CGMS-XXVII EUM-WP-17
Prepared by EUMETSAT
Agenda Item: I.1

PREPARATIONS OF WORLD RADIO CONFERENCE 2000

This document reports on preparations for the World Radio Conference 2000 which is scheduled for 8 May to 2 June 2000 in Istanbul (Turkey).

CGMS members are invited to take note and support activities.

PREPARATIONS OF WORLD RADIO CONFERENCE 2000

1 INTRODUCTION

The World Radio Conference 2000 is scheduled for 8 May to 2 June 2000 and will take place in Istanbul (Turkey). The agenda for the Conference was agreed during WRC 1997. Preparatory work takes place in ITU working groups and task groups. Furthermore there are many activities in national and supranational organisations such as CEPT, CITEL, APT etc. A major milestone in WRC 2000 operations will be the Conference Preparatory Meeting, which will take place at the ITU in Geneva in November 1999. This Conference will complete the technical inputs to the WRC and will publish the CPM report, which is the main input document to the WRC.

2 TOPICS RELATED TO METEOROLOGICAL APPLICATIONS

After successful completion of many topics related to meteorological applications at WRC 97, there are a number of new issues, which will be negotiated at WRC 2000. The main agenda points of relevance are:

Agenda item 1.3: Earth Station Co-ordination Area (revision of Appendix S7)
Agenda item 1.4: High Density Fixed Service (HDFS)
Agenda item 1.6: IMT-2000 (International Mobile Telecommunications)
Agenda item 1.9: Mobile Satellite Service (Resolutions 213 and 220)
Agenda item 1.11: Non GSO/MSS below 1 GHz (Res 214 and Res 219)
Agenda item 1.17: World-wide allocation for EESS & SRS at 18.6 – 18.8 GHz
Agenda item 1.16: Harmonisation of Frequency Bands above 71 GHz

3 STATUS OF TOPICS RELATED TO METEOROLOGICAL APPLICATIONS

Earth Station Co-ordination Area

EUMETSAT studied the required co-ordination parameters for all frequency bands allocated to the Meteorological Satellite (MetSat) service and submitted 2 input documents to the ITU-R with the objective to receive adequate protection for Earth stations operating in these bands. NOAA introduced similar input documents. These input contributions were discussed at the relevant ITU-R meetings (WP7C) and main elements were integrated into a text proposal for the Conference Preparatory Meeting (CPM) report. WRC 2000 is expected to discuss these Earth station co-ordination parameters which will hopefully be incorporated into the Radio Regulations as proposed. This will provide the basis for co-ordination, and thus

adequate protection, of Earth stations.

High Density Fixed Service (HDFS)

The conditions for introduction of HDFS in various frequency bands are being studied and results will be forwarded to WRC 2000. The work is based on resolutions 126 and 726. The introduction of HDFS will potentially create interference to EESS (passive) sensors in the bands 31.8 to 33.4 GHz and 51.4 to 52.6 GHz. There is also a potential problem in the planned band 55.78 to 59 GHz although there is a much higher atmospheric absorption in this band, which could reduce interfering signal strength.

The HDFS bands of concern are directly neighbouring the above EESS bands. The problems are related to out-of-band emissions, which are expected to exceed the acceptable interference levels to passive sensors.

A study was produced by Météo France and was submitted to ITU (WP7C). The study demonstrated the potential of harmful interference, which could reduce the quality of measurements dramatically. It has to be expected that large quantities of links will be installed in the HDFS in the near future. It will be necessary to limit HDFS out-of-band emissions to an acceptable level. This is claimed to increase equipment cost and strong opposition of the HDFS community has therefore been raised.

IMT-2000 (International Mobile Telecommunications 2000)

The agenda for WRC 2000 covers the need for identification of additional frequency bands for the extended deployment of IMT-2000 systems, formerly referred to as Future Public Land Mobile Telecommunication System (FPLMTS). In Europe, this system is also called UMTS (Universal Mobile Telecommunication System). In the initial investigation phase of candidate bands for IMT-2000 expansion, the so-called Space Science bands (2025 – 2110 and 2200 – 2290 MHz) were identified as suitable bands. The lower band contains many MetSat uplinks and the upper band the TTC links for MSG. After massive interventions from the space science and space operations community, these bands are at present not considered suitable for IMT-2000 expansion. Nevertheless, it has to be noted that the first generation of UMTS will be allocated in directly neighbouring bands below and in-between the above bands. Moreover, the band above 2290 MHz is also considered as a candidate band which raises concerns that possible expansion discussions will be restarted at some stage.

Mobile Satellite Service Frequency Requirements

The currently allocated frequency bands for Mobile Satellite Service applications are reaching saturation and new candidate bands are being investigated. This is stimulated by ITU Resolutions 213, 220 and 214, the latter one being limited to Non-Geostationary (NGSO) systems. In this context, there have been continuing discussions over several years on possible use of bands allocated to the Meteorological Satellite Service (MetSat) and the

Meteorological Aids Service (MetAids). In particular, parts of the bands 1675 to 1710 MHz and 400.15 to 406 MHz have been identified for potential MSS operations.

During WRC 97 it was possible to prevent a world-wide MSS uplink allocation in the band 1675 to 1683 MHz as proposed by several ITU administrations. The main reason for this was the unsuccessful allocation attempt of a suitable downlink companion band. Resolution 213 and 220 urgently invite the ITU-R to continue studies to satisfy MSS requirements above 1 GHz. Present discussions are again concentrating on the use of either the band 1675 – 1683 or 1683 – 1690 MHz for MSS uplinks and it is likely that proposals to WRC-2000 will be made in this respect. Further studies are performed on the suitability of sharing additional uplinks in the frequency band 1698 to 1710 MHz in a time sharing mode with MetSat systems. CEPT has recently created a task group to evaluate possible scenarios.

EUMETSAT has produced several studies on sharing possibilities for the band 1675 to 1710 MHz. Basically all of the obtained conclusions were incorporated into an ITU-R recommendation. One particular study is still under consideration with respect to suitable text for the CPM report. It is related to the feasibility of time sharing operations between MetSat and MSS in the sub-band 1698-1710 MHz. This study demonstrates that there is only limited potential for sharing and that, based on a number of considerations, the band 1698-1710 MHz is practically not suitable for sharing. The MSS community has a different view on this and negotiations will continue within the ITU-R.

Some MSS NGSO systems (so-called Little LEOs) require frequency bands below 1 GHz. Candidate bands for possible MSS allocations are 137.025 – 137.175 MHz, 137.825 – 138 MHz, and 405 –406 MHz. The first two bands are and will be used for direct readout services from Meteorological Polar Orbiting satellites (LRPT, APT). Sharing with MSS is not feasible in these bands. The band 405 – 406 MHz is used for MetAids operations. WMO has produced a study which indicates that the band will be needed for radiosonde operations for the medium term future (12 years at least) and that sharing with MSS will not be possible in this band.

World-wide allocation for EESS & SRS at 18.6 – 18.8 GHz

This issue was considered by WRC 97, but could not be resolved, as it was not possible to find an acceptable compromise solution for new technical constraints. These would have to be applied to already primary fixed and fixed-satellite services as a consequence of the requested upgrade of Earth Exploration Satellite Service (EESS) and Space Research Service (SRS) to primary status in ITU Regions 1 and 3. It has to be noted that in Region 2 (America) EESS and SRS have already a primary status in this band. Whereas a solution with the fixed service appears feasible, the situation regarding the fixed satellite service is much more difficult.
Discussions in preparation to WRC 2000 are still not successful and compromise solutions are still being processed.

Harmonisation of Frequency Bands above 71 GHz

Frequency allocations above 50 GHz were adopted at the World Radio Conference in 1979. Allocations were made in accordance with the knowledge and information available at that time. In many cases arbitrary decisions were taken. It was necessary to review these allocations in the light of developments within the various services.

This was started with the re-allocation of frequency bands between 50 and 71 GHz at WRC 97 and resulted in one of the most successful outputs of WRC 97. The new allocation table in this band satisfies the requirements of EESS, Fixed Service, and the Inter-Satellite Service. It was agreed that re-allocations for frequency bands above 71 GHz should be discussed at WRC 2000. Considerable work was done within the framework of the CEPT Project Team PT 33 resulting in a proposed allocation table covering frequencies between 71 and 275 GHz. It was concluded that bands above 275 GHz should be considered at a later time. The new allocation table elaborated by CEPT PT33 was presented to the Space Frequency Co-ordination Group and modifications were included to reflect inputs from Space Agencies. The table will now be internationally supported and it can be expected that re-allocations will be successfully implemented at WRC 2000.

Both re-allocation exercises will establish the basis for space-borne measurement of passive sensors including those operated by EPS.

4 PREPARATION PROCESS

Preparations for the WRC 2000 are performed in many national and international working groups. Those relevant to EUMETSAT are the ITU-R Study Groups 7 and 8, in particular Working Parties 7C and 8D, the CEPT working groups FM (Frequency Management) and CPG (Conference Preparatory Group) as well as Project Teams established by those groups. Important work is also performed in the "WMO/CBS Steering Group on Radio Frequency Co-ordination" and in the Space Frequency Co-ordination Group.

ITU SGs and WPs play a key role for decisions adopted at the conference as they establish the technical baseline for the work of the conference. The ITU-R study results and conclusions will be published in the Conference Preparatory Meeting report, which will be prepared in November 1999.

CEPT organises its preparatory meetings to collect national inputs, to harmonise these inputs and to convert them into European Common Proposals (ECPs) and CEPT Briefing Information. The ECPs will be submitted to WRC 2000 and are normally supported by all 43 CEPT member administrations. Only in few exceptional cases are there single administrations which do not agree to individual ECPs. CEPT is also attempting to harmonise its views with other multinational organisations such as CITEL (America), APT (Asia-Pacific), Africa and the Arab League to prepare smooth processing at the WRC.

The WMO/CBS Steering Group on Radio Frequency Co-ordination meets normally once or twice a year around ITU meetings. The aim is to collect information on the status of relevant

activities and to harmonise meteorological requirements.

5 CONCLUSION

Preparations for WRC 2000 are performed in many international task groups with the aim to establish co-ordinated and technically justified inputs to the CPM and WRC 2000. The meteorological community supports a number of activities with contributions from WMO, Météo France, NOAA and EUMETSAT.

CGMS members are invited to support meteorological topics of WRC 2000 by promoting these items with their national frequency authorities.