annual Army Day celebrations, commented that "though unpredictable, the situation at the northern borders is stable and under control".[1] The Army Chief was referring to the confrontational deployment of the Indian Army and the Chinese People's Liberation Army (PLA) along the LAC in Eastern Ladakh.

The challenge for India, along the 3400 kms LAC, is twofold: create options for deterrence by denial operations against the PLA, without invoking the use of heavier conventional forces and keep the conflict localised. The second is to have in reserve adequate long-range combat firepower which can be used for localised asymmetry.

An Integrated Rocket Force (IRF) serves both these purposes. The idea of IRF is timely since there is an increasing recognition within the Indian Armed Forces that the future of warfare will hinge on the effective utilisation of the tenets of non-contact warfare as part of shaping operations in any military campaign. For this, it is required that India, as stated by the late Gen Bipin Rawat while interacting with a select group of journalists in September 2021, operationalise a missile force.[2] The command and control of the force can initially be vested within a single service, i.e., the Indian Army, and later can be made rotational.

A rotation system will require common professional military education (PME) system, an analysis of which is beyond the purview of the current text. There are many reasons for this. First of all, there is a need to establish the rationale behind consolidating a long range vector force, on the lines of the Chinese PLA Rocket Force (PLA RF). The strikes in Uri and Balakot, and the actions at Kailash range, have reinforced the dictum that an operational space exists between two nuclear armed adversaries for waging warfare, that does not cross into the nuclear domain. Such operations have shown that the stability–instability paradox[3], as it obtains today in the dyads of India–Pakistan and India–China,[4] does not hold true. The so-called "window of opportunity" exists for accurate surgical strikes in a manner that strategic stability is maintained.

Missiles are one of the ways in which warfare can be waged by India against its adversaries, especially when it comes to shallow strikes against demonstrably military targets. The reasons are precision, speed of response, capability to evade detection with minimal loss to human lives. Compared with using manned aircraft, which if used, can be thought of as moving up the escalation ladder, missile strikes

[1] Rajat Pandit, **"PLA Numbers at LAC Up, Army Watching: General Manoj Pande"**, *The Times of India*, 13 January 2023.

[2] Rajat Pandit**, "India is Looking to Raise New 'Rocket Force' for Missiles, Says General Bipin Rawat"**, *The Times of India*, 16 September 2021.

[3] Sumit Ganguly, **"Indo-Pakistani Nuclear Issues and the Stability/Instability Paradox"**, *Studies in Conflict & Terrorism*, Vol. 18, No. 4, 1995, pp. 325–34.

[4] Abhay Kumar Singh, **"India–China Rivalry: Asymmetric No Longer—An Assessment of China's Evolving Perceptions of India"**, KW Publishers, New Delhi, 2021, p. 102.

due to their accuracy and effectiveness may be used to either convey a message or achieve ascendancy in a localised conflict.

One also has to look at the cost-effectiveness of a missile vis-à-vis a fighter jet. An Air Force jet is a system-of-systems platforms, incurring costs of pilot training, EW suites, missiles, radars and other associated technologies. The production of aircraft is laborious and time-consuming, with only limited numbers being rolled out annually. Also, every increase in the aircraft numbers also entails an exponential increase in the training costs and time of each additional pilot, increasing the marginal costs of training and administration manifold. Thus, in the same budget, more number of missiles can be produced and deployed.

Though unmanned aerial vehicles (UAVs) have been shown to provide some advantages in conflicts, their effective utilisation has been in the intelligence, surveillance, target acquisition and reconnaissance (ISTAR) domains.[5] There have also been studies that state that the usage of UAVs only complements the side with a battlefield advantage.[6] Drone swarms—supposed to be game-changers—are still in the experimental phase.[7]

There is also a question of indigenisation. India faces challenges with producing fighter aircrafts at scale. The LCA programme has just started getting off its feet in terms of production, with AMCA still at the conceptualisation stage. The key issue is lack of indigenous jet engine technology. On the other hand, India already has excellent expertise in producing both conventional and nuclear-tipped missiles. Agni, Prithvi, BrahMos, Nag, Pralay, Pradyumna, etc., are all examples of domestically made missiles in both the medium and long range category.

Pralay: Likely Point of Origin for IRF

The Pralay missile is a quasi-ballistic, surface-to-surface missile based on sub-systems from a host of already-tested DRDO missiles such as the exoatmospheric interceptor missile Prithvi Defence Vehicle (PDV) and the Prahaar tactical missile. The composite propellant comes from the Sagarika family of missiles being developed for the Indian Navy.[8] The range of Pralay is 150–500 km and its recent successful test launches and the induction of 120 missiles is likely to become the focal point for the creation of an Indian IRF. This is the only conventional tactical battlefield missile likely to be fielded by India, apart from the BrahMos supersonic cruise missile.

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[5] Can Kasapoğlu, **"Techno-Geopolitics and the Turkish Way of Drone Warfare"**, Atlantic Council in Turkey, March 2022.

[6] Antonio Calcara, Andrea Gilli, Mauro Gilli, Raffaele Marchetti and Ivan Zaccagnini, **"Why Drones Have Not Revolutionized War: The Enduring Hider-Finder Competition in Air Warfare"**, *International Security*, Vol. 46, No. 4, 1 April 2022, pp. 130–71.

[7] Isabel Coles, **"Ukraine Begins 2023 Under Attack From Russian Drone Swarm"**, *The Wall Street Journal*, 1 January 2023.

[8] Ajit Kumar Dubey, **"Indian Forces Acquiring 'Pralay' Ballistic Missile for Striking Targets at 150-500 km"**, *Asia News International (ANI)*, 20 December 2022.

The creation of a Rocket/Missile force by India as separate from the Strategic Forces Command (SFC) is required for creating conventional deterrence and exploiting the windows of opportunity at the tactical and operational levels. Pralay is likely to be one of the major pivots for the still-to-be-formed force, which can create retaliatory as well as pre-emptive options for the Indian Army against China and ensure that the threshold for nuclear warfighting is neither reached nor crossed.

The range of the missile (150–500 km) along with the amount of payload per missile (350–700 kgs) and capabilities, i.e., high explosive pre-formed fragmentation warhead, Penetration-Cum-Blast (PCB) and Runway Denial Penetration Submunition (RDPS)[9] ensure that the Army retains the flexibility to target hard targets such as bunkers, communication centres and runways at the operational ranges of up to 500 km, a distance which will yield maximum advantages due to the proximate deployment of the PLA in both Eastern Ladakh and Arunachal Pradesh.

The Pralay missile can also be thought of bridging the gap between the extreme ranges of the guns and rockets of the Indian artillery and conventional intercontinental ballistic missiles (ICBM) strikes. While the Artillery guns have a range between 20 and 50 km,[10] the rocket systems of the Indian Army have a maximum range of 90 km.[11] Pralay's operational range of 150–500 km will bring under threat significant PLA military infrastructure that was considered unreachable so far unless long range ballistic missiles were used. These had the disadvantage of belonging to the SFC which also has the mandate of preparing for nuclear warfighting operations. The Pralay missile, when deployed, can be seen to extend the range of the Indian Armed Forces' strike capability beyond the 90 km range mark, providing it with critical deterrent capabilities by bringing into range a number of Chinese garrisons, communication centres, surface-to-air missile (SAM) sites and other critical infrastructure, while doggedly remaining within the conventional warfighting paradigm. In fact, as per an analysis by a veteran Indian Army officer, the IRF can be organised on the lines of six sector-based rocket missile forces with one focusing on Pakistan, four on China and one kept in reserve.[12] The idea is to move beyond the traditional conceptualisation of artillery as supplementing infantry-predominant operations to a more central role with rockets and tactical missiles forming the vanguard of a new and potent Indian non-contact warfare capability. It is now important to see how a likely structure of IRF will emerge. The PLA RF's organisation, structure and objectives may serve as one of the templates.

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[9] Ibid.

[10] Rahul Singh, **"Indian Army Eyes Major Firepower Upgrade to Counter China"**, *Hindustan Times*, 27 September 2022.

[11] Debajit Sarkar, **"India's Rocket Artillery Force: Endeavour in Self-reliance"**, *Financial Express*, 12 October 2022.

[12] Major General Ashok Kumar (Retired), **"Rocket-Missile Force: An Inescapable Indian Necessity"**, *Chanakya Forum*, 10 September 2022.

Organisation and Deployment Posture of PLA RF Relevant to India

The PLA RF comprises nine bases which are either Corps or Corps Deputy Leader grade.[13] While Bases numbering 61 to 66 are meant for ballistic missile operations, Bases 67–69 are meant for support operations. While Base 67 is responsible for overseeing the nuclear stockpile, Base 68 is charged with engineering and physical infrastructure. Base 69, which is the latest, is concerned with personnel training and missile tests.

Out of the operational missile bases, most face eastwards and most missiles are against Taiwan, with longer range missiles threatening American military bases in Guam. Base 64, headquartered in the western Chinese city of Lanzhou covers North West and North Central China.[14] It consists of seven missile brigades, out of which at least four are road-mobile nuclear ICBM brigades, one a dual nuclear-conventional intermediate range ballistic missile (IRBM) brigade and two brigades of unknown missile type.[15]

The brigades are based at Korla, Xining, Yinchuan, Hancheng, Hanzhong and Tianshui. The missiles possibly include DF-26 IRBM (range 5000 km), DF-31 (range 7200–8000 km), DF-31 AG (likely range 11200 km), DF-41 (range 12000–13000 km) and some unknown missile types[16]—all can cover the entire frontage of the LAC against India.

All of PLA's land-based tactical and strategic ballistic missiles are controlled by PLA RF. For nuclear-tipped missiles, the command and control is directly from the Central Military Commission (CMC) (currently headed by Chinese President Xi Jinping) to the PLA RF Headquarters at Qinghe, Beijing to the Rocket Bases, Brigades and finally to the launching units. In case of conventional missiles, the Bases seem to have more autonomy. However, as per a Jamestown Foundation analysis, for conventional operations, most rocket bases are supposed to be subsumed under the respective theatre commands, precluding the need for a theatre rocket force.[17] All of PLA RF's short range ballistic missiles (SRBMs) and ground-launched cruise missiles (GLCMs) brigades are assumed to be under the direct control of the theatre commands,[18] increasing its combat firepower and also providing an opportunity for conducting joint operations.

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[13] Roderick Lee, **"Integrating the PLA Rocket Force into Conventional Theater Operations"**, *China Brief*, Vol. 20, Issue 14, 14 August 2020.

[14] Ma Xiu, **"PLA Rocket Force Organisation"**, China Aerospace Studies Institute, 24 October 2022.

[15] Ibid.

[16] Ibid.

[17] Roderick Lee, **"Integrating the PLA Rocket Force into Conventional Theater Operations"**, no. 20.

[18] Ibid.

Ideal Organisation of IRF

There are likely forms of command and control of an emerging IRF in the Indian context. The structure of PLA RF can be considered as one of the templates where all conventional and nuclear missile forces are concentrated into a separate service. Another model is that of individual services having their respective missile forces but this model may not be viable when theatre commands are created. The third model is the integration of the missile units within the theatre commands, with the rocket and missile forces clubbed together under a fourth component. Here, the operational command and control will reside with the respective service component to facilitate planning for joint operations within the theatre command.

Depending on the composition and tasks of the theatre commands, the respective platforms for launching the missiles may be decided. Personnel from the Corps of Artillery can initially form the core group for exercising initial command and control, operational training and exercises which will be made realistic and go a long way in inculcating long-range precision fires expertise within the remaining two services. Inclusion of state-of-the-art UAVs in the form of micro and mini drones can serve as force multipliers for ISTAR and post-strike damage assessment (PSDA). A similar use was made by the PLA during its exercises around the Taiwan strait.[19] Artificial intelligence (AI) and machine learning (ML) based command and control (C2) systems can be used for effectively matching targets to delivery platforms.

The Corps of Artillery, which currently handles most of India's missile and rockets systems in terms of deployment and training, is well-poised to act as the core group of the new IRF. It has extensive training experience and has done countless firing tests and deployment exercises with these systems for a long time. With cross-pollination of personnel from the SFC and steered by the Corps of Artillery, the IRF can become India's answer to extend its conventional deterrence posture beyond the conventional range of its artillery.

Apart from operational command and control, it is necessary that there is a clear segregation between launch platforms for rockets and missile forces. Within the fourth vertical, while all ground-based launchers can be manned by Army units, air launched vectors should be exclusively with the Indian Air Force (IAF) while coastal defence and submarine launched missiles will be with the Indian Navy. This will accomplish two things: leverage the operational competence of each Service and ensure optimisation of operational logistics. Issues such as storage capacities and maintenance, repair and overhaul (MRO) will be streamlined.

A clear segregation of assets between the IRF and SFC will also address the paranoia generated by certain security studies scholars regarding India's "counterforce

[19] Lieutenant Colonel Aita Moriki, **"Concerning the Possibility that the Chinese TB-001 Unmanned Aerial Vehicle Was Involved in Ballistic Missile Impacts"**, China Aerospace Studies Institute, 9 January 2023.

temptations".[20] India's stated policy is still of no-first-use (NFU) envisioning nuclear weapons as political instruments and has steadfastly remained so. To preclude any actor from misidentifying any conventional strikes as nuclear or 'bolt-out-of-the-blue',[21] it is critical that there is a marked and visible segregation of delivery platforms. The conventional theory of deterrence involves a judicious combination of the three Cs, i.e., capability, credibility and communication.[22]Communication involves signalling especially to the adversary. There should be no grey zone in distinguishing the missiles that are kept for conventional strikes from the nuclear-tipped ones. The creation of the SFC was essentially for operationalising India's 'massive retaliation' nuclear strategy. It is therefore essential that the commissioning of Pralay coincide with the creation of IRF separate from SFC, followed by shifting of the rocket assets into the IRF.

Conclusion

The Chinese threat along the LAC necessitates a paradigm change in the Indian defence posture. While a start has been made with the deployment of unmanned systems and advanced sensors, there exists the challenge of creating a deterrent threat with two aims: create a window of opportunity for undertaking kinetic actions without climbing the escalation ladder and therefore putting the onus of escalation on the other side; and creating an indigenous solution which can be scaled up rapidly without being limited to the foreign policy constraints of any country. The induction of Pralay may become the start of an Indian IRF which addresses both these aims.

[20] Vipin Narang and Christopher Clary, **"India's Counterforce Temptations: Strategic Dilemmas, Doctrine, and Capabilities"**, *International Security*, Vol. 43, No. 3, 1 February 2019, pp. 7–52.

[21] Frank Nuno and Vaughn Standley, **"Bolt Out of the Blue: Nuclear Attack Warning in the Era of Information and Cyber Warfare"**, *War on the Rocks*, 14 June 2018.

[22] Robert P. Haffa Jr, **"The Future of Conventional Deterrence: Strategies for Great Power Competition"**, *Strategic Studies Quarterly*, Vol. 12, No. 4, November 2018, pp. 94–115.

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