

India

Agenda item - 8

Space Debris

Mr. Chairman and Distinguished Delegates,

With the rapid growth and diversification of activities in outer space, it is vital for all space actors to be aware of the threat posed by space debris to safe, sustainable operations and unhindered access to space, and take appropriate measures for its mitigation.

Mr. Chairman,

As a responsible space faring nation, India recognises the importance of long-term sustainability of outer space and takes up all relevant studies, analysis and activities towards sustainable and meaningful use of outer space. India implements the mitigation guidelines recommended by the UN and Inter-Agency Space Debris Coordination Committee (IADC) to the maximum extent feasible and practicable to safeguard Indian space assets.

In conformance to the widely adopted mitigation practices for preventing accidental explosions, the upper stages of all Indian satellite launch vehicles are passivated after payload injection to minimize the risk of any possible explosion that may create space debris. Such passivation was carried out for the upper stages of the recently launched PSLV C51 and GSLV F10.

COLLision Avoidance (COLA) assessments are carried out by Indian Space Research Organisation (ISRO) to ensure safe, collision-free lift-off times within the designated launch windows for all its missions. The satellite separation sequences are designed to avoid any risk of collision amongst the separated payloads after the injection. ISRO also regularly performs Space Object Proximity Analysis (SOPA) for all its operational spacecraft to mitigate any close approach risk with catalogued space objects. Coordination with other external agencies is carried out for the exchange of relevant information to improve the accuracy of close approach analysis. In the year 2021, 14 collision avoidance manoeuvres for LEO and 5 collision avoidance manoeuvres for GEO satellites were carried out.

Recently, at its end-of-life, INSAT-4B has been successfully re-orbited to a super synchronous graveyard orbit and passivated in perfect compliance with UN and IADC guidelines. In order to comply with the post mission disposal guidelines for LEO objects, Cartosat-2 was de-orbited through a series of manoeuvres at its end-of-life to reduce its post-mission lifetime; the left-over fuel was also depleted to minimise any future accidental

explosion risk. As a result, the post mission orbital lifetime of Cartosat-2, otherwise expected to be more than 30 years, has been now reduced to less than 5 years.

Mr. Chairman,

India strives to enhance her existing capability of space debris monitoring through the establishment of dedicated observational facilities and to evolve more efficient mechanisms for continual processing and analysis of the orbital debris environment.

With NEtwork for space object TRacking and Analysis or NETRA project, India has taken initiatives to establish necessary SSA infrastructure. In order to synergise space debris studies and mitigation efforts across the country under a centralised mechanism, an SSA control centre has been established, where research and development related to space debris are being pursued to suitably support the aforementioned activities.

ISRO regularly participates in the annual Inter-Agency Space Debris Coordination Committee (IADC) meetings and has also been actively involved in activities of the IAA Space Debris Working Group, the IAF Space Traffic Management Technical Committee and ISO Working Group 7. ISRO participated in the annual re-entry prediction campaign of IADC and the special re-entry campaign during May 2021 and provided re-entry predictions using its in-house developed tools.

Mr. Chairman,

The proliferation of large constellations, many of them consisting of tens of thousands of satellites in the lower earth orbit, and the consequent congestion is likely to increase space object population by many folds and would pose additional challenges for spaceflight safety. A few non-operational satellites from such constellations are likely to remain in orbit due to on-orbit failures. The sheer size of these constellations suggests that the number of such non-operational satellites would be non-trivial, creating additional risk for collision. Any such event may irreversibly exacerbate the space debris situation. India urges this esteemed body to deliberate on the potential adverse impact of these constellations on the present and future debris environment.

Mr. Chairman,

India recognises the importance of technical collaboration in the context of the global nature of space debris problem and encourages relevant data sharing and exchange amongst international space agencies and entities for effective monitoring and mitigation of the space debris environment. India is currently in the process of formally adopting an SSA policy addressing long-term sustainability of outer space which is to be abided by all Indian space actors.

Thank you Mr. Chairman and distinguished Delegates.