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# Union Activities

## First Session of WARC ORB(1)

**A**fter nearly 40 days of work, the First Session of the World Administrative Radio Conference on the use of the geostationary-satellite orbit and the planning of the space services utilizing it completed its work on 15 September 1985. It opened on 8 August at the Geneva International Conference Centre and was attended by over 900 delegates and observers from 111 countries and 14 international organizations.



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*Closing of the First Session of WARC ORB(1). From left to right: Messrs R. E. Butler, ITU Secretary-General, and I. Stojanović, Chairman of the Conference*

During the five weeks of meetings, the Conference endeavoured to find a balanced solution that would not only permit any Member of the Union to start a satellite service on a basis of equality and consolidate continuing equal access to satellite services, but also avoid hampering the development on a sound basis of satellite technology aimed at improving spectrum use and economic viability—especially in view of the present rapid rate of technological progress in all fields of telecommunications.

### I. Structure of the Conference

The Conference was held under the chairmanship of Prof I. Stojanović (Yugoslavia) assisted by seven Vice-Chairmen: Messrs A. Petti (Italy), M. Cissé (Senegal), F. Jiménez Dávila (Argentina), S. M. Safavi Hemami (Islamic Republic of Iran), F. A. Zaidan (Saudi Arabia), D. Burch (United States) and A. Badalov (USSR).

Seven Committees, two Special Working Groups of a Committee and one *ad hoc* Working Group of the Plenary were set up. Several Sub-Working Groups were also established on an *ad hoc* basis to resolve specific questions allocated to them by Committees.

The detailed structure of the Conference was published in the *Telecommunication Journal* of September 1985, page 489.

### II. Results of the Conference

The results of the Conference fall into two categories: the Final Acts and a Report to the Second Session of the Conference scheduled to take place in 1988.

#### The Final Acts

The Final Acts of WARC ORB(1) enable the incorporation into the Radio Regula-

tions of the decisions taken by the Members of Region 2 (The Americas) during the Regional Administrative Conference for the planning of the broadcasting-satellite service in Region 2 (Geneva, 1983)—SAT-83 (see the *Telecommunication Journal* of September 1983, pages 438-439).

It should be recalled that the main purpose of SAT-83 was to draw up a detailed plan of frequency assignments and orbital positions for geostationary satellites in the broadcasting-satellite service in Region 2 (space-to-Earth) in the band 12.2-12.7 GHz and to plan feeder links (Earth-to-space) in the band 17.3-17.8 GHz.

A similar down-link plan was adopted in 1977 for Regions 1 and 3 and incorporated in the Radio Regulations during the World Administrative Radio Conference of 1979.

Apart from feeder links in Regions 1 and 3 which will be planned in 1988 by the Second Session of WARC ORB based on the proposals of the First Session, a comprehensive world broadcasting plan exists.

The Final Acts of WARC ORB(1) introduce the Region 2 Plan and associated regulatory provisions into the Radio Regulations. Such partial revision has been supplemented by four Resolutions.

The *partial revision* of the Radio Regulations, contained in the Annex to the Final Acts of which they form an integral part, relates to:

- the provisions and associated Plan for the broadcasting-satellite service in the frequency band 12.2-12.7 GHz in Region 2, which, as a result of this Conference, are incorporated into the Radio Regulations in Appendix 30 (ORB-85);
- the provisions and associated Plan for the feeder links for the broadcasting-satellite service (12.2-12.7 GHz) in Region 2 in the frequency band 17.3-17.8 GHz, incorporated, as a result of this Conference, into the Radio Regulations as Appendix 30A;
- the consequential modifications to certain Articles of the Radio Regulations and to Appendix 30.

The partial revision of the Radio Regulations contained in the Final Acts will enter into force on 30 October 1986 at 00h01 UTC (co-ordinated universal time).

Prior to this date, a procedure governing the use of the provisions of Appendices 30 and 30A has been adopted (Resolution No. COM6/2) as well as a procedure relating to interim systems for Region 2 (Resolution No. COM6/3).

The two other Resolutions contained in the Final Acts relate on the one hand, to the recording in the Master International Frequency Register of the assignments for Region 2 contained in Appendices 30 and 30A and, on the other hand, to orbital position limitations for the broadcasting-satellite service in Regions 1 and 2 in the band 12.2-12.5 GHz and for the fixed-satellite service (FSS) (feeder-link stations) in Region 2 for the band 17.3-17.8 GHz.

The incorporation thus completes the action taken for a definitive world agreement for the planning and establishment of direct television broadcasting in the frequency bands concerned.

### The Report to the Second Session

The Report to be transmitted to the Second Session of the WARC ORB comprises some 170 pages and consists of eight chapters, two Resolutions and three Recommendations. It constitutes the findings of the First Session on the question of the use of the geostationary-satellite orbit (GSO) and the planning of space services utilizing it together with its proposals on final decisions to be taken by the Second Session on the space services and frequency bands to be planned, the technical criteria to be established and the planning method to be used.

After a short introduction (Chapter 1) giving the legal basis for holding this Conference and summarizing the decisions of the First Session, the Report reviews in Chapter 2 the characteristics of typical in-service networks of the fixed-satellite service as only the FSS in the bands 6/4, 14/11-12 and 20/30 GHz has been identified for planning.

Chapter 3 proposes, for adoption by the Second Session, the planning principles and the planning method to govern the use of the geostationary-satellite orbit and the space services utilizing this orbit.

The planning principles provide for equitable and *guaranteed access* to the orbit while keeping flexibility and efficiency in its use. They also take into account existing systems, technical aspects of special geographical situations, and the provisions for multi-service/multi-band networks.

Although it is considered that a worldwide planning solution would be most suitable, the planning principles do not exclude the possibility of having different planning methods.

Finally, the possibility of setting aside portions of the orbit/spectrum resource to accommodate unforeseen as well as future Union Members' requirements after all requirements have been satisfied, has been adopted together with the principle that administrations or groups of administrations are not entitled to permanent priority in the use of particular frequencies and GSO positions in such a way as to foreclose access by other administrations to the GSO and frequency bands allocated to space services.

Led by these principles, the Conference decided to recommend a dual planning method:

a) an allotment Plan for certain bands.<sup>1</sup> The Plan should permit each administration to satisfy requirements for national services from at least one orbital position, within a predetermined arc and predetermined band(s). The Plan shall be limited to national systems providing domestic services. Provisions would however enable administrations with adjacent territories to combine all or part of their allotments with a view to ensuring a subregional service;

b) improved procedures<sup>2</sup> to be applied in other bands.<sup>3</sup> The principal characteristic of this method is the convening of periodic multilateral planning meetings. These meetings will constitute the normal process for gaining access to the GSO/spectrum resource. The multilateral planning approach will be, if adopted by the Second Session, a new and separate procedure to be added to the Radio Regulations.

Chapter 4 provides guidelines for regulatory procedures for space services and frequency bands which have not been identified for planning. It concerns sections 1 and 2 of Article 11 of the Radio Regulations, Articles 13 and 14 and Resolution No. 4 of WARC-79 and other Resolutions relating to space services, simplified IFRB handbooks on regulatory procedures and IFRB technical standards and rules of procedures.

Inter-service sharing considerations are dealt with in Chapter 5 with particular emphasis on existing sharing criteria to be reviewed or revised or new sharing criteria to be developed as a result of the decisions to be taken by the Second Session.

Chapter 6 recommends bands for which a frequency plan should be established for feeder links (Earth-to-space) for the 12 GHz broadcasting-satellite service in Regions 1 and 3. It has been decided to select the frequency bands 17.3-18.1 and 14.5-14.8 GHz (for countries outside

Europe and for Malta). It was decided not to use the frequency band 10.7-11.7 GHz for the feeder-link assignment plan.

Chapter 7 makes Recommendations for the attention of the Second Session in order to meet the objectives of Resolution No. 505 of WARC-79.<sup>4</sup> The Conference recommends that administrations should continue to carry out studies on the question of quality of service, frequency of operation, modulation type, bandwidth required, receivers, antenna design, feeder links, appropriate sharing criteria, cost considerations, the ability of present and future technology and multiple user satellites. Based on these results and in reviewing the situation prevailing in 1988, the Second Session is requested to take appropriate decisions concerning the various aspects of sound-broadcasting satellites in the band 0.5 to 2 GHz.

The Report, in Chapter 8, describes the intersessional activities to be carried out by the permanent organs of the Union for the Second Session of the Conference. In essence, the Union is requested to carry out studies to provide the Second Session with full and accurate information on various aspects of a number of issues raised during the First Session and to carry out planning exercises on the basis of the requirements submitted by administrations and in accordance with the Recommendations of the First Session of the Conference, including the development of the appropriate software package for the preparation of the allotment plan.

<sup>1</sup> 4500-4800 MHz, 300 MHz to be selected in the band 6425-7075 MHz, and 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz.

<sup>2</sup> The Radio Regulations at present provide for procedures to be followed in the use of GSO and the planning of space services utilizing it. They were however felt inadequate to cope with today's situation.

<sup>3</sup> 3700-4200 MHz  
5850-6425 MHz  
10.95-11.20 GHz  
11.45-11.70 GHz  
11.70-12.20 GHz in Region 2 between networks of the FSS only  
12.50-12.75 GHz in Regions 1 and 3 between networks of the FSS only  
14.00-14.50 GHz  
18.10-18.30 GHz  
18.30-20.20 GHz  
27.00-30.00 GHz

<sup>4</sup> Resolution No. 505 relates to the subject of satellite sound broadcasting in the band 0.5 to 2 GHz.

The Conference adopted two Resolutions and three Recommendations:

- Resolution PLEN/1 relates to the approval of the Report of this Session of the Conference;
- Resolution No. COM/5 relates to the improvement of the accuracy of the Master Register, the International Frequency List, List VIIIA,<sup>5</sup> and the

information provided to administrations;

- Recommendation PLEN/A proposes to the Administrative Council of the Union a draft agenda for the Second Session of the Conference;
- Recommendation PLEN/B relates to high definition television (HDTV) in the broadcasting-satellite service;

- Recommendation PLEN/C relates to satellite sound broadcasting systems for individual reception by portable and automobile receivers.

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<sup>5</sup> List VIIIA relates to space radiocommunications stations and radio astronomy stations.