



Growing Chorus for an ASAT Test Ban Treaty

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Testing of Anti-Satellite Weapons (ASAT) in outer space has become a menace in recent years. The after effects are irreversible – the most profound effect being that of thousands of debris pieces created due to the impact of explosion. In a new initiative, the Outer Space Institute based at Canada, has initiated an international open letter to urge the United Nations General Assembly (UNGA) to consider introduction of a ‘*kinetic ASAT test ban treaty*’. The necessity for such a treaty is driven by the rapid growth in number of satellites in orbit and the growing threat scenario in outer space.¹ Debris from these tests often ends up in useful orbits posing a threat to orbital assets of multiple nations. There are chances that even a single debris from such a test may collide with a satellite and cause a fragmentation event, which could lead to additional events - like further fragmentations, satellite failures, or service disruptions - affecting all states².

There is a growing support from the global space community on favoring a zero tolerance on any debris creating anthropogenic events. Russian Foreign Minister Sergey Lavrov, called for talks on a legally binding treaty to prohibit weapons in space in a statement on April 12, 2021, a day the world marks the International Day of Human Space Flight³. UNGA in December 2020 adopted its Resolution 75/36 on ‘Reducing space threats through norms, rules and principles of responsible behaviour’. This resolution also seeks the views of member states on reducing space threats which was to be submitted as a report to the UNGA at its seventy-sixth session which commenced on September 14, 2021⁴. In responses submitted by member states, Russia has suggested an embargo on ASAT testing through a ban on weapon systems designed to destroy objects in outer space. China too espouses the same views. It may be recalled that China and Russia jointly submitted to the Conference of Disarmament (CD) a draft treaty on the Prevention of the Placement of Weapons in Outer Space (PPWT) in 2008 and its updated text in 2014, which could have provided a good basis for negotiations. The PPWT, however, could not gather a consensus amongst member states. On the other hand, United States opined that kinetic ASAT tests could be viewed as a category of conduct in space

that could be addressed during deliberations and implementation of universal guidelines evolved following UNGA Resolution 75/36, thus being non-committal and leaving a scope for further deliberations. In responses received from about 40 member states and organisations, there is a strong acceptance for placing binding restrictions on kinetic ASAT tests. India too has given a categorical reply stating that – “India’s focus is on the use of space for ‘welfare’ and not for ‘warfare’. India is opposed to the weaponisation of outer space and India has not and will not, resort to arms race in outer space.”⁵ India too favours a treaty within the multilateral framework of the UN which includes transparency, sustainability and equity of member states.

Efforts in maintaining a safe access to earth orbit date back to the incorporation of the ‘Outer Space Treaty’ of 1967 – a framework treaty for outer space utilisation - which prohibits placing nuclear weapons or weapons of mass destruction in orbit⁶. However, a major flaw of the treaty which has gained prominence is the silence on the use of other forms of weapons in outer space. Incidentally, the treaty banning nuclear weapon tests in the atmosphere, in outer space and under water was incorporated in 1963⁷. The Conference of Disarmament under UN General Assembly has been deliberating the issue to prevent weaponisation of space since many years. A Group of Government Experts (GGE) was appointed by the UN secretary general in 2011 to examine and report on methods for improving stability and sustainability in space. The Transparency and Confidence Building Measures (TCBM) recommended by the GGE in 2013 gathered widespread global support, however, they could not achieve the desired objectives as the recommended mechanisms were voluntary in nature and suggested guidelines were non-binding.⁸

The experiences of exploring space governance mechanisms and treaties to achieve stability and sustainability in outer space have clearly been ineffective. The UN along with its representatives like the CD and Committee on Peaceful Uses of Outer Space (COPUOS) need to strategise on implementing a rule based order in outer space. The need of the hour is hence, to gather consensus on evolving a treaty which is binding and punitive in nature. Transparency in space activity will necessarily be the bedrock of any such treaty.

Earth orbits are becoming congested at an unimaginable pace. The number of satellites in orbit is about 7520 of which about 4600 are active satellites⁹. Surprisingly, there were only 1033 active satellites a decade ago in 2011¹⁰ and there is a projected addition of as many as 100,000 active satellites within the next ten years¹¹. The numbers of catalogued and tracked space debris objects has also risen to around 29240 from around 25000 five years ago. The recorded events of break-ups, explosions, collisions, or anomalous events resulting in fragmentation are estimated to be more than

570.¹² These figures are alarming. This rapid exponential growth in satellites and debris is worrisome as it would not only be crowding Earth orbits in an irreversible manner, but would create an imminent threat of collisions resulting in an ever increasing count of debris due to the Kessler's syndrome. The debris caused by Kinetic ASAT tests would only worsen the outer space environment to a point which would make space unusable by future generations. The environmental impact on the Earth's atmosphere would be worse. Thus, a ban treaty for kinetic ASATs should be put in place without any further delay.

An option available to every space capable nation was to conduct Kinetic ASAT tests at lower altitudes which could limit the orbital life of debris. Thus, imposing a limiting altitude restriction of Kinetic ASAT tests can also be considered. However, this has not found much favour amongst the space community. The argument against such a restriction is that debris may eventually get kicked up to higher orbits, even as high as 1000 km as the projectiles velocity, energy and impact angles cannot be accurately determined in a random target situation in a hostile environment.¹³

India's kinetic ASAT test in March 2019, named 'Mission Shakti' was conducted at a low altitude of 282 km, with due diligence to prevent stagnant debris, unlike the Chinese ASAT test of 2007, which produced a debris field of some 3,000 objects at an altitude of 865 kilometers which still remain in orbit. Despite the deliberate low altitude and efforts to minimise debris, there are still chances that some debris would have reached higher altitudes, due to the high impact velocity and impact angles.¹⁴ Whether the Indian ASAT test achieved its objectives or not is debatable. However, the ability to replicate a similar feat in a hostile environment against an adversary's satellite is doubtful, owing to the deficiencies in India's Space Situational Awareness infrastructure.

Recent developments in soft weapons technology like Directed Energy Weapons, Radio Frequency Interference and intrusions in the Cyberspace have shown similar results as the kinetic ASAT, with the added benefits of denying attributability, lower costs, and most importantly, preventing a debris trail in space. Moreover, in this age of satellite constellations, destroying a single or a few satellites by kinetic ASATs would serve no useful purpose, as redundancy is inbuilt in a constellation, and the smaller satellites used can be replaced with responsive launch capabilities. Hence, Kinetic ASATs are beginning to see the end and should be phased out. They serve no purpose beyond deterrence. The stage is not far for kinetic ASAT weapons becoming unusable.

Misadventures in space are clearly a thing of the past. New regulations have to be put in place for a safe and sustainable use of space. The current growth rate of space traffic demands a change in the way we access space. Creating additional debris intentionally by kinetic ASATs is ill afforded in the

prevailing scenario. It is time for the UNGA to ban the kinetic testing of ASAT weapons, lest we live with the consequences of not doing so.

Notes

- ¹ “Kinetic ASAT Test Ban Treaty”, an open letter by OSI dated September 02, 2021 at http://outerspaceinstitute.ca/docs/OSI_International_Open_Letter_ASATs_PUBLIC.pdf, accessed on September 5, 2021.
- ² “Anti-satellite weapons must be banned before they cause ‘major fragmentation event’, astronauts and space agencies warn” at <https://www.independent.co.uk/space/anti-satellite-weapons-astronauts-fragmentation-space-debris-b1911915.html>, accessed on September 05, 2021
- ³ Web article at https://www.spacewar.com/reports/Russia_Calls_for_Talks_on_Binding_Treaty_to_Prohibit_Weapons_in_Space_Lavrov_99.html, accessed on April 16, 2021.
- ⁴ UN General Assembly Resolution 75/36 dated December 07, 2020, at <https://undocs.org/en/A/RES/75/36> accessed on September 06, 2021.
- ⁵ India’s reply to “Resolution 75/36: Reducing space threats through norms, rules and principles of responsible behaviors”, at <https://front.un-arm.org/wp-content/uploads/2021/04/India-Submission-on-Resolution-75-36-.pdf>.
- ⁶ “Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies”, at <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html>, accessed on September 05, 2021.
- ⁷ UN Treaties at <https://treaties.un.org/pages/showDetails.aspx?objid=08000002801313d9>, accessed on September 05, 2021.
- ⁸ Christopher Johnson, SWF report on ‘The UN Group of Governmental Experts on Space TCBMs’, available at https://swfound.org/media/109311/swf_gge_on_space_tcbms_fact_sheet_april_2014.pdf, accessed on September 12, 2021.
- ⁹ The latest figures related to space debris, provided by ESA's Space Debris Office at ESOC, Darmstadt, Germany., at https://www.esa.int/Safety_Security/Space_Debris/Space_debris_by_the_numbers, accessed on September 15, 2021.
- ¹⁰ “Number of active satellites from 1957 to 2020”, at <https://www.statista.com/statistics/897719/number-of-active-satellites-by-year/>, accessed on September 15, 2021.
- ¹¹ Ibid, n-1
- ¹² Ibid , n-9
- ¹³ Ashley J Tellis “ India’s ASAT Test: An Incomplete Success”, at <https://carnegieendowment.org/2019/04/15/india-s-asat-test-incomplete-success-pub-78884>, accessed on September 14, 2021.
- ¹⁴ Ibid n-13