

Space Debris

Madam Chair and Distinguished Delegates,

India recognises space debris as one of the most serious threats to safe and sustainable operations in outer space and gives utmost importance on addressing space debris mitigation requirements while conducting space-based activities. Currently, space debris mitigation guidelines recommended by UN-COPOUS and the Inter-Agency Space Debris Coordination Committee (IADC) are followed while dedicated efforts are pursued to continually improve compliance. It is well recognised that at present, the key to curbing the growth of space debris lays in self-governance and voluntary adoption of space debris mitigation practices.

Madam Chair,

ISRO System for Safe and Sustainable Space Operations Management (IS⁴OM) synergizes efforts within India to cope with space debris threats and regularly carries out activities like close approach risk assessment for space missions and atmospheric re-entry analyses. For all the Indian launches, COLLision Avoidance (COLA) assessments are performed to ensure safe, collision-free lift-off times within the designated launch windows. For our recent PSLV-C60/SPADEX mission, the lift-off was delayed by 2 min 15 seconds to avoid potential close approaches with the resident space objects during the orbital phase of the injected spacecraft. Since the beginning of 2024, 12 collision avoidance manoeuvres were performed for Indian Earth-orbiting spacecraft for avoiding probable close approaches by resident space objects.

Madam Chair,

India regularly submits information on Indian space objects, including those re-entering the atmosphere or undergoing significant orbital relocation, to the UN as per Registration Convention.

To minimise accidental break-up potential, all upper stages of recently launched missions, namely PSLV-C58, GSLV-F14, SSLV-D3, PSLV-C59, PSLV C60, were passivated by venting excess fuel. Focussed activities have been initiated for post mission disposal of Low Earth Objects. Cartosat-2 satellite, which was de-orbited to a lower orbit by 2021, re-entered the atmosphere on February 14, 2024. At its mission end, Scatsat-1 was de-orbited to a lower orbit expending all left-over fuel and decommissioned. The upper stages of PSLV-C58 and PSLV-C60 missions were de-orbited to an altitude of 350 km, ensuring their atmospheric re-entry within a few months. For the rest of the Indian launches in 2024, namely GSLV-F14, PSLV-C59, SSLV-D3, the upper stages will undergo natural orbital decay and would re-enter the atmosphere within 10 years.

The Multi-Object Tracking Radar (MOTR) facility in Sriharikota has commenced tracking of Low Earth Space Objects regularly and efforts are underway to improve its

accuracy. NETRA (Network for Space Object Tracking and Analysis) is also under progress to further strengthen space debris observational capabilities.

Madam Chair,

India hosted the 42nd IADC annual meet at Bengaluru, during 16-19 April 2024, where nearly 100 delegates participated and deliberated over a wide range of topics on space debris observation, modelling, and mitigation. During this meet, India declared its intent for Debris Free Space Mission (DFSMS) by 2030, by undertaking necessary measures during design, operation, and disposal phase of space missions and aligns with the ongoing global efforts for curtailing debris population.

Apart from IADC, India actively participates in space debris related deliberations in international fora, such as IAA Space Debris Working Group, the IAF Space Traffic Management Technical Committee and the ISO Working Group 7.

Madam Chair,

India has initiated many studies related to space debris modelling, cis-lunar Space Situational Awareness, impact analysis of large constellations and beyond Earth Orbit collision avoidance tools.

Thank you, Madam Chair and distinguished Delegates.