# UNITED STATES OF AMERICA

**DRAFT PRELIMINARY VIEW FOR THE WORK OF THE CONFERENCE**

**Agenda Item 1.7***:**to study the spectrum needs for telemetry, tracking and command (TT&C) in the space operation service for non-geostationary (NGSO) satellites with short duration missions, to assess the suitability of existing allocations to the space operation service and, if necessary, to consider new allocations, in accordance with Resolution* ***659 (WRC-15)***

**BACKGROUND**:

The term “short duration mission” used in Resolution **659 (WRC-15)** refers to a mission having a limited period of validity of typically not more than 3 years, where the operator does not launch replenishment or replacement spacecraft. SD missions might provide a useful alternative means for satisfying some scientific and commercial space requirements purposes. Thus, the objective of WRC-19 Agenda Item 1.7 is to better quantify the spectrum requirements for NGSO satellites with short duration (SD) missions, and to determine what if any suitable revisions to the Radio Regulations may be needed to adequately accommodate these types of satellite missions.

WRC-19 Agenda Item 1.7 invites studies to accommodate spectrum requirements for TT&C in the space operation service, below 1 GHz, for NGSO satellites with short duration missions (SD-NGSO) in existing bands not subject to No. **9.21**. The lead group for the conduct of the studies is ITU-R WP-7B. Thus far, studies have concluded that the Space Operations Service (SOS) applications are not able to co-exist with current usage. Consequently, the study efforts have shifted to considering the feasibility of possible new spectrum allocation(s) or an upgrade of an existing allocations within the frequency ranges 150.05-174 MHz and 400.15-420 MHz (e.g., so that RR No. **9.21** does not apply).

Compatibility studies have shown that current technical and operational characteristics of SD-NGSO may not protect global maritime distress and safety service (GMDSS) frequencies for space, coast, ship and aircraft station frequencies between 156-163 MHz, nor frequencies used for the safety of life COSPAS/SARSAT system in the band 406-406.1 MHz. One Administration has suggested that studies should consider using existing SOS allocations in the 137-138 MHz and 148-149.9 MHz bands for SD-NGSO, however no studies considered to date by ITU-R WP-7B have assessed the compatibility of that concept with aeronautical mobile (R) service systems operating in adjacent allocated spectrum which is used heavily worldwide for all aspects of air traffic control in all airspace.

Considering the impact to safety services, no regulatory method has been considered for possible solutions to remove RR No. **9.21** for existing space operation service Earth-to-space ground stations to ensure incumbent protection from harmful interference. In addition, technical studies for both methods proposing a new SOS (Earth-to-space) allocation between 403-405 MHz has shown varying conclusions regarding the feasibility of sharing. Finally, studies have raised concern about using the existing SOS (s-E) allocation in the 137-138 MHz due to possible impacts on aeronautical systems operating below 137 MHz.

The frequency band 117.975 – 137 MHz is allocated worldwide to the AM(R)S service and is used to transmit Air Traffic Control (ATC) and Airline Operational Control (AOC) communications in all phases of flight and in all airspace. The upper portion of this frequency band, 136-137 MHz, is primarily used for air-ground digital communications to supplement existing voice communications. The highest assignable channel, 136.975 MHz, is the Very High Frequency Data Link Mode 2 (VDL M2) Common Signaling Channel (CSC) as specified in Annex 10 to the Convention on International Civil Aviation Volume III 6.1.2.3.

One administration has suggested using existing SOS allocations in the 137-138 MHz band for the SD-NGSO downlink. Assuming the characteristics in the DN Report for SD-NGSO uplink and downlink, the SOS emissions below 137 MHz will be too high to protect the AM(R)S service. Similarly, proposed use of the existing SOS (E-s) allocation in the 148-149.9 MHz band using the stated characteristics will result in required separation distances that would not be supportable operationally.

The Draft CPM (Method C) proposes thresholds for coordination similar to those for MSS in 137-138 MHz, which is specified in Annex 1 of Appendix **5** of the RR and removal of No. **9.21** in RR No. **5.218**. The coordination for MSS (space-to-Earth) in 137-138 MHz is done under RR No. **9.11A**, requiring meeting a pfd threshold on the earth’s surface for coordination with terrestrial services. SOS ground station assignments in the 148-149.9 MHz band are required to be coordinated under RR No. **9.21**, which was deemed not suitable for SD-NGSO in Resolution **658** (**WRC-15**). However, no studies considered to date by ITU-R WP-7B have assessed the feasibility of implementing SD mission spectrum utilization under the ‘Method C’ option with adequate means for ensuring protection of heavily used AM(R)S systems operating adjacent bands.







**PRELIMINARY VIEW**

WP-7B should continue studies examining the feasibility of accommodating SD in bands below 1 GHz while ensuring protection of incumbent and adjacent band services. WP 7B should continue collaborating with other WPs to facilitate studies for WRC-19.