International Civil Aviation Organization

ELEVENTH MEETING OF THE
ASIA/PACIFIC AIR NAVIGATION PLANNING AND
IMPLEMENTATION REGIONAL GROUP (APANPIRG/11)
Bangkok, Thailand, 2 - 6 October 2000

Agenda Item 2: ASIA/PAC Air Navigation System and Related Activities

REPORT ON THE RESULTS OF THE ITU WORLD RADIOCOMMUNICATION CONFERENCE (2000) (WRC-2000)

(Presented by the Secretariat)

SUMMARY

This paper presents the results of the ITU World Radiocommunication Conference (2000) (WRC-2000), which was held from 8 May to 2 June 2000 in Istanbul, Turkey.

Action by the APANPIRG is proposed at paragraph 5.

1. INTRODUCTION

1.1 The ITU World Radiocommunication Conference (2000) (WRC-2000) was held from 8 May to 2 June 2000 in Istanbul, Turkey. The ICAO delegation to the conference included Dr. A. Kotaite, President of the Council and Head of the ICAO delegation, Mr. R.C. Costa Pereira, Secretary General of ICAO, Mr. J. Howell, D/ANB, Mr. C. Eigl, RD, EUR/NAT Office, Mr. R. Kruger, RO/CNS, EUR/NAT Office and Mr. A. Capretti, TO/CNS (all on a part-time basis), and Mr. J. Chagas (C/CNS) and Mr. R. Witzen (TO/CNS) (on a full-time basis).

1.2 The WRC-2000 was opened on 8 May 2000 by Mr. D. Bahceli, Deputy Prime Minister of Turkey. The Chairman of the conference was Mr. F. M. Yurdal, Director-General of Turk Telecom. During the first plenary meeting of the conference, Dr. A. Kotaite gave a statement underlining the need to secure adequate and protected spectrum for aviation. The full text of the statement given by Dr. Kotaite is at Appendix A.

1.3 Aeronautical participation and coordination

1.3.1 The ICAO position was developed by the Air Navigation Commission (ANC), assisted by Working Group F of the Aeronautical Mobile Communications Panel (AMCP) and by the Global Navigation Satellite System Panel on issues related to GNSS. The draft ICAO position was initially reviewed by the Air Navigation Commission on 1 December 1998 (ANC 149-9) and sent to States and relevant international

organizations for comments in State letter E 3/5-98/98, dated 31 December 1998. A final review by the Air Navigation Commission, with consideration of the comments received from States and international organizations, took place on 1 June 1999 (ANC 151-7). The Council approved the ICAO position on 18 June 1999 (C 157/9).

1.3.2 The ICAO position was sent to States and relevant international organizations in State letter E 3/5-99/74, dated 9 July 1999, and was submitted to the ITU on 26 October 1999. Subsequently, three addenda and one corrigendum to the ICAO position were submitted to the ITU, after having been reviewed by the Air Navigation Commission on 20 April 2000 (ANC 154-2). The additional material provided background information on the new allocations for GNSS, the protection of DME, the need for improvement of aviation access to the satellite frequency bands and the protection of the band 2 700 - 2 900 MHz (radar stations).

1.3.3 In total, about 2 300 delegates from 120 ITU Member States and thirty-six international organizations participated in the work of the conference. Aviation participation was substantial: about 120 aviation experts participated in the various delegations of ITU Member States and Observers. This is a significant improvement in comparison with the previous conferences.

1.3.4 Five aviation coordination meetings were organized by the ICAO delegation. All of the aviation experts were invited. Dr. A. Kotaite, President of the Council, presided over the first meeting and Mr. J. Chagas chaired the other meetings. Mr. R. C. Costa Pereira, Secretary General of ICAO participated in the third meeting and Mr. J. Howell, D/ANB, participated in the fourth meeting. The meetings addressed all the aviation-related issues on the agenda of the conference and were considered by the participants as providing an invaluable opportunity for coordinating aviation's participation to the conference.

2. RESULTS OF THE CONFERENCE ON THE AGENDA ITEMS RELATED TO INTERNATIONAL CIVIL AVIATION

2.1 Details of the results of the conference on all agenda items relevant to aviation are contained in Appendix B. A brief overview of the results, in tabular form, is contained in Appendix C. In summary, the main results for civil aviation are:

a) with regard to the future use of the GNSS frequency band 1 559 - 1 567 MHz, the conference agreed that no allocation should be made to the mobile satellite service in this band. Furthermore, Resolution 220, which called for further studies on the compatibility between the radionavigation satellite service and the mobile satellite service (space-to-Earth), was suppressed. With these steps, one of the most controversial discussions in ITU, initiated at WRC-97, was concluded in a fully satisfactory manner for civil aviation. The conference also agreed to downgrade the fixed service, which operates in the GNSS band in a number of countries, to a secondary status after 1 January 2005 (except in some countries, which could only agree to this downgrading with effect from 1 January 2010);

b) the conference agreed to amend the provisions of the Radio Regulations to improve civil aviation access to the satellite frequency bands that WRC-97 had allocated on a generic basis to the mobile satellite service. In a Resolution, States agreed to ensure that mobile satellite service operators carrying non-safety related traffic yield capacity (spectrum)

as and when necessary, to accommodate the spectrum requirements of the aeronautical mobile satellite (R) service;

c) proposals to introduce a new allocation to the (terrestrial) mobile service in the band 2 700 - 2 900 MHz were not accepted. This band is heavily used for primary radar systems. Due to the broad opposition from aviation to this proposal, further review was deferred to a future conference; and

d) new allocations were made to the radionavigation satellite service in various bands. These provisions enable the introduction of GPS L5 and of the Galileo system. Since the allocations were made in bands used by the aeronautical radionavigation service (DME, radar and MLS), regulatory provisions were incorporated in the Radio Regulations to ensure protection of these services.

3. NEXT CONFERENCES

3.1 The next World Radiocommunication Conference is currently scheduled for 2003. The ITU Plenipotentiary Conference will be held in 2002.

3.2 The draft agenda for the WRC-2003, to be formally approved by the ITU Council, includes the following items of interest to civil aviation:

a) general agenda items which can affect civil aviation:

1.1 deletion of country names from footnotes;
4. review of Resolutions/Recommendations of previous conferences;
7.2 draft agenda for next WRC, foreseen for 2006;

b) specific agenda items of major interest to civil aviation:

1.4 the use of the band 5 091 - 5 150 MHz by the MLS;
1.5 use of the bands 5 150 - 5 725 MHz by mobile, fixed, Earth exploration satellite and space service;
1.6 protection of feeder links in the band 5 150 - 5 250 MHz;
1.14 measures related to harmful interference in the HF bands;
1.15 review the results of studies on the compatibility between the radionavigation satellite service and the aeronautical radionavigation service in the band 960 - 1 215 MHz (DME, SSR), 1 215 - 1 350 MHz (radar) and 5 000 - 150 MHz (MLS above 5 030 MHz);
1.17 upgrading of the radiolocation service in the band 2 900 - 3 300 MHz;
1.28 use of the band 108 - 117.975 MHz for GBAS;
1.30 additional allocations to MSS between 1 - 3 GHz; and

c) other items of interest to aviation:

1.8. issues related to unwanted emissions;
1.11 use of the band 14 - 14.5 GHz by the aeronautical mobile satellite service;

1.16 allocations for feeder links in bands around 1.4 GHz;
1.20 additional allocations for non-GSO MSS below 1 GHz; and
1.22 spectrum for systems beyond IMT-2000.

4. CONCLUSIONS

4.1 In general, the conference results fully satisfied the ICAO position. A significant element in the ICAO preparatory activities for this conference was the early awareness and involvement of Contracting States in the development of the ICAO position. Major factors contributing to this achievement included:

a) the early development and dissemination of the draft ICAO position by the Air Navigation Commission, assisted by AMCP Working Group F and GNSSP;

b) the active participation by ICAO experts in the preparatory work of the ITU, including the relevant meetings of the ITU-R (e.g. Working Parties 4A, 8B and 8D; Study Groups 4 and 8; Conference Preparatory Meeting (CPM));

c) the increased participation by ICAO experts in the meetings of the regional telecommunication organizations (APT, CEPT, CITEL, African group). The involvement of the regional offices, with the assistance from Headquarters when required, proved important in supporting the development of regional proposals to the conference that were satisfactory for civil aviation;

d) higher profile of spectrum management issues in ICAO through the actions of the governing bodies and personal actions by the President of the Council and the Secretary General (letters to Ministers and CAA's) and participation in WRC-2000 work; support given by the Secretary General to ANB's activities described in a) through c) above; and

e) the implementation of Assembly Resolution A32-13.

4.2 A full analysis of the impact of the WRC-2000 decisions and an expeditious start of the ICAO preparatory activities for the next conference are now essential. Working group F of the Aeronautical Mobile Communications Panel will develop an initial draft of the ICAO position for review by the ANC during the 155th Session (October-December 2000). Participation of experts from the Regional Offices is being considered to increase at an early stage their awareness of the issues on the WRC-2003 agenda and to contribute their expertise on the specific regional aspects of the various agenda items. In particular, a program for establishing spectrum requirements for the MLS will have to be developed. A final review by the ANC of the ICAO position, and its approval by the Council, is foreseen before mid-2001. The next ICAO Assembly is expected to consider a report on the WRC-2000, as well as aspects related to the ITU Plenipotentiary Conference in 2002.

5. ACTION BY THE APANPIRG

5.1 The APANPIRG is invited to:

a) note the information in this paper; and

b) note the views expressed in paragraph 4.2 above.

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APPENDIX A

ADDRESS BY THE PRESIDENT OF THE COUNCIL OF ICAO,
DR. A. KOTAITE, TO THE INTERNATIONAL TELECOMMUNICATION UNION (ITU) WORLD RADIOCOMMUNICATION CONFERENCE (2000)

I welcome the opportunity to reiterate to this International Telecommunication Union (ITU) World Radiocommunication Conference (2000) the position of the 185 Contracting States of the International Civil Aviation Organization (ICAO) and of all members of the international civil aviation community concerning the protection of the aeronautical spectrum.

It is crucial that all delegates fully grasp the urgency of preserving intact the availability of well-protected radio frequencies for the aviation sector. Simply put, it is the only way that we can maintain the safety of civil aviation and safety is an absolute prerequisite for continued growth of the global air transport industry in the 21st century.

For the past 50 years or more, air transport has been a catalyst for economic growth in virtually every part of the world. Last year alone, some 1.5 billion passengers flew on 22 million flights, carried by 15 000 aircraft on scheduled services. More than one third of manufactured goods by value were shipped by air. In ten years' time, those figures could reach 2.3 billion passengers, 30 million flights, 22 000 aircraft and 40 per cent of manufactured goods.

A healthy and growing air transport system clearly benefits everyone. It creates and supports, directly or indirectly, hundreds of millions of jobs worldwide. It is an integral component of the economic lifeline in many countries. Beyond economics, air transport also enriches the social and cultural fabric of society and contributes to the attainment of peace and prosperity throughout the world.

If we want air transport to continue providing these essential benefits in the future, then we must put into place the air navigation systems that will make it possible for us to manage congested airports and congested airspace without sacrificing safety. We must emphasize safety. There can be no real, sustained growth of the air transport industry without first ensuring safety in the sky. Public confidence in the safety of air travel is a sine qua non condition for them to fly.

The air navigation systems of the future that will provide both safety and efficiency are known as CNS/ATM systems. This acronym stands for communications, navigation, surveillance and air traffic management. A primary feature of CNS/ATM systems is that they are highly dependent on radio communications for optimum operational efficiency. In other words, they require continued interference-free accessibility to the radio frequency spectrum which supports safety-of-life applications.

This is why ICAO has been quite concerned by the tendency at recent ITU conferences to reduce the availability of spectrum for aeronautical communication and radio navigation systems. As President of the Council of ICAO, another world regulatory body, I understand only too well your position of having to reconcile sometimes divergent needs in regulating spectrum allocations. Nevertheless, I urge you not to underestimate the negative consequences of any reallocation of the spectrum that is currently being used for international civil aviation or intended to support its future growth.

From the very beginning, civil aviation has been highly dependent on radio telecommunications. As I have shown, this dependency will inevitably grow in the years to come, as modern aeronautical radio communication and navigation systems are implemented in support of increased safety and efficiency of air transport.

The following three elements will require particular attention:

a) long-term availability of the frequency bands necessary for satellite navigation, in particular the band already used for operations of the global navigation satellite system (GNSS);

b) guaranteed access to the frequency bands for aeronautical satellite communication systems; and

c) compatibility between any new allocations and the existing utilization of the radio frequency spectrum by aviation.

There is no doubt in my mind that if the availability of frequency spectrum required by civil aviation is compromised by sharing it with non-aeronautical users, both safety and efficiency of air transport will be threatened.

ICAO has regularly promoted civil aviation's views at periodic conferences of the ITU. The ICAO position, presented in document 4 at this Conference, is fully supported by international aviation organizations and endorsed by all 185 Contracting States of ICAO. I trust that these efforts have contributed to a better understanding of the need to protect the aeronautical spectrum.

Ladies and gentlemen, in your deliberations at this Conference, I invite you to fully consider the enormous and long-lasting benefits of air transport to the well-being of nations and citizens of the world. My firm belief that the only conclusion one can come to is that the availability of well-protected radio frequencies is essential to safe, regular, efficient and growing global air transport.

In so deciding, you will be contributing to the three fundamental objectives of air transport:

- maintain and enhance the extraordinary record of international civil aviation as the safest mode of mass transportation ever created;

- support the consistent and dramatic growth of air transport in this decade and beyond;

- preserve the substantial, permanent and increasing economic benefits of aviation to the world's economies.

On behalf of the 185 Contracting States of ICAO and of all members of the world aviation community, I thank you for integrating these views into your deliberations. The ICAO Observer Delegation is at your disposal throughout the Conference for reviewing any aspect of this most important question.

I wish all delegates a most productive meeting.

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APPENDIX B

RESULTS OF THE CONFERENCE ON THE AGENDA ITEMS RELATED TO INTERNATIONAL CIVIL AVIATION

AGENDA ITEM 1.1. — *REQUESTS FROM ADMINISTRATIONS TO DELETE THEIR COUNTRY FOOTNOTES OR TO HAVE THEIR COUNTRY NAME DELETED FROM FOOTNOTES, IF NO LONGER REQUIRED, IN ACCORDANCE WITH RESOLUTION 26 (REV. WRC-97)*

1.1.1 Under this agenda item, the ICAO position supported the deletion of footnotes S5.181, S5.197 and S5.259. These footnotes were introduced in about 20 countries in 1987 in view of the global transition from ILS to MLS, which, at that time, was expected to be completed by 1998. They were intended to enable the introduction of the mobile service in the ILS bands as and when these would no longer be required for ILS. However, it has now become apparent that ILS will continue to be used by aviation for the foreseeable future, and therefore the existence of these footnotes is no longer justified. Most Administrations removed their name from these footnotes; however, the following Administrations are still listed in these footnotes:

S5.181: Egypt, Israel, Japan and Syria
S5.197: Japan, Pakistan and Syria
S5.259: Egypt, Israel, Japan and Syria

1.1.2 While the results achieved are quite encouraging, further efforts are required to convince all the countries still listed to remove their name and allow for suppression of the footnotes, since there is still a risk that the allocation to the mobile service becomes active in some of these countries and may cause harmful interference to ILS/VOR.

1.1.3 The ICAO position also supported the deletion of footnotes S5.355 and S5.359, or the establishment of a closing date of these footnotes not later than 2005. These footnotes allocate the GNSS band 1 559 - 1 610 MHz to the (terrestrial) fixed service, in 45 countries on a primary basis (S5.359) and in 28 countries on a secondary basis (S5.355). The use of this band by the fixed service (co-frequency, co-coverage) is not compatible with the use by the radionavigation satellite service (GNSS) and coordination distances of up to 400 km between the stations of the fixed service and the aircraft would be required. The meeting agreed that for most of the countries mentioned in footnote S5.359 the allocation to the fixed service in the band 1 559 - 1 610 MHz would become secondary by 1 January 2005 (by 1 January 2010 in some countries). After 1 January 2015, the allocation to the fixed service in this band through both footnotes should no longer be valid.

1.1.4 The use of this band by the fixed service is mainly in Africa, Europe and parts of Asia. Interference-free operation of GNSS would require coordination with the radio regulators and/or operators in the fixed service to ensure that operation of the fixed stations in the band 1 559 - 1 610 MHz ceases. The secondary status of the fixed service after 1 January 2005/2010 would require the fixed service to not cause harmful interference to, nor claim protection from, GNSS, and would give GNSS priority over the fixed service.

AGENDA ITEM 1.2. — *FINALIZING REMAINING ISSUES IN REVIEW OF APPENDIX S3 TO THE RADIO REGULATIONS WITH RESPECT TO SPURIOUS EMISSIONS FOR SPACE SERVICES, TAKING INTO ACCOUNT RECOMMENDATION 66 (REV. WRC-97) AND THE DECISIONS OF WRC-97 ON ADOPTION OF NEW VALUES, DUE TO TAKE EFFECT AT A FUTURE TIME, OF SPURIOUS EMISSIONS FOR SPACE SERVICES*

1.2.1 The ICAO position on this agenda item was to support measures to clarify that radar stations installed on or before 1 January 2003 remain exempt from the spurious emission limits of Appendix S3. These limits were tightened at the WRC-97 and considered too costly for aviation to implement. The conference agreed that the new spurious emission limits should apply only for new radar stations, installed after 1 January 2003 and should apply for all radar stations as from 1 January 2012. This decision is in line with the ICAO position.

AGENDA ITEM 1.6.1 — *REVIEW OF SPECTRUM AND REGULATORY ISSUES FOR ADVANCED MOBILE APPLICATIONS IN THE CONTEXT OF IMT-2000, NOTING THAT THERE IS AN URGENT NEED TO PROVIDE MORE SPECTRUM FOR THE TERRESTRIAL COMPONENT OF SUCH APPLICATIONS AND THAT PRIORITY SHOULD BE GIVEN TO TERRESTRIAL SPECTRUM MOBILE NEEDS, AND ADJUSTMENTS TO THE TABLE OF FREQUENCY ALLOCATIONS AS NECESSARY*

1.6.1.1 The ICAO position for this agenda item was to oppose any proposed new allocation to the (terrestrial) mobile service, in the bands between 2 700 and 3 400 MHz allocated or used by aeronautical radionavigation and radiolocation services, as no compatibility studies have been undertaken yet. A full study on the present use of these bands by radar stations is required, including an assessment of the feasibility of solutions allowing access by mobile services to these bands. These studies would provide the basis for an eventual allocation to the mobile service at a future conference.

1.6.1.2 Proposals for an allocation to the mobile service in the band 2 700 - 2 900 MHz were presented. However, because of the broad and active opposition against them, it was decided that this matter should be reviewed by a future conference. The ITU-R studies on this subject, which have already started, will continue. This outcome is satisfactory for ICAO.

1.6.1.3 The conference discussed options to identify various bands as part of the satellite element of IMT-2000. The frequency bands 1 545 - 1 555 MHz and 1 646.5 - 1 656.5 MHz, used by the aeronautical mobile-satellite (R) service (AMS(R)S), were identified as also being available as an element of IMT-2000 under the generic allocation to the mobile satellite service. However, the provisions in the Radio Regulations which provide the AMS(R)S priority over other communications continue to apply. (See section 6 below for more information on the priority afforded to AMS(R)S communications). Also, the band 890 - 960 MHz (adjacent to the DME band) was also identified as part of the terrestrial element of IMT-2000. Since this will result in a heavier use of this band, it will be necessary to ensure that no interference is caused by IMT-2000 to DME.

AGENDA ITEM 1.7. — *REVIEW OF THE USE OF THE HF BANDS BY THE AERONAUTICAL MOBILE (R) SERVICE AND THE MARITIME MOBILE SERVICES WITH A VIEW TO PROTECTING OPERATIONAL DISTRESS AND SAFETY COMMUNICATIONS, TAKING INTO ACCOUNT RESOLUTION 346 (WRC-97)*

1.7.1 The ICAO position for this agenda item was to support measures that would lead to a removal of all unauthorized use of the frequencies allocated to the aeronautical mobile (R) service between 2 850 and 22 000 kHz. The conference agreed with this approach and amended Art. S15 of the Radio Regulations so as to strengthen the position of the aeronautical mobile (R) service with respect to the need to remove interference. Also, Resolution 207 was amended to urge Administrations to take all practicable steps to remove these unauthorized transmissions. The ITU-R is requested to study the possible implementation of mitigation techniques and to report the results to WRC-2003. This result satisfies the ICAO position.

AGENDA ITEM 1.9. — *TO TAKE INTO ACCOUNT ITU-R STUDIES IN EVALUATING THE FEASIBILITY OF AN ALLOCATION IN THE SPACE-TO-EARTH DIRECTION TO THE MOBILE-SATELLITE SERVICE (MSS) IN A PORTION OF THE 1559 - 1567 MHZ FREQUENCY 4RANGE, IN RESPONSE TO RESOLUTIONS 213 (WRC-97) AND 220 (WRC-97)*

1.9.1 The ICAO position on this agenda item was that no allocation to the MSS should be made in this band and that Resolution 220, which called for further studies on the compatibility between MSS and the radionavigation satellite service, should be deleted in order to remove this item from the work program of the ITU. The conference agreed that no allocation should be made and that Resolution 220 be suppressed. These results are fully in line with the ICAO position.

AGENDA ITEM 1.10 — *TO CONSIDER RESULTS OF ITU-R STUDIES CARRIED OUT IN ACCORDANCE WITH RESOLUTION 218 (WRC-97) AND TAKE APPROPRIATE ACTION ON THAT SUBJECT*

1.10.1 The ICAO position on this agenda item was to support spectrum requirements for the aeronautical mobile satellite (R) service AMS(R)S of up to 10.8 MHz until 2010 and 18 MHz beyond 2010. The ICAO position also stressed the need to recover the lost exclusive allocation to AMS(R)S or to include in the Radio Regulations adequate technical and regulatory provisions to guarantee the availability of spectrum for aeronautical communications as and when required and to provide the required priority and immediate access for aeronautical communications.

1.10.2 The conference agreed to strengthen the regulatory provisions in footnote S5.357A by requiring (in a new Resolution linked to the footnote), that satellite operators that are not providing aeronautical services yield spectrum as necessary to satisfy aeronautical requirements. The solution is expected to provide long-term stability in the frequency allocation for AMS(R)S if the regulatory provisions for access of the aeronautical services are applied as required. This outcome is satisfactory to ICAO.

AGENDA ITEM 1.14 — *TO REVIEW THE RESULTS OF THE STUDIES ON THE FEASIBILITY OF IMPLEMENTING NON-GSO MSS FEEDER LINKS IN THE 15.43 - 15.63 GHZ BAND IN ACCORDANCE WITH RESOLUTION 123 (WRC-97)*

1.14.1 The ICAO position on this agenda item was that no further restrictions to the aeronautical radionavigation service operating in the band 15.43 - 15.63 GHz are acceptable. Action for removal of the fixed-satellite service should be supported, in particular, since under the current constraints imposed by the aeronautical radionavigation service on the fixed satellite service, this band cannot be efficiently used by the fixed satellite service. The conference agreed to remove the allocation to the fixed satellite service in the space-to-Earth direction while allowing systems notified prior to 2 June 2000 to continue to operate. The allocation to the fixed satellite service in the Earth-to-space direction remained without any change. These steps did improve the position of the aeronautical radionavigation service in this band and satisfy the ICAO position.

AGENDA ITEM 1.15.1. — *TO CONSIDER NEW ALLOCATIONS TO THE RADIONAVIGATION-SATELLITE SERVICE IN THE RANGE FROM 1 GHZ TO 6 GHZ REQUIRED TO SUPPORT DEVELOPMENTS*

1.15.1.1 The ICAO position on this agenda item was to support the availability of adequate spectrum for GNSS and in particular to ensure that allocations to the radionavigation satellite service in the band 960 - 1 215 MHz and 5 000 - 5 030 MHz would not affect the use by the aeronautical radionavigation service and notably by DME and MLS.

1.15.1.2 The conference agreed to allocations for the radionavigation satellite service as follows:

1 164 - 1 215 MHz	(space-to-Earth and space-to-space)
1 260 - 1 300 MHz	(space-to-Earth and space-to-space)
1 300 - 1 350 MHz	(Earth-to-space)
5 000 - 5 010 MHz	(Earth-to-space)
5 010 - 5 030 MHz	(space-to-Earth and space-to-space)

1.15.1.3 As the allocations in the bands between 1 164 - 1 350 MHz were made in bands already heavily used by the aeronautical radionavigation service for DME and primary radar, particular measures to protect these systems were required. Due to the late submission of characteristics of potential GNSS systems operating in these bands, neither ICAO nor the ITU could complete a full compatibility analysis prior to the conference. As a result, only provisional protection criteria were agreed together with the identification of the need for further studies on this matter by the ITU-R. Regulatory provisions were also agreed to ensure that the radionavigation satellite service would not cause interference to, nor claim protection from, the aeronautical radionavigation service. This effectively gives the allocation to the aeronautical radionavigation service a higher status than the radionavigation satellite service.

1.15.1.4 These results are in line with the ICAO position. It is to be noted that the allocation of 51 MHz (1 164 - 1 215 MHz) to the radionavigation satellite service in the DME band (960 - 1 215 MHz) will enable more than two systems to operate in this band using partially overlapping spectrum. This will increase the efficient use of the spectrum and is expected to avoid requirements for additional spectrum for the radionavigation satellite service in the DME band.

AGENDA ITEM 4 — *IN ACCORDANCE WITH RESOLUTION 95 (WRC-97), TO REVIEW THE RESOLUTIONS AND RECOMMENDATIONS OF PREVIOUS CONFERENCES WITH A VIEW OF THEIR POSSIBLE REVISION, REPLACEMENT OR ABROGATION*

4.1 Proposals were introduced to suppress Resolutions 20, 405 and 406 and Recommendation 402 from the Radio Regulations.

4.2 Resolution 20 addresses the technical cooperation with developing countries in the field of aeronautical telecommunications and encourages ICAO and other UN organizations to continue their assistance to developing countries in this field. ICAO requested that the Resolution be updated rather than suppressed. The conference agreed with the ICAO view and maintained the Resolution with some updates.

4.3 Recommendation 402 relates to the cooperation in the efficient use of worldwide frequencies in the aeronautical mobile (R) service and invites Administrations to coordinate with ICAO on the assignment of LDOC frequencies in the HF bands, prior to the coordination in the ITU. Furthermore, it highlights the need for ICAO and the ITU-R to continue to cooperate on the use of these frequencies. The Recommendation was proposed by the ITU to be deleted as since 1990 only very few countries observed the practice recommended. The conference did not agree with the deletion of this Recommendation which will therefore be maintained. On this matter, no ICAO position had been developed.

4.3 Resolution 405, requesting Administrations to consider the use of frequencies higher than the HF bands for aeronautical mobile (R) communications, was deleted. In the light of satellite systems being available for long distance communications and the availability of establishing data link communications in the HF bands, this Resolution was not longer required. Recommendation 406, on studies on applications of space radiocommunication techniques in the aeronautical mobile (R) service, was also deleted as these studies have been completed.

AGENDA ITEM 7.2 — *TO RECOMMEND TO THE COUNCIL ITEMS FOR INCLUSION IN THE AGENDA FOR THE NEXT WRC, AND TO GIVE ITS VIEWS ON THE PRELIMINARY AGENDA FOR THE SUBSEQUENT CONFERENCE AND ON THE POSSIBLE AGENDA ITEMS FOR THE FUTURE CONFERENCES*

7.2.1 The conference agreed to include the following items of interest to aviation on the draft Agenda for the WRC-2003:

1.1 requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution 26 (Rev. WRC-2000);

1.4 to consider the results of studies related to Resolution 114 (WRC-95), dealing with the use of the band 5 091 - 5 150 MHz by the fixed satellite service (Earth-to-space) (limited to feeder links of the non-geostationary mobile-satellite service), and review the allocation to the aeronautical radionavigation service and the fixed satellite service in the frequency band 5 091 - 5 150 MHz;

1.5 to consider, in accordance with Resolution (GT PLEN-2/1) (WRC-2000), regulatory provisions and spectrum requirements for new and additional allocations to mobile, fixed, Earth-exploration satellite and space research services, as well as to review, with a view to upgrading, of the status of the radiolocation service, in the frequency range 5 150 - 5 725 MHz taking into account the results of ITU-R studies;

1.6 to consider regulatory measures to protect feeder links (Earth-to-space) for the mobile-satellite service which operate in the band 5 150 - 5 250 MHz, taking into account the latest ITU-R Recommendations (e.g. Recommendations ITU-R S.1426, S.1427 and M.1454);

1.8 to consider issues related to unwanted emissions;

1.8.1 consideration of the results of studies regarding the boundary between spurious and out-of-band emissions with a view to including the boundary in Appendix S3;

1.8.2 consideration of the results of studies and to propose any regulatory measure regarding the protection of passive services from unwanted emissions, in particular from space services transmissions, in response to *recommends* 5 and 6 of Recommendation 66 (Rev. WRC-2000);

1.11 to consider possible extension of the allocation to the MSS (Earth-to-space) on a secondary basis in the band 14 - 14.5 GHz to permit the aeronautical mobile satellite service as stipulated in Resolution 216 (Rev. WRC-2000);

1.14 to consider measures to address harmful interference in the bands allocated to the maritime mobile and aeronautical mobile (R) services, taking into account Resolutions 207 (Rev. WRC-2000) and [COM5/12] (WRC-2000) and to review the frequency and channel arrangements in the maritime MF and HF bands concerning the use of new digital technology and also taking into account Resolution 347 (WRC-97);

1.15 to review the results of studies concerning the RNSS in accordance with resolutions [COM5/16] WRC-2000, [COM5/19] (WRC-2000 and [COM5/20] WRC-2000);

1.16 to consider allocations on a worldwide basis for feeder links in bands around 1.4 GHz to the non-GSO MSS with service links operating below 1 GHz, taking into account the results of ITU-R studies conducted in response to Resolution 127 (Rev. WRC-2000) provided that full protection is given to radio astronomy and other passive services (Recommendation ITU-R RA.769-1 can be used as guidance);

1.17 to consider upgrading the allocation to the radiolocation service in the frequency range 2 900 - 3 100 MHz to primary;

1.20 to consider additional allocations on a worldwide basis for the non-GSO MSS with service links operating below 1 GHz in accordance with Resolution 214 (Rev. WRC-2000);

1.21 to consider progress of the ITU-R studies concerning future development of IMT-2000 and systems beyond IMT-2000, in accordance with Resolution [GT PLEN-2/3] (WRC-2000);

1.28 to permit the use of the band 108 - 117.975 MHz for the transmission of radionavigation satellite differential correction signals by ICAO standard ground-based systems;

1.31 to consider additional allocations to MSS in the 1 - 3 GHz band;

4 in accordance with Resolution 95 (WRC-97) to review the Resolutions and Recommendations of previous conferences with a view to their possible revision, replacement or abrogations; and

7.2. to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences.

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APPENDIX C

OVERVIEW OF THE WRC-2000 RESULTS

Agenda item No.	Agenda item	ICAO position	Results	Conclusion
1.1	Suppression of national footnotes	Suppress S5.181, S5.197 and S5.259 (ILS bands)	Most countries deleted their name from these footnotes; Egypt (S5.181 and S5.259 only), Pakistan (S5.197 only), Israel, Japan and Syria remain	In line with ICAO position
"	"	Suppress S5.355 and S5.359 (GNSS bands)	Footnote S5.359 secondary after 1 January 2005 (2010 in some countries); all footnotes to be suppressed after 1 January 2015.	In line with ICAO position
1.2	Spurious emission requirements Appendix S3 (radar stations)	Exempt radar from requirements App. S3	Radar stations exempted until 1 January 2012	Satisfies ICAO position
1.6.1	Spectrum for IMT 2000	No change to allocation in band 2 700 - 2 900 MHz; support studies on sharing	Allocation in 2 700 - 2 900 MHz was not changed; subject not on agenda WRC-2003; AMS(R)S has priority over IMT-2000; further studies ongoing in ITU-R	Satisfies ICAO position
1.7	Review use of HF band	Removal of unauthorized use of HF bands	Improved provisions for protection of HF bands agreed; further studies necessary on use of mitigation techniques; no review of App. S27	Satisfies ICAO position
1.9	MSS allocation in band 1 559 - 1 567 MHz (GNSS band)	No allocation to MSS; suppress Resolution 220	No allocation to MSS was made in this band; Resolution 220 suppressed	Satisfies ICAO position
1.1	Result of studies on Res. 218 (generic allocation to MSS)	Improve aviation access to satcom spectrum	Access of aviation to satellite bands for AMS(R)S significantly improved; Res. 218 replaced with Res. COM5/22.	Satisfies ICAO position

Agenda item No.	Agenda item	ICAO position	Results	Conclusion
1.14	MSS feeder links in 15.43 - 15.63 MHz	No further restrictions on aeronautical radionavigation acceptable	Allocation to MSS space-to Earth was removed; no new restrictions were placed on aeronautical radionavigation	Satisfies ICAO position
1.15.1	New allocation to radionavigation satellite service between 1 - 6 GHz	Support new allocations; protect current systems (DME, radar, MLS)	New allocations with provisional protection criteria; further studies on final protection of current systems	Satisfies ICAO position
4	Review Resolutions/ Recommendations	Maintain Resolution 20	Resolution 20 was maintained and updated	Satisfies ICAO position
7.2	Agenda for WRC 2003 and 2006	No position	Many items on agenda WRC-2003 that affect civil aviation	Preparation for WRC-2003 to start immediately

— END —

APPENDIX D

ICAO POSITION FOR THE ITU WRC-2003

SUMMARY

This document reviews the agenda for the ITU WRC-2003, discusses points of aeronautical interest and provides the ICAO position for each agenda item.

The ICAO position aims at securing availability of radio frequency spectrum to meet civil aviation requirements for current and future safety-of-flight applications. In particular, it stresses that safety considerations dictate that exclusive frequency bands must be allocated to highly critical aeronautical systems and that adequate protection against harmful interference must be ensured.

Support of the ICAO position by Contracting States is required to ensure that the position is supported by the WRC-2003 and that aviation requirements are met.

CONTENTS

1 Introduction

2 Spectrum requirements for international civil aviation

3 Civil aeronautical aspects on the agenda for WRC-2003

Attachments:

1) Agenda for ITU WRC-2003

2) Suggested amendments to the ITU Radio Regulations

1. INTRODUCTION

1.1. This document contains proposals by the Air Navigation Commission for the internationally agreed ICAO Position on issues of interest to international civil aviation to be decided at the next ITU World Radiocommunication Conference (WRC), which is foreseen to be held in 2003. The Agenda of the Conference is contained in Attachment 1.

1.2. General information and ICAO policy on radio frequency spectrum requirements for civil aviation is contained in the ICAO *Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including Statement of Approved ICAO Policies* (Doc 9718, 2nd edition).

2. SPECTRUM REQUIREMENTS FOR INTERNATIONAL CIVIL AVIATION

2.1 The safety of air operations is vitally dependent on the availability of reliable communications and navigation services. Future strategies, based on an increased use of space-based systems, have been agreed as international civil aviation policy through the principles established in the ICAO communications, navigation, and surveillance/air traffic management (CNS/ATM) systems (*Statement of ICAO policy on CNS/ATM systems implementation and operation*, approved by Council (141/13) on 9 March 1994, refers).

2.2 The high integrity and availability requirements associated with aeronautical safety systems demand special conditions to avoid harmful interference to these systems. Accordingly, Article S4.10 of the Radio Regulations states that ITU Member States recognize that the safety aspects of radionavigation and other safety services require special measures to ensure their freedom from harmful interference. This factor needs to be taken into account in the allocation, assignment and use of frequencies.

2.3 The radio frequency spectrum needs for civil aviation arising from the growth in air transport are stable, and the current allocations appear capable of meeting currently known requirements for the future. The sharing of aeronautical radio services with non-aeronautical services or with other aeronautical services must be considered with extreme care. Sharing conditions need to be thoroughly proven before they can be applied. Where sharing is difficult, exclusive allocations need to be secured to preserve the integrity of aeronautical services.

2.4 Introduction of new aviation technologies, mainly datalink-oriented, may in the future result in a need for additional spectrum for aviation. This is a matter to be addressed by future conferences (post-2003).

3. AERONAUTICAL ASPECTS ON THE AGENDA FOR WRC-2003

Notes:

i. The statement of the ICAO position on an agenda item is given in a text box at the end of the section addressing the agenda item, after the introductory background material.

ii. No impact on aeronautical services has been identified from the following WRC-2003 agenda items, which are therefore not addressed in the position:

1.2, 1.7, 1.10, 1.12, 1.13, 1.18, 1.19, 1.21, 1.23 to 1.27, 1.29, 1.30, 1.32 to 1.34, 3 to 6, 7.1.

iii. Agenda items marked with an asterisk indicate that suggested amendments to the ITU Radio Regulations are provided in Attachment 2.

*WRC-2003 Agenda Item 1.1**

Requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, in accordance with Resolution 26 (Rev.WRC-97)

Allocations to the aeronautical services are generally made for all world regions and normally on an exclusive basis. These principles reflect the global process of standardization within ICAO for the promotion of safety and to support the global interoperability of radiocommunication and radionavigation equipment used in civil aircraft. In some instances, however, footnotes to the ITU Table of Frequency Allocations allocate spectrum in a country to other radio services in addition to the aeronautical service to which the same spectrum is allocated in the body of the table.

The use of footnote allocations is generally not recommended by ICAO on safety grounds, as such use may result in harmful interference to safety services. Furthermore, this practice generally leads to an inefficient use of available frequencies, particularly when the radio systems sharing the band have differing technical characteristics.

A number of footnotes in aeronautical bands that should be deleted for safety and efficiency reasons are discussed below.

a) In the bands used for the **instrument landing system** (**ILS)**[1], footnotes **S5.181, S5.197, S5.259** allow for the introduction of the mobile service when these bands are no longer required for the aeronautical radionavigation service. In 1995, the ICAO Special Communications/Operations Divisional Meeting agreed to the continuation of the use of ILS for the foreseeable future and, as a result, access to these bands by the mobile service is not feasible since no acceptable sharing criteria that secure the protection of ILS can be established. In addition, recently, the need to use the band 108 - 117.975 for global navigation satellite system (GNSS) ground-based augmentation systems (GBAS) has emerged and relevant ICAO Standards and Recommended Practices (SARPs) and frequency planning criteria are under development by the GNSS Panel (WRC-2003 Agenda Item 1.28 refers). These footnotes should now be deleted since they do not represent a realistic expectation for an introduction of the mobile service in these bands.

b) Footnotes **S5.203 and S5.203A** allocate the band 117.975 – 137 MHz, used for **VHF air-ground communications** (voice and data), to the meteorological satellite service (until 1 January 2002) and the to the fixed and mobile service, except aeronautical mobile service (until 1 January 2005), all on a secondary basis. The band 136-137 MHz was allocated to the aeronautical mobile (R) service (AM(R)S)on a primary basis by the WARC-79. The actual introduction of the AM(R)S could only take place as from 1 January 1990, to enable other users to vacate this band. However, some services continued to operate well beyond 1990. In Europe, the service was introduced in 1990 and in North America in 1995. Introduction of air-ground data link is also concentrated in this sub-band. The band is already heavily used in Europe and use is increasing in North America and other parts of the world, thus restricting seriously the operations of the meteorological satellite service, which is susceptible to interference from the AM(R)S service. There are similar difficulties with footnote S5.203A. The provisions of this footnote, expiring in 2005, should not be extended and the footnote should be deleted at the WRC 2006 (WRC-2003 Agenda Item 7.2 refers).

c) In the band 1559 - 1610 MHz used for elements of the ICAO **Global Navigation Satellite System (GNSS),** footnotes **S5.355A** and **S5.359A** allow the operation of the fixed service on a primary basis until 1 January 2005 (1 January 2010 in some countries) and on a secondary

[1] The bands used for ILS are: 74.8 – 75.2 MHz (marker beacon); 108 – 111.975 MHz (localizer); 328.6 – 335.4 MHz (glide path).

basis until 1 January 2015. This band is allocated, on a world-wide primary basis, to the aeronautical radionavigation service and to the radionavigation satellite service (RNSS). The band already supports operation of two prime elements of GNSS, i.e. GLONASS and GPS, which are in the process of being defined in ICAO SARPs. Other new RNSS systems, such as the European Galileo system, are under consideration. Studies undertaken in preparation for WRC-2000 indicate that a geographical separation distance exceeding line of sight (in the order of 400 km) between aircraft using GNSS and stations of the fixed service is required to ensure safe operation of GNSS. This is a very severe restriction, which can prohibit the safe use of GNSS over wide areas around any fixed service installation. To compensate for these restrictions, retention of current terrestrial radionavigation systems by aviation may be needed, leading to inefficient use of available spectrum. More importantly, harmful interference situations can arise leading to disruption to GNSS, affecting the safety of aircraft in flight. Thus, the WRC-2000 agreement to terminate primary use in 2005 (2010) and all use in 2015 still constitutes a severe and unacceptable constraint on the safe and effective use of GNSS in some areas of the world. It is therefore recommended that deletion of these footnotes will be effective as from 2005 at the latest.

d) In the band 4200 - 4400 MHz, which is reserved for use by **airborne radio altimeters,** footnote **S5.439** allows the operation of the fixed service on a secondary basis. Radio altimeters are a critical element in the precision landing of aircraft under automatic guidance conditions. Interference from fixed service has the potential to affect the safety of such operations. Deletion of this footnote is recommended.

ICAO Position on WRC-2003 Agenda Item 1.1

a) To support deletion of footnotes S5.181, S5.197, S5.259, as access to these bands by the mobile service is not feasible and could create the potential for interference to important radionavigation systems used by aircraft at final approach and landing.

b) To support deletion of S5.203 at WRC-2003 and no change to S5.203A (to be deleted at WRC-2006) to enable full use of the band 136-137 MHz for AM(R)S communications.

c) To support the cessation of all fixed services in the band 1559-1610 MHz as of 2005 in order to remove the interference caused by the fixed service to essential aeronautical radionavigation functions and to permit the full utilization of GNSS services to aircraft on a global basis.

d) To support deletion of footnote and S5.439 as a measure to protect safety-critical operation of radio altimeters in the band 4200-4400 MHz.

WRC-2003 Agenda Item 1.3

To consider identification of globally/regionally harmonized bands, to the extent practicable, for the implementation of future advanced solutions to meet the needs of public protection agencies, including those dealing with emergency situations and disaster relief, and to make regulatory provisions, as necessary, taking into account Resolution [GT PLEN-2/5] (WRC-2000)

Harmonized world-wide aeronautical frequencies have been identified in Article S5 and Appendix S13 for use in emergency and in search and rescue situations, and for communications between aircraft and other mobile units. Detailed operational procedures for these emergency and search and rescue situations have been established both in ITU and ICAO.

Certain frequencies or frequency bands may be identified for use by public protection agencies in support for major emergency situations and disaster relief, under conditions yet to be established. Collaboration with aviation authorities is essential to ensure the most appropriate application of certain aeronautical frequencies that will be identified in the context of this requirement, and to evaluate any repercussions on their prime use for safety of flight.

ICAO Position on WRC-2003 Agenda Item 1.3

Assist in the identification of frequencies and bands for use in the situations envisaged, provided that the use is in accordance with the provisions in the Radio Regulations, and does not cause interference to operational aeronautical radio services. In particular, current ICAO Search And Rescue (SAR) procedures should not be affected.

WRC-2003 Agenda Item 1.4*

To consider the results of studies related to Resolution 114 (WRC-95), dealing with the use of the band 5 091-5 150 MHz by the fixed-satellite service (Earth-to-space) (limited to non-GSO MSS feeder links), and review the allocations to the aeronautical radionavigation service and the fixed-satellite service in the band 5 091-5 150 MHz

Resolution 114 (WRC-95) calls, inter alia, for a review of allocations to both the aeronautical radionavigation service and the fixed-satellite service (FSS) in this band. ICAO is specifically invited to further review the detailed spectrum requirements and planning for international standard aeronautical radionavigation systems in the band. This band is reserved to meet requirements for MLS assignments which can not be satisfied in the band 5030 - 5091 MHz. In accordance with S5.444, MLS has precedence over other uses in the band 5 030 - 5 150 MHz.

Footnote S5.444A permits use of the band 5 091 – 5 150 MHz by the fixed-satellite service on a primary basis until 1 January 2010, subject to the requirements of S5.444 to protect MLS assignments and to not causing interference to the aeronautical radionavigation service. After 1 January 2010, the fixed satellite service is expected to revert to a secondary status. Sharing between the two services in this band is not feasible. ITU-R Recommendation S.1342 specifies the separation distance required to protect MLS services in the band 5 030-5 090 MHz from FSS use in this band.

In accordance with *resolves 1* of Res.114, ICAO has developed a procedure to establish the spectrum requirements for MLS and other potential aeronautical applications, in order to support the future allocation requirement for the band 5 091- 5 150 MHz. The results should be available around end 2001. This procedure includes:

- Renewal of the MLS requirements by States;
- Review of the operational requirements of MLS (Ref. Annex 10, Volume 1 – Radio Navigation Aids);
- Replanning of MLS assignments to establish spectrum requirements;
- Identification of future spectrum requirements for other aeronautical systems;
- Presentation and discussion of results in ICAO; and
- Presentation of results to ITU.

ICAO Position on WRC-2003 Agenda Item 1.4

No change to footnote S5.444 and S5.444A.

(Further material to be presented when results of studies are available)

WRC-2003 Agenda Item 1.5*

To consider, in accordance with Resolution [GT PLEN-2/1] (WRC-2000), regulatory provisions and spectrum requirements for new and additional allocations to the mobile, fixed, Earth exploration-satellite and space research services, and to review the status of the radiolocation service in the frequency range 5 150-5 725 MHz, with a view to upgrading it, taking into account the results of ITU-R studies

The aeronautical radionavigation service (ARNS) band at 5 350 – 5 470 MHz supports the operation of airborne radar systems in accordance with S5.449. This includes airborne radar systems for the detection of adverse weather conditions which provide important information for the safe flight of aircraft. Many aeronautical administrations mandate the carriage of this equipment.

The ongoing protection of the ARNS needs to be assured. The operation of radiolocation systems in the same band must be on a non-interference basis and conform to the conditions recommended by the relevant ITU-R studies. The radiolocation service must also accept interference from the ARNS service without any possibility of protection.

ICAO Position on WRC-2003 Agenda Item 1.5

Accept the upgrading of the radiolocation service to primary status in the band 5 350 – 5 470 MHz only on the express condition that no interference be caused to the ARNS service operating in accordance with S5.449, and that no protection be required from the ARNS to the radiolocation service, as agreed between administrations taking account of relevant ITU-R Recommendations.

No further changes to the allocations to the bands 5350 - 5470 MHz.

WRC-2003 Agenda Item 1.6

To consider regulatory measures to protect feeder links (Earth-to-space) for the mobile-satellite service which operate in the band 5 150-5 250 MHz, taking into account the latest ITU-R Recommendations (for example, Recommendations ITU-R S.1426, ITU-R S.427 and ITU-R M.1454)

The band 5 150 - 5 250 MHz was originally allocated to the aeronautical radionavigation service (ARNS) on a primary exclusive basis. The allocation was made (in 1945-1947) to meet the spectrum requirements foreseen at that time for the microwave landing system (MLS).

As a consequence of the later addition of other services to the band, notably the fixed-satellite service (Earth-to-space) and the mobile service, there is now very little scope for safe and interference-free use of the band by any ARNS systems.

Moreover, retention of the ARNS allocation creates the erroneous impression that the band is still available for use by ARNS. Since international civil aviation no longer has a requirement for this band, deletion of the ARNS allocation in the band 5 150-5 250 MHz is recommended.

ICAO Position for WRC-2003 Agenda Item 1.6

Not to oppose the deletion of the allocation to the aeronautical radionavigation service in the band 5 150 – 5 250 MHz on the grounds that, due to use by a number of other radio services, it can no longer support the safe and interference-free operation of navigation systems for civil aviation.

WRC-2003 Agenda Item 1.8

To consider issues related to unwanted emissions:

1.8.1 consideration of the results of studies regarding the boundary between spurious and out-of-band emissions, with a view to including the boundary in Appendix S3;

1.8.2 consideration of the results of studies, and proposal of any regulatory measures regarding the protection of passive services from unwanted emissions, in particular from space service transmissions, in response to recommends 5 and 6 of Recommendation 66 (Rev.WRC-2000)

Progress of the work on this matter in ITU R Study Group 1 is being monitored. Any amendments to the limits for unwanted emissions contained in Appendix S3 should not invalidate those in ICAO documents required for conformity with international civil aviation requirements.

In particular attention should be paid to recommends 5 and recommends 6 of ITU Recommendation 66 (Rev. WRC-2000), stipulating that ITU-R should:

*" 5 study those frequency bands and instances where, for technical or operational reasons, more stringent spurious emission limits than the general limits in Appendix **S3** may be required to protect safety services and passive services such as radio astronomy, and the impact on all concerned services of implementing or not implementing such limits;*

6 study those frequency bands and instances where, for technical or operational reasons, out-of-band limits may be required to protect safety services and passive services such as radio astronomy, and the impact on all concerned services of implementing or not implementing such limits;"

ICAO Position on WRC-2003 Agenda Item 1.8

Any revisions to the values contained in Appendix S3 to the Radio Regulations, or other regulatory provisions on unwanted emissions, should not invalidate the values for aeronautical radio systems, as expressed in ICAO Annex 10, and other relevant aeronautical documents.

WRC-2003 Agenda Item 1.9

To consider Appendix S13 and Resolution 331 (Rev.WRC-97) with a view to their deletion and, if appropriate, to consider related changes to Chapter SVII and other provisions of the Radio Regulations, as necessary, taking into account the continued transition to and introduction of the Global Maritime Distress and Safety System (GMDSS)

Appendix S13 to the Radio Regulations addresses non-GMDSS distress and safety communications, and contains important provisions for aeronautical radio services, which are applicable to the aeronautical mobile (R) and aeronautical mobile-satellite (R) services. These provisions have been carefully harmonized with those applying to aircraft emergencies as contained in ICAO Annexes.

Before any changes are made to this appropriate arrangement, it must be ensured that provisions affecting the safety of aircraft, including aircraft emergency situations, are not affected. In this regard it should be noted that the GMDSS has essentially been set up for maritime purposes, and is applicable primarily in the maritime segment of mobile operations.

ICAO Position on WRC-2003 Agenda Item 1.9

Any proposed changes to Appendix S13 and related changes to Chapter SVII must be considered carefully against the requirements of the aeronautical mobile (R) service, and applicable ICAO Annexes.

WRC-2003 Agenda Item 1.11*

To consider possible extension of the allocation to the mobile-satellite service (Earth-to-space) on a secondary basis in the band 14-14.5 GHz to permit operation of the aeronautical mobile-satellite service as stipulated in Resolution 216 (Rev.WRC-2000)

This extension of the present secondary allocation to include the aeronautical mobile satellite service, as considered in Res. 216 (Rev. WRC-2000), addresses non-safety communications with aircraft, and will not form part of the aeronautical mobile satellite (R) service since a secondary allocation is not acceptable for any aeronautical safety-of-life service. The latter is governed by Article S43.1 of the Radio Regulations[2], which defines the conditions for communications relating to safety and regularity of flight between aircraft and ground.

The modification under consideration can be supported on the basis that the service has the potential to promote the general efficiency of aircraft operations.

ICAO Position on WRC-2003 Agenda Item 1.11

Provide support where applicable to the extension of this allocation to include the aeronautical mobile satellite service.

2 "**S43.1** § 1 Frequencies in any band allocated to the aeronautical mobile (R) service and the aeronautical mobile-satellite (R) service are reserved for communications relating to safety and regularity of flight between any aircraft and those aeronautical stations and aeronautical earth stations primarily concerned with flight along national or international civil air routes."

WRC-2003 Agenda Item 1.14

To consider measures to address harmful interference in the bands allocated to the maritime mobile and aeronautical mobile (R) services, taking into account Resolutions 207 (Rev.WRC-2000) and [COM5/12] (WRC-2000), and to review the frequency and channel arrangements in the maritime MF and HF bands concerning the use of new digital technology, also taking into account Resolution 347 (WRC-97)

Resolution 207 (Rev.WRC-2000), and Resolution [COM5/12] (WRC-2000) contain provisions and measures to combat the growing concern of aviation and maritime authorities over the increased interference to operational distress and safety communications caused by unauthorized (illegal) transmissions.

Interference to safety communications with aircraft in these bands in some areas of the world, notably in the South Pacific, is now a matter of very serious concern to civil aviation authorities, and to airlines operating in those areas.

WRC-2000 has identified possible actions by administrations to reduce the effects of interference. ITU-R studies on this subject are also under way.

International civil aviation fully supports the development of measures to strengthen the Radio Regulations, as feasible, and their application by administrations to avoid the occurrence of safety infringing events and to lead to the eventual cessation of these unauthorized ransmissions.

Increased use of HF data link (HFDL), in particular for ATC communications, as standardized in ICAO Annex 10, would also provide means to overcome interference caused by these transmissions. HFDL is currently extensively available and mainly used for AOC communications.

Technical solutions solely aimed at mitigating the effects of interference and involving changes to aircraft equipment must however be carefully assessed by civil aviation as to their effect on internationally agreed standards, and to their practical effectiveness in both the short and the long term. The prime focus for action has to remain in the area of the regulatory control exercised by radio administrations. Technical means should primarily promote and make this more effective, and not create the situation where the effects of the interfering transmissions are made less perceptible. In particular in the case of aircraft equipment, careful attention must be given to avoid unnecessary or ineffective changes to equipment which would place an economic burden on airline operators.

ICAO Position on WRC-2003 Agenda Item 1.14

To support regulatory provisions, actions by administrations, and the implementation of recommended measures and techniques, aimed at reducing this threat to the safety of air operations.

WRC-2003 Agenda Item 1.15*

To review the results of studies concerning the radionavigation-satellite service in accordance with Resolutions [COM5/16] (WRC-2000), [COM5/19] (WRC-2000) and [COM5/20] (WRC-2000)

Resolution [COM 5/19] (WRC-2000) relates to the introduction of the radionavigation-satellite service[3] (space - Earth) in the band 1 164 – 1 215 MHz (S5.328A refers). The band is allocated world-wide on a primary basis to the aeronautical radionavigation service (ARNS) and is currently intensively used by DME[4].

Resolution [COM 5/20] (WRC-2000) relates, inter alia, to the introduction of the radionavigation-satellite service (space-Earth) in the band 1215 – 1 300 MHz. The band is allocated world-wide on a primary basis to the radiolocation service and in several countries, to the aeronautical radionavigation service or the radionavigation service. It is currently used by long-range primary radars for en-route surveillance.

Both Resolutions[5] call for ITU-R studies on the technical, operational, and regulatory aspects of the new allocations. ICAO has been specifically invited to participate in the work, because of the great importance of these bands to international civil aviation.

Within this agenda item, the main civil aviation interest has been to assure the protection and expansion, as required, of the present systems in the bands (DME and primary radars), which are a vital part of the air traffic infrastructure and will remain so for many years ahead, while at the same time supporting the implementation of RNSS that can offer civil aviation future benefits. Aviaiton interests were well supported at WRC-2000, which gave RNSS operators the desired allocation of frequencies, but only under the condition that existing aeronautical radionavigation services be fully protected from interference that could be caused by the RNSS (which itself could not claim any protection from ARNS services). The focus of aviation interest now is therefore on achieving the desired protection through the definition of appropriate design constraints on future RNSS systems. Such constraints must appropriately protect existing aeronautical systems, whilst still permitting a viable operation of RNSS systems.

In the **band 1164-1215 MHz,** addressed by Resolution COM 5/19, ICAO is currently studying, within the GNSS and AMCP Panels, the appropriate value of power flux density (pfd)[6] limit and

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3 Radionavigation-satellite service (RNSS) is the ITU generic designation that includes, but is not limited to, the ICAO-defined GNSS. The allocation of new frequencies to the RNSS was an item of major aviation concern at WRC-2000. Two aeronautical radionavigation bands were selected for the introduction of the RNSS (space-to-Earth): the band at 1164-1215 MHz used by the DME and the radar band at 1260-1300 MHz. Two RNSS systems were concerned: the GPS system, with the new L5 frequency in the DME band, and the Galileo system, with components both in DME band and the radar band.

4 DME services in the band 960 - 1 215 MHz are expected to be required for the foreseeable future, with the current intensive usage increasing even further in some areas.. This, together with Tacan operation in the same band and a frequency paired arrangement with VOR, ILS and MLS, creates a situation of extreme inflexibility, which leaves little or no room for changing or removing frequencies. Preservation of the available spectrum is therefore a vital concern for ongoing aviation operations and to avoid disruptive and costly changes to present facilities

5 Resolution [COM 5/16] is also mentioned in the Agenda Item but does not have any impact on aeronautical services.

6 An outstanding issue after WRC-2000 is that of the maximum level of power flux density (pfd) at the Earth's surface that the RNSS can be allowed to generate while still protecting DME in the 1 164 – 1 215 MHz band. The pfd value would firstly have to be determined by theoretical and technical analysis and agreed in ITU-R Study Group 8, and then incorporated in regulatory form in the Radio Regulations at WRC-2003. This would provide a maximum pfd to be observed by the RNSS operators. It should be noted that WRC-2000 did agree on the principle of this incorporation and established a provisional pfd value (- 115 dB/W/m^2/MHz), but did not agree on a final pfd value.

other relevant aspects of the protection of DME, with a view to presenting contributions to the ITU-R studies under Res. COM 5/19. "*Noting"* a) of the Resolution highlights the ICAO finding indicating that a provisional pfd value should be in the range of -115 - to - 119 dB(W/m^2) in any 1 MHz in the band for the aggregate of all RNSS systems. The findings will be refined further by the ICAO work.

In the **band 1215-1300 MHz,** addressed by Resolution COM 5/20, similar considerations apply. Aviation is seeking the incorporation of an agreed pfd limit in the Radio Regulation. However, the principle of such incorporation has been disputed by some countries at WRC-2000. Studies on the need for, and the value of, an appropriate pfd limit have been called for in Resolution COM 5/20. It is a firmly held view in international civil aviation that a pfd limit is necessary to give protection to radionavigation systems employed to establish and maintain separation between aircraft in busy airspace. ICAO will therefore support work to develop appropriate pfd limits in this band.

ICAO Position on WRC-2003 Agenda Item 1.15

To support an appropriate value for a pfd limit for the aggregated interference of all RNSS systems in the band 1 164 - 1 215 MHz, as a necessary protection for aeronautical DME systems currently in operation, and to support the incorporation of the agreed pfd limit within an adequate regulatory framework having full mandatory force

To support the need for a pfd limit for RNSS in the band 1215-1300 MHz as a necessary protection for important radionavigation systems providing safe separation to aircraft in flight, and to support the incorporation of the agreed pfd limit within an adequate regulatory framework having full mandatory force.

WRC-2003 Agenda Item 1.16*

To consider allocations on a world-wide basis for feeder links in bands around 1.4 GHz to the non-GSO MSS with service links operating below 1 GHz, taking into account the results of ITU-R studies conducted in response to Resolution 127 (Rev.WRC-2000), provided that due recognition is given to the passive services, taking into account No. S5.340

The bands identified in the *considerings* of Resolution 127 (Rev. WRC-2000) are used by aeronautical radio services. Studies on sharing between MSS feeder links and the aeronautical radionavigation service in other band have resulted in constraints on the development of both services.

Any suggestions that the search for spectrum for these links should include aeronautical bands must be preceded by technical studies which take into account present and future aeronautical requirements. Such studies should be undertaken jointly by the services concerned and agreed as acceptable by civil aviation,

ICAO Position on WRC-2003 Agenda Item 1.16

Any suggestions for the sharing of aeronautical bands with NGSO feeder links under this Agenda Item can only be considered on the basis of agreed studies, which take into account the present and expected future use of the band by aviation, and the constraints applied to this use.

WRC-2003 Agenda Item 1.17*

To consider upgrading the allocation to the radiolocation service in the frequency range 2 900-3 100 MHz to primary

This band is heavily utilized by civil aviation radionavigation for ground based primary surveillance radar. The upgrading of radiolocation services to a primary status should only be made on the basis of no protection from, and no interference to, current and future aeronautical radionavigation systems, operating in accordance with the regulations.

ICAO Position on WRC-2003 Agenda Item 1.17

Any upgrading of the radiolocation service to primary status in bands allocated to aeronautical services must ensure the provision of adequate measures to continued protection of aeronautical services, present and future. In particular, the allocation should be made on the conditions of non-interference to, and no protection from, the radionavigation service.

WRC-2003 Agenda Item 1.20

To consider additional allocations on a world-wide basis for the non-GSO MSS with service links operating below 1 GHz, in accordance with Resolution 214 (Rev.WRC-2000)

The spectrum below 1 GHz contains a number of important aeronautical and radionavigation bands, where the main aeronautical terrestrial radio services for communication and navigation which support air operations are located. All of these bands are under considerable pressure to provide for the future growth of air traffic in the years ahead.

The main aeronautical VHF communications band at 117.975 - 137 MHz supports all of the short- and medium-range safety communications between aircraft ant ground over continental airspace, and at airports, and will continue for the foreseeable future to provide this function. Essential aeronautical radionavigation systems operate at 75 MHz, 108 to 117 975 MHz, 328.6 to 335.4 MHz, 406 - 406.1 MHz and 960 to 1 215 MHz. All of these bands are forecast to be required for the foreseeable future.

ICAO POSITION ON WRC-2003 AGENDA ITEM 1.20

Maintain all aeronautical allocations below 1 GHz without change and taking account of the ICAO position on Agenda Item 1.1 in regard to S5.181, S5.197 and S5.259.

WRC-2003 Agenda Item 1.22

To consider progress of ITU-R studies concerning future development of IMT-2000 and systems beyond IMT-2000, in accordance with Resolution [GT PLEN-2/3] (WRC-2000)

Under this agenda item, proposals may be developed aimed at accommodating the mobile service providing the terrestrial elements of IMT-2000 in bands currently allocated to the aeronautical radionavigation and radiolocation service between 2 700 MHz and 3 400 MHz. These bands are heavily used for air traffic control radar surveillance[7] functions and to meet other important national requirements. Some operational functions carried out with these systems cannot be replaced with any other present or expected future system.

Existing studies have indicated that there is no possibility for practical sharing arrangements between these aeronautical radar stations and the mobile service. Therefore, any proposal for introducing the mobile service in these bands is not acceptable. Any further studies on sharing must take into account the full technical and operational envelope of the use of radar at airports and be accepted and endorsed by the civil aviation authorities responsible for their operation[8].

A full study on the present use of this band by radar stations and on future requirements is necessary to determine whether a removal of these to higher frequency bands is possible and practicable. The requirement for airport and TMA primary radar coverage is foreseen to remain. Removal of radar stations from the band 2 700 - 2 900 MHz into the band 2 900 - 3 400 MHz would be extremely difficult if not impossible due to the requirements for large bandwidth for modern radar stations[9]. It would also require major redesign and reconstruction effort to make the required frequency changes to many radar systems, leading to extensive disruption to services required 24 hours a day at busy airports.

Congestion is increasing at many major airports around the world, and many will reach saturation levels within this decade. The preservation of safety demands reliable and interference-free radar systems to provide surveillance and to ensure separation between aircraft in the landing phase of their operation. Hence, the requirement for primary radar coverage exepcted to continue for the foreseeable future at all major airports where a high traffic density situation applies. Thus, the aeronautical use of the band 2 700-2 900 MHz is expected to increase significantly over the next ten years and to continue well beyond 2010. It is of paramount importance to aviation that the currently available spectrum for radar stations be maintained and that no additional restrictions be placed on future frequency assignments for radar stations.

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7 The band 2 700-2 900 MHz is heavily used for air traffic control (airport, terminal area, and other short range surveillance needs) by primary radar systems on a global basis. Typically, these radar stations are installed on busy airports, which are normally situated in areas of high population density. The operational range extends to 60-100 nautical miles In addition, this band is used for meteorological radar, providing meteorological information for aeronautical and other services

8 Technical requirements for radar stations are normally determined on a national basis and it is difficult and speculative to agree on a model of a typical radar station which, when applied in interference assessment activities, can be used to develop a typical sharing scenario.

9 Most of today's radars utilize two separate frequencies to provide for frequency diversity in order to improve the performance of the system. Normally, radar stations are equipped with dual systems and each system is tuned to one of these frequencies. Furthermore, in order to satisfy requirements for adequate near and far detection of aircraft, many of these radar systems provide for more than one set of frequencies, thus increasing the bandwidth required for one single radar system accordingly.

ICAO Position on WRC-2003 Agenda Item 1.22

To oppose any proposed new allocation to the mobile service or other services, in bands between 2 700 and 3 400 MHz which are allocated or used by aeronautical radionavigation services, as no rigorous and comprehensive compatibility studies have yet been accepted by international civil aviation. Such studies must take account of all the technical and operational aspects related to the use of these systems at major airports throughout the world for vital separation and monitoring of aircraft preparing to land. The case for sharing on any basis must also be supported by an analysis which is satisfying the ICAO safety requirements.

*WRC-2003 Agenda Item 1.28**

To permit the use of the band 108-117.975 MHz for the transmission of radionavigation satellite differential correction signals by ICAO standard ground-based systems

A new aviation requirement has emerged for the transmission of augmentation data for GNSS, to be used by aircraft receivers to satisfy the stringent accuracy and integrity requirements for GNSS applications. Following ICAO GNSS Panel studies, the new ground-based augmentation systems (GBAS) are planned to operate in the present VOR/ILS band at 108-117.975 MHz (initially, 112 – 117.975 MHz).

The selected band is currently allocated to the aeronautical radionavigation service. It has been argued that GBAS does not fall within the definition for a radionavigation service (i.e. using the property of the propagation characteristics of radio waves) and that an amendment to the allocation of this band is required. An appropriate additional allocation would therefore need to be made to allow for the transmission of GNSS augmentation data.

Compatibility and frequency planning criteria for the VOR/ILS and the new service are being developed by ICAO. Compatibility with FM broadcast services in the band 87.5-108 MHz would be assured through conformity with ITU-R Recommendation IS.1009.

ICAO Position for WRC-2003 Agenda Item 1.28

Support an allocation permitting the use of the band 108-117.975 MHz for the transmission of ICAO standard GNSS augmentation systems

Ensure conformity with ITU-R Recommendation IS.1009 regarding compatibility with the FM broadcast services in the band 87.5-108 MHz

WRC- 2003 Agenda Item 1.31

To consider the additional allocations to the mobile-satellite service in the 1-3 GHz band, in accordance with Resolutions [COM5/29] (WRC-2000) and [COM5/30] (WRC-2000)

Resolutions [COM5/29](WRC-2000) and [COM5/30](WRC-2000) address the need for studies on sharing between MSS and other specified services in order to identify spectrum for future MSS expansions. The demand stated in these Resolutions is for 2 times 123 MHz by 2005, and 2 times 145 MHz by 2010 (including existing MSS allocations).

The Resolutions identify two specific bands (1518 - 1525 MHz and 1683 - 1690 MHz) as potential candidates for a new allocation. It is noted that the band between 1429 and 1535 MHz in some countries in Region 1 and 1435 - 1535 in Region 2 is used by the Aeronautical Mobile Service for aeronautical radiotelemetry purposes[10].

However, any other bands in the 1-3GHz spectrum (with the exception of the band 1 559 – 1 610 MHz) may be examined if the results of the sharing studies on the identified bands are not satisfactory.

The band 1559-1610 MHz, allocated to the RNSS service and planned to be used extensively for GNSS services by civil aviation, has been specifically excluded from the sharing examination in both Resolutions. This exclusion is fully supported by international civil aviation.

Other bands of aeronautical interest in the 1-3 GHz band include the aeronautical radio navigation service bands at 960 - 1 215 MHz, 1 559 - 1 610 MHz, and 2 700-2 900 MHz, and the mobile satellite service bands at 1.5/1.6 GHz. The process of global standardization through ICAO Standards applies in these bands, which are extensively used and are planned for even greater use as air traffic expands in the future. Civil aviation sees little scope for sharing with other services in any of these bands without prejudicing the short, and longer, term safety and viability of air transport services around the world.

ICAO Position on WRC-2003 Agenda Item 1.31

Oppose proposals for an allocation to the mobile satellite service in any of the ARNS bands between 1 and 3 GHz until a full consideration of the aviation use, and sharing studies where appropriate, have been completed and satisfy ICAO requirements.

Support the protection of aeronautical telemetry applications and their continued use in the band 1425 - 1535 MHz.

[10] In France, the use of the band 2 310-2 360 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service (ref. footnote S5.395).

WRC-2003 Agenda Item 2

To examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution 28 (Rev.WRC-2000), and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with principles contained in the Annex to Resolution 27 (Rev.WRC-2000)

At this point, no ITU-R recommendations referring exclusively to aeronautical radio services and incorporated by reference in the ITU Radio Regulations have been identified.

Provision RR S34.1 of the ITU Radio Regulations specifies that ELT signals on 406.0 MHz or in the band 1 645.5 - 1 646.5 MHz shall be in accordance with relevant ITU-R Recommendations (see Resolution 27 (WRC-95)).

ICAO Position on WRC-2003 Agenda Item 2

To support the policy of linked reference in respect of RR S34.1 for ELTs.

WRC Agenda item 7.2

To recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, taking into account Resolution [GT PLEN-2/6] (WRC-2000)

This agenda item addresses the preliminary agenda for WRC-2006, which will be developed by WRC-2003. Items of aeronautical interest that should appear in the WRC-2006 include:

a) Deletion of footnote S5.203A

This footnote enables the operation of the fixed and mobile, except aeronautical mobile, service in the aeronautical VHF band 136 – 137 MHz in some countries. As pointed out above (WRC-2003 Agenda Item 1.1 refers), the expiry date of the footnote is 2005. The date should not be extended and the footnote should be deleted accordingly by WRC-2006.

b) Review of results of studies conducted in accordance with Resolution [COM 5/22] (WRC-2000)

Resolution COM 5/22, inter alia, calls for ITU-R studies to ensure spectrum availability and protection for the aeronautical mobile-satellite (R) service in the 1.5 – 1.6 GHz band. The result of such studies should be reviewed by WRC-2006 with a view to assessing the need of changes to the Radio Regulation to satisfy AMS(R)S spectrum requirements in the band. Participation by aviation experts to the relevant ITU-R studies is required.

ICAO Position on WRC-2003 Agenda Item 7.2

To support the deletion of footnote of footnote S5.203A by WRC-2006.

To support the inclusion in the agenda of WRC-2006 of an item addressing the review of results of studies conducted in accordance with Resolution [COM 5/22] (WRC-2000).

Attachment 1

RESOLUTION [GT PLEN-2/4] (WRC-2000)

Agenda for the 2003 World Radiocommunication Conference

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that, in accordance with No. 118 of the Convention, the general scope of the agenda for a world radiocommunication conference should be established four to six years in advance and a final agenda shall be established by the Council two years before the conference;

b) Article 13 of the Constitution relating to the competence and scheduling of world radiocommunication conferences and Article 7 of the Convention relating to their agendas;

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and world radiocommunication conferences (WRCs),

recognizing

a) that this conference has identified a number of urgent issues requiring further examination by WRC-03;

b) that, in preparing this agenda, many items proposed by administrations could not be included and have had to be deferred to future conference agendas,

resolves

to recommend to the Council that a world radiocommunication conference be held in 2003 for a period of four weeks, with the following agenda:

1 on the basis of proposals from administrations and the Report of the Conference Preparatory Meeting, taking account of the results of WRC-2000, and with due regard to the requirements of existing and future services in the bands under consideration, to consider and take appropriate action with respect to the following items:

1.1 requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, in accordance with Resolution **26 (Rev.WRC-97)**;

1.2 to review and take action, as required, on No. **S5.134** and related Resolutions **517 (HFBC-87)** and **537 (WRC-97)** and Recommendations **515 (Rev.WRC-97)**, **517 (HFBC-87)**, **519 (WARC-92)** and Appendix **S11**, in the light of the studies and actions set out therein, having particular regard to the advancement of new modulation techniques, including digital techniques, capable of providing an optimum balance between sound quality, bandwidth and circuit reliability in the use of the HF bands allocated to the broadcasting service;

1.3 to consider identification of globally/regionally harmonized bands, to the extent practicable, for the implementation of future advanced solutions to meet the needs of public protection agencies, including those dealing with emergency situations and disaster relief, and to make regulatory provisions, as necessary, taking into account Resolution **[GT PLEN-2/5] (WRC-2000)**;

1.4 to consider the results of studies related to Resolution **114 (WRC-95)**, dealing with the use of the band 5 091-5 150 MHz by the fixed-satellite service (Earth-to-space) (limited to non-GSO MSS feeder links), and review the allocations to the aeronautical radionavigation service and the fixed-satellite service in the band 5 091-5 150 MHz;

1.5 to consider, in accordance with Resolution **[GT PLEN-2/1] (WRC-2000)**, regulatory provisions and spectrum requirements for new and additional allocations to the mobile, fixed, Earth exploration-satellite and space research services, and to review the status of the radiolocation service in the frequency range 5 150-5 725 MHz, with a view to upgrading it, taking into account the results of ITU-R studies;

1.6 to consider regulatory measures to protect feeder links (Earth-to-space) for the mobile-satellite service which operate in the band 5 150-5 250 MHz, taking into account the latest ITU-R Recommendations (for example, Recommendations ITU-R S.1426, ITU-R S.1427 and ITU-R M.1454);

1.7 to consider issues concerning the amateur and amateur-satellite services:

1.7.1 possible revision of Article **S25**;

1.7.2 review of the provisions of Article **S19** concerning the formation of call signs in the amateur services in order to provide flexibility for administrations;

1.7.3 review of the terms and definitions of Article **S1** to the extent required as a consequence of changes made in Article **S25**;

1.8 to consider issues related to unwanted emissions:

1.8.1 consideration of the results of studies regarding the boundary between spurious and out-of-band emissions, with a view to including the boundary in Appendix **S3**;

1.8.2 consideration of the results of studies, and proposal of any regulatory measures regarding the protection of passive services from unwanted emissions, in particular from space service transmissions, in response to *recommends* 5 and 6 of Recommendation **66 (Rev.WRC-2000)**;

1.9 to consider Appendix **S13** and Resolution **331 (Rev.WRC-97)** with a view to their deletion and, if appropriate, to consider related changes to Chapter SVII and other provisions of the Radio Regulations, as necessary, taking into account the continued transition to and introduction of the Global Maritime Distress and Safety System (GMDSS);

1.10 to consider the results of studies, and take necessary actions, relating to:

1.10.1 exhaustion of the maritime mobile service identity numbering resource (Resolution **344 (WRC-97)**);

1.10.2 shore-to-ship distress communication priorities (Resolution **348 (WRC-97)**);

1.11 to consider possible extension of the allocation to the mobile-satellite service (Earth-to-space) on a secondary basis in the band 14-14.5 GHz to permit operation of the aeronautical mobile-satellite service as stipulated in Resolution **216 (Rev.WRC-2000)**;

1.12 to consider allocations and regulatory issues related to the space science services in accordance with Resolution **723 (Rev.WRC-2000)** and to review all Earth exploration-satellite service and space research service allocations between 35 and 38 GHz, taking into account Resolution **[COM5/1] (WRC-2000)**;

1.13 to consider regulatory provisions and possible identification of existing frequency allocations for services which may be used by high altitude platform stations, taking into account

No. **S5.5RRR** and the results of the ITU-R studies conducted in accordance with Resolutions **122 (Rev.WRC-2000)** and **[COM5/14] (WRC-2000)**;

1.14 to consider measures to address harmful interference in the bands allocated to the maritime mobile and aeronautical mobile (R) services, taking into account Resolutions **207 (Rev.WRC-2000)** and **[COM5/12] (WRC-2000)**, and to review the frequency and channel arrangements in the maritime MF and HF bands concerning the use of new digital technology, also taking into account Resolution **347 (WRC-97)**;

1.15 to review the results of studies concerning the radionavigation-satellite service in accordance with Resolutions **[COM5/16] (WRC-2000)**, **[COM5/19] (WRC-2000)** and **[COM5/20] (WRC-2000)**;

1.16 to consider allocations on a worldwide basis for feeder links in bands around 1.4 GHz to the non-GSO MSS with service links operating below 1 GHz, taking into account the results of ITU-R studies conducted in response to Resolution **127 (Rev.WRC-2000)**, provided that due recognition is given to the passive services, taking into account No. **S5.340**;

1.17 to consider upgrading the allocation to the radiolocation service in the frequency range 2 900-3 100 MHz to primary;

1.18 to consider a primary allocation to the fixed service in the band 17.3-17.7 GHz for Region 1, taking into account the primary allocations to various services in all three Regions;

1.19 to consider regulatory provisions to avoid misapplication of the non-GSO FSS single-entry limits in Article **S22** based on the results of ITU-R studies carried out in accordance with Resolution **[COM5/2] (WRC-2000)**;

1.20 to consider additional allocations on a worldwide basis for the non-GSO MSS with service links operating below 1 GHz, in accordance with Resolution **214 (Rev.WRC-2000)**;

1.21 to consider progress of the ITU-R studies concerning the technical and regulatory requirements of terrestrial wireless interactive multimedia applications, in accordance with Resolution **[GT PLEN-2/2] (WRC-2000)**, with a view to facilitating global harmonization;

1.22 to consider progress of ITU-R studies concerning future development of IMT-2000 and systems beyond IMT-2000, in accordance with Resolution **[GT PLEN-2/3] (WRC-2000)**;

1.23 to consider realignment of the allocations to the amateur, amateur-satellite and broadcasting services around 7 MHz on a worldwide basis, taking into account Recommendation **718 (WARC-92)**;

1.24 to review the usage of the band 13.75-14 GHz, in accordance with Resolution **[COM5/10] (WRC-2000)**, with a view to addressing sharing conditions;

1.25 to consider, with a view to global harmonization to the greatest extent possible, having due regard to not constraining the development of other services, and in particular of the fixed service and the broadcasting-satellite service, regulatory provisions and possible identification of spectrum for high-density systems in the fixed-satellite service above 17.3 GHz, focusing particularly on frequency bands above 19.7 GHz;

1.26 to consider the provisions under which earth stations located on board vessels could operate in fixed-satellite service networks, taking into account the ITU-R studies in response to Resolution **[COM4/3] (WRC-2000)**;

1.27 to review, in accordance with Resolutions **[GT PLEN-1/1] (WRC-2000)** and **[GT PLEN-1/3 (WRC-2000)]**, the ITU-R studies requested in those resolutions, and modify, as

appropriate, the relevant regulatory procedures and associated sharing criteria contained in Appendices **S30** and **S30A** and in the associated provisions;

1.28 to permit the use of the band 108-117.975 MHz for the transmission of radionavigation satellite differential correction signals by ICAO standard ground-based systems;

1.29 to consider the results of studies related to Resolutions **[COM5/3] (WRC-2000)** and **[COM5/23] (WRC-2000)** dealing with sharing between non-GSO and GSO systems;

1.30 to consider possible changes to the procedures for the advance publication, coordination and notification of satellite networks in response to Resolution **86** (Minneapolis, 1998);

1.31 to consider the additional allocations to the mobile-satellite service in the 1-3 GHz band, in accordance with Resolutions **[COM5/29] (WRC-2000)** and **[COM5/30] (WRC-2000)**;

1.32 to consider technical and regulatory provisions concerning the band 37.5-43.5 GHz, in accordance with Resolutions **128 (Rev.WRC-2000)** and **[COM5/28] (WRC-2000)**;

1.33 to review and revise technical, operational and regulatory provisions, including provisional limits in relation to the operation of high altitude platform stations within IMT-2000 in the bands referred to in No. **S5.BBB**, in response to Resolution **[COM5/13] (WRC-2000)**;

1.34 to review the results of studies in response to Resolution **[COM4/6] (WRC-2000)** concerning threshold values for non-GSO BSS (sound) in the band 2 630-2 655 MHz, and to take actions as required;

1.35 to consider the report of the Director of the Radiocommunication Bureau on the results of the analysis in accordance with Resolution **53 (Rev.WRC-2000)** and take appropriate action;

2 to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution **28 (Rev.WRC-2000)**, and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with principles contained in the Annex to Resolution **27 (Rev.WRC-2000)**;

3 to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the conference;

4 in accordance with Resolution **95 (Rev.WRC-2000)**, to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation;

5 to review, and take appropriate action on, the report from the Radiocommunication Assembly submitted in accordance with Nos. 135 and 136 of the Convention;

6 to identify those items requiring urgent action by the radiocommunication study groups in preparation for the next world radiocommunication conference;

7 in accordance with Article 7 of the Convention:

7.1 to consider and approve the Report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector since WRC-2000, including on any difficulties or inconsistencies encountered in the application of the Radio Regulations, and action in response to Resolution **80 (Rev.WRC-2000);**

7.2 to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, taking into account Resolution **[GT PLEN-2/6] (WRC-2000)**,

further resolves

8 to recommend to the Council that additional budgetary and conference resources be provided so that the following items can be included in this agenda for WRC-03:

8.1 to examine the adequacy of the frequency allocations for HF broadcasting from about 4 MHz to 10 MHz, taking into account the seasonal planning procedures adopted by WRC-97;

8.2 to consider the regulatory and technical provisions for satellite networks using highly elliptical orbits;

8.3 to consider provision of up to 6 MHz of frequency spectrum to the Earth exploration-satellite service (active) in the frequency band 420-470 MHz, in accordance with Resolution **727 (Rev.WRC-2000)**;

8.4 to examine the spectrum requirements in the fixed-satellite service bands below 17 GHz for telemetry, tracking and telecommand of fixed-satellite service networks operating with service links in the frequency bands above 17 GHz;

9 to activate the Special Committee,

invites the Council

to finalize the agenda and arrange for the convening of WRC-03, and to initiate as soon as possible the necessary consultation with Member States,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-03,

instructs the Secretary-General

to communicate this resolution to international and regional organizations concerned.

Attachment 2

Suggested amendments to the ITU Radio Regulations

Notes:

i. Suggested amendments to the ITU Radio Regulations based on the ICAO position on action items 1.1, 1.3, 1.4, 1.5, 1.11, 1.17 and 1.28 are shown below. Further amendments may be added based on the results of future ICAO and ITU studies.

*ii. New text is underlined and deleted text is shown with a line through it. In some cases, instead of proposing a change, the ICAO position explicitly requires that no change be made to the certain existing provisions. In such cases, the current text is copied without changes, preceded by "**NOC**" (no change).*

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a) Footnotes in bands used for ILS (marker beacons, localizer, glide path)

74.8-75.2	AERONAUTICAL RADIONAVIGATION S5.180 ~~S5.181~~

S5.180 The frequency 75 MHz is assigned to marker beacons. Administrations shall refrain from assigning frequencies close to the limits of the guardband to stations of other services which, because of their power or geographical position, might cause harmful interference or otherwise place a constraint on marker beacons.

Every effort should be made to improve further the characteristics of airborne receivers and to limit the power of transmitting stations close to the limits 74.8 MHz and 75.2 MHz.

~~**S5.181** *Additional allocation:* in Egypt, Israel, Japan, and Syria, the band 74.8-75.2 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **S9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedure invoked under No. **S9.21**.~~

108-117.975	AERONAUTICAL RADIONAVIGATION ~~S5.197~~

~~**S5.197** *Additional allocation:* in Japan, Pakistan and Syria, the band 108-111.975 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **S9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedures invoked under No. **S9.21**.~~

328.6-335.4	AERONAUTICAL RADIONAVIGATION S5.258 ~~S5.259~~

S5.258 The use of the band 328.6-335.4 MHz by the aeronautical radionavigation service is limited to Instrument Landing Systems (glide path).

~~**S5.259** *Additional allocation:* in Egypt, Israel, Japan, and Syria, the band 328.6-335.4 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **S9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedure invoked under No. **S9.21**.~~

b. Footnotes in the band 117.975 - 137 MHz, used for air-ground communications (voice and data)

117.975-137	AERONAUTICAL MOBILE (R) S5.111 S5.198 S5.199 S5.200 S5.201 S5.202 ~~S5.203~~ NOC S5.203A S5.203B

~~**S5.203** In the band 136-137 MHz, existing operational meteorological satellites may continue to operate, under the conditions defined in No. **S4.4** with respect to the aeronautical mobile service, until 1 January 2002. Administrations shall not authorize new frequency assignments in this band to stations in the meteorological satellite service. (WRC-97)~~

NOC **S5.203A** *Additional allocation:* in Israel, Mauritania, Qatar and Zimbabwe, the band 136-137 MHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a secondary basis until 1 January 2005. (WRC-97)

c. Footnotes in the band 1559 - 1610 MHz used for elements of the ICAO Global Navigation Satellite System (GLONASS, GPS and augmentation systems)

1 559-1 610	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329A S5.341 S5.363 S5.355A S5.359A

S5.355A *Additional allocation:* in Bahrain, Bangladesh, Congo, Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Qatar, Syria, Somalia, Sudan, Chad, Togo and Yemen, the band 1 559-1 610 MHz is also allocated to the fixed service on a secondary basis until 1 January 2005~~15~~. After this date the fixed service will cease to operate in this band.~~, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and not authorize new frequency assignments to fixed service systems in this band.~~

S5.359A *Additional allocation:* The band 1 559-1 610 MHz is also allocated to the fixed service on a primary basis until 1 January 2005 in Germany, Armenia, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine, ~~and until 1 January 2010 in~~ Saudi Arabia, Cameroon, Jordan, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Syria and Tunisia. After this~~ese~~ date~~s~~, the fixed service will cease to operate in this band. ~~may continue to operate on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and the aeronautical radionavigation service and not authorize new frequency assignments to fixed service systems in this band.~~

d. Footnotes in the band 4200 - 4400 MHz, used for airborne radio altimeter.

4 200-4 400	AERONAUTICAL RADIONAVIGATION S5.438 ~~S5.439~~ S5.440

S5.438 Use of the band 4 200-4 400 MHz by the aeronautical radionavigation service is reserved exclusively for radio altimeters installed on board aircraft and for the associated transponders on the ground. However, passive sensing in the earth exploration-satellite and space research services may be authorized in this band on a secondary basis (no protection is provided by the radio altimeters).

S5.439 *Additional allocation:* in Iran (Islamic Republic of) and Libya, the band 4200-4400 MHz is also allocated to the fixed service on a secondary basis.

4 800-5 830 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
5 000-5 150	AERONAUTICAL RADIONAVIGATION S5.367 S5.444 S5.444A S5.444B S5.444C	

NOC **S5.444** The band 5 030-5 150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. The requirements of this system shall take precedence over other uses of this band. For the use of this band, No. **S5.444A** and Resolution **114 (WRC-95)** apply.

NOC **S5.444A** *Additional allocation:* the band 5 091-5 150 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a primary basis. This allocation is limited to feeder links of non-geostationary mobile-satellite systems and is subject to coordination under No. **S9.11A**.

In the band 5 091-5 150 MHz, the following conditions also apply:

- prior to 1 January 2010, the use of the band 5 091-5 150 MHz by feeder links of non-geostationary-satellite systems in the mobile-satellite service shall be made in accordance with Resolution **114 (WRC-95)**;
- prior to 1 January 2010, the requirements of existing and planned international standard systems for the aeronautical radionavigation service which cannot be met in the 5 000-5 091 MHz band, shall take precedence over other uses of this band;
- after 1 January 2008, no new assignments shall be made to stations providing feeder links of non-geostationary mobile-satellite systems;
- after 1 January 2010, the fixed-satellite service will become secondary to the aeronautical radionavigation service.

S5.444B *Additional allocation:* The band 5 000-5 010 MHz is also allocated to the radionavigation-satellite service (Earth-to-space) on a primary basis. See Resolution **[COM5/15] (WRC-2000)**.

S5.444C *Additional allocation:* The band 5 010-5 030 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. In order not to cause harmful interference to the microwave landing system operating above 5 030 MHz, the aggregate power flux-density produced at the Earth's surface in the band 5 030-5 150 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the band 5 010-5 030 MHz shall not exceed –124.5 dB(W/m^2) in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the band 4 990-5 000 MHz, the aggregate power flux-density produced in the 4 990-5 000 MHz band by all the space stations within any RNSS (space-to-Earth) system operating in the 5 010-5 030 MHz band shall not exceed the provisional value of –171 dB(W/m^2) in a 10 MHz band at any radio astronomy observatory site for more than 2% of the time. For the use of this band, Resolution **[COM5/16] (WRC-2000)** applies.

4 800-5 830 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
5 350-5 460	EARTH EXPLORATION-SATELLITE (active) S5.448B AERONAUTICAL RADIONAVIGATION S5.449 ~~Radiolocation~~ RADIOLOCATION S5.AAA	
5 460-5 470	RADIONAVIGATION S5.449 ~~Radiolocation~~ RADIOLOCATION S5.AAA	

S5.448B The earth exploration-satellite (active) service operating in the band 5 350-5 460 MHz shall not cause harmful interference to, or constrain the use and development of, the aeronautical radionavigation service. (WRC-97)

S5.449 The use of the band 5 350-5 470 MHz by the aeronautical radionavigation service is limited to airborne radars and associated airborne beacons.

S5.AAA The Radiolocation service shall not cause harmful interference to the Aeronautical Radionavigation Service and the Radionavigation Service nor claim protection from these services.

11.7-14.25 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
14-14.25	FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 RADIONAVIGATION S5.504 Mobile-satellite (Earth-to-space) ~~except aeronautical mobile-satellite~~ Space research S5.505	
14.25-14.3	FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 RADIONAVIGATION S5.504 Mobile-satellite (Earth-to-space) ~~except aeronautical mobile-satellite~~ Space research S5.505 S5.508 S5.509	
14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) ~~except aeronautical mobile-satellite~~ Radionavigation-satellite	**14.3-14.4** FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 Mobile-satellite (Earth-to-space) ~~except aeronautical mobile-satellite~~ Radionavigation-satellite	**14.3-14.4** FIXED FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) ~~except aeronautical mobile-satellite~~ Radionavigation-satellite
14.4-14.47	FIXED FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) ~~except aeronautical mobile-satellite~~ Space research (space-to-Earth)	
14.47-14.5	FIXED FIXED-SATELLITE (Earth-to-space) S5.484A S5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) ~~except aeronautical mobile-satellite~~ Radio astronomy S5.149	

2 700-4 800 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
2 900-3 100	RADIONAVIGATION S5.426 ~~Radiolocation~~ RADIOLOCATION S5.BBB S5.425 S5.427	

S5.423 In the band 2 700-2 900 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the aeronautical radionavigation service.

S5.424 *Additional allocation:* in Canada, the band 2 850-2 900 MHz is also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars.

S5.425 In the band 2 900-3 100 MHz, the use of the shipborne interrogator-transponder system (SIT) shall be confined to the sub-band 2 930 -2 950 MHz.

S5.426 The use of the band 2 900-3 100 MHz by the aeronautical radionavigation service is limited to ground-based radars.

S5.427 In the bands 2 900-3 100 MHz and 9 300-9 500 MHz, the response from radar transponders shall not be capable of being confused with the response from radar beacons (racons) and shall not cause interference to ship or aeronautical radars in the radionavigation service, having regard, however, to No. **S4.9**.

S5.BBB The Radiolocation Service shall not cause harmful interference nor claim protection from the Aeronautical Radionavigation Service and the Radionavigation Service

75.2-137.175 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
108-117.975	AERONAUTICAL RADIONAVIGATION ~~S5.197~~ S5.CCC	

~~**S5.197** *Additional allocation:* in Japan, Pakistan and Syria, the band 108-111.975 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **S9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedures invoked under No. **S9.21**.~~ *(See also agenda item 1.1.)*

S5.CCC The band 108 - 117.975 is also allocated to the Aeronautical Mobile (R) Service and limited for the transmission of ground-based signals that provide supplemental navigational data for the radio navigation satellite service by ICAO standardized systems.

APPENDIX B

STRATEGY FOR ESTABLISHING AND PROMOTING THE ICAO POSITION FOR FUTURE ITU WORLD RADIOCOMMUNICATION CONFERENCES

1. Introduction.

1.1 This document presents a long-term strategy for establising and promoting the ICAO position for future ITU World Radiocommunication Conferences (WRC) with a view to securing support to the ICAO position from ITU Administrations and relevant international organizations.

2. Basis for the ICAO position

2.1 The ICAO position is developed on the basis of current and future aviation requirements for radio frequency spectrum, taking into account the expected growth in air traffic and the development of new technologies.

2.2 The long-term implementation strategy contained in the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750) forms the basis for the spectrum requirements.

2.3 The ICAO policy on radio frequency spectrum requirements, as approved by the Council, is contained in the *Handbook on Radio Frequency Spectrum Requirements for Civil Aviation* (Doc 9718, 2nd edition).

2.4 The framework for the development and support of the ICAO position is contained in Assembly Resolution A32-13.

3. Development of the ICAO position.

3.1. The ICAO position for a WRC is established as early as possible after the agenda for that WRC is established. The position presents the ICAO views on all agenda items of interest to international civil aviation on the agenda of the WRC, with particular regard to the impact on safety, regularity and efficiency of flight. Technical and operational information is provided as required to support the position.

3.2 The focal point on all aspects related to the development of the ICAO position for the ITU WRC's is the Aeronautical Mobile Communication Panel (AMCP), through its Working Group F. The GNSSP is responsible for developing material related to the use of GNSS elements, in coordination with AMCP as required.

3.3. Throughout the development of the position, proper coordination with and involvement of the ICAO regional offices is required. Their involvement enables the incorporation of specific regional requirements and helps achieve improved support at the regional and national level.

3.4. The draft ICAO position developed by the AMCP is reviewed by the ANC and sent to States and relevant international organizations for comments. The comments are reviewed by the ANC and a consolidated ICAO position is submitted by the ANC to the Council for approval.

3.5 After approval by the Council, the ICAO position is sent to States for use in the coordination process leading to the development of national positions. The ICAO position is also submitted as an information paper to the ITU WRC.

3.6. Following the development of the ICAO position, consequential amendments to policy statements contained in *Handbook on Radio Frequency Spectrum Requirements for Civil Aviation*, are developed for approval by the Council.

3.7. Any subsequent developments arising from ICAO and ITU activities in preparation for the WRC are considered by the Council with a view to updating the ICAO position as necessary.

4 Support to the ICAO position.

4.1. Assembly Resolution A32-13 (attached) shall be fully implemented so as to secure support from States to the ICAO position and ensure that the resources necessary to support increased participation by ICAO to international and regional spectrum management activities are made available.

4.2. In addition to being submitted to States (paragraph 3.5 refers), the ICAO position is also disseminated, as early as possible, to the regional telecommunication organizations involved in the development of regional positions for the ITU Conference. Presentation of the position and follow-up is provided by the relevant ICAO regional offices, with assistance from Headquarters as required.

4.3. ICAO contributes to the WRC preparatory activities conducted by ITU (meetings of relevant ITU-R Study Groups and ITU Conference Preparatory Meetings) by submitting additional technical papers supporting the ICAO position.

4.4. Close coordination and cooperation with other specialized agencies of the UN is required to broaden the support to specific elements of the ICAO position. Also support from other aviation organizations participating at the Conference needs to be secured.

4.5. Regional ICAO coordination meetings to present and discuss the ICAO position should be organized as required. These meeting could be held in conjunction with the meetings of AMCP Working Group F.

5. New trends in spectrum management.

5.1. In the application of the strategy outlined above, a number of new trends influencing the allocation of spectrum today and in the future need to be taken into account. Such trends, which may affect the availability of adequate and protected spectrum for aviation, include:

a. the increased role of the private sector in the work of the ITU;

b. the increased economic value of spectrum for certain applications;

c the increased availability of radio devices that do not require licensing by radiocommunication authorities;

d. the increased pressure for sharing aeronautical spectrum with non-aeronautical services.

5.2. The increased role of the private sector in the ITU has had an adverse impact on the influence of inter-governmental bodies such as ICAO. This situation should be addressed in the context of an ITU Plenipotentiary Conferences (the next one is scheduled for 2002), with a view to strenghtening the role of ICAO in ITU.

5.3 The economic value of spectrum alloated to certain applications can exceed by far the economic value of aeronautical applications of the same spectrum. This has recently been demonstrated by the results of the “spectrum auctions” conducted in several European countries to support future commercial mobile multimedia systems. This situation requires aviation to identify clearly the need and economic value of required spectrum in certain bands and to consider innovative approaches to guarantee the required level of safety service availability.

5.4 Technical trends such as the ones mentioned in 5.1 c. and d. above have the potential of increasing interference levels to aeronautical systems and must therefore be carefully assessed on a case-by-case basis. A comprehensive investigation of interference levels and available margins in all aeronautical bands needs to be conducted urgently.

Attachment

********NOTE TO TPC please insert copy of Assembly Resolution A32-13********