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|  | ASIA-PACIFIC TELECOMMUNITY | **Document No:** |
| **The 5th Meeting of the APT Conference Preparatory**  **Group for WRC-19 (APG19-5)** | **APG19-5/OUT-07 (Rev.1)** |
| 31 July – 6 August 2019, Tokyo, Japan | 5 August 2019 |

Working Party 3

**APT VIEW AND PRELIMINARY APT COMMON PROPOSAL**

**on WRC-19 agenda item 7 (Issue A)**

**Agenda Item 7:**

*7 to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution* ***86 (Rev.WRC-07)****, in order to facilitate rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;*

Resolution **86 (Rev.WRC‑07)** – *Implementation of Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference*

**1. Background for Issue A**

WRC-12 and WRC-15 adopted into the RR a series of specific provisions, including RR No. **11.44B**, that clarified the requirements for the bringing into use (BIU) and the bringing back into use (BBIU) of frequency assignments to a space station in a GSO satellite network. However, there are no provisions in the RR that specifically address the BIU of frequency assignments to space stations in non-GSO systems. In this context and in order to complete the recording of frequency assignments to non-GSO systems, it has been the practice of the Bureau to declare their BIU successfully completed when one satellite is deployed into a notified orbital plane and capable of transmitting and/or receiving those frequency assignments. This practice, reflected for FSS and MSS non-GSO systems in section 2 of the Rules of Procedure for RR No. **11.44**, has been used for a number of years. Furthermore, it has been used irrespective of the number of satellites or of the number of orbital planes indicated in the notification information provided under RR No. **11.2**.

However, in its report to WRC-15 on the experience in the application of regulatory procedures and other related matters, the Director of the Radiocommunication Bureau stated that:

“Taking into account of the numerous non-GSO systems received so far by the Bureau, and the possible speculative nature of such submissions that could lead to spectrum warehousing and resurgence of so-called “paper satellite networks” the conference may wish to consider redefining the notion of bringing into use for non-GSO satellite networks.”

WRC-15 invited the ITU-R to examine, under the standing WRC agenda item 7, the possible development of regulatory provisions beyond those under RR Nos. **11.25** and **11.44** on the non-GSO FSS/MSS systems and the implications of the application of such milestones to non-GSO FSS/MSS systems brought into use after WRC-15.

**Methods to satisfy Issue A**

To satisfy Issue A, one method was developed that comprises two separate elements. The first element addresses the BIU of frequency assignments to non-GSO systems. The second element introduces the implementation of milestones for maintaining the recording in the MIFR of assignments to non-GSO systems in specific frequency bands and services, which provide administrations with the ability to use a period longer than the regulatory period in RR No. **11.44** to complete deployment of all satellites and orbital planes in the notified non-GSO system. For both of these elements various options are described below.

Under this method, the Conference is invited to instruct ITU-R to conduct studies for the development of a technical basis for determining tolerances for various orbital parameters of non-GSO space stations. The Conference is invited to also provide instructions to the Radiocommunication Bureau on how to treat cases of variations in orbital parameters for non-GSO space stations pending the conclusion of the studies.

**Bringing into use**

For the BIU of frequency assignments to non-GSO systems of the method referred to above, four options have been identified.

These four options involve the incorporation of a form of Section 2 of the Rules of Procedure for RR No. **11.44** into the Radio Regulations. To this effect, one option requires deployment for a continuous period of at least 90 days in a notified orbital plane of a satellite with the capability of transmitting or receiving the frequency assignments. The second option requires such deployment for a continuous period of between one and 90 days. A third option is for deployment with no fixed period for BIU. The fourth option consists of differentiating frequency assignments to non-GSO satellite systems subject to section II of Article **9** for which a successful BIU will require the deployment of at least one satellite with the capability of transmitting or receiving these frequency assignments for a continuous period of at least X days (X between 1 and 90 days, to be defined) and no fixed period otherwise.

The first three options apply a single BIU approach that applies to frequency assignments to all non-GSO systems that ultimately orbit the Earth. In addition to the above, there may need to be some special considerations for BIU non-GSO systems that do not ultimately operate in an orbital plane around the Earth. These non-GSO systems and networks must be considered brought into use when the notifying administration confirms a successful launch of a space station with the capability of transmitting or receiving the frequency assignments, or by some mechanism other than deployment into a notified orbital plane for some period up to 90 days.

Modifications or addition of provisions in RR Article **11** for the implementation of this method would also be required.

Consideration should also be given to addressing tolerances for some of the orbital characteristics, such as the altitude and the inclination of orbits of non-GSO satellites, associated with recorded frequency assignments.

**Milestone-based approach**

For the milestone-based approach, approach with several options of possible implementations have been identified to provide time beyond the seven-year regulatory period to complete the deployment of the satellites associated with recorded frequency assignments to a non-GSO system (see section 3/7/1.3.2.1 and Table 3/7/1.3.2-1 as outlined in the CPM19-2 Report).

A prerequisite for application of the milestone-based approach to the frequency assignments of a given non-GSO system is that the frequency assignments are considered to have been brought into use in accordance with RR No. **11.44** and any other associated provisions as may be adopted by WRC-19 for the BIU of frequency assignments to non-GSO systems.

Under this method, a new WRC Resolution would be adopted to specify the frequency bands and services to which the approach applies, the number of milestones, the milestone period, the required percentage of satellites deployed to satisfy the milestones, and the consequences of failing to meet a milestone (which results in reduction of time between milestones and/or adjustments to the MIFR entry based on a deployment factor). Appropriate transitional arrangements would also be included in the same new WRC Resolution. Following the non-compliance with a milestone, the Resolution will specify the timeline and the processing for the submission by a notifying administration of a consequential modification to the characteristics of the recorded frequency assignments to its non-GSO system.

Provisions for the implementation of this method would also be required.

The new WRC Resolution would be referred to in an appropriate Article of the Radio Regulations.

Since the number of satellites deployed could fluctuate after the milestone period, it may be important to update the information recorded in the MIFR. Such a process could be contained in the Resolution. However, there is no consensus on the need to include such a process in the Resolution.

**2. Documents**

* Input Documents APG19-5/INP-44Rev.1(AUS), 51(INS), 58(SNG), 72(J), 81(J), 108(MLA & THA), 129(KOR)
* Information Documents APG19-5/INF-1(WMO), 5(ICAO), 18(CEPT), 19(ATU), 20(CITEL), 22(RCC)

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 Australia** - **Document APG19-5/INP-44Rev.1**

Australia supports a BIU requirement and a milestone-based approach to deployment of non-GSO systems, to provide regulatory certainty and recognition that constellations of non-GSO satellites may take time to be fully deployed. Any regulatory changes should not disadvantage existing or future GSO satellite systems and smaller (e.g. 10 or less) non-GSO constellations.

Bringing into use: Australia supports Option A, deployment for a continuous period of 90 days within the 7-year regulatory time limit in order to bring into use a non-GSO filing.

Milestone-based approach: Australia supports a milestone regime for deployment of non-GSO systems that requires a minimum percentage of a satellite system to be deployed within certain timeframes, full system deployment at the final milestone, and imposes penalties should milestones not be met (i.e. a ‘deployment factor’).

Transitional measures: Australia supports Option 1 for its simplicity. Australia will determine its preferred commencement date when final milestone timing and deployment percentages are settled.

Frequency bands and services: Australia supports application of the milestone-based approach to non-GSO systems operating in the FSS, BSS and MSS, but not those operating in the RNSS. In particular, Australia supports application of the approach to the following MSS frequency bands listed in the CPM Report: 137-137.025 MHz, 137.025-137.175 MHz, 137.175-137.825 MHz, 137.825-138 MHz, 148-149.9 MHz, 149.9-150.05 MHz\*, 399.9-400.05 MHz, and 400.15-401 MHz. Australia does not support application of the milestone approach to the following frequency bands listed in the CPM Report: 1980-2010 MHz, 2170-2200 MHz, 7250-7750 MHz, 7900-8400 MHz, 20.2-21.2 GHz, and 30-31 GHz.

\*The band 149.9-150.05 MHz appears to have been mistakenly listed in the CPM Report as 137-138 MHz.

Milestone based approach – consequences of non-submission of milestone information (resolves 11 to 11ter): Australia prefers Option 1.

**Milestone based approach – reuse of spacecraft to BIU or count towards milestones of other systems (*resolves* 12):** Australia supports Alternative 2.

**Milestone based approach – suspension between milestones (resolves 13 and 14):** Australia supports Alternative 1.

**Milestones – post-milestone reporting requirement (*resolves* 15 to 21):** Australia supports Alternative 2.

**Milestones – information to be submitted about the deployed satellites:** Australia supports Option 3 for Annex 1.

**3.1.2 Indonesia** - **Document APG19-5/INP-51**

* BIU Period

Indonesia is of the view to support Option D which propose a continuous period of 90 days of deployment in a notified orbital plane of a satellite with the capability of transmitting or receiving frequency assignments, subject to section II of Article 9 of the RR. No fixed period otherwise.

* Milestone-approach

Indonesia is of the view to support Option D which propose the following milestones:

* M1 = 2 year, P1 = 10%
* M2 = 5 year, P2 = 50%
* M3 = 7 year, P3 = 100%
* Transitional measure

Indonesia is of the view to support Option 1 which applies identical milestones, associated timelines and required levels of deployment both to non-GSO systems with frequency assignments that have reached the end of their regulatory period prior to a date to be set by the conference, and to non-GSO systems for which the regulatory periods end on or after that date.

Indonesia also of the view to support that the starting date of the implementation of these regulations is same with the date of entry into force the result of WRC-19.

**3.1.3 Singapore** - **Document APG19-5/INP-58**

In consideration of Issue A, Singapore supports:

1. concerning the continuous period for confirming the BIU of frequency assignments to a NGSO system, Singapore supports Option A. This is in alignment with the current regulatory requirement for GSO satellite networks
2. Regarding milestone timing and minimum required percentage of satellites to be deployed to meet the milestone, Singapore supports Option C, which represent a good balance between flexibility and avoidance of spectrum warehousing

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| **Milestones** | **Milestone timing**  **(Number of years after the end of the seven-year regulatory period or after entry into force of the Resolution, whichever falls later)** | **Minimum required % of satellites deployed to meet the milestone** |
| **1st** | 2 years | 10% |
| **2nd** | 4 years | 30% |
| **3rd** | 7 years | 90% |

1. Regarding the transitional measures, Singapore supports Option 1 for the transition to new regulations and a commencement date of 01 Jan 2021.
2. Regarding the post milestone procedures, Singapore supports Alternative 1 of modifying the WRC Resolution, which ensures that the MIFR is maintained up-to-date with the real deployment of the non-GSO system.

**3.1.4 China** - **Document APG19-5/INP-67**

* China supports that a solution to address this issue should follow the eight principles established by CPM19-2 meeting.
* China supports that the definition of the BIU of frequency assignments to non-GSO systems should be in accordance with the current practice as contained in the Rules of Procedure, which means to keep a continuous period of 90 days for frequency assignments to which the new Resolution applies, and no fixed period for frequency assignments to which the new Resolution does not apply.
* China supports three milestones to be applied to networks recorded in the MIFR, and is favor of Option A and F. Considering some operational flexibility, China supports that the percentage of the 3rd milestone should be no less than 90%.
* China is favor of the commencement of the milestone process as 23 November 2019 (the first day after the end of the conference). China could accept if it is no later than 1st January 2021.
* China supports that those systems brought into use and notified, but not fully deployed before a date to be set by the Conference, will have the same regulatory certainty as that available to those systems which will be brought into use and notified after this date. For those systems brought into use and notified, but not fully deployed before a date to be set by the Conference, appropriate transitional measures need to be considered in order to allow administrations to have sufficient time to adapt their current development and deployment schedules to meet milestones, as appropriate. China supports the first option established by CPM-2 meeting to address the transitional measures.
* China supports that any milestone-based approach should be applicable to FSS/BSS/MSS at least in the specific Ku, Ka and Q/V bands.
* China supports the only option in the CPM report with regards to the modifications as a result of failure to meet the milestones.
* Regarding consequences of non-submission of information, China prefers the option that is identified in the CPM Report based on the **13.6** process, as Alternative 1 in draft WRC Resolution.
* Regarding the use of the same spacecraft for more than one filing with overlapping frequency assignments, China supports Alternative 2 in draft WRC Resolution.
* China supports that the suspension of frequency assignments does not extend the milestone period nor reduce the requirements associated with any of the remaining milestones.
* Regarding post-milestone process, China is of the view that there may be a need to ensure the coherence of the MIFR with the actually deployed satellites over time, even after the third milestone process.

**3.1.5 Japan** - **Document APG19-5/INP-72 & 81**

Japan provides some proposals for some options which are currently contained in CPM Report.

* **Definition of BIU**

In some sub-issues, there are multiple options are listed in CPM Report.

**1. Minimum period during which a satellite has to be maintained in a notified orbital plane**

Multiple options are listed in CPM Report and maximum number of the required minimum days is 90. However, there are multiple reasons why the introduction of fixed days for this purpose is not practical as shown below;

1) Since the operational orbit is intentionally changed during the mission for some space science satellites, it is not practical to define the continuous operational days in a notified orbital plane.

2) During the space debris avoidance operation, the actual orbit of the satellite may be different from a notified orbital plane and such space debris avoidance operation may be continued for more than 30 days in some cases. It should be stressed that the space debris avoidance operation is extremely important for manned space missions.

Thus, Japan proposes the option C “no fixed period” among these options.

**2. Provision to define the notified orbital plan for bringing into use**

For the detailed regulatory provision of the description of “notified orbital plane” where a non-geostationary satellite is deployed (brought into use or brought back into use), two options are listed in CPM Report.

Japan proposes the use of Option 2 for this, since Option 2 provides much clear linkage with the orbit parameters in the ITU filings of non-geostationary satellite systems.

* **Frequency bands and services to which the milestone-based approach is applied**

CPM Report contains milestone-based approach which will be applied for some specific frequency bands and services. CPM Report also includes other frequency bands and services for which no consensus was reached at CPM19-2 meeting.

Japan proposes not including the frequency bands and services for which no consensus was reached, in case that APT common proposal is produced for the milestone-based approach. In case that other APT members wishes to propose such frequency bands or services, such APT members should provide separate proposals from APT.

**:** Taking into account the impact on the Japan’s future plans for non-GSO satellite constellation, Japan supports the basic concept in CPM Report, in which the definition of BIU and the milestone-based approach to check the deployment number of non-GSO satellites are separately discussed, BIU of non-GSO satellite networks/systems can be achieved by the deployment of one space station and the milestone-based approach is applied for some specific space services and frequency bands to adjust the number of satellites in MIFR by checking the deployment status after the 7 years regulatory limit of BIU.

For the minimum period during which a satellite has to be maintained in a notified orbital plane for BIU, Japan supports no fixed period (Option C), taking into account that some space missions intentionally changes its orbit during their operations. For the clarification of “orbital plane” where a space station is brought into use or brought back into use, Japan supports Option 2, which does not explicitly describe BR’s examination on the orbital plane of non-GSO satellites.

With regard to the frequency bands and services where the milestone-based approach is applied to, Japan does not support the frequency bands and services of “no consensus” in CPM Report.

**3.1.6 Malaysia & Thailand** - **Document APG19-5/INP-108**

Malaysia and Thailand support the requirement for the bringing into use (BIU) of frequency assignments to all non-GSO systems and introduction of milestone-based approach for specific services and frequency bands.

Malaysia and Thailand are of the view that a continuous period of at least 90 days in a notified orbital plane of a satellite with the capability of transmitting or receiving the frequency assignments, as aligning with the current requirement for bringing into use to GSO systems, is required. Therefore, Malaysia and Thailand support Option A in the issue of the BIU.

Malaysia and Thailand also support new Resolutions for the implementation of milestone-based approach for deployment of non-GSO systems in certain frequency bands and services.

**3.1.7 Korea** - **Document APG19-5/INP-129**

**Bringing into use of frequency assignments to non-GSO systems**

The Republic of Korea supports that the bringing into use of frequency assignments to non-GSO systems should be achieved by the deployment of one satellite into one of the notified orbital planes within seven years of the date of receipt of the advance publication of information (API) or request for coordination, as applicable and this applies for frequency assignments for all non-GSO systems in all frequency bands and services.

For the options relating to the continuous period for confirming bringing into use of frequency assignments to non-GSO systems, the Republic of Korea supports, in general, a continuous period of at least 90 days in a notified orbital plane of a satellite with the capability of transmitting or receiving the frequency assignments (Option A) with some special considerations for bringing into use of frequency assignments to non-GSO systems that do not ultimately operate in an orbital plane around the Earth.

**Establishment of a milestone-based approach for alignment of non-GSO system deployment with MIFR entries**

The Republic of Korea has a view that for establishment of a milestone-based approach for the deployment of non-GSO systems, a balance is required between the need to prevent warehousing of the orbital/spectrum resources and the operational requirements related to the deployment of a non-GSO system.

For options of possible implementations for the milestone-based approach, the Republic of Korea supports, in general, Options D or F, provided that the suspension of use of the frequency assignments does not change the period and requirements of the milestone and restrictive measures (e.g. reduction of the number of satellites recorded in the MIFR) apply to the non-GSO systems which fail to meet the requirements for the milestone.

**3.2 Summary of issues raised during the meeting**

Issue A documents were introduced. It was suggested that flexibility may be required and that members consider the various Options/elements under this issue together as a packaged deal.

The APT members converged towards a preferred BIU Option A of the CPM report and also a variation of it which applied only to the frequency bands and services identified under the proposed new Resolution. Good progress was achieved towards converging on a range of milestone timing, percentages, and transitional measures (See section 4 below), though it was suggested that any potential consensus on an individual element of the milestone option needed to take into consideration of the other elements including the commencement date.

A note contained under the table in Section 4 proposed that a non-GSO network may recover from failing to meet the requirements of milestone 1 or 2. Regulatory text need to be developed, as it does not exist in the CPM19-2 Report.

Some APT Members supports application of the approach to the following MSS frequency bands for which no consensus was reached and listed in the CPM Report: 137-137.025 MHz, 137.025-137.175 MHz, 137.175-137.825 MHz, 137.825-138 MHz, 148-149.9 MHz, 149.9-150.05 MHz (This band 149.9-150.05 MHz appears to have been mistakenly listed in the CPM Report as 137-138 MHz), 399.9-400.05 MHz, and 400.15-401 MHz.

Some APT Members do not support application of the milestone approach to the following frequency bands for which no consensus was reached and listed in the CPM Report: 1980-2010 MHz, 2170-2200 MHz, 7250-7750 MHz, 7900-8400 MHz, 20.2-21.2 GHz, and 30-31 GHz.

Some APT Members proposes not including the frequency bands and services for which no consensus was reached, in case that APT common proposal is produced for the milestone-based approach.

**4. APT View(s)**

APT members hold the following views:

**BIU definition:**

APT members are of the view that the definition of the BIU of frequency assignments to non-GSO systems should be in accordance with the current practice as contained in the Rules of Procedure, which means to keep a continuous period of 90 days for frequency assignments of the FSS/MSS/BSS, and no fixed period for frequency assignments other than the FSS/MSS/BSS.

With respect to the regulatory provision No. **11.44C** of the BIU, notified orbital planes, APT Members could support Option 2, as outlined in the CPM19-2 report.

**Milestone-based approach**

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| Milestones | Milestone timing  (Number of years after the end of the seven-year regulatory period or after 1st January 2021, whichever falls later) | Minimum required % of satellites deployed to meet the milestone |
| 1st | 2 to 3 years | 10% |
| 2nd | 4 to 5 years | 30-50% |
| 3rd | 7 years | 90-95% /100% |

*Note:*

The WRC-19 Conference when considering the ranges of Milestones and associated deployment factors in the above table, may consider allowing a degree of flexibility to Non-GSO satellite operators if they missed the percentage criterion in the milestone 1 or 2 above, it would need to achieve those criteria's at the subsequent Milestone.

**Transitional Measures**

APT Members could support Option 1, the commencement date of the milestone process to be 1 Jan. of 2021, at this stage.

**Frequency bands and services for application of the milestone-based approach**

APT Members support application of the milestone-based approach to non-GSO systems operating in the FSS, BSS and MSS, but not those operating in the RNSS.

APT Members do not object, at this stage to the application of the approach to the following MSS frequency bands for which no consensus was reached and listed in the CPM Report: 137-137.025 MHz, 137.025-137.175 MHz, 137.175-137.825 MHz, 137.825-138 MHz, 148-149.9 MHz, 149.9-150.05 MHz (This band 149.9-150.05 MHz appears to have been mistakenly listed in the CPM Report as 137-138 MHz), 399.9-400.05 MHz, and 400.15-401 MHz.

**Milestone based approach – consequences of non-submission of milestone information (resolves 11 to 11ter)**

APT members expressed preference for Option 1.

**Milestone based approach – reuse of spacecraft to BIU or count towards milestones of other systems (*resolves* 12)**

APT members expressed slight preference for Alternative 2(NOC), at this stage.

**Bringing into use – tolerances in orbital characteristic values**

APT Members do not support the application of tolerance values at this stage, because no technical basis has been developed within the ITU-R in this study cycle to determine how much deviation could be tolerated between the characteristics of the notified orbital planes and the characteristics of the orbital planes associated with any deployed space stations.

**5. Preliminary APT Common Proposal(s)**

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