



INDIA'S MILITARY SPACE COMMAND: LESSONS FROM JAPAN'S PROPOSED MILITARY SPACE FORCE

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Resilience is an outstanding characteristic of the Japanese, profoundly manifest in its space programme which has experienced sporadic bouts of spectacular failures bringing it almost to the brink of collapse only to bounce back stronger and more resilient than ever before. Decisiveness is another remarkable attribute amply manifested in their military doctrines like the *Kantai Kessen* (decisive battle doctrine), the decisive interoperability doctrine as also in their reported political decisiveness.¹ The above attributes of the Japanese are reflected in their space programme, begun post WorldWar-2 by a people reeling under the degradation and humiliation of nuclear bombardment and military defeat. For a program begun under such trying circumstances, the Japanese space programme starting with a 200 grams 'Pencil Rocket' has come a long way in the past five decades and the Japanese are recognized as a formidable space power to be reckoned with not just in Asia but in the entire world. Until the previous millennium, it was a formidable civilian space power. The geopolitics of the new millennium is in the process of converting it into an equally formidable military space power. Ever since the Japanese pacifist

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agenda was revised to enable military space capabilities with the passage of the Basic Space Law in 2008 and revision of the Japanese Space Agency Jaxa's basic law in 2012, Japan's evolution into a formidable military space power continues. Thus, Japan's present decision to launch a space force by 2019² is but a natural progression of its revised agenda of containing insecurities of the new millennium with the technologies of the new millennium. The revision is remarkable. Equally remarkable is the comprehension of the issue, the decision and the apparent integration of air and space capabilities for Aerospace defence. The alacrity to perceive change and adapt is equally manifest. All of the above is in sharp contrast to India, which has been seeking similar capabilities for over three decades. Prudence hence demands a brief look at the Japanese model, to examine, emulate and obtain like capabilities to fulfil the demands of national security.

Drawing Lessons from Japan's Civil to Military Space Evolution

Following Japan's defeat in WW-2, the General Headquarters of the Allied Powers had banned

Japanese armaments completely. Additionally, a resolution adopted by the Diet on May 9, 1969 in the House of Representatives relating to the basic principles of development and use of space, approved a narrow definition of Japan's space development policy which prohibits the use of advanced space technology by the Japanese Defence Agency (JDA), thereby committing Japan to solely peaceful uses of outer space. However, the 1969 space resolution was altered by the then-Prime Minister (PM) Yasuhiro Nakasone to make it possible for Japan to use some space technologies for military purposes provided that the technology was commercially available.

Hence Japan could use its JCSAT and Super bird satellites, both run by private companies for the land and sea forces to communicate with each other.³

The above, however, was perceived to be inadequate by the Japanese in view of North Korean belligerence as well as Chinese military advances and hence by 1994 Japan began a serious reconsideration of its long held policy prohibiting the use of space for military purposes. Finally, on August 31, 1998, N. Korea ignited the simmering tensions, fears and concerns of Japan by launching a "Taepo-Dong" missile across Northern Japan. The first part of the missile fell into the Japan Sea and the second part (and probably third part) flew across the Japanese territory of Honshu and fell into the Pacific Ocean. By November 6, 1998, the cabinet decided to develop and launch four Information Gathering Satellites (IGS) with reconnaissance capabilities by 2002, citing security concerns over N. Korea's rocket launch.

By early 2000, Japanese impatience with its pacifist manifesto had reached a crescendo and a House of Representative research commission was established in January 2000 to revise its 'peace constitution' that occupying US forces had drafted nearly half a century ago. Revising or abolishing the war-renouncing Article 9 of the constitution to enable the armed forces to execute the right to collective self-defence was the core issue of the commission's 700-page report that was submitted to the parliament in 2002.⁴ The above had significant implications on overall Japanese policy and by September 2003,

press reports indicated that Japanese officials wanted to have both of their big military space projects- a satellite imaging system and a multi-tiered missile defence system, fully operational by the next two to three years in addition to a GPS augmentation system that could be used for military communications and, if required, missile targeting, by the end of the decade.⁵ The constitutional and legislative revisions were made and the military space capabilities sought were provided well before the end of the next decade. The usual attributes of resilience and decisiveness were amply manifest.

Vociferousness, unlike in the Indian case, was typically absent. What, instead is manifest is capabilities spanning almost the entire spectrum of military space force enhancement missions like satellite navigation, satellite communication, satellite observation etc. Following the above mission, the rudimentary building blocks of a defensive counter space capability are now being put in place.

The Japanese Space Surveillance Model

With the amendment of the Japanese basic space law in 2008, military use of space is no longer taboo in Japan. At the same time, offensive uses of space continue to be frowned upon. Thus, while ASATs and other offensive weaponry may not be on the anvil, defensive Counter Space capabilities aimed at protecting Japan's assets in space are getting increasingly visible. Protection of satellites entails not only mitigation against debris but also protection from man-made threats like hostile missiles and satellites.⁶ Protection demands the ability to be comprehensively aware of the situation in the entire vertical dimension of air and space. This ability is provided by a Space Situational Awareness (SSA) system.

Space Situational Awareness (SSA) is the prime component of any defensive or offensive counter space capability. The ability to observe, track and predict position of space objects with some level of certainty is the most elementary capability to identify, categorise and mitigate Aerospace threats. SSA capabilities are typically dual use and enable protection against natural threats like debris, asteroids and also man-made threats like ASATs, Ballistic Missiles etc. Across the world,

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SSA capabilities are an amalgam of conventional Air Surveillance sensors and space surveillance sensors. Thus, the SSA system is nothing more than a mix of radars surveilling the air space complemented by special telescopes and radars surveilling outer space.

The Japanese SSA model is no different conceptually from other models across the world. Existing national air force capabilities are extended further upwards. The standard Air Defence radars are employed and complemented by specialist radars and telescopes for space surveillance. The same personnel employed on routine air surveillance missions are employed for space surveillance and the operational procedures in either case have little difference. The pressures of defending against threats from air and space are obviously well comprehended by the Japanese and hence instead of vacillating on organisational issues as in case of India, the Japanese Government has straightaway handed over the mission of SSA to the Japanese Air Force or Japanese Air Self Defence Force (JASDF) since it believes space defence is an extension of JASDF's Air Defence function. Consequently, the JASDF which is solely responsible for Air defence and is equipped with the Command and Control of the Japanese Aerospace Defence Ground System (JADGE) has now been directed to evolve further to comprehensively

defend against threats from the entire vertical dimension of Aerospace. Conceptually, as in case of the IAF, and perhaps most air forces across the world, the present JASDF system comprises of ground Air Defence radars like the J/FPS-5, which is used for air and ballistic missile defence. A total of four J/FPS-5s are located in Japan as of 2013. These radars are originally developed to fulfil the primary Air Defence role of detecting, identifying air threats and possess some incidental capability of detecting ballistic missiles that come from outer space. These form the base structure of the Japanese Space Surveillance System.

The IAF has a much more formidable mix of ground and airborne radar systems unlike the archaic Japanese system. However, the IAF is constrained to Air Surveillance and is yet to make the transition to aerospace surveillance in any manner. There exists no sensor enabling space surveillance though the number of satellites enabling military and civil services to India keep rising. By any yardstick, the number of Indian assets in space exceeds those of Japan. The number of adversaries also far exceeds those of Japan.

On this base structure are its space sensors. These are primarily two facilities providing SSA data: the *Bisei* Spaceguard Center, which operates optical telescopes capable of tracking geostationary orbiting objects as small as 1 meter in diameter; and the *Kamisaibara* Spaceguard Center, an S-band radar. The radar has a battery of phased array antennas which coordinate to scan the low earth orbit region to a distance of approximately 1000 kilometres. Thus, the system affords a rudimentary awareness of the situation in both Geostationary Earth Orbit (GEO) and Low Earth Orbit (LEO). The above are augmented by inputs from the US's Space Situational Network (SSN) system.⁷

As of now, the above complement of four Air Defence radars for air surveillance, optical telescopes for surveillance of upper atmosphere and low earth orbit and a radar for surveillance of geostationary earth orbit provide a rudimentary capability for aerospace surveillance and consequently aerospace defence. It would be safe to infer that incremental progressions on the above system would continue. Consequently, the proposed move 'to launch a military space force by 2019 that would initially be tasked with protecting satellites from dangerous debris orbiting the Earth', may be seen as nothing more than an organizational construct aimed at facilitating operational progress. This is

especially so since the Japanese now allude to space as the "fourth battlefield"⁸. More radars and telescopes would be progressively acquired and piled upon existing conventional air defence radars. The challenges of seamless integration and operations would demand a ready force of suitable personnel, organisation, infrastructure etc and hence the need for the proposed military space force. The above conjecture is further validated by the report that the Japanese defence ministry is looking at creating a new force using personnel from its JASDF.

By contrast, in operational terms, the IAF has a much more formidable mix of ground and

airborne radar systems unlike the archaic Japanese system. However, the IAF is constrained to Air Surveillance and is yet to make the transition to aerospace surveillance in any manner. There exists no sensor enabling space surveillance though the number of satellites enabling military and civil services to India keep rising. By any yardstick, the number of Indian assets in space exceeds those of Japan. The number of adversaries also far exceeds those of Japan. The Japanese attempt to leapfrog the entire span from air to space by employing ground and space surveillance sensors and existing personnel. At present, their system is rudimentary and there would be gaps in the system. However, a system is in place. In our case, no system is in place. The Japanese model shows the way and there would be little to lose in considering an emulation of the same.

Notes

¹ A variety of reports exist on political decisiveness, for the above context, see Jacob M Schlesinger, "Trading Places: Decisive Japan, Dysfunctional US", *Japan Real Time*, 01 Oct 2013.

² Ref AFP, "Japan to Launch Military Space Force: Report", *AFP News*, 04 Aug 2014.

³ Paul Kallender, "Japan seeks dual-use space technology ok", *Defense news*, July 19, 2004.

⁴ Interim report on the constitution of Japan available at

⁵ Paul Kallender, "Japan aims for operational military space systems by 2006", *Space news*, September 02, 2003.

⁶ For details, see Yasuo Otani, "Dual Use System Architecture for SSA using Design Structure Matrix" at cesun.2014.com.

⁷ Warren Ferster, "US, Japan Sign Pact on Space Situational Awareness", *Space News*, 12 Mar 2013.

⁸ Quoting Kyodo News Agency in AFP, "Japan to Launch Military Space Force: Report", *AFP News*, 04 Aug 2014



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