



ORGANIZACION DE LOS ESTADOS AMERICANOS  
ORGANIZATION OF AMERICAN STATES

Comisión Interamericana de Telecomunicaciones  
Inter-American Telecommunication Commission

**30 MEETING OF PERMANENT  
CONSULTATIVE COMMITTEE II:  
RADIOCOMMUNICATIONS**  
November 27 to December 1, 2017  
Barranquilla, Colombia

OEA/Ser.L/ XVII.4.2.30  
CCP.II-RADIO-30/doc. 30-4356-1-7/17  
30 November 2017  
Original: English

**AGENDA ITEM 1.7**  
**PRELIMINARY VIEWS FOR WRC-19**  
**(Item on the agenda: 3.1 (SGT2))**  
**(Document submitted by the Coordinator)**

**SGT 2B – Science services**

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Source: Documents 4356-1-7, and 4431

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**Agenda item 1.7:** to study the spectrum needs for telemetry, tracking and command in the space operation service for non-GSO 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)

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### Background

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Satellites for short duration missions are used for a wide range of applications, including Earth observation, space research and mobile-satellite communication. ~~These satellites typically use commercial off the shelf components to reduce cost and design complexity, and are constrained in terms of low on-board power and low antenna gains. A short duration mission refers to a mission having a limited period of validity of not more than typically three years.~~ [From Doc 4431] The demand for suitable spectrum for NGSO satellites with short duration missions is growing due to the increasing number of these types of satellite missions. The mass, ~~and dimensions~~ and low cost of these satellites contribute to their success and their use will likely grow. These types of missions provide an affordable means for scientific and commercial space purposes and are increasingly used by new entrants in space.

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[From Doc 4356-1-7]

Since the number of these satellites ~~and missions~~ is growing, there is an increasing demand for suitable allocations in the space operation service below 1 GHz to cope with the attendant pressure on the requirements for telemetry, tracking and command. ~~Even though the frequency bands 144-146 MHz and 435-438 MHz are allocated to the amateur satellite service, some non-amateur satellites with short duration missions have used these bands for telemetry, tracking and command.~~

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~~ITU R Working Party 7B (WP 7B) is the responsible working party for this agenda item and is tasked with studying the spectrum requirements for telemetry, tracking and command in the space operation service for the growing number of non-GSO satellites with short duration missions; assessing the suitability of existing allocations to the space operation service in the frequency range below 1 GHz; and, if necessary, conducting sharing and compatibility studies to consider possible new allocations or an upgrade of the existing allocations to the space operation service within the frequency ranges 150.05-174 MHz and 400.15-420 MHz.~~

~~WP 7B is working on three new reports related to agenda item 1.7, which respectively provide typical technical characteristics of satellites with short duration missions, study the spectrum requirements in the space operations service and provides sharing studies on possible new and/or upgraded allocations.~~

[From Document 4431]

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Nevertheless, it is important to ensure that these missions do not cause harmful interference to existing systems and incumbent services. 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 in existing ~~bands or identify new spectrum supported by sharing studies~~ allocations or consider an upgrade of the existing allocations or possible new allocations to the space operation service within the frequency ranges 150.05-174 MHz and 400.15-420 MHz.

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The preliminary conclusions with regards to the spectrum requirements for SOS for satellites with short duration mission is that between 0.625 MHz to 2.5 MHz is required for downlinks and between 0.682 MHz and 0.938 MHz is required for uplinks.

[From Doc. 4431]

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 typically 3 years.

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[new text that is not from either Doc 4356-1-7 or 4431]

It should be noted that, as indicated in Resolution 659 (WRC-15) recognizing a), the existing allocations to the space operation service below 1 GHz, where No. 9.21 applies, are not suitable for these satellite missions. The nature of these missions imply a short development and launch time, and uncertain orbital characteristics, which make formal coordination under No. 9.21 impractical.

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### Issues

- To determine the spectrum requirements for telemetry, tracking and command for satellites with short duration missions and assess the suitability of existing allocations below 1 GHz to meet such requirements.
- To upgrade the existing allocations or identify new allocations to the space operation service within the frequency ranges 150.05-174 MHz and 400.15-420 MHz in order to accommodate such missions.
- To ensure that, if a new allocation to space operation service were added, incumbent services both in-band as well as in adjacent bands would be protected from potential harmful interference.

### PRELIMINARY VIEW

#### CAN

~~Subject to the outcome of the compatibility studies, Canada will consider supporting new allocations and an upgrade of the existing allocations to the space operation service within the frequency ranges 150.05-174 MHz and 400.15-420 MHz. Canada is of the view that frequency bands subject to No. 9.21 are not suitable for space operation service for satellites with small duration missions.~~

#### CAN, USA

[From Doc. 4431]

~~These United States administrations supports completing sharing and compatibility studies between NGSO satellites with short duration missions and the incumbent services with respect to invites ITU-R 1, 2, and 3 of Resolution 659 (WRC-15), and supports that frequency bands below 1 GHz should be considered for allocation changes only if agreed ITU-R studies demonstrate sharing feasibility.~~

The frequency ranges described for consideration under invites ITU-R 3 overlap with allocations to critical global maritime distress and safety service (GMDSS) frequencies, identified in RR Appendix 15, and centered at 156.3 MHz, 156.525 MHz, 156.65 MHz, 156.8 MHz, 161.975 MHz, and 162.025 MHz, as well as frequencies used for the safety of life COSPAS/SARSAT system in the band 406-406.1 MHz. Therefore, these administrations are of the view that CPM text must exclude the GMDSS frequency bands stated above, and the COSPAS-SARSAT frequency range 406-406.1 MHz and the 100 kHz adjacent bands above and below the COSPAS-SARSAT frequency range (Res. 205 (WRC-15)) from consideration for possible new allocations or an upgrade of the existing allocations to the space operation service. Additionally, the frequency ranges for fixed and land mobile (162.0375-173.2 MHz, 173.4-174 MHz, and 406.1-420.0 MHz), meteorological satellite (400.15-403 MHz), earth exploration satellite service (401-403 MHz) and meteorological aids (400.15-406 MHz) services are heavily used, and usage of the existing allocations is expected to increase in the future. The United States is of the view that these factors must be considered in any sharing and compatibility studies under this agenda item.

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These United States is of the administrations are of the view that a single spacecraft with a lifetime of less than typically three years, where the operator does not launch replenishment or replacement

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spacecraft is a short duration mission. The operation of multiple spacecraft simultaneously can qualify as short duration if all spacecraft have lifetimes less than typically three years and therefore the frequency and orbital characteristics and capabilities exist for less than 3 years – i.e., no replenishment/replacement. The case of a single (or multiple) spacecraft with a lifetime of less than typically three years, where the operator launches a single (or multiple) replenishment/replacement spacecraft(s) such that the operator has persistent frequency and orbital characteristics and capabilities longer than typically three years, is not considered a short duration mission.