



**International Civil Aviation Organization (ICAO)
NACC Regional Office**

**ICAO NAM/CAR/SAM Regional
Preparatory Group (RPG) Workshop for the International
Telecommunications Union World Radiocommunication
Conference (ITU WRC-2019)
(RPG/ITU WRC-2019)
(Mexico City, Mexico, 6 – 7 February 2018)**

Summary of Discussions

Date: 6 and 7 February 2018

Place: Mexico City, Mexico

Participants:: The workshop was attended by 12 NAM/CAR/SAM States and 5 International Organizations/Industry, totalling 32 participants (**Attachment**).

INTRODUCTION

The objective of this event was to support the NAM/CAR/SAM States in the appropriate management of the frequency spectrum and in preparing them to support the ICAO's position at the ITU WRC-2019. Participants had the opportunity to learn about the activities that different regions and organizations are developing in preparation to support ICAO to ensure the protection of frequencies for aeronautical use.

Mr. Melvin Cintron, Regional Director of the ICAO NACC Regional Office, welcomed the participants. He stressed the importance of the use of frequencies in the regions and the need for their protection. He highlighted the change that ICAO is developing, including measurement mechanisms and compliance with the activities for the development of the frequencies. He indicated that the ICAO NACC Regional Office has changed and that the achievements that are being made in the region are in line with the changes that are taking place.

The workshop webpage is located at: <https://www.icao.int/NACC/Pages/meetings-2018-rpg.aspx>

AGENDA ITEM 1 – INTRODUCTION AND PREPARATION OF THE WRC/19

1.1 Under P/01, the Secretariat showed many aspects of the Aeronautical Frequency Spectrum Management, indicating the need for implementing a combination of administrative and technical procedures and ensuring interference free and efficient operation of radio services (e.g. air/ground communications and radio navigation). The need for supporting ICAO position for the WRC-19 firstly at a national level, secondly at a regional level and finally at an international level was also commented. The Secretariat indicated the ICAO Frequency Spectrum Strategy focuses on existing and future spectrum requirements in support of the evolving CNS systems and infrastructure requirements, statements of official policy on each and every frequency band used by aeronautical systems for the provision of CNS, and ICAO's position on the specific agenda items of the upcoming ITU WRC to ensure that aeronautical requirements and safety concerns are met.

1.2 Under P/02, the Frequency Spectrum Management Panel (FSMP) Rapporteur reviewed the draft position of ICAO towards the WRC-19 ITU Conference. The ICAO position is in the webpage: <http://www.icao.int/safety/fsmp/documents/itu-wrc19>. Under the presentation, the different Agenda Items of the ICAO position and which elements of the WRC-19 are important to support the impact of the resolution for the aviation operation were exposed.

1.3 Under P/03, a briefing of the ITU, its development and structure allocate was presented. The objectives of the WRC-19, special spectrum/orbit resource for emerging radio technologies and applications, Maintain the right balance between the spectrum requirements of all radiocommunication services, including aeronautical services, achieve global spectrum harmonization for economies of scale and interoperability of the equipment and create regulatory certainty for users, regulators and industry in utilizing spectrum.

Up-to-date information online at: <http://www.itu.int/en/ITUR/study-groups/rcpm/Pages/wrc-19-studies.aspx>

AGENDA ITEM 2: PREPARATION OF THE WRC/19: ACTION PLAN TO BE IMPLEMENTED AT THE NATIONAL AND REGIONAL LEVELS

2.1 Under P/04, UK reviewed agenda item 9.1.4 of the WRC-19, Stations on-Board Sub-Orbital Vehicles (Spaceplanes). It was indicated the need to conduct studies a) to identify any required technical and operational measures, in relation to stations on board sub-orbital vehicles that could assist in avoiding harmful interference between radiocommunication services b) to determine spectrum requirements and, based on the outcome of those studies c) to consider a possible future agenda item for the WRC-23.

2.2 Under P/05, ASRI presented the consideration to have an account for the WRC-19 agenda items, which may negatively affect spectrum access for aeronautical system or services (Agenda Items 1.7, 1.8, 1.9, 1.11, 1.12, 1.13, 1.14, 1.16, 9.1.3, 9.1.6). The final ICAO's WRC-19 position document is shown in the following webpage:
<https://www.icao.int/safety/FSMP/Documents/Forms/AllItems.aspx>

2.3 Under P/06, AIRBUS indicated that for the WRC-15 ICAO, should encourage States and the ITU to discuss allocation requirements to provide the necessary spectrum allocations for global air traffic services surveillance as a matter of urgency.

2.4 In WRC-15 Resolution 425, the use of the frequency band 1 087.7-1 092.3 MHz by the Aeronautical Mobile-Satellite (AMR) Service (Earth-to-space) was indicated to facilitate global flight tracking for civil aviation.

2.5 For the next WRC-19, the new Agenda Item 1.10 will consider spectrum needs and regulatory provisions for the introduction and use of the Global Aeronautical Distress and Safety System (GADSS), in accordance with WRC15 Resolution 426.

2.6 The presentation was developed by United Kingdom, and explained the Global Aeronautical Distress Safety System concept, documents and important information to be taken into account for the evaluation. Moreover, United Kingdom indicated the different study groups of the GADSS and that AIRBUS is involved in all of them. The references of the ICAO SARPs and regulatory framework of many aviation organizations were indicated.

2.7 Under P/07, UK presented the needs and regulatory provisions for the introduction and use of the GADSS. The analysis of the Agenda Item 1.10 recommended carrying out relevant studies taking into account the information provided by ICAO and that it was necessary to review the GADSS implementation.

AGENDA ITEM 3: SPECTRUM ISSUES AND CHALLENGES NOT ON THE SPECIFIC WRC-19 AGENDA

3.1 Under P/08, the potential interference to radio altimeters due to WRC-15 decision and its mitigation was explained. The radio altimeter supports many operational functions in the aircraft and for this reason it is a critical system. The altimeters operate within the 4200-4400 MHz ARNS allocation:

- Worldwide allocation
- Traditionally, no other users within the band

3.2 Wireless Avionics Intra-Communications (WAIC) system was recently allocated to the same band as an (AMR) S.

The workshop agreed the following:

1. Radio altimeter spectrum critical to almost all classes of aviation
2. New demand for ‘mid-band’ spectrum places altimeters in a desirable location
3. There will continue to be attempts on the frequency band and to those adjacent
4. Aviation needs all the information available to ensure a robust defense of the system

3.3 Under P/09, CITEL shared information about the Status of Preparations for WRC-19, one of the topics is the: WRC-19 – *Issues of Primary Interest to Aviation*:

- Agenda Item 1.10 – Global Aeronautical Distress and Safety System (GADSS) – Preliminary View
- Agenda Item Issue 9.1.4 – Stations on Board Sub-Orbital Vehicles – Preliminary View
- Agenda Item 1.8 – Introduction of Additional Satellite Systems into the Global Maritime Distress and Safety System (GMDSS) – Preliminary Proposal

The next ITU Permanent Consultive Committee (PCC) II of CITEL (Inter-American Telecommunication Commission) meeting will be held in Mexico City, Mexico, from 16 to 20 July 2018.

3.4 Under P/10, Air services presented the activities carried out in Asia in line with the preparation for the WRC-19 and the activities that will be developed in the next months.

3.5 Under P/11, the Electronic Communication Committee (ECC), presented information on the status of European Conference of Postal and Telecommunications Administrations (CEPT) preparations for the WRC-19.

3.6 The Conference Preparatory Group (CPG19) of CEPT/ECC is responsible for developing the European Common Proposals (ECPs) and Briefs for the WRC-19 and RA-19 that cover different goals and projects objectives.

For both WRC-19 and the Radiocommunications Assembly (RA)-19, the Conference Preparatory Group, is responsible for the following deliverables:

- European Common Proposals (ECPs)
 - At least 10 administrations in support
 - No more than 6 opposing – as a general guideline
- CEPT Briefs
 - Describe each agenda item
 - Contains the CEPT view – agreed by consensus at each stage
- CEPT co-ordination in ITU-R meetings
 - Agreed contributions (also for non-WRC issues)
 - Co-ordination on lines to take

3.7 States were able to review the available information in the following links:

General information: <http://www.cept.org/ecc>

CPG page: <http://www.cept.org/ecc/groups/ecc/cpg>

Questions/Answers regarding CPG: <https://cept.org/files/4200/CPG%20role%20in%20WRC%20preparation%20process%2011oct13.pdf>

Coordinators:

<http://www.cept.org/ecc/groups/ecc/cpg/page/list-of-cept-coordinators-wrc-19/>

CEPT Briefs/ECPs:

<http://www.cept.org/ecc/groups/ecc/cpg/page/cept-briefs-and-ecps-for-wrc-19>

3.8 Under P/12, the Republic of South Africa provided the ATUs position (African Telecommunication Union) integrated by 45 Members of African States, presenting the activities developed by the African Common Proposals (ACP), the activities conducted during 2017 and the activities that will be developed in the next months were presented.

Additional APM information is available at the following link:

<http://atu-uat.org/events>

3.9 Under the P/13, the Secretariat presented information about Unmanned Aircraft Systems, spectrum issues and challenges. The Secretariat also presented information on the potential frequency bands and ICAO Remotely Piloted Aircraft System Panel (RPASP) and SARPs amendment proposals.

3.10 ICAO RPASP will have its first package of technology neutral C2 Link SARPs ready by WRC-19, and is planning to have its technology specific SARPs ready by WRC-23.

Proposed amendments to Annex 10 - *Aeronautical Telecommunications*, Volume 5 include some WRC-15 Resolutions.



3.11 The Secretariat invited participants to review all the information and the ICAO needs to consider harmful interference in its SARPs for Fixed Satellite Service (FSS)-related C2 Links. ICAO RPASP plans to complete its FSS-related SARPs amendments prior to 2023.

3.12 Under P/14, Thales Alenia Space presented information on a potential new Aeronautical Mobile Satellite Route Service system in the 5 GHz band for the RPAS C2 link. The 5GHz Solution – Spectrum: 5030-5091 MHz presented the following recommendation:

- FSMP-WG03-WP10: “Spectrum Sharing in C band for terrestrial and Satcom C2 link for RPAS” ***Sharing of the band can be achieved with limited operational impact.***
- FSMP-WG04-WP09: “Considerations for establishment of channel plans for the AMS(R)S and AM(R)S allocations in the 5030-5091 MHz frequency band for use by satellite and terrestrial systems supporting UAS C2 Links” ***It is possible to define a carrier assignment strategy in the band that will limit coordination requirements to a minimum.***

3.13 The information presented included conclusions WRC-15FSS and 5GHz There are two solutions for the Unmanned Aircraft Systems (UAS) C2 Satcom link: C-band FSS in Ku/Ka-band.

3.14 These two solutions are not in competition as; they will most likely address different classes of airspace users. C-band will be hardly avoidable for smaller UAS and at low altitudes significant level of European public investment in this domain; industrials such as TAS, and satellite operators expressed their interest in a 5GHz SatCom solution for C2.

3.15 Under P/15, the National Institute of Information and Communications Technology (NICT), presented a study about the Development of Wireless Link Applications for Small UAS in Japan.

3.16 This paper indicated the need for communication and the safe operation of UAS, which are becoming urgent with the expansion of the UAS. The NICT proposal was an Unmanned Aircraft-based Wireless Relay Network.

3.17 The NICT developed and tested UAV-based wireless relay network systems in natural disasters. On-board Ka band tracking antenna for unmanned aircraft system and its status of current standardization in Japan. Also, it was indicated that the frequency allocation for UAS for safety operation of small UAS was necessary.

3.18 Under P/16, Eurocontrol presented information on the Programme Making and Special Events (PMSE), aiming to share the 960 – 1164 MHz band.

3.19 Eurocontrol indicated that a spectrum is a limited natural resource and the increasing demand of spectrum puts pressure on all sectors. All the spectrum managers have to promote competition and ensure that markets work effectively and efficient on the use of the limited spectrum resource. Spectrum sharing has become an accepted practice.

3.20 This paper explained the reason not to share the 960-1164 MHz band because of the PMSE spectrum requirements. Negative impact will occur if PMSE use this bandwidth for their service, as PMSE interference in the 960-1164 MHz band could create noise on aircraft DME receivers, leading to the loss of the aircraft radio position and to the degradation of aircraft operational performances (loss of DME distances display). This can become critical in case of difficult conditions such as bad weather, low flight altitude and others.

3.21 The recommendation was that the aviation spectrum must have a vision and strategy to protect this bandwidth and make a decision on 960-1164 MHz and 2700-2900 MHz bands, and to incorporate the protected information in the ICAO Annexes and SARPs.

AGENDA ITEM 4: THE REALITY OF FREQUENCY MANAGEMENT IN NACC AND SAM: CURRENT PRACTICES AND NEW CHALLENGES.

4.1 Under P/17, Nav Canada presented the effect of PPD (Personal Privacy Devices) type jammers on aviation GPS receivers.

4.2 This paper presented the activities made by Nav Canada with ground and flight testing with the effect of GPS jammers on some GPS receivers. The result of the test indicated that: exposure to GPS jamming by PPD type jammers is hard to predict; receivers on the ground are far more susceptible than airborne receivers, operations on the ground are at a higher risk and therefore they should beware of stationary high-power jammers.

4.3 It was recommended to monitor these activities and be able to understand repercussions to aeronautical operation.

4.4 Under P/18, the FAA presented the Radio Frequency Interference (RFI).

ITU Definition: The effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy. Criteria to mitigate inter-system interference are established as an element of ICAO SARPs.

Defined RFI categories: Authorized Transmissions, Unauthorized Transmissions Intentional and Unintentional RFI.

4.5 The FAA discussed the GPS Interference Navigation Tool and other FAA's software that support the monitoring and correct procedure of report and solve of RFI.

4.6 Under P/19, the Secretariat shared important information for the States on handbook of radiofrequency requirements for civil aviation.

AGENDA ITEM 5: OTHER BUSINESS.

5.1 Under P/20, the ICAO NACC Regional Office presented information on the NAM/CAR Regional Management, and indicated some of the deficiencies presented in the regions, regarding the procedures of frequencies allocation.

5.2 Some of the problems impact the operation in some Caribbean States, causing interference between some operational frequencies. United States suggested to coordinate the allocation of frequencies in the Caribbean through the ICAO NACC Regional Office.

5.3 Under WP/28, Mexico informed on some considerations about Agenda Item 1.18 of the WRC-19, for supporting regulatory actions for the Global Maritime Distress System (GMDSS). Mexico exposed its position related to this Agenda Item and its concern about the possible interference between the services of this system with the aeronautical service in the future.

5.4 Mexico with Iridium and with The Federal Institute of Telecommunications (IFT), have been coordinating this issue, but they need support to decide which position will take Mexico in the future for supporting this agenda Item. The workshop agreed to follow-up and have further discussions on this topic during the next days under the FSMP.

CONCLUSIONS/RECOMMENDATIONS

1. States should take into account the information provided in each of the working papers to strengthen the activities that States will undertake to support ICAO's position before the ITU Conference in 2019.
2. States should work very close with the national organizations responsible for frequencies management to ensure that these institutions understand and support ICAO's position and the need for States to protect the frequency bands necessary for aeronautical services.
3. States should perform a local analysis regarding the needs of the States, and establish priorities and current and future services that will support their aeronautical management. Ensure that the frequencies that will be required for these services will be available at all times.
4. Participants agreed that the management and support of States to ICAO's position for the protection of frequencies for air navigation services should be local in the first instance, then regional and finally global, in order to secure the results before the Conference. Participants were invited to take this into account for regional preparation before the WRC-19.
5. According to the information presented, there are new challenges and frequency assignments for new aeronautical services. Each State must conduct its own studies or take note about other State's studies on the impact that these new assignments will have on air navigation services, and ensure that they do not cause interference in current and future air navigation services.
6. States should Support ICAO/ITU studies regarding this topic and services that will be implemented in the future.



North American, Central American and Caribbean Office (NACC)
Oficina para Norteamérica, Centroamérica y Caribe (NACC)

ATTACHMENT

ICAO NAM/CAR/SAM Regional Preparatory Group (RPG) Workshop for the International Telecommunications Union World Radiocommunication Conference

(ITU WRC-2019 / UIT CMR-2019)
Mexico City, Mexico, 6 – 7 February 2018

LIST OF PARTICIPANTS

AUSTRALIA

Eddy D'Amico

BRAZIL

Vahe Antoine Yaghdjian

CANADA

Mitch (Milivoje) Jevtovic
Seyed Rastaghi

CUBA

Carlos Miguel Jiménez Guerra

FRANCE

Alexandre Guignot
Jerôme André

INDIA

Ajay Kumar Kapur
Rajith Ali

JAPAN

Toshio Nomi
Takeshi Tomoda
Hiroyuki Tsuji

MEXICO

Oscar Vargas Antonio
Daniel Conrado Castañeda Cruz

SOUTH AFRICA

Lisa Cokisa Tele

UNITED KINGDOM

John Mettrop

UNITED STATES

Robert Denny
Michael Biggs
V.Shiva Goel
Louis Bell

URUGUAY

Leonardo Rodriguez
Horacio Berretta Kramer

ASRI

Andrew Roy
Kris Hutchison

EUROCONTROL

Raffi Khatcherian

ICCAIA

Joseph Cramer
Luiz Fernando De Souza

IFT

Xochitl Citlalli Hernández Medina
Javier Amado Alarcón

ITU

Xingguo Zhou

INMARSAT

Kamlesh Masrani

MÉXICO, ADVANCE W&W LABORATORIOS S.C.

José Zavala Chavez

ICAO

Loftur Jonasson

Mayda Ávila

LIST OF PARTICIPANTS

Name / Position	Administration / Organization	Telephone / E-mail
Australia		
Eddy D'Amico Senior RF/Communications Engineer	Airservices Australia	Tel. +612 6268 5443 E-mail eddy.damico@airservicesaustralia.com
Brazil		
Vahe Antoine Yaghdjian Telecom Engineer	Department of Airspace Control (DECEA)	Tel. +5521 2101 6487 E-mail vahevay@decea.gov.br
Canada		
Mitch (Milivoje) Jevtovic Manager, Spectrum Management	Nav Canada	Tel. +1 613 248 7275 E-mail jevtovm@navcanada.ca
Cuba		
Carlos Miguel Jiménez Guerra Especialista CNS	Instituto de Aeronáutica Civil de Cuba (IACC)	Tel. + 537 8381121/535 4328565 E-mail carlosm.jimenez@iacc.avianet.cu
France		
Jerôme André Expert	Agence Nationale des Fréquences	Tel. +332 9834 1233 E-mail jerome.andre@anfr.fr
Alexandre Guignot Expert spectrum management	Direction des Services de la Navigation Aérienne	Tel. +33 562 14 35 31 E-mail alexandre.guignot@aviation-civile.gouv.fr
India		
Ajay Kumar Kapur Joint General Manager (CNS)	Airports Authority of India	Tel. +9111 2461 2930 E-mail akkapur@aai.aero
Rajith Ali Assistant General Manager (Com)	Airports Authority of India	Tel. +9111 2461 0849 E-mail rali@aai.aero
Japan		
Toshio Nomi Project Manager	Japan Radio Air Navigation Systems Association	Tel. +813 5214 1353 E-mail nomi.toshio@jrnsa.or.jp
Hiroyuki Tsuji Planning Manager	National Institute of Information and Com Tech	Tel. +81 42 327 6034 E-mail tsuji@nict.go.jp
Takeshi Tomoda Researcher	Mitsubishi Research Institute	Tel. +813 6705 6039 E-mail tatomoda@mri.co.jp

Name / Position	Administration / Organization	Telephone / E-mail
Mexico		
Oscar Vargas Antonio Subdirector de Área	Dirección General de Aeronáutica Civil (DGAC)	Tel. +52 55 9723 9300 Ext. 18074 E-mail ovargasa@sct.gob.mx
Daniel Conrado Castañeda Cruz Inspector Verificador Aeronáutico	Dirección General de Aeronáutica Civil	Tel. + 52 55 5723 9300 x.18071 E-mail dcastane@sct.gob.mx
South Africa		
Lisa Cokisa Tele CNS Planning System Engineer	Air Traffic Navigation Services	Tel. +2711 607 1134 E-mail lisat@atns.co.za
United Kingdom		
John Mettrop Spectrum Policy Specialist	Civil Aviation Authority	Tel. 01293 573 477/07770507838 E-mail john.mettrop@caa.co.uk
United States		
V.Shiva Goel Attorney	Harris, Wiltshire & Grannis LLP	Tel. +202 730 1304 E-mail sgoel@hwglaw.com
Michael Biggs Senior Engineer Spectrum Engineering Services	Federal Aviation Administration	Tel. +1202 267 8241 E-mail michael.biggs@faa.gov
Robert Denny Electronics Engineer	National Telecommunications and Information Adm	Tel. +1 202 482 3803 E-mail rdenny@ntia.doc.gov
Louis Bell Electronics Engineer	Federal Communications Commission (FCC)	Tel. +1 202 482 1641 E-mail louis.bell@fcc.gov
Uruguay		
Horacio Berretta Kramer Ingeniero Electrónica - Asesor VII	Dinacia	Tel. +598 2604 0408 E-mail hberretta@dinacia.gub.uy
Leonardo Rodríguez Técnico Electrónico	Dinacia	Tel. +598 2604 0408 E-mail larodriguez@dinacia.gub.uy
ASRI		
Kris Hutchison President	Aviations Spectrum Resources Inc.	Tel. +443 951 0322 E-mail keh@asri.aero
Andrew Roy Director, Engineering Services	Aviation Spectrum Resources, Inc.	Tel. +1-443 951 0340 E-mail acr@asri.aero

Name / Position	Administration / Organization	Telephone / E-mail
EUROCONTROL		
Raffi Khatcherian Spectrum Manager	Eurocontrol	Tel. +32 27293687 E-mail: raffi.khatcherian@eurocontrol.int
ICCAIA		
Joseph Cramer Regional Director	ICCAIA	Tel. +1 703 465 3486 E-mail Joseph.Cramer@Boeing.com
Luiz Fernando De Souza Engineer	ICCAIA	Tel. 5516 9816 72275 E-mail lfsouza@embraer.com.br
IFT		
Xochitl Citlalli Hernández Medina Subdirectora de Coordinación Técnica en Radiocomunicación	Instituto Federal de Telecomunicaciones (IFT)	Tel. +52 55 50154000 ext 2317 E-mail xochitl.hernandez@ift.org.mx
Javier Amado Subdirector de Implementación de Atribuciones	Instituto Federal de Telecomunicaciones (IFT)	Tel. +52 55 50154000 ext 4635 E-mail javier.amado@ift.org.mx
ITU		
Xingguo Zhou Radiocommunication Engineer, BR/TSD/FMD	International Telecommunication Union	Tel. +41 22 730 5068 E-mail xingguo.zhou@itu.int
INMARSAT		
Kamlesh Masrani Manager, Spectrum	Inmarsat	Tel. + 44 20 7728 1338 E-mail kamlesh.masrani@inmarsat.com
México, Advance W&W Laboratorios S.C.		
José Zavala Ingeniero	México, Advance W&W Laboratorios S.C.	Tel. +52 55 5685 7744 E-mail jose@advanceww.com.mx
ICAO		
Loftur Jonasson	International Civil Aviation Organization	Tel. +514 954 8219 ext. 7130 E-mail LJonasson@icao.int
Mayda Ávila Regional Officer Communications, Navigation and Surveillance	ICAO NACC Regional Office	Tel. +52(55) 5250 3211 ext. 114 E-mail mavila@icao.int