THIRD MEETING OF THE ALLPIRG/ADVISORY GROUP

(Montreal, 6 to 8 April 1999)

Agenda Item 5.8: Interregional coordination and harmonization mechanism – ICAO position for WRC-2000

(Presented by the Secretariat)

SUMMARY

This paper introduces the ICAO position for the International Telecommunications Union (ITU) World Radiocommunication Conference (2000) (WRC-2000), and highlights the possible role of regional activities in promoting the ICAO position.

1. BACKGROUND

1.1 This paper introduces the ICAO position for the International Telecommunications Union (ITU) World Radiocommunication Conference (2000) (WRC-2000), along with some views on how more support could be secured through regional activities. The proposed position, contained in Attachment A, has been transmitted to all ICAO Contracting States and relevant international organizations for comment and use in preparation to WRC-2000 (State letter E 3/5-98/98, dated 31 December 1998).

1.2 The International Telecommunication Union (ITU) is the specialized agency of the United Nations for telecommunications matters. International agreements on the allocation and use of the radio frequency spectrum are made within the framework of ITU at World Radiocommunication Conferences (WRCs) and are incorporated in the ITU Radio Regulations.

1.3 ICAO is recognized by States as the international body with the competence to coordinate the aeronautical input to ITU meetings on radio frequency spectrum matters. The ICAO position at WRCs, where ICAO is accorded observer status, reflects the coordinated requirements of the international civil aviation community and is approved by the ICAO Council. ICAO also actively participates in the technical activities in preparation for WRCs, through regular attendance to the meetings of ITU Study Groups, where it has a leading role in presenting the views of the international civil aviation community.

2. MAIN POINTS OF AERONAUTICAL CONCERN FOR THE WRC-2000

2.1 The continuing developments of proposals by mobile satellite service (MSS) operators to introduce the sharing of frequency bands used by civil aviation with non-aeronautical services is a source

of concern to aviation. In particular, the continuing availability of spectrum for the global navigation satellite system (GNSS), for GNSS augmentation and satellite communications is a matter that requires active support from States at WRC-2000.

2.2 A detailed review of points of aeronautical interest in the agenda for ITU WRC-2000 is provided in Attachment A, together with the proposed ICAO position.

3. REQUIRED SUPPORT TO THE ICAO POSITION AT WRCS

3.1 For the ICAO position to be duly considered by WRCs when deliberating on matters of interest to the aviation community, an increased level of support by ITU member administrations is essential. The current level of support has proven insufficient to guarantee that aviation requirements are consistently met.

3.2 This situation may lead to WRC decisions which do not address adequately the aeronautical RF spectrum bandwidth requirements. In the long run, aeronautical services may be jeopardized, with potentially serious consequences. Such consequences could include harmful interference from non-aeronautical services to existing aeronautical services, requiring expensive re-equipping of aircraft to preserve the current level of safety; failure of certain systems to satisfy operational requirements (such as in the case of interference to GNSS); and inability to satisfy the growing need for aeronautical spectrum to support new CNS/ATM systems and enhance safety and regularity of flight.

4. ROLE OF REGIONAL ACTIVITIES IN SUPPORTING THE ICAO POSITION AT WRC-2000

4.1 Experience has shown that the agreements obtained in regional telecommunication organizations have come to dominate the discussions at ITU Conferences. The decision-making process on substantive issues is increasingly taking place at the regional and inter-regional level, rather than at the Conference level, and involves a wide range of regional interests. This has substantially increased the resource requirements to support the intensive schedule of WRC preparation activities at various levels.

4.2 While the ICAO position is adopted at the Council level and is globally applicable, increased awareness in the regions is necessary in order to deliver the expected results. As stated in paragraph 4.5, ICAO has been active in presenting its position for WRC-2000 to a number of regional telecommunications organizations. In order for ICAO's efforts to be more effective, regional activities need to be directed appropriately to increase awareness in the ICAO Contracting States and ensure that the ICAO position is embraced at the national and regional policy level.

4.3 It is therefore essential that members of regional planning groups, in coordination with national aviation authorities, present the ICAO position in the national and regional fora where preparation for WRC-2000 is being conducted, and promote its incorporation into States' position.

4.4 ALLPIRG/2 recognized the importance of the issue and developed Conclusion 2/20, recommending a number of actions by regional planning groups and other bodies to support the ICAO position at future ITU Conferences.

4.5 Pursuant to ALLPIRG/2 Conclusion 2/20, the following actions have been taken:

a) the ICAO position for WRC-2000 has been presented at a number of regional telecommunications organizations meetings, including meetings of the Conferencia

Interamericana de Telecomunicaciones (CITEL), the Asia-Pacific Telecommunity (APT), the Conférence Européenne des Administrations des Postes et des Télécommunications (CEPT) (Conclusion 2/20 a) refers);

b) the 32nd Session of the ICAO Assembly has adopted Resolution A32-13 - Support of the ICAO policy on radio frequency spectrum matters. The text of the resolution is reproduced in Attachment B. Through State letter E 3/5-98/98, all ICAO Contracting States and international organizations have been invited to implement it (Conclusion 2/20 b) refers);

c) a statement by the ICAO Secretary General has been delivered to the fifteenth ITU Plenipotentiary Conference (Minneapolis, USA, 12 October – 6 November 1998). A statement to WRC-2000 is also planned (Conclusion 2/20 c) refers);

d) the World-wide CNS/ATM Systems Implementation Conference (Rio de Janeiro, 11-15 May 1998) was informed of the importance of securing adequate radio frequency allocations for CNS/ATM system implementation (Conclusion 2/20 d) refers); and

e) coordination between ICAO, IMO and Contracting States has been intensified in preparation for WRC-2000 (Conclusion 2/20 g) refers).

4.6 While considerable progress in the application of Conclusion 2/20 has been made, it should be noted that efforts to preserve aeronautical spectrum need to be continued and become a permanent concern of States and regional planning groups. The main thrust of Conclusion 2/20 is therefore still applicable to the preparation for WRC-2000. In particular, it is essential that members of regional planning groups, in coordination with national aviation authorities, present the ICAO position in the national and regional fora where preparation for WRC-2000 is being conducted, and promote its incorporation into States' position.

5. ACTION BY THE ALLPIRG

5.1 The meeting is invited to:

a) note the information provided in this paper;

b) note the progress in the implementation of ALLPIRG/2 Conclusion 2/20, a), b), c), d) and g);

c) reaffirm the continuing urgency of ALLPIRG/2 Conclusion 2/20, a), e), f) and g); and

d) make use of the material in Attachments A and B to promote consideration of the proposed ICAO position for incorporation into national proposals to WRC-2000.

– – – – – – – – – –

APPENDIX A

ICAO POSITION FOR THE ITU WRC-2000

SUMMARY

This document reviews the agenda for the ITU WRC-2000, discusses points of aeronautical interest and provides the draft ICAO position for each.

CONTENTS

1. INTRODUCTION

1.1 This document addresses the draft ICAO position on issues of interest to international civil aviation to be decided at the ITU World Radiocommunication Conference 2000 (WRC-2000). The draft ICAO position is developed on the basis of the agenda for the WRC-2000 reproduced in Attachment 1.

1.2 The ICAO position was developed by Working Group F of the Aeronautical Mobile Communications Panel (AMCP) in September 1998. It was co-ordinated with the members of AMCP by correspondence.

2. SPECTRUM REQUIREMENTS FOR INTERNATIONAL CIVIL AVIATION

2.1 The safety of air operations is vitally dependent on the availability of reliable and interference-free communications and navigation services. Continuous contact between pilot and ground with a safety message every few minutes in high-traffic density conditions is necessary to provide an air traffic service and to avoid collision in the air. Systems for navigation must be available for all phases of flight. Satellite systems for use in aircraft are now a fully mature technology and are foreseen to provide practical and realizable benefits, which can materially contribute to operational enhancements. 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. The associated high reliability and availability requirements demand special conditions to avoid harmful interference to these systems.

2.2 For the future, the radio frequency spectrum needs for civil aviation arising from the increased growth in air transport is stable, and no major adjustments in the current allocations are foreseen, as these appear capable of meeting currently known requirements for the future. In recent World Radiocommunication Conferences, however, the spectrum allocated to aeronautical services has been reduced in some bands; in other bands, sharing with non-aeronautical services was adopted notwithstanding strong aviation opposition. As a consequence of these measures, the remaining allocations will need to be fully utilized in order to accommodate the expected traffic growth. Modern technology, better modulation methods and the use of satellites will all contribute to achieve the objective of satisfying demands.

2.3 The introduction of the above-mentioned sharing scenarios must be considered with extreme care. In cases of high operational criticality (such as precision approach and landing), they must be thoroughly proven in real life before the implementation. This may be difficult and risky when expensive satellite systems are being considered and when real-time tests are normally impractical. As a consequence of these difficulties, the international civil aviation community retains the firm opinion that high critical operational systems, such as those used for low visibility approach and landing, should always operate in exclusive frequency bands.

3. ASPECTS ON THE AGENDA FOR WRC-2000

Note.— All of the items appearing in the agenda for WRC-2000 are mentioned below together with a comment. Where the item contains matters of concern to aeronautical radio services, a statement of the ICAO position is also given.

3.1 **WRC-2000 Agenda Resolves 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)**

3.1.1 Allocations to the aeronautical mobile service and the aeronautical radionavigation service 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 transport aircraft. In many cases, country footnotes allocate spectrum to radio services other than those identified in the table of allocations, normally in limited geographical areas. Such allocation can be made on a primary or secondary basis. In circumstances where the country footnote allocation in an aeronautical band is to a service other than the aeronautical, such use generally precludes full and unrestrained use of the band by the aeronautical allocation identified. In highly utilized aviation bands, which have to cope with future increased demands, the presence of country footnotes allocating spectrum to another service is undesirable. In many cases, such practice leads to an inefficient use of available frequencies by both services, notably when the systems have different technical characteristics. For these reasons, the following footnotes should be deleted:

a) **S5.181, S5.197, S5.259** (*Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including Statement of Approved ICAO Policies* (Doc 9718), Chapter 7, Sections 74.8 - 75.2 MHz, 108 - 117.975 MHz and 328.6 - 335.4 MHz refers).

This family of similar footnotes, covering the bands used for ILS localizer and VOR (108 - 117.975 MHz), glide path (328.6 - 335.4 MHz) and marker beacons (75 MHz), was inserted by the ITU World Administrative Radio Conference 1987 (WARC-87), in the expectation of a release, or reduction, of the use of these bands by the aeronautical radionavigation service. At that time, it was expected, in view of the plans to replace ILS with MLS by 1998, that ILS would be withdrawn. These bands were earmarked by the WARC-87 for re-allocation to the mobile service, in principle for non-aeronautical usage. The plans for replacing ILS with MLS have changed and it is now very unlikely that the mobile service will, in the foreseeable future, be able to get access to these bands. 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 frequency planning criteria are under development by the GNSS Panel. These country footnotes should now be deleted since they no longer represent a realistic expectation, and additionally create an undesirable precedent for introducing a new service in spectrum that will be used for safety critical operations and will not be vacated in the future; and

b) **S5.355, S5.359** (*Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including Statement of Approved ICAO Policies* (Doc 9718), Chapter 7, Section 1 559 - 1 626.5 MHz refers).

These footnotes allow the operation of fixed services in the band 1 559 - 1 610 MHz. This band is allocated, on a worldwide basis, to the aeronautical radionavigation service and the radionavigation satellite service and it accommodates various significant elements of the GNSS. Studies undertaken in some Contracting States indicate that a geographical separation exceeding line of sight (in the order of 400 km)

is required to ensure safe operation of GNSS. This is a very severe restriction, which will prohibit the use of GNSS over a wide area of the Earth's surface, including a greater part of Europe, Middle East and Africa. To compensate for these restrictions, retention of terrestrial radionavigation systems may be needed, leading to further inefficient use of available spectrum. More importantly, harmful interference situations can arise leading to disruption to GNSS, affecting the safety of aircraft in flight.

3.1.2 **ICAO position**

3.1.2.1 **To support deletion of footnotes S5.181, S5.197 and S5.259 on the grounds that they no longer represent a realistic possibility to introduce the mobile service in the relevant bands**.

3.1.2.2 **To support deletion of footnotes S5.355 and S5.359 from the band 1 559 – 1 610 MHz, or establish a closing date after which the fixed service ceases to operate in this band**.

3.2 **WRC-2000 Agenda Resolves 1.2 — To finalize remaining issues in the 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**

3.2.1 Requirements for spurious emission limits for radar systems have been placed with Section 1 of Appendix S3 of the Radio Regulations. This requires conformance for all transmitters installed on, or before, 1 January 2003.

3.2.2 **ICAO position**

3.2.2.1 **To support measures intended to restore the requirements for spurious emissions limits from radar systems to the situation, which applied prior to WRC-97**.

3.3 **WRC-2000 Agenda Resolves 1.3 — To consider the results of ITU-R studies in respect of Appendix S7/28 on the method for the determination of the coordination area around an earth station in frequency bands shared among space services and terrestrial radiocommunication services, and take the appropriate decisions to revise this appendix**

3.3.1 No impact on aeronautical radio services has been identified.

3.4 **WRC-2000 Agenda Resolves 1.4 — To consider issues concerning allocations and regulatory aspects related to Resolutions 126 (WRC-97), 128 (WRC-97), 129 (WRC-97), 133 (WRC-97), 134 (WRC-97) and 726 (WRC-97)**

3.4.1 No impact on aeronautical radio services has been identified.

3.5 **WRC-2000 Agenda Resolves 1.5 — To consider regulatory provisions and possible additional frequency allocations for services using high altitude platform stations, taking into account the results of ITU-R studies conducted in response to Resolution 122 (WRC-97)**

3.5.1 No impact on aeronautical radio services has been identified.

3.6 **WRC-2000 Agenda Resolves 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 mobile spectrum needs, and adjustments to the Table of Frequency Allocations as necessary**

3.6.1 Proposals may be developed aimed at accommodating the mobile service providing the terrestrial elements of IMT-2000 (in Europe UMTS) in bands currently allocated to the aeronautical radionavigation and radiolocation service. These bands are heavily used for radar stations (e.g. 2 700 to 2 900 MHz). There is no possibility for practical sharing arrangements between these aeronautical radar stations and terrestrial (land) mobile services, hence any proposal of this type is not acceptable.

3.6.2 **ICAO position**

3.6.2.1 **To oppose any proposed allocation to the mobile service in bands allocated or used by aeronautical services for reasons of incompatibility**.

3.7 **WRC-2000 Agenda Resolves 1.6.2 — Identification of a global radio control channel to facilitate multimode terminal operation and worldwide roaming of IMT-2000**

3.7.1 No impact on aeronautical radio services has been identified.

3.8 **WRC-2000 Agenda Resolves 1.7 — Review of the use of the HF bands by the aeronautical mobile (R) and maritime mobile services with a view to protecting operational, distress and safety communications, taking into account Resolution 346 (WRC-97)**

3.8.1 Resolution 346 addresses the use of specific frequencies by the maritime mobile service in the HF bands allocated to the maritime mobile service.

3.8.2 The aeronautical mobile (R) frequencies of 3 023 kHz and 5 680 kHz are designated for use by aeronautical and maritime services, and by manned space vehicles for search and rescue operations. Furthermore, all frequencies in the HF bands allocated exclusively to the aeronautical mobile (R) service are used to communicate operational safety messages in accordance with RR S43.1. Unauthorized use by other services in contravention of the requirements of the ITU Radio Regulations, and particularly with the provisions of Appendix S27, is increasing and causing serious degradations to safety communications. Special measures to eradicate unauthorized use are therefore necessary.

3.8.3 The frequencies used by the aeronautical mobile (R) service and the conditions for their utilization are contained in Appendix S27 to the ITU Radio Regulations. Conformity with ITU Radio Regulation S1.33 requires only "communications relating to safety and regularity of flight, primarily along national or international civil air routes" to be passed on frequencies assigned to the aeronautical mobile (R) service. In addition, the aeronautical frequencies 3 023 kHz and 5 680 kHz have been designated in S5.115 and in Articles S31 and Appendix S13 for use by ships and aircraft engaged in co-ordinated search and rescue operations. These uses are ongoing for the foreseeable future.

3.8.4 **ICAO position**

3.8.4.1 **To support measures that can 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**.

Note.— For more information refer to the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including Statement of Approved ICAO Policies (*Doc 9718*), Chapter 7, Section 2 850 - 22 000 kHz.

3.9 **WRC-2000 Agenda Resolves 1.8 — To consider regulatory and technical provisions to enable earth stations located on board vessels to operate in the fixed-satellite service (FSS) networks in the bands 3 700 - 4 200 MHz and 5 925 - 6 425 MHz, including their coordination with other services allocated in these bands**

3.9.1 No impact on aeronautical radio services has been identified.

3.10 **WRC-2000 Agenda Resolves 1.9 — To take into account the results of 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 1 559 - 1 567 MHz frequency range, in response to Resolutions 213 (WRC-97) and 220 (WRC-97)**

3.10.1 The band 1 559 - 1 610 MHz is allocated, on a primary basis, to the radionavigation service and the radionavigation satellite service. Two GNSS systems, GLONASS and GPS, are currently in operation in this band. The GNSS has been chosen as a core navigation technology of the ICAO CNS/ATM systems. The ICAO GNSS Panel is developing worldwide Standards and Recommended Practices (SARPs) for incorporation in ICAO Annexes. Navigation capability for all types of aircraft for en-route, terminal,

precision approach and aerodrome surface operations is envisaged, involving use of the band for augmentation systems and for follow-on satellite navigation systems.

3.10.2 Any sharing of this band with other systems has the potential to cause harmful interference to safety critical aeronautical services and is intrinsically unacceptable. The protection of a radionavigation service requires special treatment under the ITU Radio Regulations, effectively creating a situation of rights to be observed by any other services that may cause harmful interference.

3.10.3 In the case of the GNSS, an array of measures, both administrative and technical, is necessary to assure complete protection at all times. These measures would include adequate co-ordination and control, enabling immediate remedial action when harmful interference occurs. Technical provisions are an essential part of the protection structure and will require continuation of study in ITU-R and in ICAO, taking account of all the necessary operational features envisaged.

3.10.4 Resolution 220 (WRC-97), which addresses the study on the feasibility of operating a mobile-satellite service (space-to-Earth), includes technical criteria and operational and safety requirements for the aeronautical radionavigation service.

3.10.5 Studies on the feasibility of sharing are being progressed in various fora, including the GNSS Panel. The emerging results indicate that practical and safe sharing conditions cannot be established. In particular, it has been concluded that, in order to protect GNSS systems, MSS space-to-Earth transmissions must be limited to minus 138 dBW/m^2/MHz for wideband signals, and minus 148 dBW/m^2/MHz for narrowband signals. With the current state of the art, MSS systems limited to these low power flux densities are not feasible. Apart from aviation safety considerations, restrictions which constrain the aeronautical use or further development of existing and envisaged systems are not acceptable to aviation.

3.10.6 It is essential to ensure that, in the future, the total band for GNSS (1 559 - 1 610 MHz) remain free from interference from non-aeronautical sources. In particular, no allocation to the mobile-satellite service should be made. Resolution 220 (WRC-97) should be deleted from the Radio Regulations as studies on this issue of sharing GNSS with MSS have concluded that such sharing is not feasible.

3.10.7 **ICAO position**

3.10.7.1a) **no allocation should be made to the MSS service in the band 1 559 - 1 567 MHz; and**

b) **delete Resolution 220**

Note.— For more information refer to the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including Statement of Approved ICAO Policies *(Doc 9718)*, Chapter 7, Section 1 559 - 1 626.5 MHz)

3.11 **WRC-2000 Agenda Resolves 1.10 — To consider results of ITU-R studies carried out in accordance with Resolution 218 (WRC-97) and take appropriate action on this subject**

3.11.1 At the WRC-97, strong reservations were expressed by the aeronautical and maritime community on the feasibility of introducing an allocation to the mobile satellite service (generic) in respect of a number of important technical and operational points affecting the aeronautical and maritime mobile-satellite services. Principally, these reservations relate to the need to assure that adequate access to the radio frequency spectrum is available as and when it is needed. Also, concern was expressed with respect to the feasibility of pre-emption between networks. WRC-97 agreed to a generic allocation to the mobile-satellite service at 1.5/1.6 GHz. Footnote S5.362 A gives priority to AMS(R)S when co-ordinating spectrum. A number of aspects of concern to aviation were included in the request to ITU-R study groups to consider and to report to WRC-2000.

3.11.2 Early results of ICAO studies are available. In respect of spectrum estimates, the long-term requirement for AMS(R)S for the various world areas are: 11 MHz up to 2 010 and 18 MHz beyond that time frame.

3.11.3 No material has been presented to date supporting the feasibility of prioritization, real-time pre-emptive access, and the interoperability between different mobile-satellite systems. The absence of such material throws considerable doubt on the capability of the present generic allocation to satisfy aeronautical spectrum requirements to meet the future needs of the AMS(R)S. Furthermore, the footnote, as presently defined, gives no guarantee that any further access for AMS(R)S can ever be achieved through regulatory means once other mobile satellite service operations have taken all of the available spectrum in to use.

3.11.4 **ICAO position**

3.11.4.1 **a) to support the spectrum requirements of 11 MHz up to 2 010 and 18 MHz beyond 2010; and**

b) to ensure that adequate technical and regulatory provisions are agreed to:

1) guarantee the availability of spectrum for aeronautical communications as required; and

2) ensure that aeronautical communications in Categories 1 to 6 of Article S.44 are given priority and immediate access at all times.

Note.— For more information refer to the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including Statement of Approved ICAO Policies *(Doc 9718)*, Chapter 7, Section 1 525 - 1 559 and 1 626.5 - 1 660.5 MHz)

3.12 **WRC-2000 Agenda Resolves 1.11 — To consider constraints on existing allocations and to consider additional allocations on a worldwide basis for the non-geostationary (non-GSO) MSS below 1 GHz, taking into account the results of ITU-R studies conducted in response to Resolutions 214 (Rev.WRC-97) and 219 (WRC-97)**

3.12.1 The spectrum below 1 GHz contains a number of important aeronautical and radionavigation bands, where the main aeronautical terrestrial radio services supporting 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.

3.12.2 The main VHF communications band at 117.975 - 137 MHz supports all of the short- and medium-range communications over continental airspace and will continue for the foreseeable future to provide this function. Radionavigation systems operate at 75 MHz, 108 to 117 975 MHz, 324.6 to 335.4 MHz, and 960 to 1 215 MHz. They will be required well into the next century.

3.12.3 **ICAO position**

3.12.3.1 **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**.

3.13 **WRC-2000 Agenda Resolves 1.12 — To consider the progress of studies on sharing between feeder links of non-GSO MSS networks and GSO FSS networks in the bands 19.3 - 19.7 GHz and 29.1 - 29.5 GHz, taking into account Resolution 121 (Rev.WRC-97)**

3.13.1 No impact on aeronautical radio services has been identified.

3.14 **WRC-2000 Agenda Resolves 1.13.1 — To review and, if appropriate, revise the power limits appearing in Articles S21 and S22 in relation to the sharing conditions among non-GSO FSS, GSO FSS, GSO broadcasting-satellite service (BSS), space sciences and terrestrial services, to ensure the feasibility of these power limits and that these limits do not impose undue constraints on the development of these systems and services**

3.14.1 No impact on aeronautical radio services has been identified.

3.15 **WRC-2000 Agenda Resolves 1.13.2 — To consider the inclusion in other frequency bands of similar limits in Articles S21 and S22, or other regulatory approaches to be applied in relation to sharing situations**

3.15.1 No impact on aeronautical radio services has been identified.

3.16 **WRC-2000 Agenda Resolves 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 in accordance with Resolution 123 (WRC-97)**

3.16.1 The report of CPM-97 to WRC-97 proposed a sharing methodology between the aeronautical radionavigation systems presently in operation in this band, and the proposed Earth-to-space and space-to-Earth transmissions of the fixed-satellite service in the same band. Although international civil aviation had to accept the present allocation in Article S5, together with the safeguards for both services contained in the relevant ITU-R Resolutions, as a basis for sharing, it should be noted that this has been achieved by placing restrictions on several radionavigation systems, both ground-based and onboard aircraft.

3.16.2 It is proposed that the allocation to the fixed-satellite service should be removed if it is anticipated that the allocation will not be used.

3.16.3 **ICAO position**

3.16.3.1 **No further restrictions to the aeronautical radionavigation service are acceptable. Support action for removal of the fixed-satellite service, in particular, if under the current conditions the band cannot be efficiently used by the fixed-satellite service**.

Note.— For more information refer to the ICAO Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including Statement of Approved ICAO Policies *(Doc 9718)*, Chapter 7, Section 15.4 - 16.6 GHz).

3.17 **WRC-2000 Agenda Resolves 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**

3.17.1 The allocation to the radionavigation satellite service in the band 1 559 to 1 610 MHz supports operations of GLONASS and GPS, the two radionavigation satellite systems, which, together with supporting augmentation systems, are the presently identified elements of GNSS. The availability of new frequency bands to enhance current use of GNSS such as the bands for additional civil frequencies needs to be supported.

3.17.2 **ICAO position**

3.17.2.1 **To secure the availability of adequate spectrum for GNSS systems**.

3.18 **WRC-2000 Agenda Resolves 1.15.2 — To consider the addition of the space-to-space direction to the radionavigation-satellite service allocations in the bands 1 215 - 1 260 MHz and 1 559 - 1 610 MHz**

3.18.1 Introduction of an allocation enabling space-to-space operations of GLONASS and GPS does not affect aviation. As such allocation will not interfere with the projected aeronautical use of GNSS, proposals for this allocation can be permitted.

3.18.2 **ICAO position**

3.18.2.1 **No objections to a space-to-space allocation to the radionavigation satellite service in the bands 1 215 – 1 260 MHz and 1 559 – 1 610 MHz**.

3.19 **WRC-2000 Agenda Resolves 1.15.3 — To consider the status of allocations to services other than the radionavigation-satellite service (Nos. S5.355 and S5.359) in the band 1 559 - 1 610 MHz**

3.19.1 For more information on this subject, see paragraph 3.11.

3.19.2 **ICAO position**

3.19.2.1 **The operation of fixed service on the frequencies between 1 559 and 1 610 MHz should be discouraged and ceased**.

Note.— For more information refer to the ICAO Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including Statement of Approved ICAO Policies *(Doc 9718)*, Chapter 7, Section 1 559 - 1 626.5 MHz.

3.20 **WRC-2000 Agenda Resolves 1.16 — To consider allocation of frequency bands above 71 GHz to the earth exploration-satellite (passive) and radio astronomy services, taking into account Resolution 723 (WRC-97)**

3.20.1 No impact on aeronautical radio services has been identified.

3.21 **WRC-2000 Agenda Resolves 1.17 — To consider possible worldwide allocation for the earth exploration-satellite (passive) and space research (passive) services in the band 18.6 - 18.8 GHz, taking into account the results of the ITU-R studies**

3.21.1 No impact on aeronautical radio services has been identified.

3.22 **WRC-2000 Agenda Resolves 1.18 — To consider the use of new digital technology for the maritime mobile service in the band 156 - 174 MHz and consequential revision of Appendix 18/S18, taking into account Resolution 342 (WRC-97)**

3.22.1 No impact on aeronautical radio services has been identified.

3.23 **WRC-2000 Agenda Resolves 1.19 — To consider the report of the inter-conference representative group (IRG) submitted by the Director of the Radiocommunication Bureau and determine the basis for replanning by the next conference so as to afford each country an amount of spectrum that permits the economical development of a broadcasting-satellite service system**

3.23.1 No impact on aeronautical radio services has been identified.

3.24 **WRC-2000 Agenda Resolves 1.19 bis — In accordance with Article S14, to consider objections expressed by administrations with respect to the Radio Regulations Board's Rules of Procedure relating to the application of RR 2674/S23.13 in order for the Bureau to modify its findings in accordance with the conclusions of the Conference**

3.24.1 No impact on aeronautical radio services has been identified.

3.25 **WRC-2000 Agenda Resolves 1.20 — To consider the issues related to the application of Nos. S9.8, S9.9 and S9.17 and the corresponding parts of Appendix S5 with respect to Appendices S30 and S30A, with a view to possible deletion of Articles 6 and 7 of Appendices S30 and S30A, also taking into consideration Recommendation 35 (WRC-95)**

3.25.1 No impact on aeronautical radio services has been identified.

3.26 **WRC-2000 Agenda Resolves 1.21 — To consider the report from the Radiocommunication Bureau on results of the analysis in accordance with Resolution 53 (WRC-97) and take appropriate actions**

3.26.1 To be addressed when the report is available.

3.27 **WRC-2000 Agenda Resolves 2 — To examine the revised ITU-R recommendations incorporated by reference in the Radio Regulations in accordance with Resolution 28 (WRC-95); and 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-97)**

3.27.1 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.

3.27.2 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)).

3.27.3 **ICAO position**

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

3.28 **WRC-2000 Agenda Resolves 3 — To consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the Conference**

3.28.1 To be addressed when further material is available.

3.29 **WRC-2000 Agenda Resolves 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 abrogation**

3.29.1 No items have been identified at this time.

3.30 **WRC-2000 Agenda Resolves 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 (Geneva, 1992)**

3.30.1 To be addressed when the further material is available.

3.31 **WRC-2000 Agenda Resolves 6 — To identify those items requiring urgent action by the radiocommunication study groups in preparation for the next world radiocommunication conference**

3.31.1 No items have been identified at this point in time.

3.32 **WRC-2000 Agenda Resolves 7.1 — To consider and approve the report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector since WRC-97**

3.32.1 To be added when the report is available.

3.33 **WRC-2000 Agenda Resolves 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**

3.33.1 No items for inclusion in the agenda for the next WRC have been identified.

– – – – – – – – – –

ATTACHMENT 1

AGENDA FOR THE WORLD RADIOCOMMUNICATION CONFERENCE (WRC-2000)

The Council,

noting,

that Resolution 721 of the World Radiocommunication Conference (Geneva, 1997):

a) resolved to recommend to the Council that a world radiocommunication conference be held in Geneva in late 1999 for a period of four weeks;

b) recommended its agenda, and invited the Council to finalize the agenda and arrange for the convening of WRC-99 and to initiate as soon as possible the necessary consultation with Member States,

resolves

to convene a World Radiocommunication Conference (WRC-2000) in Istanbul (Turkey) from 8 May - 2 June 2000, 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 the 1997 World Radiocommunication Conference (WRC-97), and with due regard to the requirements of existing and future services in the bands under consideration, to consider and take appropriate action in respect of the following topics;

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 finalize remaining issues in the 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;

1.3 to consider the results of ITU-R studies in respect of Appendix **S7/28** on the method for the determination of the coordination area around an earth station in frequency bands shared among space services and terrestrial radiocommunication services, and take the appropriate decisions to revise this Appendix;

1.4 to consider issues concerning allocations and regulatory aspects related to Resolutions **126 (WRC-97)**, **128 (WRC-97)**, **129 (WRC-97)**, **133 (WRC-97)**, **134 (WRC-97)** and **726 (WRC-97)**;

1.5 to consider regulatory provisions and possible additional frequency allocations for services using high altitude platform stations, taking into account the results of ITU-R studies conducted in response to Resolution **122 (WRC-97)**;

1.6 issues related to IMT-2000;

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 mobile spectrum needs, and adjustments to the Table of Frequency Allocations as necessary;

1.6.2 identification of a global radio control channel to facilitate multimode terminal operation and worldwide roaming of IMT-2000;

1.7 review of the use of the HF bands by the aeronautical mobile (R) and maritime mobile services with a view to protecting operational, distress and safety communications, taking into account Resolution **346 (WRC-97)**;

1.8 to consider regulatory and technical provisions to enable earth stations located on board vessels to operate in the fixed-satellite service (FSS) networks in the bands 3 700 - 4 200 MHz and 5 925 - 6 425 MHz, including their coordination with other services allocated in these bands;

1.9 to take into account the results of 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 1 559 - 1 567 MHz frequency range, in response to Resolutions **213 (WRC-97)** and **220 (WRC-97)**;

1.10 to consider results of ITU-R studies carried out in accordance with Resolution **218 (WRC-97)** and take appropriate action on this subject;

1.11 to consider constraints on existing allocations and to consider additional allocations on a worldwide basis for the non-geostationary (non-GSO) MSS below 1 GHz, taking into account the results of ITU-R studies conducted in response to Resolutions **214 (Rev.WRC-97)** and **219 (WRC-97)**;

1.12 to consider the progress of studies on sharing between feeder links of non-GSO MSS networks and GSO FSS networks in the bands 19.3 - 19.7 GHz and 29.1 - 29.5 GHz, taking into account Resolution **121 (Rev.WRC-97)**;

1.13 on the basis of the results of the studies in accordance with Resolutions **130 (WRC-97)**, **131 (WRC-97)** and **538 (WRC-97)**:
1.13.1 to review and, if appropriate, revise the power limits appearing in Articles **S21** and **S22** in relation to the sharing conditions among non-GSO FSS, GSO FSS, GSO broadcasting-satellite service (BSS), space sciences and terrestrial services, to ensure the feasibility of these power limits and that these limits do not impose undue constraints on the development of these systems and services;

1.13.2 to consider the inclusion in other frequency bands of similar limits in Articles **S21** and **S22**, or other regulatory approaches to be applied in relation to sharing situations;

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 in accordance with Resolution **123 (WRC-97)**;

1.15 issues related to the radionavigation-satellite service;

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;

1.15.2 to consider the addition of the space-to-space direction to the radionavigation-satellite service allocations in the bands 1 215 - 1 260 MHz and 1 559 - 1 610 MHz;

1.15.3 to consider the status of allocations to services other than the radionavigation-satellite service (Nos. **S5.355** and **S5.359**) in the band 1 559 - 1 610 MHz;

1.16 to consider allocation of frequency bands above 71 GHz to the earth exploration-satellite (passive) and radio astronomy services, taking into account Resolution **723 (WRC-97)**;

1.17 to consider possible worldwide allocation for the earth exploration-satellite (passive) and space research (passive) services in the band 18.6 - 18.8 GHz, taking into account the results of the ITU-R studies;

1.18 to consider the use of new digital technology for the maritime mobile service in the band 156 - 174 MHz and consequential revision of Appendix **18/S18**, taking into account Resolution **342 (WRC-97)**;

1.19 to consider the report of the inter-conference representative group (IRG) submitted by the Director of the Radiocommunication Bureau and determine the basis for replanning by the next conference so as to afford each country an amount of spectrum that permits the economical development of a broadcasting-satellite service system;

1.19*bis* in accordance with Article S14, to consider objections expressed by administrations with respect to the Radio Regulations Board's Rules of Procedure relating to the application of RR 2674/S23.13 in order for the Bureau to modify its findings in accordance with the conclusions of the Conference;

1.20 to consider the issues related to the application of Nos. **S9.8**, **S9.9** and **S9.17** and the corresponding parts of Appendix **S5** with respect to Appendices **S30** and **S30A**, with a view to possible deletion of Articles 6 and 7 of Appendices **S30** and **S30A**, also taking into consideration Recommendation **35 (WRC-95)**;

1.21 to consider the report from the Radiocommunication Bureau on results of the analysis in accordance with Resolution **53 (WRC-97)** and take appropriate actions;

2. to examine the revised ITU-R recommendations incorporated by reference in the Radio Regulations in accordance with Resolution **28 (WRC-95)**; and 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-97)**;

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 (WRC-97)**, 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 (Geneva, 1992);

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 (Geneva, 1992);

7.1 to consider and approve the report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector since WRC-97;

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,

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-2000,

instructs the Secretary-General

1. to make all the necessary arrangements, in agreement with the Director of the Radiocommunication Bureau, for the convening and holding of the Conference;

2. to communicate this Resolution to concerned international and regional organizations.

– – – – – – – – – –

ATTACHMENT 2

EXPLANATORY NOTES

1. INTRODUCTION

1.1 The material in this attachment provides background information to the ICAO position with a view to facilitating its presentation to Contracting States.

1.2 The index used is that of the Agenda Item in the Conference Agenda as contained in ITU Resolution 1130 of the ITU Council.

2. SUPPLEMENTARY INFORMATION ON SELECTED AGENDA ITEMS

2.1 Resolves 1.1

2.1.1 The ITU Voluntary Group of Experts (VGE) recommended to reduce the high number of footnotes in the Table of Frequency Allocations (Article S5 of the ITU Radio Regulations). This recommendation was to preserve the prime purpose of the Table, which is to indicate global and regional agreement on the use of frequencies. The main purpose of these footnotes is to register in the ITU Radio Regulations national differences with the Table of Frequency Allocations and to obtain international recognition and protection. Such footnotes adversely affect the uniformity of the Table and often result in less efficient use of the frequency spectrum. This agenda item appeared also in WRC-97 but had limited success; in fact, new additions of footnotes and country names to existing footnotes exceeded the deletions. It is to be noted that the Conference must agree on the deletion of any country name from a footnote.

2.1.2 Two cases of footnotes, which are detrimental to aviation interests, are identified in the ICAO position for WRC-2000 (ICAO position, paragraph 3, Agenda Resolves 1.1 refers).

2.1.3 In 1987, footnotes allocating the bands 74.8 - 75.2 MHz, 108 -117.975 MHz and 328.6 - 335.4 MHz to the mobile service on a secondary basis were introduced to the Table of Frequency Allocations. The condition was added that introduction of these mobile services could only take place after these bands are no longer required for the aeronautical radionavigation service. These footnotes were inserted in the expectation that aviation would be releasing ILS spectrum due to the transition plans in ICAO to implement the microwave landing system (MLS). Radio regulators, mainly in Europe, wished to reserve the spectrum that would thus become available for the land mobile service. This practice of reserving spectrum to satisfy probable but not identified requirements is now generally considered as unacceptable.

2.1.4 In the frequency band 1 559 - 1 610 MHz, the operation of fixed microwave links (fixed service) is in certain countries of long standing and regulated through footnotes S5.355 and S5.359. Recently, in 1995 and 1997, a significant number of countries added their name to these footnotes. This band is allocated on a worldwide basis to the aeronautical radionavigation service and the radionavigation satellite service and used for the GPS and GLONASS. Studies have shown that the use of this band by satellite navigation systems is not compatible with the operations in the fixed service, as separation distances in the order of 400 kilometre are required to avoid interference to GLONASS/GPS.

2.2 **Resolves 1.9**

2.2.1 A proposal from Conférence Européenne des Administrations des Postes et des Télécommunications (CEPT) countries to allocate a part of the band 1 559 - 1 610 MHz to the mobile-satellite service (space-to-Earth), was presented to the WRC-97. The ITU Radiocommunication Study Groups and ICAO did not have the opportunity to carefully assess the proposal on its effects on the safety of satellite navigation. The proposal was strongly opposed by some countries, ICAO and the International Maritime Organization (IMO). Further work undertaken in ICAO demonstrates that if the allocation was made, the band 1 559 - 1 567 MHz would not longer be usable for satellite radionavigation. This would result in an effective reduction of the GNSS band and severely restrict future development of GNSS systems.

2.2.2 This proposal is an example of the recent practice in ITU, whereby other, non safety-related, services are introduced to share frequencies used by safety critical radionavigation systems. No actual operational experience is available with the proposed sharing schemes. The ICAO policy is to regard any such sharing without controlled operational evaluations as highly undesirable and unsuitable for bands used by safety critical systems.

2.3 **Resolves 1.10**

2.3.1 Since 1987, the separate, exclusive allocations to the maritime, aeronautical (R), and land mobile-satellite services were viewed as candidates to be merged into an allocation to the generic mobile-satellite service. The exclusive allocations were in recognition of the different technical and operational requirements from these services. The aeronautical mobile satellite (R) service (AMS(R)S) is subject to internationally agreed Standards and Recommended Practices (SARPs) contained in Annex 10 to the Convention on International Civil Aviation. The AMS(R)S also needs to satisfy certain performance requirements (integrity reliability and availability), which are assumed to be more stringent than for the other two services. Most importantly, all air traffic communications are for safety of life purposes, whilst the other two services are predominantly non-safety related, with the exception of communications in the global maritime distress and safety system (GMDSS).

2.3.2 On the basis of the above considerations, the ICAO position has been for adequate proof that the three individual mobile services can be operated together on a dynamic basis in the same frequency band without adversely affecting AMS(R)S communications. A specific requirement is demonstration that independent networks of space systems can ensure the application of an effective priority system for safety-related aeronautical messages. The assurance that aviation's expanding needs into the longer term can be satisfied is now required since the exclusive allocation has been discontinued.

2.3.3 WRC-97, while introducing generic allocations against major opposition from the international aviation and maritime community, did accept that further study was necessary. Resolution 218 (WRC-97) identifies, *inter alia,* the need to determine the **feasibility of prioritization, real-time pre-emptive access and, if necessary, the interoperability between different mobile-satellite systems.** Implicit in this work appears the assumption that a review of the allocation to the generic mobile-satellite service would be necessary if these studies failed to demonstrate the feasibility of prioritization, real-time pre-emptive access and interoperability required by international civil aviation to ensure adequate access to the frequency spectrum. Such a review should examine ways of satisfying these requirements, including the return to the previous exclusive allocations in some form.

2.3.4 The introduction of the generic allocation to MSS means a radical departure from the past practice in which aviation maintained a measure of co-ordination and control, albeit reducing in recent years, in the spectrum management and operational use of communication systems for air safety purposes. Effectively, this will now disappear for satellite communications, and be replaced by commercial agreements with service providers which need to include the internationally and agreed requirements for availability, integrity and reliability. The implications of this shift of focus need to be reviewed in the context of air operations in to the next century.

2.4 **Resolves 1.14**

2.4.1 Prior to the WRC-95, the band 15.4 - 15.7 MHz was exclusively allocated to the aeronautical radionavigation service and was extensively used for both civil and military purposes. The short wavelength makes it very suitable for short-range navigation systems and, in particular, for airborne systems where directivity of signals can be achieved with equipment with small physical dimensions. The band supports two identified civil systems, airport surface detection equipment (ASDE radar) and an airborne radar measurement system, as well as a number of other non-civil systems, both ground and airborne. The two civil systems operate typically in the upper part of the band. A transportable landing system and a multipurpose airborne radar system both use the full band. In 1995, allocations to the fixed-satellite service (Earth-to-space and space-to-Earth) were introduced.

2.4.2 These allocations to the fixed-satellite service were agreed at WRC-95, at a time when only minimal information on the ARNS systems using the band was available. Subsequently, considerable studies by ITU-R and ICAO, called for by WRC-95 in Resolutions 116 and 117, have resulted in ITU-R Recommendations S.1340 and S.1341. These clearly indicate the conditions for compatible operation between the ARNS systems and the transmissions of the fixed-satellite service. The results of these studies were agreed to at the Conference Preparatory Meeting 1997 (CPM-97) and resulted in minor adjustments to the Table of Frequency Allocations. The most important of these was the limitation of the operation of the fixed-satellite service to frequencies between 15.4 and 15.63 GHz.

2.4.3 These adjustments were found restrictive to satellite operators as, in particular, they created a need for large and costly ground-based antennas. Concern was also expressed on the possible interference to satellite stations receivers from airborne transmissions from the civil and military systems, which were already in operation. Also, the radio astronomy community is concerned about interference from spurious products from transmissions in the space-to-Earth direction from the non-geostationary orbiting satellites. Overall, the original WRC decision appears to have been premature, and it has become clear that the newly introduced service cannot expect to impose severe constraints on systems already in operation.

2.4.4 Resolution 123 (WRC-97) calls for studies on the **feasibility of implementing feeder links in the band 15.43 - 15.63 GHz** and presentation of the results to the WRC-2000, where a decision on possible adjustments to spectrum allocations is expected. No further restrictions to the allocation to the aeronautical radionavigation service are acceptable. Removal of the allocation to the fixed-satellite service appears appropriate.

2.4.5 The ICAO Policy accepts a degree of sharing for these satellite services, provided it does not prejudice existing aeronautical use and provides for development scope for future aeronautical needs.

2.5 **Resolves 1.15.3**

2.5.1 Footnotes S5.355 (covering twenty-five countries) and S5.359 (covering forty-four countries) permit the operation of point-to-point radio relay links (i.e. microwave links) operating in the fixed service in their territories. The areas affected are Europe, Middle East and parts of Africa. These stations have the potential to cause interference to GNSS signals over ranges exceeding many hundreds of kilometres. As such, they present an unknown hazard which can have the effect of interfering or even inhibiting GNSS usage for applications of high safety criticality, such as precision approach and landing, over quite wide areas.

2.5.2 In areas of congestion with many smaller countries, the co-ordination problem associated with assessing the effects of these links cannot be solved in practice, and conservative assumptions on the interference areas must be taken. For example, in Europe, where the footnotes contain ten country names without precise details on which to base calculations, an inhibition area of almost the full European airspace would be the only safe assumption for critical navigation functions.

2.5.3 The removal of the fixed services, if agreed, is likely to be carried out over a long period of time, due to the need to amortize systems and to find new bands. Clearance action is hence urgent and necessary.

2.5.4 This agenda item has been included to respond to pressures applied by civil aviation interests. Well-co-ordinated action will be necessary to achieve results at the WRC-2000.

– – – – – – – – – –

APPENDIX B

RESOLUTION A32-13

Resolution 32-13: Support of the ICAO policy on radio frequency spectrum matters

Whereas ICAO is the specialized agency of the United Nations responsible for the safety, regularity and efficiency of international civil aviation;

Whereas ICAO adopts international Standards and Recommended Practices (SARPs) for aeronautical communications systems and radio navigation aids;

Whereas ITU is the specialized agency of the United Nations regulating the use of the radio frequency spectrum;

Whereas the ICAO position, as approved by the Council, for ITU World Radiocommunication Conferences (WRCs) is the result of the co-ordination of international aviation requirements for radio frequency spectrum;

Recognizing that the development and the implementation of the CNS/ATM systems and the safety of international civil aviation could be seriously jeopardized unless aviation requirements for allocations of radio frequency spectrum are satisfied and protection of those allocations is achieved;

Recognizing that support from ITU member administrations is required to ensure that the ICAO position is supported by the WRC and that aviation requirements are met;

Considering the urgent need to increase such support due to the growing demand for spectrum and aggressive competition from commercial telecommunications services;

Considering the increased level of ITU WRC preparation activities associated with the biennial WRC regime;

Considering Recommendations 7/3, 7/5 and 7/6 of the Special Communications/Operations Divisional Meeting (1995) (SP COM/OPS/95);

The Assembly:

1. *Urges* Contracting States and international organizations to support firmly the ICAO position at WRCs and in regional and other international activities conducted in preparation for WRCs by the following means:

a) undertaking to provide for aviation interests to be fully integrated in the development of their positions presented to regional telecommunications fora involved in the preparation of joint proposals to the WRC;

b) including in their proposals to the WRC, to the extent possible, material consistent with the ICAO position;

c) supporting the ICAO position at WRC-2000 to retain the frequency band 1 559 - 1 610 MHz for exclusive use by the Aeronautical Radionavigation Service and the Radionavigation Satellite Service;

d) undertaking to provide aviation authorities to fully participate in the development of States' positions; and

e) ensuring, to the maximum extent possible, that their delegations to WRCs include representatives of their civil aviation administrations or other officials who are fully prepared to represent aviation interests;

2. *Requests* the Secretary General to bring to the attention of ITU the importance of adequate radio frequency spectrum allocation and protection for the safety of aviation; and

3. *Instructs* the Council and the Secretary General, as a matter of high priority within the budget adopted by the Assembly, to ensure that the resources necessary to support increased participation by ICAO to international and regional spectrum management activities are made available.

– END –