

**INTERNATIONAL CIVIL AVIATION ORGANIZATION**  
**EIGHTH MEETING OF THE CIVIL AVIATION AUTHORITIES OF THE**  
**SOUTH AMERICAN REGION (RAAC/8)**

(Buenos Aires, Argentina, 23 to 25 April 2003)

**Agenda Item 4: Regional Air Navigation Plan – Transition to the CNS/ATM Systems**

**WORLD RADIOCOMMUNICATION CONFERENCE (WRC) 2003**

(Presented by the United States of America)

**SUMMARY**

This document presents international radio spectrum issues of critical importance to international civil aviation and the work required to prepare for WRC-2003

**1. Introduction**

1.1. The work to protect and allocate spectrum for civil aviation was 100% successful at WRC-2000. All existing aviation spectrum was protected.

1.1.1. The effort to create an allocation that would allow the Mobile Satellite Service (MSS) to share the Global Navigation Satellite System (GNSS) band, 1559-1610 MHz, was defeated. Extensive analysis demonstrated that the planned MSS operations were not compatible with safe GNSS operations.

1.1.2. The 1164-1215 MHz band was allocated for Radionavigation Satellite Service (RNSS – the civil aviation system is called GNSS) to accommodate the GPS L5 and Galileo E5 frequencies. These actions have allowed the U.S. to progress its plans for GPS modernization to provide new capabilities from this global system. This band is also planned to be used by the proposed European satellite navigation system, Galileo.

1.1.3. Other radio spectrum bands allocated to RNSS – (GNSS) include, 1260-1300 and 5000-5030 MHz that are planned for use by the European Galileo system.

1.1.4. Use of the GNSS band 1559-1610 MHz for fixed links in some countries resulted in the inability of some States to implement GNSS with its attendant benefits. At WRC-2000, some countries stated their intention to immediately cease using fixed links in this band. The remainder agreed on a transition plan to remove these fixed links by 2015.

1.1.5. The Conference adopted a resolution that strengthens aeronautical access to Aeronautical Mobile Satellite (Route) Service (AMS(R)S) radio spectrum. The resolution calls for studies to determine the feasibility of inter-system preemption. Technical and procedural issues will be studied to implement inter-system preemption, if feasible, and considered at a future WRC. It should be noted that civil aviation must show greater use of this radio spectrum or risk its loss at a future WRC.

1.1.6. The Conference adopted a resolution to initiate an ITU “education” program to emphasize the importance of not using aeronautical HF frequencies except for aeronautical requirements, and to study possible technical and regulatory solutions to mitigate radio frequency interference. The review of aeronautical use of the HF band was put off until at least 2006.

1.1.7. IMT-2000 is the ITU designation of the future cellular telephone system (also sometimes called “third generation wireless” or “3G”). Many bands were identified for possible IMT-2000 implementation at WRC-2000. The 2700-2900 MHz band used by many States, including the U.S., for airport surveillance radar was identified as a potential band for IMT-2000. However, a study to determine the feasibility of using this band was put off until after 2006. Civil aviation will need to provide thorough analysis of use of this band to ensure that the needs of aeronautical surveillance can be met in the future.

## 2. Discussion

2.1. WRC-2003 will include several international radio spectrum issues of critical importance to international civil aviation.

2.1.1. There was extensive discussion at WRC-2000 with regard to the need for a pfd limit and the value needed to protect aeronautical radionavigation service (ARNS) systems (including Distance Measuring Equipment (DME)). Resolution 605 (WRC-2000) requested the ITU-R to study the technical, operational, and regulatory aspects of compatibility between RNSS and ARNS in the band 960-1215 MHz, including an assessment of the need for an aggregate pfd limit. If such a need exists, the ITU-R was requested to revise, if necessary the provisional pfd limit given in S5.328A concerning the operation of RNSS (space-to-Earth) systems in the frequency band 1164-1215 MHz.

2.1.2. WRC-2000 agreed to additional allocations to the radionavigation-satellite service (RNSS) (space-to-Earth) in the 1260-1300 MHz band making the entire 1215-1300 MHz band available for RNSS. This band was also allocated to the RNSS (space-to-space). The band 1240-1300 MHz is also allocated on a co-primary basis to radiolocation and radionavigation services and is used for long-range primary radar systems. Studies were conducted pursuant to the provisions of Resolution 606 (WRC-2000). Among other things, Resolution 606 (WRC-2000) called for studies on “the need for a power flux-density limit concerning the operation RNSS (space-to-Earth) systems in the frequency band 1215-1300 MHz in order to ensure that the radionavigation-satellite service (space-to-Earth) will not cause harmful interference to the radionavigation and radiolocation services.” Also in Resolution 606 (WRC-2000), WRC-2000 resolved that no additional constraints are to be placed on RNSS systems operating in the 1215-1260 MHz band.

2.1.3. An aviation requirement has emerged for the transmission of differential correction (augmentation) data for the Global Navigation Satellite System (GNSS), to be used by aircraft receivers to satisfy the stringent accuracy and integrity requirements for GNSS applications. The new ground-based augmentation systems (GBAS) are planned to operate in the band 108-117.975 MHz (initially, 112-117.975 MHz), which is currently used by Instrument Landing Systems (ILS) and VHF Omni-directional Ranging (VOR) systems. The band is currently allocated to the aeronautical radionavigation service. It has been argued that GBAS does not fall within the definition of a radionavigation service (i.e., using the property of the propagation characteristics of radio waves) and that an amendment to the allocation would therefore need to be made to allow for the transmission of GNSS augmentation data. ICAO is developing compatibility and frequency planning criteria between the VOR/ILS, and the new service. GBAS receiver performance will be compatible with FM broadcast services in the band 87.5-108 MHz, and compatibility will be assured without imposing further restrictions on broadcast stations. The U.S. is proposing a footnote in the Radio Regulations that will permit the use of the band 108-117.975 MHz, on a worldwide basis, for the transmission of radionavigation satellite differential correction signals by an international aeronautical standard ground-based system. The use of GBAS will increase the accuracy of satellite radionavigation systems and conform to the requirements for precision landing.

### 3. **Conclusion**

3.1. States are encouraged to participate in ICAO activities, such as the Aeronautical Mobile Communications Panel Working Group F, which are developing the ICAO positions for WRC-2003 and future WRC meetings.

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