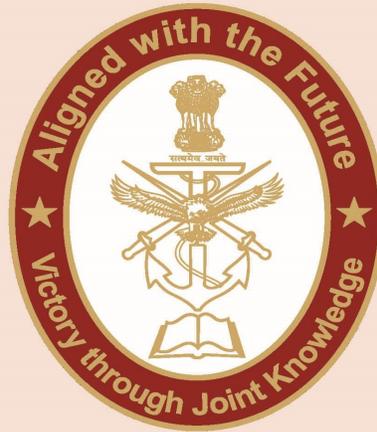


CENTRE FOR JOINT WARFARE STUDIES



CENJOWS

MISSION SHAKTI AND ITS IMPLICATIONS

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The space has become a key to accomplish success in the modern warfare. The satellites besides being the eye in the space, assist in navigation and targeting by the forces during wars and conflicts since their potential was realized by the militaries during their use by the Americans in the first Iraq war. Since then, the militaries in all domains seek to increase their efficiency and fighting capacity with support from the satellites. Satellites have considerably reduced the (observe–orient–decide–act), OODA loop by providing adversaries Order of Battle (ORBAT) and subsequent changes in it in almost real time along with coordinated use of the unmanned vehicles. The net centrality so brought in by the satellites and communication and other emerging technologies, in their wake has ushered an environment of efficient command and control of the battle. Apart from military, space has become equally indispensable in all walks of the civil life. The dependence has thus increased on the space assets.

Till recently dedicated military satellites was a taboo. This has changed in Aug 2013 with launch of GSAT-7 or INSAT-4F, which is a multi-band military communications satellite developed by ISRO for the Indian Navy. Similar

Communication satellite was launched for the Indian Air Force in Dec 2018. Launch of dedicated satellite for the army is also on the anvil.

Earlier in absence of dedicated military satellite forces made dual use of the civil satellite for some necessary data needed by them. The dependence satellite has also created a sort of vulnerability. To exploit that, adversary could develop a variety of means to exploit perceived reliance on space-based systems. Their sudden loss can impose great limitations both in military and civil. In armed forces, not only we need to develop options to work without satellite inputs but, also develop capability to deter adversary from hitting our satellite or incapacitate them through soft kill etc. Till recently, only US, Russia and China had the anti satellite capability through Kinetic kill as well as soft kill methods but, India's anti satellite test of 27 Mar 2019 christened as "Shakti" has brought us too in this exclusive club. We always vouched for peaceful use of space, despite the test, we remain committed to this idea. At the same time, by conducting this test India has not violated any space laws which prohibit the weaponisation of the space with weapons of mass destruction.

Mission Shakti: Its Implications. In A Sat test, Indian Defence Research Development Organisation (DRDO) destroyed one of the country's own satellites in low Earth orbit at approx 300km. The reason for carrying out this test at low height orbit was two folds Firstly, to showcase our capability to the potential adversaries, Secondly, we also do not want to litter the space environment with the resultant space debris more than necessary which in this case would decay in matter of weeks. On the contrary, Chinese A- Sat test of year 2007 which was conducted at 800 km, left tens of thousands of orbiting debris which will take decades to burn and clear the space. Apart from some A sat tests the most of the space junk is as a result of space launches which is made up of the items such as rocket stages, loose fragments from rocket explosion, nuts, bolts paint flakes etc As on Jan 2019 a total of 34000 pieces of debris larger than 10 cm are being tracked by US state department along with NASA. Our Test has added a debris roughly by 400 in the lower most earth orbits hence, is insignificant and would decay and burn out very fast.

The purpose of the Anti-satellite test is for deterrence alone, rather than treat it as a primary attack vector. The idea is basically to send a message to other space-faring nations: "If you destroy our space assets, we'll destroy yours." This is something like nuclear deterrence.

The conduct of this test does not mean that we have the real capability to detect, localise and hit at the satellites. To perform in this manner, we require the space surveillance capability which is presently available only with the United States and Russia. China is also moving forward and is known to have deployed one space surveillance radar. Mind you, during day to day operations, we get warning of debris in the path of our satellites, from United States which maintains a catalog of known orbital objects, using ground-based radar and telescopes, and a space-based telescope. This capability we also need to develop.

Secondly, the capability as per DRDO is possible up to the height of 1000 km meaning thereby that satellites only in the low earth orbit could be targeted. This band is highly congested wherein most military satellites and earth observation remotes sensing satellites operate. Satellites at higher orbits even at Low earth orbit above 1000 km and Medium Earth Orbit (MEO) and Geostationary Earth Orbit (GEO) which are at 36000km height stay out of the range. US, Russia and probably China, have the capability to target at higher altitude. China in May 2013 carried out high altitude missile flight without any payload for insertion in the orbit. The missile was tracked till 10000 km, its purpose was hidden but, it could be a test to hit satellites at higher orbits. Apart from the Kinetic kill, countries are developing the terrestrial laser capability to shoot down satellites. US DIA estimates that Chinese could be ready to disable US satellites in low earth orbit by next year and may be able to hit satellites at Geo stationary orbit by mid 2020. Hence, while we may say that we are not in the space arms race it would not be possible to ignore such developments, if we are to deter any such misadventures against us ¹

Thirdly, to operationalise the capability, apart from the satellite surveillance system for better space situational awareness (the adversary's satellite locations and identification and other satellites in the vicinity), we need to develop the doctrine, command and control structure and infrastructure, to take the considered decisions.

In all probability, the satellite kinetic kill system may never be used due to the issue of debris as well as its likely chain reaction from the adversary therefore; more workable option is of soft kill which may prove more useful. In this, unobtrusive monitoring of the adversary's satellite data, jamming the targeted satellite data, and hacking control are other viable options.

¹ <https://www.defenseone.com/technology/2019/02/china-russia-building-attack-satellites-and-space-lasers-pentagon-report/154819/>

Finally, the Shakti has been the spinoff from the ballistic missile capability. Should this capability instead of being independent be dub tailed with BMD with common infrastructure to tackle both threats?

We recognise every country's right to common spaces such as sea, Antarctica/ Arctic regions and the outer space. But, despite this being foundation of a outer space laws, all may not believe in this idea and may resort to destructive actions against our satellites. It is to deter such forces that India needed to carry out this test. We may weaponise and keep it for the contingency which we hope will never emerge.

Disclaimer:- Views expressed are of the author and do not necessarily reflect the views of CENJOWS.