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| **The 6th Meeting of the APT Conference Preparatory****Group for WRC-23 (APG23-6)** | **APG23-6/OUT-17** |
| 14 – 19 August 2023, Brisbane, Australia | 18 August 2023 |

Working Party 2

**APT VIEW[[1]](#footnote-1) and Preliminary APT Common Proposal**

**on WRC-23 agenda item 1.8**

**Agenda Item 1.8**

*to consider, on the basis of ITU R studies in accordance with Resolution* ***171 (WRC-19)****, appropriate regulatory actions, with a view to reviewing and, if necessary, revising Resolution* ***155 (Rev.WRC-19)*** *and No.* ***5.484B*** *to accommodate the use of fixed-satellite service (FSS) networks by control and non-payload communications of unmanned aircraft systems;*

1. **Background**

In compliance with Resolution **171 (WRC-19)**, under its agenda item 1.8, WRC-23 is to review and undertake a potential revision of Resolution **155 (Rev.WRC-19)** and No. **5.484B** in the frequency bands referred to in **Resolution 155 (Rev. WRC-19)**. The responsible working party for the preparatory work within ITU-R is WP 5B with WP 4A and WP 4B being contributing working parties. During the study cycle, WP 5B has worked in liaison with the contributing working parties as well as to WP 3M, WP 5A, WP 5C, and WP 7D and ICAO.

In the final CPM Report for WRC-23, the following methods are proposed to address this agenda item.

**Method A**

Method A proposes to suppress RR No. **5.484B** together with Resolution **155** **(Rev**.**WRC-19)** as well as Resolution **171 (WRC-19)**.

**Reasons:** Resolution **171 (WRC-19)** is requiring a review and possible revision of Resolution **155 (Rev.WRC-19)** since this in its current state does not enable operation of UA earth stations. This agenda item stems from agenda item 1.3 of WRC-12 and agenda item 1.5 of WRC-15 and consideration of the matter of WRC-19 which resulted in Resolution **171 (WRC-19)**. After more than ten years of extensive studies, there are still key problems that have not been resolved, in particular the contradiction between the safety nature of the operation of UAS and the non-safety status of the fixed-satellite service.

The FSS frequency bands identified in *resolves* 1 of Resolution **155 (Rev.WRC-19)** are heavily congested and interference is a regular occurrence, also into FSS networks that has completed all the frequency coordination. The communication link of the UAS CNPC via FSS consequently can be interrupted by various forms of interference and is therefore not sufficiently robust. This could negatively impact the ability to achieve the required service quality needed for safe operation and could even render it impossible to use. The interruption of the CNPC link would be an incident affecting the safety of aviation, including the safety of people.

With no satisfactory solution identified for the operation of UA earth stations, it therefore would be necessary to suppress RR No. **5.484B** together with Resolution **155 (Rev.WRC-19)** as well as Resolution **171 (WRC-19)**.

**Method B**

Method B intends to revise Resolution **155** **(Rev.WRC-19)** in accordance with Resolution **171 (WRC-19)** and consequently suppress Resolution **171 (WRC-19)**. In addition, this method contains the revision of RR No. **5.484B** as an option.

*Note: No agreement was reached in respect of text for Method B. For this reason, three alternative texts are provided, labelled Method B1, B2 and B3. The text of Method B1 is a reproduction of the draft CPM text as contained in Document* [*CPM23-2/1*](https://www.itu.int/md/R19-CPM23.2-C-0001/en)*. Methods B2 and B3 are mergers of contributions received at CPM23-2 where the merging is conducted by the respective authors and are provided for information. CPM23-2 had no time to review or discuss the content of the text for these methods and no agreement to these by CPM therefore should be assumed.*

**Method B1**

Resolution **155 (Rev.WRC-19)** is revised in view of the principles listed in section 2/1.8/3.2 above. In particular it is intended to:

• clearly separate between the responsibilities of ICAO and ITU;

• consider how to ensure the safety of flight while recognizing the issue of RR No. **4.10**;

• remove ambiguities contained in Resolution **155** **(Rev.WRC-19)**;

• clarify that UAS CNPC is an operation under the primary FSS while avoiding adverse effects to terrestrial stations;

• maintain the existing procedure for the FSS network coordination as well as for bilateral coordination agreements;

• provide a process to treat cases of interference caused by UA earth station.

As an option, RR No. **5.484B** would be updated to improve the clarity to the services and systems to which the footnote applies.

**Reasons:** After considering the progress obtained by the International Civil Aviation Organization (ICAO) in the process of establishing and preparing Standards and Recommended Practices (SARPs) for the safe operation of unmanned aircraft systems, the studies to protect the terrestrial services from harmful interference, revisions to Resolution **155 (Rev.WRC-19)** are proposed to satisfy this agenda item. The intention being that compliance with the Resolution would ensure that all required ITU-R technical, operational, and regulatory conditions are met, and would not adversely affect existing and future FSS networks or terrestrial services.

**Method B2**

Resolution **155** (**Rev.WRC-19**) is revised in view of the principles listed in section 2/1.8/3.2 above. In particular it is intended to:

• clarify that with the introduction of UA in non-segregated airspace, continued safety of other airspace users as well as life and property on the ground needs to be maintained;

• emphasize that RR No. **4.10** is one of the main provisions of the Radio Regulations relating to the interference-free operation of safety services;

• require that the assignments and use of the relevant frequency bands are consistent with No. **4.10** of the Radio Regulations which recognizes that safety services require special measures to ensure their freedom from harmful interference;

• require that the frequency bands specified in *resolves* 1 shall not be used for the UAS CNPC links before the issue of safety of life referred to in RR No. **4.10** is solved and agreed in ITU-R framework;

• specify that the use of frequency assignments of GSO FSS networks for UAS CNPC links does not confer on the satellite network special regulatory status or any advantage or priority in the application of RR Articles **9** and **11** or any other regulatory provisions.

RR No. **5.484B** would be updated to improve the clarity to the services and systems to which the footnote applies.

**Method B3**

Resolution **155** (**Rev.WRC-19**) is revised in view of the principles listed in section 2/1.8/3.2 above. In particular it is intended to:

• clearly separate between the responsibilities of ICAO and ITU;

• ensure that UAS CNPC links shall only operate in accordance with the convention on international civil aviation and its annexes;

• confirm that the provisions of RR No. **4.10** shall not apply to the use of UAS CNPC links through FSS networks, or creates a responsibility of administrations to ensure safety of flight in any way;

• clarify that UAS CNPC operations shall not impose any additional constraints on the terrestrial systems;

• maintain the existing procedure for the FSS network coordination as well as for bilateral coordination agreements;

• ensure that UAS CNPC links shall not have any impact on the relevant existing agreements reached during FSS satellite coordination process or on the future coordination of FSS networks during the application of the provisions of the Radio Regulations; and that this application shall not create any obstacle to coordination and development of regular FSS in the bands;

• provide that UAS CNPC links should ensure the protection of the current systems operating in terrestrial and space services without imposing any undue constraints on them;

• provide a process to treat cases of interference caused by UA earth station.

As an option, RR No. **5.484B** would be updated to improve the clarity to the services and systems to which the footnote applies.

*Note: During the CPM23-2 Meeting, no agreement was reached in respect of the solution for Method B (as contained in sections 2/1.8/4.2 and 2/1.8/5.2 of CPM 23-2 Report). For this reason, three alternative texts are provided, labelled Method B1, B2 and B3. The text of Method B1 is a reproduction of the draft CPM text as contained in Document* [*CPM23-2/1*](https://www.itu.int/md/R19-CPM23.2-C-0001/en)*. Methods B2 and B3 are mergers of contributions received at CPM23-2 where the mergers are conducted by the respective authors and are provided for information. CPM23-2 had no time to review or discuss the content of the text for these methods and no agreement to these by CPM therefore should be assumed.*

**2. Documents**

* Input Documents: APG23-6/INP-31(JPN), APG23-6/INP-48(INS), APG23-6/INP-59(THA), APG23-6/INP-66R1(IRN), APG23-6/INP-81(AUS), APG23-6/INP-88(KOR), APG23-6/INP-99(NZL), APG23-6/INP-104(CHN), APG23-6/INP-110(MLA), APG23-6/INP-119(VTN)
* Information Documents: APG23-6/INF-25(ICAO), APG23-6/INF-26 (ICAO), APG23-6/INF-28(GSOA), APG23-6/INF-45 (RCC), APG23-6/INF-46(CEPT), APG23-6/INF-52(CITEL)

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 Australia – Document APG23-6/INP-81**

Australia supports possible revision of Resolution **155** and No **5.484A** through further consideration of Method B3 in-line with the Key Principles for UAS CNPC operation as outlined in the CPM Report (Document WRC-23/03), noting that some of the key principles outlined in the CPM Report are not agreed including principles § 6 and 14.

Australia does not propose a Preliminary APT Common Proposal on this agenda item.

**3.1.2 China – Document APG23-6/INP-104**

China proposes to adopt Method A as the solution of AI 1.8 based on the fact that the safety-of-life issue related to UAS CNPC operation are not appropriately addressed and the responsibilities of administrations involved in the operation of UAS CNPC systems, especially those in respect of the safety-of-life aspects are not defined clearly.

**3.1.3 Indonesia – Document APG23-6/INP-48**

Indonesia is of the view that Agenda Item 1.8 WRC-23 needs further consideration, provided that the completion of ICAO SARPs for the use of the FSS networks for the UAS CNPC has been achieved.

**3.1.4 Iran – Document APG23-6/INP-66 (Rev.1)**

The Administration of Iran (Islamic Republic of) firmly supports Method A for the reasons given section above. Namely proposes to suppress RR No. **5.484B** together with Resolution **155 (Rev.WRC-19)** as well as Resolution **171 (WRC-19)**.

**3.1.5 Japan - Document APG23-6/INP-31**

Japan does not support Method A at this stage. It should be noted that the UAS CNPC should not adversely affect existing services in the same or adjacent bands of the frequency bands where the UAS CNPC is expected to be used.

**3.1.6 Korea (Republic of)– Document APG23-6/INP-88**

The Republic of Korea supports the intention of Method B described in the CPM Report that proposes revising Resolution **155 (Rev.WRC-19)**. When developing regulatory provisions under the Method B, the protection of other systems or services operating in accordance with the Radio Regulations should be ensured.

**3.1.7 Malaysia – Document APG23-6/INP-110**

Due to the complexity of the agenda item, Malaysia is considering Method A at this moment.

Nevertheless, if all safety issues of the UA CNPC links operated under FSS frequency bands have been resolved at WRC-23, Malaysia may consider Method B.

**3.1.8 New Zealand – Document APG23-6/INP-99**

New Zealand supports Method A, to suppress RR No. **5.484B**, Resolution **155** **(Rev.WRC-19)** and Resolution **171 (WRC-19)**.

New Zealand and proposes the following **Preliminary APT Common Proposal**



**3.1.9 Thailand (Kingdom of)- Document APG23-6/INP-59**

Thailand is of the view that the approach to revise RR No. **5.484B** and Resolution **155 (Rev.WRC-19)**, by taking into account all required technical, operational and regulatory conditions that UAS CNPC links need to comply with, is sufficient to ensure protection of existing and future FSS networks or terrestrial services. Therefore, Thailand prefers Method B2 in the CPM Report.

Thailand is also of the view that WRC-23 should address and agree on the resolution to the issue of safety of life referred to in RR No. **4.10**.

**3.1.10 Vietnam – Document APG23-6/INP-119**

CPM23-2 had no time to review or discuss the content of the text for the methods in the Report of the CPM for WRC-23 agenda item 1.8. Therefore, Viet Nam supports Method A.

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

From the discussion it appears that No PACP and No APT Views at this stage.

Five APT Members supported Method A.

Three APT Members supported Method B. One of them did not mention which option of Method B they support. One of them supported Method B2. One of them supported Method B3, taking into account that the disclaimer on the top of CPM-23 Report clearly indicated that no agreement has been reached in the ITU-R CPM23-2 meeting on any of the options of Method B.

Moreover, members supporting Method B in their contribution referred to method to protect the incumbent service, however, it is to be emphasized that in this agenda item the problem of protection of incumbent service is not an issue. The difficulties ascribe to the lack of agreement on the responsibility, the availability of complete set of SARPS until 2026, and more importantly the total divergent views on application of RR 4.10.

**4. APT View(s)**

No APT View on this agenda item.

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

None

**6. Issues for Consideration at APG Coordination Meeting at WRC-23 (if any)**

APT Members are encouraged to make the upmost effort with the view to reduce the divergent opinion or to converge to a solution to facilitate WRC-23 to decide on the matter.

**7. Views from Other Organisations** (as provided in the information documents to

APG23-6)

**7.1 Regional Groups**

**7.1.1 ASMG - Document APG23-4/INF-21**

UAS CNPC links should operate in accordance with the protection and safety of life standards of the International Civil Aviation Organization and provided that: UAS CNPC links shall not operate if the conditions for safe operation issued by the International Civil Aviation Organization cannot be met; Provision **No. 4.10** doesn’t apply to the use of UAS CNPC links by FSS networks; No additional restrictions are imposed on ground systems; Not affecting existing coordination agreements between administrations that were concluded during FSS satellite coordination process or future coordination process in the bands concerned by requesting additional protection than agreed in the current coordination procedures.

In the absence of a satisfactory solution for the operation of the UA earth stations, support the deletion of RR Footnote **5.484B**, Resolution **155 (Rev.WRC-19)** as well as Resolution **171 (WRC-19)**.

**7.1.2 ATU** - **Document APG23-6/INF-55**

Support, Method A – whichproposes to suppress RR No. 5.484B together with Resolution 155 (Rev.WRC-19) as well as Resolution 171 (WRC-19), since so far, no satisfactory solution identified for the operation of UA earth stations.

**7.1.3 CEPT** - **Document APG23-6/INF-46**

CEPT is of the view that if the conditions for the safety operation of CNPC established by ICAO cannot be met with the existing FSS link as it stands, then this link should not be used by the UAS operator.

CEPT is of the view that the safety aspects of UAS CNPC shall not have any impact on:

* the existing terrestrial services and their current and expected applications;
* the relevant existing agreements reached during FSS satellite coordination process;
* the future coordination of FSS networks during the application of provisions of Articles **9** and **11** of the Radio Regulations;
* all cases which fall under RR No. **11.41**.

CEPT is currently investigate two options in accordance with Resolution **171 (WRC-19)** to respond to this agenda item:

* to suppress RR No. **5.484B** together with Resolution **155 (Rev.WRC-19)** as well as Resolution **171 (WRC-19)**
* to modify RR No. **5.484B** and Resolution **155 (Rev.WRC-19)** and to suppress Resolution **171 (WRC-19)**

**7.1.4 CITEL** - **Document APG23-6/INF-52**

An Administration provided Preliminary Proposal at recent CITEL meeting. This proposal is based on the studies carried out in line with Resolution **171 (WRC-19)** and Resolution **155 (Rev.WRC-19)** that define conditions for operating command and non-payload communication (CNPC) for unmanned Aerial systems (UAS) in the FSS in the frequency bands identified in No. **5.484B**.

* **MOD RESOLUTION 155 (WRC-19)** “Regulatory provisions related to earth stations on board unmanned aircraft which operate with GSO networks in FSS in certain frequency bands not subject to a Plan of Appendix 30, 30A and 30B for CNPC of UAS in non-segregated airspaces”
* **MOD 5.484B**
* **SUP RESOLUTION 171 (WRC-19)** – Consequential to the results of studies at ITU-R in relation to this Resolution.

**7.1.5 RCC** - **Document APG23-6/INF-45**

The RCC Administrations are of the view that:

* for operation of UAS CNPC, only ITU registered frequency assignments to FSS satellite networks, for which the coordination has been successfully completed, shall be used;
* UAS CNPC links shall operate in accordance with ICAO SARPs, covering all aviation safety issues;
* the links of FSS networks which are not compliant with the ICAO SARPs requirements for UAS control and communications links, shall not be used for control and communications of UAS;
* revision of current Resolution 155 (Rev.WRC-19) or development of new Resolution shall be based on the results of the ITU-R compatibility studies for UAS CNPC links with the systems of existing services, operating within this band and if necessary in adjacent frequency bands;
* UAS CNPC links shall not cause more interference and shall not claim more protection than stations in FSS satellite networks which have been coordinated and registered in ITU;
* UAS CNPC links shall not restrict future development and impose additional restrictions on existing services, which have RR allocations within this band or adjacent frequency bands.

Method В from the CPM Report is preferable.

**7.2 International Organisations**

**7.2.1 ICAO** - **Document APG23-6/INF-25**

To support the modification of No. **5.484B** and Resolution **155 (Rev.WRC-19)**. ICAO is expecting that the decision of WRC-23 will result in a Resolution that:

* clearly provides primary status;
* removes any apparent inconsistencies;
* acknowledges that in accordance with the Annexes to the Convention of the International Civil Aviation Organization (ICAO), ensuring the safety-of-life aspects of the use of UAS CNPC is the role of the responsible States;
* provides sufficient information to support and/or validate safety cases;
* ensures that the UAS CNPC operator is notified prior to any change in the service provision performance being implemented as a result of the satellite coordination process; and
* ensures that any change as a result of a satellite coordination process does not adversely affect an active service level agreement.
1. The term ‘APT View’ refers to Section 4 of this document and is not a document type ‘APT View’. [↑](#footnote-ref-1)