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Committee on the Peaceful Uses of Outer Space
Scientific and Technical Subcommittee
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Agenda item 9
Space debris

Proposal for consideration of matters related to space debris by the Scientific and Technical Subcommittee

Working paper submitted by the United States of America

1. At its thirty-sixth session, in February 1999, the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space adopted the technical report on space debris (A/AC.105/707).[1] The report was the culmination of a multi-year work plan that the Subcommittee had adopted in 1995. The Subcommittee agreed that the adoption of the report was an important achievement and recommended that the item entitled "Space debris" be retained as a priority item on the agenda for its thirty-seventh session (A/AC.105/719, paras. 35 and 36).

2. Also at its thirty-sixth session, the Subcommittee considered a working paper (A/AC.105/C.1/L.227) entitled "Proposal on revising the agenda of the Scientific and Technical Subcommittee following the convening of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space". The Proposal contained a list of items suggested for inclusion in the draft provisional agenda of the Subcommittee at its thirty-seventh and thirty-eighth sessions. According to the proposal, the draft provisional agenda for each of those session would include, under "Other matters/Single issues", an item entitled "Space debris (specific subject to be agreed upon)".

3. The specific subject for the thirty-seventh session of the Subcommittee is a review of the international application of International Telecommunication Union standards and recommendations of the Inter-Agency Space Debris Coordination Committee concerning the disposal of satellites in the geostationary orbit at the end of their useful life.

4. It is now appropriate for the Subcommittee to decide what subject will be addressed at its thirty-eighth session. Launch vehicle orbital debris mitigation practices would be a suitable subject.

5. The explosion of upper stages of launch vehicles is the main source of debris in the 1-10 cm size regime in low Earth orbit. Most such explosions have occurred after successful completion of satellite delivery missions and appear in most cases to be related to the presence of residual propellants or high-pressure fluids. Of the 56 known on-orbit explosions that occurred during the 1990s, a total of 41 (73 per cent) involved upper stages or related components. All but three of those break-ups occurred after payload deployment operations. To address this issue, passivation measures were introduced on some launch vehicles as early as in the 1960s. Those measures have been extremely effective in reducing the growth of orbital debris. The increased use of passivation measures over the past several decades has had a proportional positive effect on the space environment. All launch operators should consider adopting such measures.

6. To a lesser extent, the release of mission-related debris (e.g. fragments of explosive bolts, lanyards and yo-yos) during staging and satellite separation have also contributed to the current orbital debris population. Many launch vehicle designers have minimized these debris sources and should continue to do so. Those who are not already minimizing these sources should consider adopting practices to reduce debris from them.

7. This topic could be a valuable subject of discussion at the thirty-eighth session of the Subcommittee, in February 2001. This will be in addition to providing States with an opportunity to inform the Subcommittee of their independent work on space debris.

Notes

[1]The technical report was subsequently issued as a United Nations publication (Sales No. E.99.I.17).