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WORKING PAPER

ASSEMBLY — 37TH SESSION

TECHNICAL COMMISSION

Agenda Item 41: Support of the ICAO policy on radio frequency spectrum matters

USE OF THE AVIATION FREQUENCY SPECTRUM AND THE INTERNATIONAL TELECOMMUNICATION UNION (ITU) WORLD RADIOCOMMUNICATION CONFERENCE (WRC)

(Presented by the Council of ICAO)

EXECUTIVE SUMMARY

This paper introduces and examines the strategy for establishing and promoting the ICAO Position for future International Telecommunication Union (ITU) World Radiocommunication Conferences (WRCs). To balance the increased attention, pressure and resources given to the ITU WRC process by other (non-aviation) services, aviation must similarly increase its profile in this process. To this end, it needs to be ensured that necessary resources, as described in Assembly Resolution A36-25, are made available for the ITU WRC process, by ICAO as well as by States.

The requirement for an associated long-term CNS strategy within the aviation community is also highlighted. Such a strategy should gradually introduce more spectrum-efficient systems within the aviation frequency bands. This strategy will need to be requirements driven as well as technology driven and it will, from time to time, need to be backed up by a proactive phase out of older technology.

Action: The Assembly is invited to:
a) agree that continued access to spectrum is a critical issue for the long term safety and efficiency of civil aviation;
b) support the ICAO strategy for establishing and promoting the ICAO Position for future ITU WRCs, as contained in Doc 9718;
c) encourage aviation authorities to fully participate in the national, regional and ITU-R preparatory activities for WRC-12, as resolved in A36-25; and
d) note the need to continuously optimize the use of spectrum for current and future CNS applications.

Strategic Objectives:	This working paper relates to Strategic Objectives A, D and E on safety, efficiency and continuity.
Financial implications:	Resources for the activities referred to in this paper are included in the proposed budget for 2011 to 2013.
References:	Doc 9902, *Assembly Resolutions in Force (as of 28 September 2007)* Doc 9718, *Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including Statement of Approved ICAO Policies (fifth edition, 2010)* State letter E 3/5-09/61

1. INTRODUCTION

1.1 Radio frequency spectrum is becoming an increasingly scarce resource as pressure for increased access from aeronautical as well as non-aeronautical users continues to mount. Aviation is not only facing increased requirements for bandwidth from within, as envisaged by the NextGen and SESAR programmes, but it is also facing ever-increasing pressure from other users of the spectrum, who are exercising their rapidly growing requirements for larger spectrum bandwidths.

1.2 This paper introduces and discusses the application of the current ICAO strategy for establishing and promoting the ICAO Position for future ITU WRCs.

1.3 The paper also highlights the need for an associated internationally harmonized and cohesive long-term communications, navigation, and surveillance (CNS) strategy within the aviation community to gradually introduce more spectrum-efficient systems within the aviation frequency bands.

2. SUPPORT TO THE ICAO POSITION IN PREPARATION FOR AND DURING ITU WRCs

2.1 Long-term protection of adequate spectrum for aeronautical safety communication and navigation systems is based on the application of the ICAO "*Strategy for establishing and promoting the ICAO Position for future ITU World Radiocommunication Conferences",* as approved by Council and included in the third edition of the *Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including Statement of Approved ICAO Policies* (Doc 9718) in 2003. This strategy, assisted by Assembly Resolution A36-25 (2007), provides the basis and guidance for the development and promotion of the ICAO Position.

2.2 The strategy also defines the development and maintenance of the ICAO policy on all radio frequency spectrum requirements, a policy which has official status as it is approved by Council. The current policy is contained in the fifth edition (2010) of Doc 9718.

2.3 To date, this strategy has served aviation well. For each WRC a position is developed in a timely manner and during the WRC preparation phase the strategy facilitates sufficient coordination, both within the aviation industry and with the national frequency spectrum authorities, to ensure a favourable outcome for aviation during the WRCs.

2.4 The most noteworthy development during recent WRCs has been the continuously increasing participation and influence of lobbyists representing various industries or services. In light of this trend, and to ensure that the aviation views continue to be adequately represented, in 2007 the ICAO Assembly made substantial amendments to the Assembly Resolution on ITU WRC matters (formerly A32-13). The updated version of the resolution (A36-25) now requires more active participation by the aviation stake holders in the national preparatory process for WRC, by *"undertaking to provide experts from their civil aviation authorities to fully participate in the development of States' and regional positions and development of aviation interests at the ITU; and ensuring to the maximum extent possible that their delegations to regional conferences, ITU study groups and WRCs include experts from their civil aviation authorities or other aviation officials who are fully prepared to represent aviation interests"*.

3. LONG-TERM SPECTRUM REQUIREMENTS FOR AVIATION

3.1 The majority of the frequency spectrum allocated to aviation today was already allocated at the 1947 Atlantic City World Administrative Radiocommunication Conference at which time the ITU also became a specialized agency of the United Nations. At that time, many of the spectrum allocations were highly speculative since the technology expected to use many of those spectrum allocations had yet to come into existence.

3.2 As pressure on the frequency spectrum has continually mounted over the years, there has been some erosion of aviation allocations and some allocations are increasingly being targeted for other use. In most cases so far, this has not caused aviation much difficulty as most of the spectrum lost had been underutilized by aviation and improved technology has enabled more efficient use of the existing allocations. There are, however, exceptions, such as the former aeronautical mobile satellite (R) service (AMS(R)S) allocation which was deleted in 1997. Since then aviation has been seeking a solution through the WRC process but with little result thus far. [Currently, a proposal is being discussed in the ITU-R whereby ICAO would be given a key role in the coordination of aviation safety spectrum requirements to ensure priority access for aviation in a common mobile satellite service (MSS) band. If this approach is agreed, it will require ICAO to commit the necessary resources to this process.] «text subject to change or deletion in line with ITU-R developments».

3.3 The ITU Radio Regulations require efficient and equitable use of spectrum by all users. Inefficient users of spectrum are under increasing pressure to make room for other users. In light of this, from time to time it is necessary for aviation to take stock of its requirements, not only to introduce new and more efficient services in a given frequency band, but also to vacate a frequency band if it is not expected to be of further use to aviation in the foreseeable future.

3.4 At WRC-03 and WRC-07, a number of aeronautical radionavigation service (ARNS) bands were reallocated for sharing with the aeronautical mobile (route) service (AM(R)S) under certain conditions which protect the integrity of existing and future radionavigation infrastructure. The WRCs acknowledged through the accompanying resolutions that ICAO could manage the introduction of mixed services in the bands as long as all the systems affected were ICAO standardized; however, in the case of ICAO versus non-ICAO standardized systems, any compatibility studies would still need to be undertaken in the ITU.

3.5 This very positive development provides increased flexibility when advancing new communication and radionavigation technologies to satisfy the future requirements of civil aviation. The core element of an effective long-term spectrum strategy should build on this flexibility. To make full use of this flexibility, ICAO and the civil aviation community as a whole must develop a cohesive CNS strategy to gradually introduce more spectrum-efficient systems within the aviation bands. Such a CNS strategy will need to be driven by ATM requirements as well as technology driven and it will, from time to time, need to be backed up by a proactive phase-out of older technology that is no longer required.

4. CONCLUSION

4.1 The ICAO "*Strategy for establishing and promoting the ICAO Position for future ITU World Radiocommunication Conferences*", together with Resolution A36-25, provides a sufficient basis to uphold the civil aviation requirements in the WRC process. Ever-increasing attention and resources, however, are being given to the WRC process by non-aviation stakeholders. Therefore, in order for the strategy to be successful, the necessary support and resources, as described in Resolution A36-25, must be available for the WRC process, by ICAO as well as by States.

4.2 The appendix to this paper contains a description of the activities undertaken by ICAO to date in support of the WRC-12 preparation. As can be seen, the activity, which started in 2008, has gained pace in 2009 and 2010. Budgetary constraints, however, may impact further work, especially in 2011. To balance the increased attention, pressure and resources by other services in the ITU WRC process, aviation as a whole needs to increase its profile in this process; States and service providers must ensure adequate participation by aviation frequency spectrum professionals. Similarly, it needs to be ensured that ICAO has the necessary funds in its regular programme budget for adequate support of this activity.

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APPENDIX

WRC-12 PREPARATION: ACTIVITIES RELEVANT TO CIVIL AVIATION

ITU activities:

ITU-R study group meetings: National telecommunications authorities develop supporting material for ITU WRCs (e.g. draft CPM text and other technical material) in the ITU-R study groups. In this process, the national agendas are often driven by commercial interests and the implications for the safety of aviation are not necessarily understood or appreciated. Thus, ICAO guidance on aviation matters is required for the ITU and its member States to be made aware of aviation requirements. The study groups most involved in aviation frequency spectrum matters are SG4 and WP4C (satellite), as well as SG5 and WP5B (terrestrial and mobile).

ITU conference preparatory meetings (CPM): The CPMs prepare a consolidated report to be used in support of the work during the WRC. The report is based on contributions from administrations, ITU-R study groups and other sources and includes, to the extent possible, reconciled differences in approaches as contained in the source material or includes differing views and their justification.

Regional telecommunication organizations (APT, ASMG, ATU, CEPT, CITEL and RCC[1]): National telecommunications authorities coordinate their positions through the regional organizations. Similar to ITU-R study group meetings, aviation interests may be present in some delegations; however a national frequency spectrum authority has only "one official position" which may not be supportive of aviation interests. ICAO is allowed to participate.

The activities described above serve to develop States' positions in preparation for a WRC. In addition, the ITU-R study groups also develop ITU-R recommendations which supplement the Radio Regulations. Many of these recommendations describe the conditions for use of spectrum by aviation.

ICAO activities:

Working Group F (Frequency) (WG/F) of the Aeronautical Communications Panel (ACP): WG/F is responsible for the initial development of the draft ICAO Position for WRCs. WG/F is also responsible for developing the draft overall ICAO frequency spectrum policy which, similar to the position, is then finalized by the Air Navigation Commission and adopted by Council. WG/F serves as a forum of aviation frequency spectrum experts to assist the ICAO Secretariat in developing material to support the common aviation position during the deliberations of the ITU-R study groups and CPM and of the regional telecommunication organizations.

1 APT: Asia-Pacific Telecommunity; ASMG: Arab Spectrum Management Group; ATU: African Telecommunications Union; CEPT: the European Conference of Postal and Telecommunications Administrations; CITEL: Inter-American Telecommunication Commission; RCC: Regional Commonwealth in the field of Communications.

Regional aviation frequency spectrum workshops (regional preparatory group (RPG)) meetings for WRC-12: This activity is intended to support States aviation authorities in their preparation and coordination with the States' spectrum regulatory authorities in a timely manner for the ITU WRC-12. RPG meetings are held in conjunction with ACP-WG/F meetings and hosted by the ICAO Regional Offices. All regional participants in the RPG meetings are encouraged to participate in the corresponding ACP-WG/F meetings as well. During the RPG meetings the relevant aviation issues on the WRC-12 agenda are introduced and discussed within the region.

The objective of combining the WG/F meetings with the RPG meetings is to provide an effective forum within the regions for the aviation spectrum professionals designated by the States to provide the tools and insight necessary to facilitate effective aviation participation at the national and regional level, in support of the ICAO Position, and to secure adequate regional aviation input into the WRC process.

WRC 2012 activities supported by the ICAO Secretariat, past and foreseen:
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2008:
- Two meetings of the ACP-WG/F (Frequency) in Montreal, Canada; main task: develop the ICAO Position for WRC-12 and material for the ITU-R study groups.
- Two meetings of ITU-R Study Group 5 on terrestrial services, Geneva, Switzerland.
- Two meetings of ITU-R Study Group 4 on satellite services, Geneva, Switzerland.

2009:
- ACP-WG/F in Montreal, Canada; main task: finalize the ICAO Position for WRC-12 and develop material for the ITU-R study groups.
- Meeting of the APANPIRG Regional Preparatory Group (RPG) on WRC-12 preparation, combined with a meeting of the ACP-WG/F, ICAO Office in Bangkok, Thailand.
- Four meetings of ITU-R Study Groups 4 (satellite) and 5 (terrestrial).
- Meeting of the APT conference preparatory group (APG) for WRC-12 (APG-2012-2), Hangzhou, China.
- Meeting of ATU on the development of a regional position for WRC-12, Geneva, Switzerland.
- Meeting of the CEPT CPG PTC on WRC-12 preparation, Geneva, Switzerland.
- Meeting of CITEL PCC II, WRC-12 preparation, Washington DC, United States.

2010:
- RPG WRC-12 meeting combined with ACP-WG/F, ICAO office in Mexico City, Mexico.
- Regional Preparatory Workshop for WRC-12 combined with ACP-WG/F, ICAO office in Cairo, Egypt.
- Four meetings of ITU-R Study Groups 4 (satellite) and 5 (terrestrial).
- Seven meetings, regional telecom organizations (APT, ASMG, ATU, CEPT, CITEL, RCC).

2011:
- Two RPG WRC-12 meetings, ICAO Office TBD; and two meetings of the ACP-WG/F, ICAO Office TBD, in conjunction with the RPGs.
- Four meetings of ITU-R Study Groups 4 (satellite) and 5 (terrestrial).
- Four to six meetings, regional telecom organizations.
- ITU-R conference preparatory meeting (CPM), Geneva, Switzerland (two people).

2012:
- ITU Radiocommunication Assembly, Geneva, Switzerland.
- ITU WRC-12, three people, four weeks, Geneva, Switzerland.

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