

## ANNEX 1 TO THE CPM REPORT

### Global Flight Tracking

The ITU Plenipotentiary Conference Busan, 2014, adopted Resolution 185 “Global flight tracking for civil aviation”, which stipulated:

Quote:

*“resolves*

to instruct WRC-15, pursuant to No. 119 of the ITU Convention, to include in its agenda, as a matter of urgency, the consideration of global flight tracking, including, if appropriate, and consistent with ITU practices, various aspects of the matter, taking into account ITU-R studies,

*instructs the Secretary-General*

to bring this resolution to the attention of WRC-15 and ICAO,

*instructs the Director of the Radiocommunication Bureau*

to prepare a specific report on the matter as referred to in *resolves* above for consideration by WRC-15.”

Unquote.

Two ITU-R Working Parties are currently studying aspects related to this issue: WP 5B (maritime mobile service including the Global Maritime Distress and Safety System (GMDSS); aeronautical mobile service and radiodetermination service) and WP 4C (Efficient orbit/spectrum utilization for MSS and RDSS). An extraordinary meeting of WP 5B and the regular meetings of WP 4C and WP 5B will take place in May, June and July 2015, respectively, and the Director, BR, will prepare a specific report to WRC-15 on the matter as referred to in *resolves* of Resolution 185.

CPM15-2 received six contributions relating to Global Flight Tracking. After introduction of those contributions and extensive discussions on how to deal with them, two divergent views were expressed.

The text of the views expresses the opinions of the proponents of these views.

Summaries of the contributions, compiled by and reflecting the opinion of their contributing members, suggesting possible approaches to address Global Flight Tracking, are therefore consolidated in the Appendix to this Annex.

#### VIEW ONE

Administrations which held this view indicated that the issue of global flight tracking is a very important subject with a number of complex issues to be considered. There are many questions around technical parameters, harmful interference and other issues that still need to be properly examined. For such a crucial issue, it is important that all the evidence is examined in a thorough and responsible manner.

Global flight tracking is a matter for WRC-15 to consider. ITU Plenipotentiary Conference (Resolution 185 (Busan, 2014)) instructed the Secretary-General to bring this matter to the attention of the WRC-15. It did not instruct him to bring it to the attention of CPM15-2.

CPM15-2 is responsible for finalizing the activities and studies carried out by ITU-R Study Groups and their associated working parties to which the agenda items agreed by WRC-12 were assigned by CPM15-1. These agenda items were adopted by WRC-12 and further approved by ITU Council Resolution 1343 (C12). Since there was no such agenda item in the Council Resolution containing the WRC-15 Agenda and no tasks were assigned by CPM15-1 to ITU-R Study Groups, CPM15-2 does not have any mandate to deal with global flight tracking in CPM Report itself. In accordance with *resolves* 1 of Resolution ITU-R 2-6 CPM should include received contributions from Member States with regard to the Resolution 185 (PP-15) in an Annex to the CPM Report for information only.

The six contributions to CPM15-2 present an incomplete picture because some administrations understood that CPM15-2 would not consider contributions relating to global flight tracking and so did not submit contributions on that subject. In addition, the Plenipotentiary Conference instructed WRC-15 to add the issue of global flight tracking as a whole to its agenda, but the contributions received by CPM15-2 only focus on one particular system.

CPM15-2 cannot express any properly considered view because technical studies are still to be developed and completed. The ITU Plenipotentiary Conference resolved that WRC-15 should take these ITU-R studies into account. Working Parties 5B and 4C are still developing these studies, which should then be incorporated into a special report by the Director of the Radiocommunication Bureau to WRC-15. CPM15-2 should not duplicate, prejudice or undermine this process by agreeing parallel text based on incomplete ITU-R studies and unrepresentative contributions.

In view of the above, should any material text be included in the CPM 15-2 Report, such inclusion is inappropriate and inconsistent with the ITU-R practice as well as contradictory to *resolves* 1 of Resolution ITU-R 2-6 and thus not acceptable nor endorsed by administrations who are proponents of View One.

**VIEW TWO (GFT is within the mandate of CPM15-2, therefore some material should be developed for the CPM15-2 Report)**

Plenipotentiary Conference Busan, 2014, has already instructed WRC-15 to place on its agenda as a matter of urgency the issue of Global Flight Tracking for Civil Aviation by adopting Resolution 185 to serve as the text of the agenda item. Administrations were notified of this Resolution by Circular Letter No. 002 (19 January 2015) with the subject World Radiocommunication Conference 2015 (WRC-15). Resolution 185 provides for the full scope of possible regulatory action to satisfy this agenda item, and its consequential treatment by CPM15-2, WP 5B and WP 4C in order to develop the corresponding technical, operational and regulatory materials, required to facilitate the adequate treatment of the subject by WRC-15.

Therefore, it is appropriate and in line with ITU-R past practice and *decides* 2 of Resolution ITU-R 2-6 that relevant materials be included or attached to the CPM Report at CPM15-2.

In addition, for such a crucial issue, work has to be undertaken with no delay within ITU-R, and accordingly, this is another motivation for CPM15-2 to deal with it.

Fourteen Member States, plus ICAO and the Director of the Bureau, submitted contributions in respect to CPM15-2.

In view of the above, a summary of members' contributions are therefore consolidated in an Appendix to this Annex and attached to the CPM Report as preliminary indications of possible approaches to address the GFT item.

The proponents of the second view were also of the opinion that such Annex could be useful for the Director to include in his special Report on GFT, together with results of studies being carried out by WP 5B and WP 4C for submission to WRC-15 as instructed in Resolution 185 (Busan 2014).

## APPENDIX TO ANNEX 1 TO THE CPM REPORT

### Summary of contributions on GFT

Contributions and informational documents submitted to CMP15-2: [7\(BR\)](#), [89\(CHN\)](#), [98 \(ICAO\)](#), [108\(CITEL\)](#), [141\(DNK, IRL, I\)](#), [155 \(F\)](#).

**Document [89 \(CHN\)](#) is summarized below:**

One administration is of the opinion that the issue of global flight tracking may have an impact on flight safety and it is necessary for ITU-R to do full studies and develop necessary technical and regulatory measures accordingly. The ongoing study by ITU-R is premature and no report on global flight tracking has been drafted yet. Only a Working Document towards a PDNR on satellite ADS-B system is available. But so far, no evidence indicates whether or not the proposed satellite ADS-B system could meet its expected performance. Many key technical problems still need to be studied, such as the technical characteristics of satellite ADS-B systems, the compatibility between incumbent services and possible new service, the real-time performance of satellite ADS-B system and the correct reception of ADS-B signal from smaller aircraft, which is equipped with only an antenna on the bottom, by satellite ADS-B system. Possible new service shall not cause any limitation to incumbent services. The global flight tracking issue should be addressed by a combination of different types of terrestrial and satellite systems.

**Document [98 \(ICAO\)](#) is summarized below:**

A concept of operations for a Global Aeronautical Distress and Safety System has been developed within ICAO employing a long-term evolutionary approach which will address aircraft tracking during all phases of flight under all circumstances, including distress. This approach will involve many systems and technologies, the development of some of these will take a number of years. However, some technologies have already been identified for early benefit, such as ADS-C. One future technology has already been identified, satellite-based reception of ADS-B at 1 090 MHz.

ICAO is of the view that WRC-15 should address a new provision in the Earth-to-space direction only for an AMS(R)S allocation at 1 090 MHz for the satellite reception of existing aircraft ADS-B signals that operate in accordance with recognized international aeronautical standards under the condition that it does not constrain existing aeronautical safety systems. Further, ICAO is of the view that a future Conference (WRC-19) agenda item will be required to address evolving GFT requirements.

**Document [108 \(CITEL\)](#) is summarized below:**

Some administrations are of the opinion that the safety-of-life needs expressed by ICAO with regard to Global Flight Tracking will continue to require a combination of multiple terrestrial and satellite-based technologies; that the satellite reception of ADS-B signals is the only application requiring regulatory action by WRC-15 in order to enhance coverage over areas where the terrestrial reception of these signals is not possible, and that the coexistence environment of ICAO and non-ICAO systems must continue to be addressed.

These administrations further believe that the compatibility of existing ADS-B signals with other systems has been resolved and believe that studies within WP 5B will demonstrate that the satellite reception of these existing ADS-B signals, which involve no new transmissions, can also be successfully addressed by WRC-15.

These administrations agree with ICAO and are of the opinion that an appropriate solution to address the above needs is the addition of a new global primary AMS(R)S (Earth-to-space)

allocation to the frequency band around 1 090 MHz limited to the reception of signals from ICAO-standardized systems as well as a modified Resolution **417 (Rev. WRC-12)** to recognize the responsibility of ICAO in creating corresponding standards and procedures for the operational use of this allocation, and to address the possible coordination with non-ICAO systems. As needed, such a solution would also include a country dependent footnote to identify a more specific coordination method. A specific example on how to achieve the global AMS(R)S allocation is provided below:

## ARTICLE 5

### Frequency allocations

#### Section IV – Table of Frequency Allocations (See No. 2.1)

#### MOD

890-1 300 MHz

Allocation to services		
Region 1	Region 2	Region 3
...		
<b>960-1 164</b>	AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328 <b>ADD 5.XXX</b>	
...		

#### ADD

**5.XXX** The frequency band 1 087.7-1 092.3 MHz is also allocated to the aeronautical mobile-satellite (R) service (Earth-to-space) on a primary basis for the space station reception of automatic dependant surveillance – broadcast (ADS-B) emissions from aircraft stations and is limited to systems that operate in accordance with recognized international aeronautical standards. Resolution **417 (Rev.WRC-15)** applies.

#### Document [141 \(DNK, IRL, I\)](#) is summarized below:

Like CPM15-2/108-E, this contribution identified the satellite extension of ADS-B, an existing aeronautical surveillance technology, as a potential method of achieving global flight tracking.

The contribution highlighted that, at a special meeting on global flight tracking, ICAO encouraged ITU to take action, at the earliest opportunity, to provide the necessary spectrum allocations for satellite when emerging aviation needs are identified. ICAO has also advised WP 5B that a global allocation to the aeronautical mobile satellite route service (AMS(R)S) would be appropriate for the reception of ADS-B aircraft transmissions by space station receivers.

Studies within WP 5B have not yet been fully concluded, but the compatibility of the existing signals into other systems was found not to be an issue since the satellite reception of ADS-B involves no new transmissions. Other aeronautical navigation systems (operating under the aeronautical radionavigation service (ARNS)) provide a potential source of interference to ADS-B receivers, including those installed on satellite, where these systems are assigned to bands overlapping 1 087.7-1 092.3 MHz.

The proposed allocation would be made as follows:

## ARTICLE 5

### Frequency allocations

#### Section IV – Table of Frequency Allocations (See No. 2.1)

#### MOD

#### 890-1 300 MHz

Allocation to services		
Region 1	Region 2	Region 3
...		
<del>960-1 164</del> <u>1 087.7</u>	AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328	
<del>960</del> <u>1 087.7-1 164</u> <u>1 092.3</u>	AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328 <u>AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space) 5.YYY</u>	
<del>960</del> <u>1 092.3-1 164</u>	AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328	
...		

#### ADD

**5.YYY** The use of the frequency band 1 087.7-1 092.3 MHz by the aeronautical mobile-satellite (R) service is limited to systems that operate in accordance with recognized international aeronautical standards. Such use shall be subject to agreement obtained under No. **9.21**. See also Resolution [AMSRs]. (WRC-15)

An associated Resolution [AMSRs] would invite ICAO to develop standards and recommended practices (SARPs) for the use of this new allocation.

#### Document 155 (F) is summarized below:

One administration is of the opinion that the issue of global flight tracking (GFT) aims at avoiding any disappearance, is different from air traffic management (ATM) and shall be treated as a priority.

This administration considers that this GFT function is non-safety related. It is and will continue to be ensured by the combination of many existing and future technologies of different types of terrestrial and satellite systems/networks.

The ongoing studies by ITU-R are not expected to be finalized in due time for WRC-15. New services or systems shall not cause any limitation to incumbent services.

If WRC-15 considers that any new allocation is needed for global flight tracking in accordance with Resolution 185 (Busan, 2014), then it is proposed that such allocation be either a mobile-satellite service (Earth-to-space) or an aeronautical mobile-satellite service (Earth-to-space) on a secondary

basis so as to enhance the coverage over areas where the terrestrial networks are not available, as given, as an example, for the mobile-satellite service (Earth-to-space) below.

The use of aircraft location for any other purpose, such as ATM, would need more time to be analysed in detail as they may be flight safety applications, and as a consequence, this administration is willing to accept a future agenda item for WRC-19.

## ARTICLE 5

### Frequency allocations

#### Section IV – Table of Frequency Allocations

(See No. 2.1)

#### MOD

##### 890-1 300 MHz

Allocation to services		
Region 1	Region 2	Region 3
...		
<b>960-1 164</b>	AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328 <u>ADD 5.XXX</u>	
...		

#### ADD

**5.XXX** The frequency band 1 089-1 091 MHz is also allocated to the mobile-satellite service (Earth-to-space) on a secondary basis, strictly limited to the satellite detection of signals transmitted by airplanes so as to enhance the coverage over areas where terrestrial networks are not present.

**Reasons:** To recognize the reception of the ADS-B signal by satellites as a means for global flight tracking to avoid any disappearance.