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- This PDF includes Document No. 101-200
- The complete set of conference documents includes Document No. 1-489, DL No. 1-72, DT No. 1-95

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 101-E 29 August 1988 Original: Spanish

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

PLENARY MEETING

<u>Mexico</u>

PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 10

"10. To review the possibility of the long-term applicability of Resolution No. 2 (SAT-R2), and to take a definitive decision on this matter."

Mexico considers it desirable to have provisions allowing a degree of flexibility in bringing the assignments in the Plans into use, so as to enable administrations to proceed by stages if they wish and to use characteristics different from those in the Plans initially, without causing any adverse effects for the Plans or creating obstacles to their application and further development.

MEX/101/1

In view of the fact that Resolution No. 2 (SAT-R2) ensures flexibility while at the same time protecting other services, both in Region 2 and in Regions 1 and 3, the Mexican Administration proposes that the provisions of Resolution No. 2 (SAT-R2), suitably modified, should be definitively included in the Radio Regulations for application in Region 2.

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ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 102-E 29 August 1988 Original: Spanish

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

PLENARY MEETING

<u>Mexico</u>

PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 11

"11. In accordance with Recommendation 3 of the First Session of the Conference, and without prejudice to the present BSS allocation in the 22.5 - 23 GHz band in Regions 2 and 3, to consider the question of a suitable frequency band for the broadcasting-satellite service, preferably on a world-wide basis, to accommodate HDTV, including possible action as appropriate on the necessary changes to Article 8 at a later competent conference."

MEX/102/1

The Mexican Administration, after studying the Report of the CCIR to the Conference, considers it necessary that the CCIR should continue studying the matter with a view to finding a frequency band which is technically and operationally suitable. Its study should deal with the problem of sharing with other radio services and the desirability of having an appropriate world-wide frequency allocation to the BSS for the transmission of HDTV, so as to facilitate the introduction of a single world-wide standard for satellite transmission of highdefinition television.

It follows that a future competent WARC should be entrusted with the task of considering the results of the CCIR studies with a view to allocating the appropriate spectrum for this service.

WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 103-E 29 August 1988 Original: Spanish

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

PLENARY MEETING

<u>Mexico</u>

PROPOSALS FOR THE WORK OF THE CONFERENCE

WARC ORB-88 AGENDA ITEM 13

"13. To consider, revise as necessary, and take other appropriate action upon relevant Resolutions and Recommendations."

- A. <u>RESOLUTIONS</u>
- NOC RESOLUTION No. 2 Relating to the Equitable Use, by All Countries, with Equal Rights, of the Geostationary-Satellite Orbit and of Frequency Bands for Space Radiocommunication Services

MEX/103/1

SUP

RESOLUTION No. 3 Relating to the Use of the Geostationary-Satellite Orbit and to the Planning of Space Services Utilizing It

<u>Reasons</u>: The action required under this Resolution will be completed by the Second Session of the Conference.

MEX/103/2

SUP

RESOLUTION No. 4 Relating to the Period of Validity of Frequency Assignments to Space Stations Using the Geostationary-Satellite Orbit

<u>Reasons</u>: This Resolution will no longer be necessary once the Second Session of the Conference has made the requisite modifications to Article 13.

NOC RESOLUTION No. 6 Relating to the Preparation of a Handbook to Explain and Illustrate the Procedures of the Radio Regulations

MEX/103/3

SUP

RESOLUTION No. 31 Relating to the Application of Certain Provisions of the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, to Take into Account Changes Made by the World Administrative Radio Conference, Geneva, 1979 to the Table of Frequency Allocations for Region 2 in the Band 11.7 - 12.7 GHz

<u>Reasons</u>: The provisions of this Resolution have already been incorporated in Appendix 30 (Orb-85).

- 2 -ORB(2)/103-E

- NOC RESOLUTION No. 32 Relating to the Use of Frequency Assignments to Terrestrial and Space Radiocommunication Stations in the Band 11.7 - 12.2 GHz in Region 3 and in the Band 11.7 - 12.5 GHz in Region 1
- NOC RESOLUTION No. 33 Relating to the Bringing into Use of Space Stations in the Broadcasting-Satellite Service, Prior to the Entry into Force of Agreements and Associated Plans for the Broadcasting-Satellite Service
- NOC RESOLUTION No. 34 Relating to the Establishment of the Broadcasting-Satellite Service in Region 3 in the 12.5 - 12.75 GHz Frequency Band and to Sharing with Space and Terrestrial Services in Regions 1, 2 and 3

MEX/103/4

SUP

SUP

RESOLUTION No. 40 (Orb-85) Relating to the Recording in the Master International Frequency Register of the Assignments for Region 2 contained in Appendix 30 (Orb-85) and Appendix 30A

<u>Reasons</u>: The IFRB ought to have fulfilled its mandate under this Resolution already, but will need to confirm that it has done so.

- MEX/103/5
- RESOLUTION No. 41 (Orb-85) Relating to the Provisional Application of the Partial Revision of the Radio Regulations as Contained in the Final Acts of the WARC Orb-85 Prior to its Entry into Force

<u>Reasons</u>: Same as above.

MEX/103/6 RESOLUTION No. 42 (Orb-85) Relating to the Provisional Application for Region 2 of Resolution No. 2 (Sat-R2)

> <u>Reasons</u>: The Mexican Administration has given its opinion on Resolution No. 2 (Sat-R2) in Document 33 of the PC/WARC Orb-88.

NOC RESOLUTION No. 43 (Orb-85) Relating 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 (Feeder-Link Stations) in Region 2 for the Band 17.3 - 17.8 GHz

MEX/103/7

SUP

RESOLUTION No. 100 Relating to the Coordination, Notification and Recording in the Master International Frequency Register of Assignments to Stations in the Fixed-Satellite Service with Respect to Stations in the Broadcasting-Satellite Service in Region 2

 $\underline{Reasons}$: The provisions in this Resolution have been incorporated in Appendix 30 (Orb-85).

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MEX/103/8 SUP	RESOLUTION No. 101 Concerning the Drawing Up of Agreements and of the Associated Plans for Feeder Links to Space Stations in the Broadcasting-Satellite Service Operating in the 12 GHz Band under the Plan Adopted by the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, for Regions 1 and 3 Reasons: It will no longer be needed once the Conference has adopted the
MEX/103/9	decisions necessary to establish the Plan.
SUP	RESOLUTION No. 102 Relating to Coordination among Administrations of the Technical Characteristics of Feeder Links to Space Stations in the Broadcasting-Satellite Service in the Band 11.7 - 12.5 GHz (Region 1) and 11.7 - 12.2 GHz (Region 3) During the Period Between the Entry into Force of the Final Acts of the World Administrative Radio Conference, Geneva, 1979, and the Entry into Force of the Final Acts of a Future Conference on the Planning of Feeder Links to Such Space Stations
	<u>Reasons</u> : Same as above.
NOC	RESOLUTION No. 205 (Mob-83) Relating to the Protection of the Band 406 - 406.1 MHz Allocated to the Mobile-Satellite Service
MEX/103/10 SUP	RESOLUTION No. 502 Relating to the Period Between the Entry into Force of the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, and the Date on Which the Provisions and Associated Plan Adopted by that Conference Are Annexed to the Radio Regulations
	<u>Reasons</u> : The provisions associated with the Plan have been annexed to the Radio Regulations.
MEX/103/11 SUP	RESOLUTION No. 503 Relating to the Coordination, Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in the Broadcasting-Satellite Service in Region 2
	<u>Reasons</u> : The provisions are already contained in Appendix 30 (Orb-85).
MEX/103/12 SUP	RESOLUTION No. 504 Relating to the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, with Respect to Region 2
	<u>Reasons</u> : The action required under this Resolution has already been taken.

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MEX/103/13	RESOLUTION No. 505 Relating to the Broadcasting-Satellite Service (Sound) in the Frequency Range 0.5 GHz to 2 GHz
	<u>Note</u> : The Mexican Administration has given its opinion on the sound broadcasting service in Document 33 of the PC/WARC Orb-88.
NOC	RESOLUTION No. 506 Relating to the Use, by Space Stations Operating in the 12 GHz Frequency Bands Allocated to the Broadcasting-Satellite Service, of the Geostationary-Satellite Orbit and No Other
NOC	RESOLUTION No. 507 Relating to the Establishment of Agreements and Associated Plans for the Broadcasting-Satellite Service
MEY /102 /1/	
SUP	RESOLUTION No. 700 Relating to Sharing Between the Fixed-Satellite Service in Regions 1 and 3 and the Broadcasting-Satellite Service in Region 2 in the Band 12.2 - 12.7 GHz
	<u>Reasons</u> : The provisions have already been incorporated in Appendix 30 (Orb-85).
MEY /103 /15	
SUP	RESOLUTION No. 701 Relating to the Convening of a Regional Administrative Radio Conference for the Detailed Planning of the Broadcasting-Satellite Service in the 12 GHz Band and Associated Feeder Links in Region 2
	<u>Reasons</u> : The necessary action has been taken.
NOC	RESOLUTION No. 703 Relating to the Calculation Methods and Interference Criteria Recommended by the CCIR for Sharing Frequency Bands Between Space Radiocommunication and Terrestrial Radiocommunication Services or Between Space Radiocommunication Services
	B. <u>RECOMMENDATIONS</u>
MEX/103/16 SUP	RECOMMENDATION No. 2 Relating to the Examination by World Administrative Radio Conferences of the Situation with Regard to Occupation of the Frequency Spectrum in Space Radiocommunications
	<u>Reasons</u> : The action required under this Recommendation will be taken by the Second Session of the WARC ORB.
NOC	RECOMMENDATION No. 67 Relating to the Definitions of "Service Area" and "Coverage Area"

MEX/113/17 SUP	RECOMMENDATION No. 101 Relating to Feeder Links for the Broadcasting-Satellite Service		
	<u>Reasons</u> : After the feeder link plan comes into force, future studies on technical characteristics and improvements to them will automatically be pursued, without any need for a Recommendation.		
NOC	RECOMMENDATION No. 102 Relating to the Study of Modulation Methods for Radio-Relay Systems in Relation to Sharing with Fixed-Satellite Service Systems		
NOC	RECOMMENDATION No. 405 Relating to a Study of the Utilization of the Aeronautical Mobile-Satellite (R) Service		
NOC	RECOMMENDATION No. 505 Relating to Studies of Propagation at 12 GHz for the Broadcasting-Satellite Service		
NOC	RECOMMENDATION No. 506 Relating to the Harmonics of the Fundamental Frequency of Broadcasting-Satellite Stations		
NOC	RECOMMENDATION No. 507 Relating to Spurious Emissions in the Broadcasting-Satellite Service		
MEX/103/18			
SUP	RECOMMENDATION No. 508 Relating to Transmitting Antennae for the Broadcasting-Satellite Service		
	<u>Reasons</u> : The Recommendation is no longer necessary. Studies on the improvement of characteristics are made by the CCIR as a matter of course, and CCIR Recommendation No. 652 has been adopted for the 12 GHz band.		
NOC	RECOMMENDATION No. 700 Relating to the Utilization and Sharing of Frequency Bands Allocated to Space Radiocommunications		
NOC	RECOMMENDATION No. 705 Relating to the Criteria to Be Applied for Frequency Sharing Between the Broadcasting-Satellite Service and the Terrestrial Broadcasting Service in the Band 620 - 790 MHz		
NOC	RECOMMENDATION No. 706 Relating to Frequency Sharing by the Earth Exploration-Satellite Service (Passive Sensors) and the Space Research Service (Passive Sensors) with the Fixed, Mobile Except Aeronautical Mobile, and Fixed-Satellite Services in the Band 18.6 - 18.8 GHz		
NOC	RECOMMENDATION No. 707 Relating to the Use of the Frequency Band 32 - 33 GHz Shared Between the Inter-Satellite Service and the Radionavigation Service		
NOC	RECOMMENDATION No. 708 Relating to Frequency Bands Shared Between Space Radiocommunication Services and Between Space and Terrestrial Radiocommunication Services		
NOC	RECOMMENDATION No. 709 Relating to Sharing Frequency Bands Between the Aeronautical Mobile Service and the Inter-Satellite Service		

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- NOC RECOMMENDATION No. 710 Relating to the Use of Airborne Radars in the Frequency Bands Shared between the Inter-Satellite Service and the Radiolocation Service
- NOC RECOMMENDATION No. 711 Relating to the Coordination of Earth Stations

MEX/103/19 SUP

RECOMMENDATION No. 712 Relating to the Interdependence of Receiver Design, Channel Grouping and Sharing Criteria in the Broadcasting-Satellite Service

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<u>Reasons</u>: The plans for the 12 GHz band have been completed and future improvements to them will be made by the CCIR as part of its normal work.

INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

<u>Document 104-E</u> 29 August 1988 <u>Original</u>: Spanish

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

PLENARY MEETING

<u>Mexico</u>

PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 15

"15. To consider and, if appropriate, revise No. 480 of the Radio Regulations only to the extent necessary to ensure that implementation of broadcasting stations in Region 2 in the band 1 605 - 1 705 kHz is without prejudice to the Regional Broadcasting Plan adopted at the Second Session of RARC BC-R2."

The Regional Administrative Radio Conference to Establish a Plan for the Broadcasting Service in the Band 1 605 - 1 705 kHz in Region 2 (RARC BC-R2) recommended that No. 480 of the Radio Regulations should be modified to read as follows:

MEX/104/1

MOD 480

In Region 2, the use of the band 1 605 - 1 705 kHz by stations of the broadcasting service is subject to the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

In Region 2, in the band 1 625 - 1 705 kHz, the relationship between the broadcasting, fixed and mobile services is shown in No. 419. However, frequency assignments to stations of the fixed and mobile service in the band 1 625 - 1 705 kHz, notified under No. 1214, shall take account of the allotments appearing in the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

Mexico supports the modification adopted by RARC BC-R2 and proposes that it should be adopted by this Conference as it stands.

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INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 105-E 29 August 1988 Original: Spanish

PLENARY MEETING

Republic of Paraguay

PROPOSALS FOR THE WORK OF THE CONFERENCE

1. <u>Introduction</u>

As at the First Session of the Conference, at this Second Session Paraguay again maintains that, if results acceptable to all are to be achieved, the Conference must base itself on principles that guarantee the efficient use of the orbit-spectrum resource, promote understanding between developed and developing countries, and ensure fairness, bearing in mind that this requires all to act in honesty and especially to display a spirit of sacrifice with regard to mutual claims, so as to secure the equality of rights that has been a fundamental principle of the Union since its inception in 1865.

2. Accordingly, Paraguay proposes:

PRG/105/1

2.1 That the Allotment Plan should guarantee countries access to the orbit for their present and future national requirements.

PRG/105/2

2.2 That the position within the arc predetermined for (allotted to) a country's satellite may be occupied by another country's satellite only with the agreement of the former country.

PRG/105/3

2.3 That if such positions are already occupied, the Plan adopted should embody provisions which enable countries to occupy their positions with their own satellite once the satellite of the country using that position has completed its useful life.

PRG/105/4

2.4 That, with a view to the efficient use of the geostationary-satellite orbit, administrations having satellites at the end of their useful life should make the necessary arrangements for removing them from the orbit.

PRG/105/5

2.5 That the Allotment Plan should embody provisions and methods for enabling administrations to implement regional and subregional satellite systems in the medium term.

PRG/105/6

2.6 That, with a view to increasing the efficiency of use of the geostationary-satellite orbit, the Conference should adopt the most appropriate provisions and technical criteria for minimizing the need to relocate satellites in operation.

PRG/105/7

2.7 Earth and space station antenna systems being a key factor in the effective use of the geostationary-satellite orbit, given the present state of technological development, it is proposed that:

PRG/105/8

2.7.1 Provisions should be adopted which limit the side-lobe power levels of earth station antennas (peak gain) within 10 degrees of the axis of the main lobe pointing to the geostationary-satellite orbit.

PRG/105/9

2.7.2 Such provisions should not be mandatory for antennas in operation and having a D/λ ratio of 300 or more for frequencies below 6 GHz.

PRG/105/10

2.7.3 Wherever appropriate in the band 6/4 GHz, orthogonal polarization should be adopted for the new networks that are to constitute the Allotment Plan.

PRG/105/11

2.7.4 Wherever appropriate, shaped beam antenna systems should be used in the new space stations that are to constitute the Allotment Plan.

PRG/105/12

2.7.5 The space station antenna pointing error limit, at present set at 0.3 degrees, should be reduced to 0.2 degrees, bearing in mind that the use of radiobeacon tracking techniques is now reducing costs, combined with an increase in the size of space station antenna reflectors.

PRG/105/13

2.7.6 The diameter of earth station antenna reflectors for the bands 6/4 GHz should be 7 m, or not less than 4.5 m.

PRG/105/14

2.7.7~ The diameter of earth station antenna reflectors for the bands $13/11~{\rm GHz}$ should be 3 m.

The adoption of a standard reflector diameter might help to facilitate the preparation of the Allotment Plan.

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INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 106-E 29 August 1988 Original: Spanish

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

PLENARY MEETING

12

Republic of Paraguay

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 5 - Definitions relating to space services

As indicated by the title of the First Session and again of this Session, the term "space services" is frequently used in documents dealing with space radiocommunications; it is also used in the title of Administrative Council Resolution No. 953, as well as in the wording of item 5 of the agenda of this Conference.

Notwithstanding its recognition of what a space service constitutes, and acknowledging the difficulties that might arise from the discussion of a specific definition, Paraguay proposes the following as a basis for discussion.

Space service: A telecommunication service which uses space radiocommunications.

Such a service may also be regarded as including links from and to deep space by means of electromagnetic waves having wavelengths with frequencies above 3 000 GHz.

PRG/106/1

MOD 169

Deep space: Space at distances from the Earth approximately equal to, or greater than, the distance between the Earth and the Moon 2×10^6 km.

<u>Reasons</u>: The proposed amendment is consistent with the new CCIR definition in Recommendation 610 and Report 986. The new definition is more in keeping with technological progress.

PRG/106/2

MOD 105

Satellite system: A space system <u>generally</u> using one or more artificial earth satellites.

<u>Reasons</u>: To adopt the change suggested by the CCIR, which broadens the concept in that, under the proposed wording, any planet may comprise the satellite system.

It will be understood that earth satellites are implied unless the name of a planet is mentioned.

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INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 107-E 29 August 1988 Original: Spanish

PLENARY MEETING

Republic of Paraguay

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 9 - Satellite sound-broadcasting systems

1. <u>Introduction</u>

At the First Session of the Conference, Paraguay submitted proposals concerning the satellite sound-broadcasting service (in accordance with WARC-79 Resolution No. 505).

Those proposals reflected concern about the serious problems of sharing with services operating in the band 0.5 - 2 GHz and its economic repercussions on the cost of satellites operating in that band.

In connection with section 6.7 of Part II of the CCIR Report to WARC-ORB(2), having regard to the permissible level of interference to existing services, it is essential to bear in mind that, given their applications, various services operating in the band 512 - 890 MHz in Region 2 cannot tolerate any level of interference.

Paraguay is completing a project for the extension and modernization of a rural telephony system in the band 1 247 - 1 525 MHz and is planning a public mobile telephony service using a cellular system in the bands 825 - 845 MHz and 870 - 890 MHz, with a view to forming an international mobile service based on a quadripartite agreement between Argentina, Brazil, Paraguay and Uruguay.

PRG/107/1

2. For the reasons outlined above, Paraguay <u>proposes</u> that in the band 1 429 - 1 525 MHz allocated to the fixed and mobile services, no sub-band should be considered for the "satellite sound-broadcasting service" (which has not yet been defined in Article 1 of the Radio Regulations).

PRG/107/2

3. Paraguay further proposes that the bands 825 - 845 MHz and 870 - 890 MHz should not be considered for the purposes of "satellite sound-broadcasting".

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ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT <u>Document 108-E</u> 29 August 1988 <u>Original</u>: Spanish

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

PLENARY MEETING

Republic of Paraguay

PROPOSALS FOR THE WORK OF THE CONFERENCE

<u>Agenda item 10</u>

"To review the possibility of the long-term applicability of Resolution No. 2 (SAT-R2), and to take a definitive decision on this matter".

PRG/108/1

The use of interim systems should not cause an increase in interference to systems entered in the Allotment Plan, or to terrestrial services. Although Resolution No. 2 (SAT-R2) envisages a procedure for providing adequate safeguards, Paraguay <u>proposes</u> that Resolution No. 2 (SAT-R2) should be revised with a view to incorporating its provisions in the Radio Regulations. Such provisions would be needed for all three Regions.

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Document 109-E 29 August 1988 Original: Spanish

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

PLENARY MEETING

Republic of Paraguay

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 13

Paraguay submits the following proposals with respect to the Resolutions and Recommendations dealing with space radiocommunication and the efficient use of the geostationary-satellite orbit:

PRG/109/1 NOC

Resolution No. 2

<u>Reasons</u>: The principles underlying this Resolution continue to be valid.

PRG/109/2 SUP

Resolution No. 3

<u>Reasons</u>: The action required under this Resolution has already largely been taken and will be completed with the adoption of this Conference's decisions.

PRG/109/3

Resolution No. 4

To be revised with a view to being possibly deleted or modified in the light of the decisions of this Conference.

PRG/109/4

Resolution No. 15

Might have to be modified (updated) in the light of the decisions of this Conference.

PRG/109/5

SUP R

Resolution No. 31

<u>Reasons</u>: The provisions of this Resolution already form part of Appendix 30 (ORB-85).

PRG/109/6

Resolution No. 33

Should be revised to bring it up to date in line with the decisions of the present Conference.

PRG/109/7

Resolution No. 34

Should be revised so as to be updated in line with the decisions of the present Conference.

PRG/109/8

SUP Resolution No. 40

<u>Reasons</u>: The task assigned to the IFRB should now be completed.

PRG/109/9

SUP Resolution No. 41

Reasons: The action envisaged in this Resolution should now be completed.

PRG/109/10

Resolution No. 42

Needs to be reviewed and studied with a view to being possibly deleted in the light of the decision taken in this connection by the Conference.

PRG/109/11

Resolution No. 43

Needs to be revised with a view to being updated in line with any action taken to delete Resolution No. 42 and in the light of any decisions adopted in this connection by the Conference.

PRG/109/12

SUP Resol

Resolution No. 100

<u>Reasons</u>: The provisions referred to in this Recommendation already form part of Appendix 30 (ORB-85).

PRG/109/13

Resolution No. 101

Might have to be deleted as a result of the decisions taken by the Conference.

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PRG/109/14

Resolution No. 102

Might have to be deleted as a result of the decisions taken in this connection by the Conference.

PRG/109/15

SUP Resolution No. 502

<u>Reasons</u>: The provisions and the associated plan annexed to the Radio Regulations retain their integrity as a legal instrument.

- 3 -ORB(2)/109-E
- PRG/109/16 Resolution No. 503 SUP Reasons: The provisions of this Resolution are contained in Appendix 30 (ORB-85). PRG/109/17 SUP Resolution No. 504 Reasons: The provisions of this Resolution have already been complied with. PRG/109/18 NOC Resolution No. 505 Reasons: Still valid. PRG/109/19 Resolution No. 506 This Resolution should be updated since <u>considering</u> b) has already been complied with and the Plan for Region 2 has been incorporated into the Radio Regulations. PRG/109/20 NOC Resolution No. 507 <u>Reasons</u>: The provisions of this Resolution may still be applied. PRG/109/21 SUP Resolution No. 700 Reasons: The provisions of this Resolution are covered by Appendix 30 (ORB-85). PRG/109/22 SUP Resolution No. 701 Reasons: The provisions of this Resolution have already been complied with. PRG/109/23 Resolution No. 703 Needs to be revised with a view to being updated in the light of the decisions taken by the Conference; might be abbreviated. PRG/109/24 RECOMMENDATIONS PRG/109/25 SUP Recommendation No. 2 Reasons: This Conference will deal with the situation described in considering g) of the Recommendations.

SUP	Recommendation No. 101
	<u>Reasons</u> : Will not be necessary when the feeder-link plan comes into force.
PRG/109/27 NOC	Recommendation No. 102
NOC	Recommendation No. 103
NOC	Recommendation No. 405
NOC	Recommendation No. 505
NOC	Recommendation No. 506
NOC	Recommendation No. 507
	<u>Reasons</u> : These Recommendations are still necessary.
PRG/109/28 SUP	Recommendation No. 508
	<u>Reasons</u> : This Recommendation will no longer be necessary since the antenna studies assigned to the CCIR are continuing.

PRG/109/29			
NOC	Recommendation	No.	100
NOC	Recommendation	No.	105
NOC	Recommendation	No.	106
NOC	Recommendation	No.	107
NOC	Recommendation	No.	108
NOC	Recommendation	No.	109
NOC	Recommendation	No.	110
NOC	Recommendation	No.	111

<u>Reasons</u>: These Recommendations are still valid.

PRG/109/30

PRG/109/26

SUP

Recommendation No. 112

<u>Reasons</u>: This Recommendation is no longer necessary since the broadcasting plans have already been completed. CCIR will continue its work normally on the studies relating to receivers and other subjects.

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INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 110-E 29 August 1988 Original: Spanish

PLENARY MEETING

Republic of Paraguay

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 15

With reference to the consideration and revision of No. 480 of the Radio Regulations, Paraguay <u>proposes</u> that the modification adopted by RARC BC-R2 be adopted as it stands by this Conference:

PRG\110\1

MOD 480

In Region 2 the use of band 1 605 - 1 705 kHz by stations of the broadcasting service is subject to the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

In Region 2, in the band 1 625 - 1 705 kHz, the relationship between the broadcasting, fixed and mobile services is shown in No. 419. However, frequency assignments to stations of the fixed and mobile services in the band 1 625 - 1 705 kHz, notified under No. 1214, shall take account of the allotments appearing in the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

CONF\ORB-2\DOC\110E.TXS

INTERNATIONAL TELECOMMUNICATION UNION

WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 111-E 29 August 1988 Original : English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 6

Note by the Secretary-General

IFRB REPORT

ON DEFINITION OF EUROPE

At the request of the Chairman of IFRB, I have the honour to transmit to the Conference a copy of the above-mentioned Report.

> R.E. BUTLER Secretary-General

Annex : 1

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ANNEX

REPORT BY THE INTERNATIONAL FREQUENCY REGISTRATION BOARD

on

DEFINITION OF EUROPE

Provisions Nos. 858 and 863 of the Radio Regulations refer respectively to the use of the 14 to 14.5 GHz band and 14.5 to 14.8 GHz band for feeder links of the broadcasting-satellite service; such use being reserved for countries outside Europe and for Malta. Europe is not defined in the Radio Regulations.

Although the Board has not had cause, so far, to examine any notices which involved the application of these provisions it would appear prudent for the ORB-88 Conference to consider the matter so that future difficulties with regard to their interpretation may be avoided.

The Board has considered two possible alternative approaches which may assist the Conference in adopting a definition of Europe for the application of the above provisions. The first approach, given in Annex 1, is based on the definition given in the 15th Edition of the Encyclopedia Britannica while the second approach, given in Annex 2, is based on a modification of the definition of the "European Broadcasting Area" given in Article 8 of the Radio Regulations consisting of re-defining the southern limit.

The Conference is requested to consider this matter and indicate to the Board the way in which it will apply provisions Nos. 858 and 863.

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ANNEX 1

The Encyclopedia Britannica (15th Edition) 1986 (Vol.14 p.62 (Micropaedia)) defines Europe as follows:

"Europe, second smallest of the world's continents, composed of the westward projecting peninsulas of Eurasia and occupying an area of about 4,100,000 square miles (10,600,000 square kilometres) that is nearly one-fifteenth of the world's total land area. It is bordered on the north by the Arctic Ocean, on the west by the Atlantic Ocean and on the south (west to east) by the Mediterranean Sea, the Black Sea and the Caucasus Mountains; the eastern boundary (north to south) runs along the eastern Ural Mountains, the Emba River, the Caspian Sea and the Kuma and Manych Rivers. Europe's islands and archipelegos include the Novaya Zemlya, Iceland, the British Isles, Corsica, Sardinia, Sicily and Crete. Its major peninsulas include the Scandinavian, Iberian, Italian, Balkan and Jutland (Denmark)."

The Macropaedia of the Encyclopedia Britannica in Vol. 18 p. 648 further defines Europe,

"As to the territorial limits of Europe, while these seem clear on its three seward flanks, they have been uncertain and hence much debated on the east, where the continent merges, without sundering physical limits, with parts of western Asia. Even to the north and west, many island groups -Svalbard (Spitsbergen), the British Isles, the Faroes, Iceland and the Madeira and Canary Islands - that are European by culture - are included in the continent, although Greenland is conventionally allocated to North America. Further, the Mediterranean coastlands of northern Africa and southwest Asia also exhibit some European physical and cultural affinities, and Turkey and Cyprus, while geographically Asian, possess elements of European culture and may, perhaps, be regarded as parts of Europe.

Eastern limits, now adopted by European (including Soviet) geographers, assign the Caucasus to Asia and are taken to run southward along the eastern foot of the Urals, and then across the Mugodzhar Hill (Mugodzharskiye Gory), along the Emba River (Vaike Emajogi) and along the northern shore of the Caspian Sea. West of the Caspian, the European limit follows the Kumo-Manych Depression (Kumo-Manychskaya Vpadina) and the Kerch Strait (Kerchensky Proliv) to the Black Sea."

Using the definition of Europe given above, Europe can be defined for the purposes of application of the Radio Regulations as follows.

Eastern Mainland Limits

In the north, commencing at the southern limit of Bajderackaja Guba (approx. 68°N 68°E) the eastern boundary of Europe following the eastern side of the Ural Mountains would include Labytrangi, Saranpaul, Svel, Serov, Sverdlovsk, Miass, Magnitogorsk, Orsk and Emba. Annex 1 (cont.)

- 2 -

The limits would then follow the Emba River to the Caspian Sea, along the northern coast of the Sea until the mouth of the Kuma River is reached. The limit initially follows the Kuma River taking the line of the Kuma-Manych Drepression towards Rostov and to the Black Sea via the Kerch Straits.

Southern Limit

Commencing at the Kerch Straits the southern limit would include the western side of the Bosphorus, Dardanelles, the Greek Islands of Lesvos, Khlos, Rhodes, and Crete. The western extension would be to include all north of the Island of Lampedusa through to the Straits of Gibraltar. It should be noted that Cyprus would not be included in Europe with this definition.

Northern Limit

Commencing at Bajderackaja Guba the limit would extend northward to include Zemlya, Svalbard, and Iceland.

Western Limit

Commencing at the most western point of Iceland the limit would include Rockall, Ireland, Madeira and the Canary Islands and thence to the Straits of Gibraltar.

The delineation of Europe can be approximated in terms of lines of latitude and longitude as follows.

Eastern Limits - Line A

In the North, commencing at $83^{\circ}N$ 700E, line A extends to $68^{\circ}N$ 70°E, to $65^{\circ}N$ $61^{\circ}E$, to $55^{\circ}N$ $61^{\circ}E$ to $48.5^{\circ}N$ $53^{\circ}E$ and follows the Emba River to the Caspian Sea, thence along the northern coast of the Caspian Sea to the mouth of the Cuma River, thence to $47^{\circ}N$ $40^{\circ}E$. Line A continues to $46.5^{\circ}N$ $37^{\circ}E$, thence to the Kerch Straits, the Bosphorus and the Dardanelles from where it follows the eastern side of the Greek Islands to $36.5^{\circ}N$ $28^{\circ}E$ and terminates at $34.5^{\circ}N$ $28^{\circ}E$.

Southern Limits - Line B

In the East, commencing at $34.5^{\circ}N$ $28^{\circ}E$, line B extends to $35.4^{\circ}N$ $20^{\circ}E$, thence to include the Island of Lampedusa, to $37.5^{\circ}N$ $11.5^{\circ}E$, to the Straits of Gibraltar and $35^{\circ}N$ $10^{\circ}W$; thence to $27.5^{\circ}N$ $15^{\circ}W$ and terminates at $27.5^{\circ}N$ $30^{\circ}W$.

Western Limits - Line C

In the South, commencing at 27.5°N 30°W, Line C extends to 65°N 30°W, to 70°N 10°W, 83°N 10°E \cdot

Northern Limits - Line D

In the West, commencing at 83°N 10°E line D extends to 83°N 70°E.

ANNEX 2

Definition of Europe using a modified version of the definition of the "European Broadcasting Area" (RR404).

This modification includes the whole of Turkey and Cyprus and excludes Iraq and Jordan and the northern part of Saudi Arabia as well as countries in North Africa.

Eastern Limits - Line A

Line A extends from the North Pole along the meridian 40° E to 42° N thence to the junction of the Turkey/USSR borders on the Black Sea and follows the Turkish eastern and southern borders to the Mediterranean Sea and 34.5° N 35° E.

Southern Limits - Line B

In the East, commencing at 34.5° N 35° E, line B extends to 34.5° N 20 E thence to include the Island of Lampedusa, to 37.5° N 11.5° E, to the Straits of Gibraltar and 35 N 10 W thence to 27.5 N 15 W and terminates at 27.5^{\circ}N 40^{\circ}W.

Western Limits - Line C

Line C extends from the North Pole along meridian $10^{\circ}W$ to its intersection with parallel $72^{\circ}N$; thence by great circle arc to the intersection of meridian $50^{\circ}W$ and parallel $40^{\circ}N$; thence by great circle arc to the intersection of meridian 40 W and parallel $27.5^{\circ}N$.



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INTERNATIONAL TELECOMMUNICATION UNION WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 112-E 1 September 1988 Original: English

PLENARY MEETING

MINUTES

OF THE

FIRST PLENARY MEETING

Monday, 29 August 1988, at 1440 hrs

<u>Chairman</u>: Mr. H.L. VENHAUS (Federal Republic of Germany), Dean of the Conference

Later: Prof. Dr. I. STOJANOVIĆ (Yugoslavia)

<u>Subjects discussed</u>		Document
1.	Opening of the Conference	-
2.	Election of the Chairman of the Conference	-
3.	Election of the Vice-Chairmen of the Conference	-
4.	Address by the Secretary-General	-
5.	Conference structure	DT/3
6.	Election of the Chairmen and the Vice-Chairmen of the Committees	-
7.	Composition of the Conference Secretariat	-
8.	Allocation of documents to Committees	DT/4(Rev.)
9.	Requests for participation received from international organizations	15
10.	Date by which the Credentials Committee must submit its conclusions	-
11.	Working hours of the meetings of the Conference	-
12.	Financial responsibilities of administrative conferences	16
13.	Statement by the Minister of Communications of Colombia	-

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1. <u>Opening of the Conference</u>

1.1 <u>Mr. Venhaus</u>, Head of the Delegation of the Federal Republic of Germany and Dean of the Conference, opened the Conference, expressing the hope that in-depth and detailed discussions would be held on the 16 items on the agenda agreed upon by the Administrative Council and wishing the participants good luck in the accomplishment of their difficult task.

2. <u>Election of the Chairman of the Conference</u>

2.1 The <u>Secretary-General</u> said that the Meeting of Heads of Delegations had agreed to put forward the candidature of Prof. Dr. I. Stojanović, who had presided over the First Session, as Chairman of the Conference.

That proposal was <u>approved</u> by acclamation.

2.2 <u>Prof. Dr. Stojanović</u> took the Chair and delivered the statement reproduced in Annex 1.

3. <u>Election of the Vice-Chairmen of the Conference</u>

3.1 The <u>Secretary-General</u> said that the Meeting of Heads of Delegations had decided to recommend the following delegates to the posts of Vice-Chairmen of the Conference:

Mr.	S. Bouhadeb	(Algeria)
Mr.	Song Zhiyuan	(People's Republic of China)
Mr.	A.R. Bahrainian	(Islamic Republic of Iran)
Mr.	J. Dondelinger	(Luxembourg)
Mr.	T.F. Brophy	(United States of America)
Mr.	A.L. Badalov	(USSR)

The name of a second candidate from Region 2 would be announced later.

The above nominations were approved.

4. Address by the Secretary-General

4.1 The <u>Secretary-General</u> delivered the address reproduced in Annex 2.

5. <u>Conference structure</u> (Document DT/3)

5.1 The <u>Secretary-General</u> said that the Meeting of Heads of Delegations had unanimously approved the structure set out in the document and drew attention to the fact that footnote 2) on page 3 in the English and Spanish texts had to be added to the French text.

Document DT/3 was approved.

6. Election of the Chairmen and Vice-Chairmen of the Committees

6.1 The <u>Secretary-General</u> said that, after discussions at the Meeting of Heads of Delegations, the following nominations for Chairmen and the Vice-Chairmen of Committees has been suggested:

Committee 2 - Credentials

Chairman: Mr. S. Sissoko (Mali)

Vice-Chairman: Mr. J. Székely (Hungary)

Committee 3 - Budget Control

Chairman: Dr. M.K. Rao (India)

Vice-Chairman: Mr. G.I. Warren (Canada)

Committee 4 - Allotment Planning and Associated Procedures

Chairman: Mr. S. Pinheiro (Brazil)

Vice-Chairman: Mr. C.T. N'Diongue (Senegal)

Committee 5 - Broadcasting-Satellite Service (BSS) Matters and Associated Procedures

Chairman: Mr. D. Sauvet-Goichon (France)

Vice-Chairman: Mr. K. Kosaka (Japan)

Committee 6 - Regulatory Procedures (other than for Allotment Planning and BSS Feeder Links)

Chairman: Mr. J.F. Broere (Netherlands)

Vice-Chairman: (to be announced later)

Committee 7 - Editorial

Chairman: Mr. P. Aboudarham (France)

Vice-Chairmen: Dr. K.C. Shotton (United Kingdom) Mr. J.A. Prieto Tejeiro (Spain)

Working Group of the Plenary

Chairman: Mr. R. Ryvola (Czechoslovak	ia)
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Vice-Chairman: Mr. H.K. Al Shankiti (Saudi Arabia)

The above nominations were approved.

7. <u>Composition of the Conference Secretariat</u>

7.1 The <u>Secretary-General</u> said that the following members of the Secretariat would act as Secretaries of the Conference and its Committees and would be assisted as necessary by other staff members seconded from Headquarters:

Secretary of the Conference:	Mr. R.E. Butler, Sec	cretary-General
Executive Secretary:	Mr. X. Escofet	
Technical Secretary:	Mr. M. Harbi	
Administrative Secretary:	Mr. J. Escudero	
Meeting Secretaries:		
Plenary Meeting and Com	nittee 1 (Steering):	Mr. J. Francis
Committee 2 (Credentials	5):	Mr. X. Escofet
Committee 3 (Budget Cont	crol):	Mr. R. Prélaz

Committee 4 (Allotment Planning and Mr. F.S. Leite Associated Procedures):

- Committee 5 (Broadcasting-Satellite Mr. G. Mesias Service (BSS) Matters and Associated Procedures):
- Committee 6 (Regulatory Procedures (other Mr. K. Arasteh than for Allotment Planning and BSS Feeder-Links)):

Committee 7 (Editorial): Mr. P.D. Cross

Working Group of the Plenary (Technical Mr. Wu Deyan and Miscellaneous Matters):

8. <u>Allocation of documents to Committees</u> (Document DT/4(Rev.1))

8.1 The <u>Secretary-General</u> said that Document DT/4(Rev.1) took account of comments already made at the Heads of Delegations meeting on the original allocation of documents to Committees. Any new documents received would be referred to the appropriate Committees by their authors.

The allocation of documents was approved on that basis.

9. <u>Requests for participation received from international organizations</u> (Document 15)

9.1 The <u>Secretary-General</u> said that the international organizations listed in Document 15 had regular relations with the ITU. He was therefore submitting their formal applications for admission to the Conference for approval.

The requests for participation were approved.

10. Date by which the Credentials Committee must submit its conclusions

10.1 The <u>Secretary-General</u> said that the Credentials Committee normally completed its formal work four or five days before the end of a Conference. He therefore suggested that in the current case, the Committee should report by Thursday, 29 September 1988.

It was so <u>agreed</u>.

11. Working hours of the meetings of the Conference

11.1 The <u>Secretary-General</u> proposed that, in accordance with the customary practice, the working hours of meetings should be:

Working days except Friday: 0900 - 1200 hrs; 1400 - 1700 hrs Fridays: 0900 - 1200 hrs; 1430 - 1730 hrs

It was so <u>agreed</u>.

12. Financial responsibilities of administrative conferences (Document 16)

12.1 The <u>Secretary-General</u> said that Document 16 was self-explanatory. Greater emphasis had been put on financial considerations since the 1982 Plenipotentiary Conference in Nairobi. In addition, the difficulties faced by some Member States in meeting financial commitments must not be underestimated. He therefore suggested that the Budget Control and other relevant Committees should be invited to pay particular attention to the provisions of Article 80 of the Convention and Resolution No. 48 of the Plenipotentiary Conference, Nairobi, the texts of which were annexed to the document.

It was so <u>agreed</u>.

13. <u>Statement by the Minister of Communications of Colombia</u>

13.1 The <u>Minister of Communications of Columbia</u>, Dr. Pedro Martin Leyes Hernandez, made the statement reproduced in Annex 3.

The meeting rose at 1535 hours.

The Secretary-General:

R.E. BUTLER

The Chairman:

Prof. Dr. I. STOJANOVIĆ

Annexes: 3

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ANNEX 1

Address by the Chairman of the Conference

Honourable Dean, Secretary-General, Distinguished Delegates, Ladies and Gentlemen,

It has been three years since we finished the First Session of the Orbit Conference right here, on this spot. Then we decided how to use the geostationarysatellite orbit and we agreed upon the basic principles which should govern the planning of the space services utilizing it. We expressed our firm willingness to create the necessary conditions which will ensure the implementation of the motto of the Conference to guarantee, in practice, equitable access for all countries to the orbit and to the frequency spectrum allocated to the services using it.

The First Session, let me remind you, was not that easy. The dispersion of views at the beginning was tremendous. Nevertheless, after having spent a lot of time and effort in the deliberations, non-convergent points of view finally converged to produce a common balanced solution. This solution is to be translated into reality at this Second Session of the Conference.

However, time is pitiless. Immediately after the First Session when starting the intersessional work, we became aware that many details, necessary for the planning, had not been worked out. They were lacking, but, on the other hand, it might have been explained as not being so bad. For the ITU organs responsible for the intersessional tasks, the IFRB and the CCIR, as well as many administrations, aware of this deficiency, have made particular efforts in giving us a number of potential answers, different assumptions, thus clarifying unprecise or understated items and offering the possibility of choice.

On the basis of such a reflection and keeping in mind all facts, I strongly believe that we have all the necessary elements and that with a little help from all of us, we shall bring our task to a successful end.

I would like to stress that what I said does not imply that there are no problems, but that all the problems to arise could be solved with our knowledge and joint efforts.

I wish to tell you that I am sure that the spirit of cooperation, our mutual understanding and above all tolerance, will dominate this Session as has been the case for the First Session. In these premises, I see the best guarantee being given for a successful conference.

Ladies and Gentlemen,

This is the second time that you have placed your confidence in me to chair such an important ITU conference. On behalf of my country, Yugoslavia, and on my own behalf, I thank you most sincerely.

I am quite aware both of the honour and responsibility in performing such a not so easy task as Chairman. The only thing that I can tell you for the time being is that I will do my best for the benefit of our communication community.

Thank you for your attention.

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ANNEX 2

Opening address by the Secretary-General

Mr. Chairman, Ladies and Gentlemen,

At the outset allow me, Mr. Chairman, to congratulate you on your election as Chairman of this Second Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It.

It is almost three years now since you have closed, as Chairman, the First Session of the Conference which concluded five and a half weeks' efforts to meet the objectives which presented a historical challenge to the ITU membership. Most of the delegates present have witnessed your fine sense and untiring efforts spent in intensive negotiations and debates. In extremely critical moments of the First Session you have conducted us in a democratic way with a spirit of reconciliation towards pragmatic solutions. We cannot fail to remember the kindness and courtesy which you have manifested to all of us in your professional and scientific capacities, which I am sure will assist you this time as you take the office of the Chairman of the Conference for the second time.

Mr. Chairman, Ladies and Gentlemen,

The First Session adopted a dual planning approach for the fixed-satellite service and paved the way to pragmatic solutions in the search for the response to the question: "to guarantee in practice for all countries equitable access to the geostationary-satellite orbit and the frequency bands allocated to all services".

The Allotment Plan, within the pre-determined arc, and Improved Procedures, enabled a balance to be struck between the somewhat conflicting requirements of equitable access and efficiency of use. In this dual planning method, one part gives more emphasis to the requirement of equitable access and the other gives more emphasis to the efficiency of use of the orbit; however, both seek to assure more equitable access and efficiency of use than the existing provisions, consistent with individual needs.

However, the Allotment Plan approach is intended to be limited to systems providing domestic services. For the bands concerned, all ITU Members will have in the Plan at least one allotment consisting of assured access to an orbital position for their domestic services within a pre-determined arc, a minimum bandwidth and a particular service area. The pre-determined arc should provide increased flexibility in the Plan. There is also the important question of how wide the pre-determined arc associated with each allotment would be. Obviously, if this is too small, the Plan might be difficult to implement in practice. In this regard, adequate flexibility would seem necessary to meet the near-term requirements of any common user domestic service sharing that could evolve, for example, with subregional use cooperation between countries ahead of any specified national (domestic) system.

The other element in this dual approach for the fixed-satellite service are Improved Procedures, a major feature of which would be the introduction of a concept of multilateral coordination meetings. The concept requires further development. First, it must not lessen the importance of bilateral coordination efforts and agreements which are essential elements of the existing regulatory provisions. Generally, the bilateral efforts are completed on a sequential basis by the new entrants with existing system perators. In the multilateral meeting concept it will be necessary to clearly define be character of such meetings, the type of decision (or conclusion) making process, their impact on the coordination process, the obligation of the Members to react to the needs of any other Member(s) who wish to pursue coordination for the resolution of difficulties through the multilateral meeting process, realizing that technical characteristics of systems vary widely from one to another. Finally, there are the financial consequences of such meetings and hence the need to specify the nature and character of the meetings, vis-à-vis which administrations are obliged to meet the expenditures associated with such meetings. In this regard there are 165 Members, many of which, once they have satisfaction of assured access through the other element of the dual planning approach, would not be specially interested in most multilateral planning meetings concerned with particular systems.

With respect to the feeder links for the broadcasting-satellite service (BSS) in Regions 1 and 3 for which a down-link plan has been developed in 1977, this Conference will need to draw up a missing, complementary part of that Plan, taking account of the technical basis as adopted by the First Session, and make a feeder link Plan for Regions 1 and 3 in appropriate frequency bands.

The Conference will also have to review and update technical provisions and change, as necessary, other regulatory provisions concerning other services including, where appropriate, simplification of procedural provisions.

During this intersessional period, various planning exercises have been performed by the IFRB in regard to the Allotment Plan for the fixed-satellite services and in the development of feeder link plans for the BSS for Regions 1 and 3. The results which will be presented to you are self-contained and need to be also studied carefully in order to reach satisfactory and overall acceptable solutions.

In regard to the Allotment Plan, it is clear that a major issue will be the treatment of **existing systems** within the bands allocated for the Allotment Planning Process.

Another important area of intersessional work relates to specific technical studies that have been performed, in particular by the CCIR within its general mandate to study all relevant questions of a technical and operational nature concerning radiocommunications. The report is presented to the Conference as additional technical information to that adopted in the First Session Report.

Since the First Session, three information meetings were held at the Headquarters under the guidance of the IFRB. The Union was represented in meetings organized by regional broadcasting or telecommunication organizations. We organized a specific regional seminar in Lomé, Togo, with support from administrations from other regions as part of our wish to optimize the information exchange concerning the basic issues to be considered in this Second Session. I thank the administrations which made available officials who presented papers to the ITU Seminar.

Nevertheless, a great and decisive deal of work remains to be done during the next five and a half weeks. In regard to the Allotment Plan, we need, however, to have some basic decisions concerning elements and approaches, within the first week or so of the Conference.

Finally, the results of this Orbit Conference are indeed awaited with great expectation, also by those outside the telecommunication community but concerned with space matters in general. I refer, in particular, to the UN Committee on the Peaceful Uses of Outer Space, and its sub-committees, which as you know have been giving consideration to ways and means to ensure the rational and equitable use of the geostationary-satellite orbit, without prejudice to the role of the ITU.
I am convinced that the Conference will endeavour to find a balanced solution that would, on the one hand, guarantee to every Member of the Union an orbital location and the associated radio frequency spectrum to meet its satellite communication requirements within a pre-determined arc, while on the other, not hampering the development of technology aimed at improving spectrum use and the economic viability of satellite networks. Space technology with its ever-increasing cost effectiveness and flexibility and with prospects of even more rapid spread and application, will certainly contribute in the next two decades to expanding service functions or help in reaching areas, particularly rural areas and remote island communities in need of services, previously not considered viable from the investment viewpoint.

Mr. Chairman, Ladies and Gentlemen,

The Conference has opportunities of serving mutual interests between developed and developing countries with benefits of great significance beyond mere telecommunications which have achieved a new recognition as a driving force for **development**. Such factors bring added incentives for Members to reach agreement through mutual understanding and cooperation.

I am confident that these tasks will be completed in good time. They will take the Union forward to the next step for bringing into reality the new planning and regulatory provisions that would lead to the practical achievement of the objectives set for the Orbit Conference, being the last World Administrative Radio Conference in the programme established by the Nairobi Conference, 1982.

Let me wish you every success in your deliberations.

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ANNEX 3

Mr. Chairman, Vice-Chairmen, Members of the International Frequency Registration Board, Representatives of the CCIR, Heads of Delegations, Delegates, Counsellors, Ladies and Gentlemen,

My presence at the beginning of this important Conference, as Colombian Minister of Communications, is intended as an earnest of the great concern of the Colombian Government to make a responsible and serious contribution to these farreaching discussions, relating as they do to the use of the geostationary-satellite orbit and the planning of the relevant services.

I am extremely gratified for this opportunity of addressing such a high-level meeting, and I wish to make it clear that the views of the Colombian Delegation are not voiced merely for the purpose of defending our national interests alone but also those of the great majority of countries which, although they have not yet made their presence directly felt by placing their own satellites on the geostationary-satellite orbit, will never relinquish the rights which they possess in space as Members of the international community.

I am perfectly aware that this meeting is of a pre-eminently technical and specialized character and that it does not lend itself to political statements. However, I also realize that, on technical grounds, it is possible to adopt decisions and assume positions having enormous political repercussions in the field of communications, with unpredictable consequences for the harmony which should prevail within the ITU.

To plan, allot, design procedures, in radiocommunication terms, for fixedsatellite services, and orbital station positions, without applying the yardstick of fairness and without acknowledging rights which reflect the reality of the situation, would be tantamount to deciding in favour of some and against others, to granting privileges to some and discriminating against others. For this reason, I call upon all those present here to reflect deeply on the points which I take the liberty of raising.

The President of the Republic of Colombia, Dr. Virgilio Barco Vargas, sends you a greeting of solidarity and a message of peace, while urging the highly developed countries, which today enjoy the benefits of industrialization, modern technology and the enormous advances made by science, to enable all the peoples of the world to take part in this progress and to help us to speed up the development of the countries which are currently underprivileged.

My Government holds that development is the only sure way to peace, and that peace will not be strengthened so long as all the nations and peoples of this planet fail to gain equitable access to the advantages of development.

As all the distinguished delegates present are aware, the Colombian Government has for the past two decades upheld before the various international forums the principle of equitable access to the geostationary-satellite orbit and the frequency bands, taking account of aspects and realities such as special geographical situations, the technological evolution of the developing countries and the economic and human resources constituted by the bringing into use of satellite networks to meet national and regional requirements. We wish to confirm the views which we have already expressed on the geostationary-satellite orbit as a limited natural resource, the rights pertaining to the developing countries, including the equatorial countries, and we reiterate the reservations which we have voiced on previous occasions.

The delegates present will remember that, at the World Administrative Radio Conference of 1979, in its Resolution No. 3 supported by Colombia, a consensus was reached on the proposition that a world space administrative radio conference should be convened to carry out the planning required to guarantee in practice for all countries equitable access to the geostationary-satellite orbit and the frequency bands allocated to space services, taking account of the relevant technical aspects concerning the special geographical situation of particular countries.

The establishment of a special legal system governing the use of the geostationary-satellite orbit is an urgent need for all countries if, in practice, access to the geostationary-satellie orbit is to be assured on an equitable, efficient and economic basis.

Given that the "first come, first served" approach leads to equality of rights but inequality in practice, there is a need for a special equitable system recognizing some preferential rights for the developing countries. To believe otherwise would be tantamount to concerning oneself solely with today's developed nations, forgetting those of tomorrow. The other trap which the Conference will have to be careful to avoid - and this will be the key to success - is the adoption of an unjust planning system which closes the door to future development of the developing countries and creates or compounds disadvantages in terms of technologies, science and resources. There are various approaches, several specific options and different methods which will have to be analysed objectively, without overlooking the legitimate interests of nations which have the right to their fair share in the use of this resource.

By analogy with the law of the sea, which provides for a so-called exclusive economic zone up to 200 miles from territorial waters and up to the area deemed to be the common heritage of mankind, Colombia as a developing country does not claim any exclusive or preclusive rights apart from recognition of its special geographical situation. Establishing mechanisms such as prior authorization would give effect to preferential right and the duty to preserve the natural orbit/spectrum resource which is essential for the developing countries and for the equilibrium which we are bound to defend.

It is crucial that this Conference should apply the legal principle embodied in Article 33 of the Nairobi International Telecommunication Convention which, it is worth recalling, stipulates that "in using frequency bands for space radio services Members shall bear in mind that radio frequencies and the geostationary-satellite orbit are limited natural resources and that they must be used efficiently and economically, in conformity with the provisions of the Radio Regulations, so that countries or groups of countries may have equitable access to both, taking into account the special needs of the developing countries and the geographical situation of particular countries".

In their previous reservations Colombia, Ecuador, Congo, Gabon, Indonesia, Kenya, Uganda and Somalia have declared that they do not object to planning of the orbit, on condition that the rights of the equatorial countries are taken into account. Any planning will undeniably be fragile and unacceptable unless those rights are recognized. I would go so far as to say that any failure to recognize preferential rights or particular geographical situations would constitute a type of appropriation of orbital positions or a singular type of neo-colonialism in space. Accordingly, this year in the Committee on Outer Space, Colombia, in conjunction with Kenya, Indonesia and Ecuador, submitted an important draft with a view to giving priority to the developing countries, which received broad initial support and constituted a step forward towards the adoption of a special unique system for the orbit.

It will be remembered that the First Session of WARC-ORB decided that it was not competent for aspects relating to sovereignty and jurisdiction and authorized the Secretary-General of the ITU to inform the Secretary-General of the United Nations and the Committee on Outer Space, which was duly done. This is thus not a matter for discussion at the Second Session now starting, nor is it our intention to raise it, since the general aspects of principle fall within the scope of the Committee on Outer Space, which is currently studying our draft and that submitted by the German Democratic Republic, which are undergoing a process of clarification and consolidation.

Having carefully studied the various planning exercises conducted by the IFRB and the technical standards established by the CCIR, the Colombian Administration has concluded that, in principle, the orbital positions and results are unsatisfactory for our country. Accordingly, in the course of the Conference we shall be submitting contributions, documents and alternatives in order to explain our position in relation to planning and demonstrate that it is possible to develop a scheme which is less discriminatory and fairer for all, maintaining an equitable regional distribution. It has also carried out planning exercises in order to demonstrate that it is feasible to plan the geostationary-satellite orbit with an orbital position for each country whilst at the same time accommodating subregional orbital positions to meet the requirements of groups of administrations, without disregarding preferential rights or specific geographical situations.

In our opinion, this Conference must revise the parameters that were adopted as a basis for planning to ensure that, when taking the requirements of the developing countries into account, orbital positions within the arc 70.3°W and 75.4°W are obtained in the case of Colombia and that, moreover, the orbital positions already recorded for the networks of our projects SATCOL and COLOMBIA are maintained.

The IFRB states in its Report of 12 May 1987 that the bringing into service of an assignment before the application of the coordination procedures is not covered by any provision of the Radio Regulations. Such a case must be examined with respect to the existing provisions of Article 13 of the Radio Regulations applying to the bringing into service of an assignment before its notification.... In other words, the standards are unclear for such cases, and their interpretation is uncertain. Colombia therefore proposes that this Conference should regulate the safeguards machinery guaranteeing compliance with the Agreements and particularly the Plan which is adopted, as well as its associated standards, to prevent administrations from placing satellites without having met the standards stipulated in the Radio Regulations.

I am confident that the predominantly technical nature of this Conference will not prevent the distinguished delegates from bearing in mind that all the conquests of science in space have been designed by the experts and superior talents to serve progress and the well-being of humankind in all countries, and not only in some of them.

Colombia hopes that the results and decisions of this Conference will meet the objective of ensuring a genuine and well-balanced access by all countries to the geostationary-satellite orbit in a spirit of just international cooperation for the benefit of all humanity.

All the nations of earth, whether rich or poor, large or small, developed or underdeveloped, have a place in the present and a space in the future. Let us recognize their rights, whether human, geographical or orbital, without violating the balanced designs of nature and of God who created us. A man with galactic ambitions while countenancing poverty must not bring to extra-terrestrial space the same imbalances, contradictions and injustices that bedevil mankind.

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INTERNATIONAL TELECOMMUNICATION UNION **ORB-88** Warc on the use of the Geostationary-satellite orbit and the planning of space services utilizing it SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 113-E 29 August 1988 Original : English French Spanish

Note by the Secretary-General

SECRETARIAT OF THE CONFERENCE

Secretary of the Conference	: Mr. R.E. Butler, Secretary-General
Executive Secretary	: Mr. X. Escofet
Technical Secretary	: Mr. M. Harbi
Administrative Secretary	: Mr. J. Escudero
Plenary Meeting and Committee 1 (Steering)	: Mr. J. Francis
Committee 2 (Credentials)	: Mr. X. Escofet
Committee 3 (Budget Control)	: Mr. R. Prélaz
Committee 4 (Allotment Planning and Associated Procedures)	: Mr. F.S. Leite
Committee 5 (Broadcasting-Satellite Service (BSS) Matters and Associated Procedures)	: Mr. G. Mesias
Committee 6 (Regulatory Procedures (other than for Allotment Planning and BSS Feeder-Links))	: Mr. K. Arasteh
Committee 7 (Editorial)	: Mr. P.D. Cross
Working Group of the Plenary (Technical and Miscellaneous Matters)	: Mr. Wu Deyan

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These officials will be assisted as necessary by others seconded - from ITU Headquarters and the complete list will be published separately.

R.E. BUTLER Secretary-General

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INTERNATIONAL TELECOMMUNICATION UNION

WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 114-E 29 August 1988 Original : English

STRUCTURE OF THE SECOND SESSION OF THE WORLD ADMINISTRATIVE RADIO CONFERENCE ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT (ORB-88) (Geneva, 1988)

(Approved at the First Plenary Meeting)

The agenda of the Conference appears in Resolution No. 953 which was adopted by the Administrative Council at its 41st Session (Geneva, 1986). This Resolution is reproduced in the Annex to Document 1 of the Conference.

Bearing in mind Nos. 464 to 479 inclusive of the International Telecommunication Convention, Nairobi, 1982, the following committees with their terms of reference are suggested. These terms of reference have been drawn up within the framework of the Convention, the Conference Agenda and in the light of experience gained at previous conferences, after analysis of the replies of Administrations.

Committee 1 - Steering Committee

Terms of Reference :

To coordinate all matters connected with the smooth execution of work and to plan the order and number of meetings, avoiding overlapping wherever possible in view of the limited number of members of some delegations (Nos. 468 and 469 of the International Telecommunication Convention, Nairobi, 1982).

Committee 2 - Credentials Committee

Terms of Reference :

To verify the credentials of delegations and to report on its conclusions to the Plenary Meeting within the time specified by the latter (Nos. 390 and 471 of the International Telecommunication Convention, Nairobi, 1982).

Committee 3 - Budget Control Committee

Terms of Reference :

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- To determine the organization and the facilities available to the 1. delegates, to examine and approve the accounts of expenditure incurred throughout the duration of the Second Session of the Conference and to report to the Plenary Meeting the estimated total expenditure of the Second Session as well as the estimated costs entailed by the execution of the decisions of the Conference (Nos. 476 to 479 inclusive of the International Telecommunication Convention, Nairobi, 1982 and Nairobi Resolution 48).
- 2. Furthermore, to evaluate the financial impact of the Conference's decisions upon the budget of the Union, in accordance with No. 627 and other pertinent provisions of the International Telecommunication Convention, Nairobi, 1982 (item 16 of the Agenda).

Committee 4 - Allotment Planning and Associated Procedures Committee

Terms of Reference :

On the basis of proposals from administrations, the Report of the First Session and taking into account the reports on the inter-sessional work carried out by the IFRB and the CCIR, as well as the requirements for the allotment Plan submitted by administrations :

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- To consider for adoption the appropriate technical standards, parameters and criteria pertaining to the fixed-satellite service in the frequency bands:
 - 4 500 4 800 MHz and 300 MHz to be selected in the band 6 425 7 075 MHz; and

10.70 - 10.95 GHz, 11.20 - 11.45 GHz and 12.75 - 13.25 GHz,

(agenda item 3).

- To establish the allotment Plan and the associated regulatory procedures¹) for the fixed-satellite service in the above-mentioned bands according to the principles and methods established at the First Session (agenda item 1).
- 3. To prepare such consequential amendments in the Radio Regulations as may be necessitated from the viewpoint of allotment planning (agenda item 12).
- 4. To consider, from the allotment planning point of view, revise as necessary, and take other appropriate action upon the relevant Resolutions and Recommendations (agenda item 13).
- 1) The establishment of the Allotment Plan and the associated regulatory procedures may require the review of the regulatory procedures applicable to services sharing the same frequency bands with the fixed-satellite service.

- 3 -ORB(2)/114-E

Committee 5 - Broadcasting Satellite Service (BSS) Matters and Associated Procedures Committee

Terms of Reference :

On the basis of proposals from administrations, the Report of the First Session and taking into account the reports on the inter-sessional work carried out by the IFRB and the CCIR:

- 1. To establish the provisions²) and associated Plan for feeder links, in the bands 14.5 - 14.8 GHz (for countries outside Europe and for Malta) and 17.3 - 18.1 GHz, to stations in the broadcasting-satellite service in Regions 1 and 3 operating in accordance with Appendix 30 (Orb-85) to the Radio Regulations, and to incorporate these decisions in the Radio Regulations, revising the Radio Regulations, as well as related Resolutions and Recommendations, only for these purposes as necessary (agenda item 6).
- 2. To consider, on the basis of a list submitted by the IFRB after consultation with administrations, the possible correction of minor errors in the revision of Appendix 30 (Orb-85). Such corrections shall be made without impact on either Plan, on the interactions between the two Plans, or on the balance of the provisions relating to the various services in different Regions (agenda item 8).
- 3. In accordance with Recommendation 2 of the First Session, to consider the results of the various up-to-date studies and, in reviewing the situation prevailing at that time, take appropriate decisions concerning the results of various studies and regarding the allocation of a suitable frequency band for satellite sound-broadcasting systems as outlined in Resolution 505 of WARC-79 (agenda item 9).
- To review the possibility of the long-term applicability of Resolution 2 (Sat-R2), and to take a definitive decision on this matter (agenda item 10).
- 5. In accordance with Recommendation 3 of the First Session of the Conference, and without prejudice to the present BSS allocation in the 22.5 - 23 GHz band in Regions 2 and 3, to consider the question of a suitable frequency band for the broadcasting-satellite service, preferably on a world-wide basis, to accommodate HDTV, including possible action as appropriate on the necessary changes to Article 8 at a later competent conference (agenda item 11);
- 6. To prepare such consequential amendments in the Radio Regulations as may be necessitated from the viewpoint of broadcasting satellite matters (agenda item 12).
- 7. To consider and, if appropriate, revise No. 480 of the Radio Regulations only to the extent necessary to ensure that implementation of broadcasting stations in Region 2 in the band 1 605 - 1 705 kHz is without prejudice to the regional broadcasting Plan adopted at the Second Session of RARC BC-R2 (agenda item 15).

²⁾ These will include appropriate technical standards, parameters and criteria.

- 4 -ORB(2)/114-E

Committee 6 - Regulatory Procedures (other than for Allotment Planning and BSS Feeder-Links) Committee

Terms of Reference :

On the basis of proposals from administrations, the Report of the First Session and taking into account the reports on the inter-sessional work carried out by the IFRB and the CCIR, as well as the relevant advice of the Working Group of the Plenary, as appropriate:

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1. To establish the improved regulatory procedures³⁾ for the fixedsatellite service in the bands:

> 3 700 - 4 200 MHz 5 850 - 6 425 MHz 10.95 - 11.20 GHz 11.45 - 11.70 GHz 11.70 - 12.20 GHz in Region 2⁴) 12.50 - 12.75 GHz in Regions 1 and 3⁴) 14.00 - 14.50 GHz 18.10 - 18.30 GHz⁴) 18.30 - 20.20 GHz 27.00 - 30.00 GHz

according to the principles and methods established at the First Session (agenda item 2).

- 2. To review and revise, as necessary, the regulatory procedures pertaining to space services and frequency bands not to be subject to planning (agenda item 4).
- 3. To prepare such consequential amendments in the Radio Regulations as may be necessitated from the viewpoint of the improved regulatory procedures developed (agenda item 12).
- 4. To review and revise, as necessary, the definitions relating to space services (agenda item 5).

³⁾ The establishment of improved regulatory procedures may require the review of the regulatory procedures applicable to services sharing the same frequency bands with the FSS.

⁴⁾ In these bands the improved procedures shall apply between networks of the FSS only.

Committee 6 (contd)

- 5. To consider, subject to the adoption of a suitable feeder-link assignment Plan for Region 1, the amendment of the relevant Articles of the Radio Regulations and associated Resolutions and Recommendations, if it is appropriate, to permit the use of the band 10.7 - 11.7 GHz (Earth-to-space) in Region 1 for all modes of fixed-satellite service operation, taking into account the frequency bands identified for planning under items 1 and 2 of the agenda (agenda item 7).
- To consider, in the light of the decisions taken under paragraphs 1 to 5 above, revise as necessary, and take other appropriate action upon the relevant Resolutions and Recommendations (agenda item 13).

Working Group of the Plenary (Technical and Miscellaneous Matters)

Terms of Reference :

On the basis of proposals from administrations, the Report of the First Session and taking into account the reports on the inter-sessional work carried out by the IFRB and the CCIR:

1. To consider for adoption the appropriate technical standards, parameters and criteria pertaining to the fixed-satellite service in the frequency bands:

> 3 700 - 4 200 MHz 5 850 - 6 425 MHz 10.95 - 11.20 GHz 11.45 - 11.70 GHz 11.70 - 12.20 GHz in Region 2 12.50 - 12.75 GHz in Regions 1 and 3 14.00 - 14.50 GHz 18.10 - 18.30 GHz 18.30 - 20.20 GHz 27.00 - 30.00 GHz

(agenda item 3).

- 2. To review and revise, as necessary, appropriate technical standards, parameters and criteria pertaining to space services and frequency bands not to be subject to planning (agenda item 4).
- 3. To consider the technical characteristics of the fixed-satellite service in the bands 18.10 18.30 GHz, 18.30 -20.20 GHz and 27.00 30.00 GHz, and make appropriate recommendations to the Plenary with a view to taking a decision on the future planning of these bands by a future competent Conference (agenda item 14).
- 4. To consider, in the light of the decisions taken under paragraphs 1 to 3 above, revise as necessary, and take other appropriate action upon the relevant Resolutions and Recommendations (agenda item 13).

Committee 7 - Editorial Committee

Terms of Reference :

To perfect the form of the texts to be included in the Final Acts of the Conference, without altering the sense, for submission to the Plenary Meeting (Nos. 473 and 474 of the International Telecommunication Convention, Nairobi, 1982).

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NOTE: The Working Group of the Plenary may give technical advice, as necessary, to the substantive committees at their request.

INTERNATIONAL TELECOMMUNICATION UNION ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 115(Rev.)-E 1 September 1988

Information Document

GENERAL SCHEDULE OF THE WORK OF THE CONFERENCE (As established by the Steering Committee)

Week 1 (29 August - 2 September)

Organisation and commencement of progressive decision-making in Committees and Working Parties, with particular emphasis on Committee 4

Week 2 (5 - 9 September)

Continuation of work in Committees and Working Groups Definitive Decision by end of Second week on all criteria and requirements to be used for the preparation of the Plans.

Week 3 (12 - 16 September)

Continuation of work in Committees and Working Groups

Week 4 (19 - 23 September)

Thursday 22 - End of work of the Technical Working Group of the PL

Week 5 (26 - 30 September)

Sherry

Monday 26	-	End of	work of	Working (Groups	of	Committee	4
Tuesday 27	-	End of	work of	Working (Groups	of	Committee	5
Wednesday 28	-	End of End of	work of work of	Committee Working (e 4 Groups	of	Committee	6
Thursday 29	-	End of Report	work of of Commi	Committee Lttee 2	<u>e</u> 5			
Friday 30	_	End of	work of	Committee	e 6			

Week 6 (3 - 5 October)

	Monday 3	- First reading by Plenary of last texts of the Final Acts
	Tuesday 4	 Second reading by Plenary of last texts of the Final Acts Report of Committee 3
	Wednesday 5	- Signing Ceremony and Closing
Note 1	Plenary meeting the Conference	s will be scheduled as necessary during each week of
Note 2	This schedule m	ay be changed in the course of the work of the

Conference.

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INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 115-E 29 August 1988

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Information Document

PROVISIONAL GENERAL SCHEDULE OF THE WORK OF THE CONFERENCE* (After consideration by the Steering Committee)

Week 1 (29 August - 2 September)

Organisation and commencement of progressive decision-making in Committees and Working Parties, with particular emphasis on Committee 4

Week 2 (5 - 9 September)

Continuation of work in Committees and Working Groups Definitive Decision by end of Second week on all criteria and requirements to be used for the preparation of the Plans.

Week 3 (12 - 16 September)

Continuation of work in Committees and Working Groups

Week 4 (19 - 23 September)

Thursday 22

- End of work of the Technical Working Group of the PL

Week 5 (26 - 30 September)

Monday 26	- End of work of Working Groups of Committee 4
Tuesday 27	- End of work of Working Groups of Committee 5
Wednesday 28	 End of work of Committee 4 End of work of Working Groups of Committee 6
Thursday 29	 End of work of Committee 5 Report of Committee 2

Friday 30 - End of work of Committee 6

Week 6 (3 - 5 October)

Monday 3 - First reading by Plenary of last texts of the Final Acts

Tuesday 4 - Second reading by Plenary of last texts of the Final Acts - Report of Committee 3

- Signing Ceremony and Closing Wednesday 5

- Plenary meetings will be scheduled as necessary during each week of Note 1 the Conference.
- This schedule may be changed in the course of the work of the Note 2 Conference.
- The definitive general schedule will be established by Committee 1 on 1 September 1988.

INTERNATIONAL TELECOMMUNICATION UNION

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 116-E 30 August 1988 Original: Spanish

COMMITTEES 4, 5, 6

<u>Chile</u>

PROPOSALS FOR THE WORK OF THE CONFERENCE

The work of WARC ORB(2) is based on the Report of the First Session, Resolution No. 953 adopted by the Administrative Council, the CCIR Report to the Second Session of the Conference and proposals from the administrations.

The Administration of Chile puts forward the following proposals with respect to the agenda of WARC ORB-88:

Agenda item 1 - Allotment Plan for the fixed-satellite service

CHL/116/1

The band 6 725 - 7 025 MHz should be selected as the 300 MHz segment for the Allotment Plan in the band 6 425 - 7 075 MHz.

CHL/116/2

The Plan should include national requirements for satellites and subregional systems involving a group of administrations, without prejudice to national allotments.

CHL/116/3

The Allotment Plan should be based on the compatible predetermined arc concept and the generalized parameters A', B', C' and D'.

CHL/116/4

During the Conference, planning should be carried out for both sets of frequency bands and it would be preferable to have a multi-band Allotment Plan.

CHL/116/5

It should be possible for allotments in the Plan to be converted into assignments without any need for agreement with other administrations, provided that other allotment or assignment in conformity with the Plan is adversely affected.

CHL/116/6

The regulatory procedures should include a mechanism for modifying Plan allotments and converting an allotment into an assignment.

CHL/116/7

Existing systems should be incorporated in the Plan on an equal footing with planned allotments, possibly subject to readjustments to enable new systems to be accommodated.

CHL/116/8

The Allotment Plan should be valid for a minimum of ten years and remain in force until it is revised by a future competent WARC.

CHL/116/9

WARC ORB-88 should consider achieving other planning objectives, taking advantage of different geographical characteristics throughout the world, which might produce an improved Plan in areas where there are fewer requirements.

<u>Agenda item 2</u> - <u>Improved regulatory procedures for the fixed-satellite service</u> <u>in certain portions of the bands 6/4 GHz, 14/11 - 12 GHz and</u> <u>30/20 GHz</u>

CHL/116/10

The First Session of the Conference decided that the planning method would consist of two parts, one of them to be based on improved procedures to satisfy requirements additional to those included in the Allotment Plan, involving the holding of periodic multilateral planning meetings (MPM).

The Administration of Chile considers that multilateral planning meetings could hinder administrations' access to both the GSO and the spectrum and that the organization of periodic meetings would constitute an unacceptable administrative and financial burden for the Union and its Members; accordingly, it proposes that the provisions of Articles 11 and 13 be applied, with a number of amendments to be adopted by WARC ORB-88.

Agenda item 4 - Regulatory procedures and technical standards and criteria pertaining to space services and frequency bands not to be subject to planning

CHL/116/11

The procedures described in Articles 11 and 13 should also be applicable to the space services and frequency bands not subject to planning.

Agenda item 9 - Satellite sound-broadcasting systems

CHL/116/12

The conclusions reached by the CCIR in its Report to the Second Session of the Conference clearly show that whilst establishment of a satellite sound-broadcasting system is technically feasible, new sharing criteria still have to be established in certain frequency bands for sharing with certain terrestrial radiocommunication services.

The Administration of Chile proposes that no decision should be taken in this regard by WARC ORB-88, pending recommendations from the CCIR concerning the criteria required to secure satisfactory sharing with other radiocommunication services and the completion of studies on feeder links and the most appropriate frequency bands in the band concerned up to 3 000 MHz, as well as the bandwidth necessary to provide this service to all countries on a planned basis. The conclusions of the CCIR's studies should be submitted for consideration by a future competent WARC.

Agenda item 15 - No. 480 of the Radio Regulations

CHL/116/13

The Regional Administrative Radio Conference to establish a Plan for the Broadcasting Service in the Band 1 605 - 1 705 kHz in Region 2 (BC-R2, Second Session) adopted Resolution COM5/3 specifying the Plan to be used by all Region 2 countries, in accordance with No. 480 of the Radio Regulations.

- 3 -ORB(2)/116-E

The BC-R2(2) Conference also adopted Recommendation COM5/A recommending to WARC ORB-88 that No. 480 of the Radio Regulations should be amended to read as follows:

"480 In Region 2, the use of the band 1 605 - 1 705 kHz by stations of the broadcasting service is subject to the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

In Region 2, in the band 1 625 - 1 705 kHz, the relationship between the broadcasting, fixed and mobile services is shown in No. 419. However, frequency assignments to stations of the fixed and mobile services in the band 1 625 - 1 705 kHz, notified under No. 1214, shall take account of the allotments appearing in the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988)."

The Administration of Chile firmly supports adoption of the new No. 480 by WARC ORB-88 for inclusion in the Radio Regulations.

INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 Warc on the use of the Geostationary-satellite orbit and the planning of space services utilizing it SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

<u>Document 117-E</u> 30 August 1988 <u>Original</u>: French

COMMITTEE 6

France

PROPOSAL (AGENDA ITEM 5)

REVISION OF ARTICLE 1, No. 109 (FEEDER LINK)

<u>Reasons</u>: The definition of the term "feeder link" which appears at present in Article 1 (No. 109) was adopted in 1971 to define links established from specified fixed points. The French Administration believes that this definition should be modified and extended to links established from transportable stations situated within specified areas.

It is therefore proposed that the present definition should be replaced by the definition adopted by the CCIR at its XVIth Plenary Assembly (Dubrovnik, 1986), after discussions between the different Study Groups, which appears in the appendix to the CCIR Report (Document 3, Part II, appendix, Part A, No. A31C). It is further proposed that Note 1 of the CCIR text should be incorporated in the definition.

Proposal

F/117/1

MOD 109

Liaison de connexion: feeder link: enlace de connexion: A radio link from an earth station at a specified fixed point given location to a space station, or vice versa, conveying information for a space radiocommunication service other than for the fixed-satellite service.

The given location may be at a specified fixed point, or within specified areas, coordinated according to the Radio Regulations.

CONF\ORB-2\DOC\117E.TXS

<u>Corrigendum 1 to</u> <u>Document 118-E</u> 1 September 1988 <u>Original</u>: English

People's Republic of China

PROPOSALS FOR THE WORK OF THE CONFERENCE

1. Page 4, CHN/118/12 under the heading "Generalized parameters", paragraph 3, in the second line from bottom, T/T should be replaced by $\Delta T/T$.

2. <u>Page 4</u>, at the bottom <u>Agenda item 4</u> should be replaced by <u>Agenda item 6</u>.

3. <u>Page 4</u>, the last line should be crossed out. (English text only)

CONF\ORB-2\DOC\118C1E.TXS

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SECOND SESSION. GENEVA, AUGUST/OCTOBER 1988

Document 118-E 30 August 1988 Original: English

COMMITTEES 4, 5, 6

People's Republic of China

PROPOSALS FOR THE WORK OF THE CONFERENCE

Introduction

In order to guarantee in practice for all countries equitable access to the geostationary-satellite orbit and the frequency bands allocated to space services, WARC ORB(85) has made very important decisions, adopted planning principles and dual planning approaches, the Allotment Plan and planning by improved procedures.

Considering the importance of the task which has to be dealt with at the Second Session of the Conference, it is hoped that all delegations will work together in the spirit of cooperation so as to make the Conference a full success within the scheduled time. According to the agenda for WARC ORB(88), the Chinese Administration wishes to submit the following proposals to the Conference.

<u>Agenda Item 1</u>

WARC ORB(2) will make the Allotment Plan and the relevant regulatory procedures in accordance with the principles and approaches set forth by the First Session of the Conference. The Administration of the People's Republic of China wishes to submit the following proposals for the Allotment Plan.

CHN/118/1

1. Existing systems

For the purpose of working out an Allotment Plan including the existing systems in conformity with the planning parameters, the existing systems should be analysed and adjusted respectively in light of the specific circumstances found in the planning exercises. The degree of adjustment should take the following two aspects into account:

- 1) the degree of adjustment of the existing systems to be required by the materialization of the Allotment Plan;
- 2) the development phase of the existing systems;

After the completion of the Allotment Plan, the existing systems will enjoy equal status with all the allotments in the Plan.

CHN/118/2

2. Additional requirements

The First Session of the Conference did not give a clear definition to additional requirements. To facilitate the discussion of relevant questions at the Second Session, it is necessary to work out a precise definition of additional requirements. The Chinese Administration believes that the following situations fall into the category of additional requirements:

- A certain administration has extra requirements apart from the allotment of one coverage acquired in the Plan.
- Only when it is ascertained that the additional requirements are compatible with all the relevant allotments in the Allotment Plan, can they be accommodated.

2

This session will focus on the formulation of the Allotment Plan. After the completion of the Allotment Plan, the additional requirements will be accommodated through relevant regulatory procedures.

CHN/118/3

3. <u>Multi-band satellite systems</u>

Considering that some countries have requirements for multi-band satellite systems and that it will be more economical for such a system to use the two designated frequency bands, the Chinese Administration proposes that when making the Allotment Plan, every country's allotments on the two said frequency bands should be arranged on the same orbital position so long as they are compatible with the other allotments.

Agenda Item 2

In order to remedy the irrational practice of "First come, first served" in the utilization of geostationary-satellite orbit/spectrum in the current Radio Regulations, the First Session of the Conference, with the joint efforts of all the delegations, decided to apply the method of planning by improved procedures for the fixed satellite service and indicated part of frequency bands allocated to it. The method of planning by improved procedures is to guarantee equitable access for all requirements to orbit/spectrum mainly through convening Multilateral Planning Meetings. Despite the descriptions of the basic characteristics and contents of this method in the Report of WARC ORB(1), there are still some important issues which need to be explicitly stipulated at this session. In this connection, the Chinese Administration puts forward the following proposals concerning the main problems in the method of planning by improved procedures.

CHN/118/4

1. <u>Objectives of planning by improved procedures</u>

The improved procedures which will be developed at WARC ORB(2) must fully embody the planning principles approved by WARC ORB(1) and should guarantee equitable access of requirements to geostationary orbit and spectrum.

CHN/118/5

2. <u>Preparations before multilateral planning meetings</u>

Prior to the convening of the MPM (at least no less than six months), the administration should submit to the IFRB information on satellite networks or

- 3 -ORB(2)/118-E

modified networks to be put into service within five years. The information should enable the Board to identify the affected administrations and to publish in the IFRB Weekly Circular. Upon receiving the Circular, the relevant administrations should endeavour to make bilateral or multilateral coordination by various means and approaches. If the problems involving a number of administrations can not be solved through the efforts on their part, solutions could be sought by convening MPM. Thus the pressure on MPM can be lessened and the expenditure of the administrations be reduced.

3. Considerations of several important factors relating to MPM

CHN/118/6

3.1 <u>Time period</u>

When necessary, MPM is normally convened every two years.

CHN/118/7

3.2 Participation

The participants of MPM should be the administrations which submit the requirements and modify their satellite networks as well as those affected administrations. The other administrations of Member countries of the ITU and inter-governmental satellite organizations can attend MPM in the capacity of observers on a voluntary basis.

CHN/118/8

3.3 Sponsorship

The ITU is a specialized inter-governmental organization under the auspices of the United Nations. The time, place and related matters of MPM should be settled through consultations of the ITU Secretariat with relevant administrations, and necessary preparations should be made by the ITU. The Chairman of the meeting should be selected from the administrations participating in the meeting.

CHN/118/9

3.4 Legal status

The procedures developed at WARC ORB(2) for MPM should be incorporated into the Radio Regulations and become an integrated part of the Radio Regulations, enjoying their due legal status. In the approved procedures, it should be provided that the relevant countries including all those which have received invitations but cannot attend the meeting should likewise abide by the decisions and agreements made by MPM.

CHN/118/10

4. The role of the IFRB

The IFRB should provide possible assistance in technology and other aspects including accepting and processing the information on satellite networks submitted by the administrations, carrying out planning exercises with computers, giving advice and reporting the results of MPM. If necessary, the IFRB should assist the relevant administrations in implementing the agreements reached at MPM. CHN/118/11

5. <u>Burden sharing</u>

In order to guarantee equitable access of actual requirements to orbit/spectrum, it is necessary to make some adjustments in the existing systems and the planned satellite networks. The degree of adjustment will be determined by the different stages of the initial concept and design, construction and operation of satellites, as well as by the technical and economic conditions of different countries, and the burden of interference entailed by the adjustment should be shared by all concerned administrations. However, due consideration should be given to those developing countries without or with very few satellite networks.

1

Agenda Item 3

Technical parameters in the Allotment Plan.

CHN/118/12

1. Generalized parameters in the Allotment Plan

Section 3.3.4.2 in the Report of WARC ORB(1) to WARC ORB(2) indicates that the Plan shall be prepared on the basis of generalized parameters applicable to all allotments. The adoption of generalized parameters will provide flexibility for the design of the satellite communications system in the implementation phase of the Allotment Plan.

The Allotment Plan could be divided into three phases, i.e., development, publication and implementation. Different generalized parameters should be used during different phases.

In the development phase, the application of a set of standardized parameters and a generalized C/I ratio will be appropriate considering the current planning approach and computer software. In the phase of publication, generalized parameters A, B, C, D, or A', B', C', D', could be used. The published generalized parameters should be derived from the standardized parameters practically used in the first phase of planning and show exactly the actual interference situation of the specific allotment in the Plan. In the implementation phase, inter-system coordination may be needed in some cases. Generalized parameters T/T and C/I, etc., could be used as a coordination trigger and applied in interference coordination.

CHN/118/13

2. <u>Selection of 300 MHz on the 6 GHz frequency band in the Allotment Plan</u>

The Chinese Administration proposes that within the frequency band 6 425 - 7 075 MHz, the pairing of 6 725 - 7 025 MHz with down-link 4 500 - 4 800 MHz frequency band should be adopted in making the Allotment Plan, realizing a frequency difference of related up-link and down-link of 2 225 MHz. This pairing approach will minimize the number of the existing systems to be considered within 6 GHz bands in the Allotment Plan.

Agenda Item 4

The IFRB Circular-letter No. 723 listed the calculation results of the two planning exercises of BSS feeder link plans for Regions 1 and 3. Except for some requirements, the calculation results of most of the requirements can meet the criterion of the overall equivalent protection margin being bigger than zero. The analysis of the calculation results shows that, if interference is strong between the down-links, a similar situation will be found between the strong between the down-links, a similar situation will be found between the feeder links.

Considering that the requirements in BSS feeder link plans submitted by administrations are based on the down-link planning in 1977 and in light of the actual requirements to feed the national programmes to satellites from their territories, the Chinese Administration proposes the following:

CHN/118/14

- Calculations should be conducted on the requirements which were not calculated in the first planning exercise.
- CHN/118/15
 - 2) The requirements including special ones of various administrations should be accommodated to the greatest possible extent in the Plan unless quite serious interferences exist among some feeder links. In this case, the requirements need to be adjusted.

CHN/118/16

3) With regard to the mutual interferences between the feeder links of the same administration which do not seriously affect the feeder links of other administrations, it should be left to the disposal of that administration whether certain technical measures should be taken to alleviate those interferences.

CHN/118/17

4)

For mutual interferences between the feeder links of various administrations, efforts should be made by the administrations to coordinate among themselves so as to reach agreements and accommodate their respective requirements in the Plan.

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UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

ORB-88 SECONDE SESSION, GENÈVE, AOÛT/OCTOBRE 1988 Document 119-F/E/S 30 août 1988 Original: anglais

Note du Secrétaire général / Note by the Secretary-General / Nota del Secretario General

ATTRIBUTION DES DOCUMENTS / ALLOCATION OF DOCUMENTS / ATRIBUCION DE LOS DOCUMENTOS

(comme approuvée à la première séance plénière) (as approved at the First Plenary Meeting) (como aprobada en la primera sesión plenaria)

Séance plénière / Plenary Meeting / Sesión plenaria : 1, 15

C2 - Pouvoirs / Credentials / Credenciales : 2

- C3 Contrôle budgétaire / <u>Budget Control</u> / Control del presupuesto : 16, 61, 62, 63, 64
- C4 Planification des allotissements et procédures associées / <u>Allotment Planning and Associated Procedures</u> / Planificación de adjudicaciones y procedimientos asociados: 3, 5, 7, 12, 13, 19, 28, 29, 33, 34, 38, 45, 46, 48, 49, 53, 56, 59, 65, 66, 69, 70, 72, 73

C5 - Questions relatives au service de radiodiffusion par satellite (SRS) et procédures associées / <u>Broadcasting-Satellite Service (BSS) Matters and Associated Procedures</u> / <u>Cuestiones relacionadas con el servicio de radiodifusión por satélite (SRS)</u> y los procedimientos asociados: 3, 6, 7, 8, 9, 12, 14, 17, 19, 24, 25, 26, 27, 34, 36, 37, 39, 40, 41, 42, 43, 44, 49, 51, 52, 54, 57, 58, 59, 60, 65, 69, 73

C6 - Procédures réglementaires (à l'exclusion de la planification des allotissements du SFS et des liaisons de connexion du SRS) / <u>Regulatory Procedures (other than for FSS Allotment Planning</u> <u>and BSS Feeder Links)</u> / Procedimientos reglamentarios (distintos de los correspondientes a la planificacion de las adjudicaciones del SFS y los enlaces de conexión con el SRS): 3, 4, 7, 9, 10, 11, 12, 18, 19, 20, 21, 22, 23, 30, 31, 32, 34, 35, 44, 47, 49, 53, 55, 56, 58, 59, 60, 65, 67, 68, 69, 70, 71, 73, 74, 75, 76, 77 GT/WG-PL - Questions techniques et diverses / <u>Technical & Miscellaneous</u> / Cuestiones técnicas y otras: 3, 6, 7, 10, 12, 13, 19, 21, 22, 23, 34, 48, 49, 53, 56

> R.E. BUTLER Secrétaire général

- 2 -ORB(2)/119-F/E/S

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 120-E 30 August 1988 Original: Spanish

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEES 4, 6

<u>Colombia</u>

PROPOSALS FOR THE WORK OF THE CONFERENCE

<u>Agenda item 1</u>

In the light of the results of planning exercises carried out by Colombia with the technical support of INTELSAT, we propose the following:

CLM/120/1

1. The Allotment Plan should be established by region so that national, existing and subregional networks may be satisfactorily accommodated, since we consider that the Plan should not only guarantee orbital positions for national requirements but should also include subregional systems.

CLM/120/2

2. The standardized technical parameters used as a basis for planning should be revised to include other criteria such as power limits, beam aperture, elevation angles and rain attenuation, and the value of the aggregate carrierto-interference ratio (C/I) should be considered for each case, according to whether a national requirement, existing network or subregional network is involved.

CLM/120/3

3. The Allotment Plan to be adopted by the Conference should take into account Colombia's requirements, i.e., that its national position should be within the orbital segment $70.3^{\circ}W-75.4^{\circ}W$. This would reduce rain attenuation to a large extent (zone "P"), thereby decreasing the cost of earth stations by allowing them to operate with more satisfactory and less restrictive technical characteristics.

CLM/120/4

4. In view of the fact that one of the characteristics of Colombia's particular geographical situation is the high rainfall levels prevailing in rain climatic zone "P" and that attenuation reaches extremely high values at elevation angles below 30° , we consider that a rain attenuation value limited to a maximum of 10 dB, as determined by the IFRB and used in the planning exercises for the bands 14/11 - 12 GHz is inadequate for countries such as Colombia which have high rain rates.

We therefore propose that this value should be revised in accordance with the studies carried out by the CCIR, using the method described in Report 564-3 which indicates, for example, an attenuation value of 40.4 dB for an elevation angle of 10° , whereas attenuation of less than 15 dB is only achieved at elevation angles greater than 51.3°.

CLM/120/5

5. Although planning exercises allowing for elevation angles have already been conducted, the results do not satisfy our requirements $(33.6^{\circ}E)$, and we therefore require planning exercises which contemplate elevation angles greater than 50° .

The results of the planning exercises to which we refer above are available to delegates wishing to consult them.

<u>Agenda item 2</u>

CLM/120/6

1. The procedures to be adopted by the Conference should stipulate that the prior coordination required under Article 11 of the Radio Regulations must be effected whenever satellite networks are set up.

CLM/120/7

2. Multilateral planning meetings should be instituted for the planning of satellite systems on a regional basis, and the Conference should specify the periodicity of such meetings, which should be held in a country of the region concerned.

CLM/120/8

3. The improved procedures should include systems for which the IFRB received advanced publication information before the starting date of WARC ORB(2) in 1988.

INTERNATIONAL TELECOMMUNICATION UNION **ORB-88** WARC ON THE USE OF THE GEOSTATIONARY SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Corrigendum No. 1 to Document 121-E 16 September 1988 Original : English

COMMITTEE 4

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 4

1. Amend paragraph 3.4 as follows :

"3.4 The delegate of the Côte d'Ivoire approved the proposed structure for the work of Committee 4. However, the question of the treatment of existing systems, on which his delegation had specific proposals (Document 31), should be discussed first in Committee before establishing an ad hoc Group to consider the matter further."

2. Amend paragraph 3.10 as follows :

"3.10 The <u>delegate of the Federal Republic of Germany</u> said that on the question of a frequency band to be selected in the band 6425-7075 MHz a review of the proposals concerned indicated a large measure of agreement. A decision could well be arrived at without lengthy discussion, and since it might permit the list of existing and possible new existing systems to be reduced, it should perhaps be taken early during the next meeting of Committee 4, rather than being left to Working Group 4-A."

INTERNATIONAL TELECOMMUNICATION UNION WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 121-E 2 September 1988 Original: English

COMMITTEE 4

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 4

(ALLOTMENT PLANNING AND ASSOCIATED PROCEDURES)

Tuesday, 30 August 1988, at 0905 hrs

Chairman: Mr. S. PINHEIRO (Brazil)

<u>Subjects discussed</u> :		
1.	IFRB presentation on intersessional work on allotment planning	-
2.	Terms of reference of Committee 4	114
3.	Organization of the work of Committee 4	DT/5, 96

1. IFRB presentation on intersessional work on allotment planning

The Vice-Chairman of the IFRB, basing his explanations on the IFRB's 1.1 presentation paper, recalled that the First Session of the Conference had decided to limit planning to the FSS in certain bands and, as a compromise, to use a two/part planning method consisting of improved procedures (the responsibility of Committee 6) and the allotment plan (the responsibility of Committee 4) requiring identification of a service area and appropriate frequency channel, which would provide the flexible approach to planning which the First Session had deemed desirable. Eleven planning principles had been adopted by the First Session. On the principle of sharing with other services, it was particularly emphasized that no additional constraints should be placed on such services. On the technical aspects of special geographical situations, which were listed in paragraph 3.4.2.1.3 of the Report to the Second Session, the Board, in its planning exercises and in developing its software, had taken account of special latitudes in defining the service arc, the precipitation in defining the rain climatic zone and of geographically small countries in defining a minimum beamwidth to be used for planning. The planning would take account of existing systems notified to the IFRB by 8 August 1985.

One of the difficulties encountered by the IFRB in its planning exercise had been the question of adjustments to be made at the present session. Not being authorized to make adjustments to existing systems during the intersessional period, the administrations concerned had been asked to review their positions and some modifications had already been submitted. On the issue of multi-administration systems, the present Conference would not only have to provide a precise definition of such systems but would have to ensure that they were taken into account in the Plan without affecting the rights of administrations vis-à-vis their national systems. In that connection two basic points had been identified: the need to permit intergovernmental systems to continue to operate and, where multi-administration systems used the planned bands for feeder links, to take account of these systems where safety of life was involved.

Given that flexibility was the main feature of the allotment plan, the planning method should be capable of accommodating advances in technology and unforeseen requirements which the present Conference would have to define, bearing in mind that they had also been referred to as "additional requirements" or "additional uses". Another task for the present Conference was to decide whether or not to have different planning solutions in different circumstances, bearing in mind the one constraint imposed by the First Session, i.e. that any such solutions were to be determined at the same administrative conference. Multi-band networks had been taken into account in the planning exercises but the IFRB considered that multi-service requirements should be considered by each administration when implementing its system.

The associated procedures referred to in the IFRB presentation document under Guarantee of Access were part of those which would have to be adopted for implementation of the Plan, flexibility once again being the keynote. From the definition given in paragraph 3.3.4.1 of the Report to the Second Session, the Board had understood that the service area was limited to national territory, hence administrations which had indicated test points outside their national territories had been asked to modify their requirements. The limitation to domestic services was something to be observed by administrations themselves. To operate sub-regional systems, territories should be adjacent and the system should result from the combination of all or part of the allotment. In the light of that condition, and paragraph 8.2.2.1 of the Report which indicated one coverage per territory, the IFRB had concluded that it had not been authorized, in its planning exercise, to include both national and sub-regional allotments and it had consequently asked administrations to make a choice, a matter which Committee 4 would also have to consider. - 3 -ORB(2)/121-E

With respect to additional requirements, attention was drawn to sub-paragraph 4(a) of Annex 1 of Chapter 3 of the Report, which dealt with additional uses and ways in which they should be protected.

In view of the lack of precise instructions from the First Session, the IFRB had had to base its intersessional work on a number of assumptions which had been communicated to administrations by Circular-letter and discussed at length at information meetings. Whenever possible the IFRB had modified its assumptions in the light of administrations' comments.

Assumption No. 1 concerned the predetermined arc which had not been defined by the First Session and for which three alternatives were now offered: in the first solution, any orbital position in the arc was compatible with any position of any other allotment. The grouping approach was intended as a possible solution for administrations which for reasons of congestion had practically no predetermined arc. The system would cover situations in which satellites could work if separated by some tenths of a degree. Recognizing that the software for that approach might be complex, the Board had decided not to do it alone. A software package, NASARC, had recently been offered by the United States Administration and the Board was still trying to use it. The results of the first approach and the third, which had been based on proposals made at the First Session, had been communicated to administrations.

In the case of Assumption No. 3, the Board had decided in the early stages when only limited computer facilities were available, to use one beam per territory, irrespective of the size of the territory, except where the territory could not be seen from one orbital position, as had been the case of the USSR. Later, when Canada had demonstrated that it was in the same position, it had been decided that three beams should be used for the USSR and two for Canada. The Board had recognized the limitations of that approach, but had left it to the Conference to make the final decision. Another element of that assumption was the limit of the earth station antenna elevation angle, which the Board had put at 10 degrees. At the last information meeting it had been recognized that that limit was not appropriate for territories with high rain attenuation, so the Board had adjusted the figure to 30 degrees.

Assumption No. 4 concerned the minimum beamwidth(s) to be used for the bands 4/6 and 11/6 GHz and a decision was required in the early days of the Conference in that connection. For Assumption No. 5, if Committee 4 decided to include existing new systems, the Board would need time before starting multi-band planning to create theoretical beams in bands where existing systems did not operate. Assumption No. 6 was a summary of the IFRB's previous assumptions.

The question of generalized parameters covered by Assumption No. 7 had taken up a large proportion of the Board's time in view of the need to understand fully the intent of administrations' proposals. The final understanding was that to be flexible the Plan was to be expressed in the form of generalized parameters so that administrations implementing the system could use any technical parameter within those limitations. No objections from administrations had been received to the decision to use the generalized C/I approach as the basis for the standardized technical parameters. Because of the time constraints, Committee 4 might usefully define the standardized technical parameters to be used by the Board in establishing the Plan before it defined the generalized parameters. - 4 -ORB(2)/121-E

One of the basic decisions required by the Conference related to Assumption No. 12 and the question of the characteristics of existing networks. The Board had received for publication in the planned bands notices of 16 networks from six administrations and the task of Committee 4 was to decide how to take account of those networks.

Assumption No. 15 indicated how the Board had intended to proceed in the early stages. In the first planning exercise, however, it had become clear that approach (a) was impossible with the characteristics available to the Board and it had started with approach (c) and then moved to (b), with (a) being omitted. With regard to Assumption No. 16, the Board had noted that the large majority of proposals submitted to the present Conference confirmed the IFRB's choice of sub-band.

With regard to the input data, a particular difficulty, other than that caused by test points outside national territory, had been caused by a number of administrations indicating operational constraints and consequently requests for more than one coverage in their territory. The Board had stated that those operational constraints should be submitted to the Second Session.

In 1986 the first version of ORBIT-II had been provided by the Japanese Administration, which had also provided the services of its experts when required. As a result of that close cooperation, the final software, now running satisfactorily, was double the volume of the original and so the IFRB's name and the date had been added to the title.

In conclusion, the information contained in Document 96 was used to illustrate the time required to produce a plan, and slides of the four graphs included at the end of the presentation document were also used to give a summary of results and comparisons.

1.2 The <u>delegate of Indonesia</u>, noting that the requirements for the Plan were greater than the resources available, suggested that the Committee should initially, before entering into detailed considerations, devote some time to a general discussion of the planning principles put forward by the IFRB in order to determine whether the various assumptions on which they were based were fully acceptable to all delegations or whether there were any reservations. In addition, it would be helpful if delegations with proposals for consideration by the Working Groups of the Committee could review the main thrusts of those proposals in the Committee itself before detailed technical work began in the Groups. From such a discussion useful guidelines could be obtained for the Working Groups, contradictory elements eliminated from the planning principles, special wishes of delegations brought to the attention of the IFRB and account taken of time and budget constraints.

1.3 The <u>delegate of the USSR</u> said that the most realistic planning schedule proposed was Option 2 of Document 96 (ORBIT-II and individual PDA with a Planning Exercise). It was, however, a matter for concern that the time constraints indicated gave no leeway for the Conference to introduce any corrections, clarifications or amendments to the Plan once it had been prepared. It was very important that the time constraints should be modified to provide such an opportunity, possibly by eliminating other uses of the computer within the ITU (see paragraph 1(e) of Document 96).

1.4 The <u>delegate of Japan</u> said that any decision made by the Conference should (1) guarantee equitable access by all countries to the geostationery orbit and spectrum, (2) ensure the most efficient utilization of the geostationary orbit and spectrum by application of the latest results of research and development and, (3) produce

- 5 -ORB(2)/121-E

provisions that were easy to apply, effective in preventing harmful interference and workable in the practical operation of satellite communication networks. Adherance to principles (1) and (2) were essential in allotment planning, which was a major task of the Conference. He was in favour of carrying out a planning exercise and noted that the Board had improved the ORBIT-II programme to deal with actual data from Member countries. With exercise of the spirit of cooperation that was the hallmark of the ITU he was persuaded that the Conference would reach a successful outcome.

1.5 The <u>delegate of the United States of America</u>, noting that the time taken to complete the planning exercise would have a significant impact on the rest of the time available for the work of the Conference, supported the request to look into ways of reducing that time.

1.6 The <u>Vice-Chairman of the IFRB</u> said that the IFRB would be discussing with the Secretary-General ways of reducing the time requirement for planning calculations. However, the situation could not be improved to the extent of allowing for the preparation of more than one plan during the Conference. He suggested that once the particular planning option had been chosen, and the date on which the first planning exercise could be provided was known, the situation could be reviewed further.

1.7 The <u>Secretary-General</u> said that, as was usual at ITU meetings, Conference needs would be given priority in the use of the computer. The matter had been raised at the Staff Meeting he had held with the Board and principal Secretariat officials the previous week. The Secretariat would make every effort from the operational point of view to reduce the time constraints that appeared in Document 96.

2. <u>Terms of reference of Committee 4</u> (Document 114)

The Committee took note of its terms of reference as set out in Document 114.

3. Organization of the work of Committee 4 (Documents DT/5 and 96)

The Chairman said that the organization of work in Document DT/5 had been 3.1 proposed in the light of the severe time constraints on the Conference and the fact that a number of very fundamental decisions had to be taken by Committee 4 before the end of the second week if a plan was to be obtained at all. He appealed to delegates for their assistance, cooperation and understanding in achieving a successful outcome. Of the items on which the Board required immediate information in order to start procedures for development of the Plan, Committee 4 itself would discuss and determine matters relating to requirements, existing systems, sub-regional beams, predetermined arcs, and a multi-band or separate band plan, while a Working Group 4-A would be set up to determine the technical characteristics and parameters to run the planning programme. It was proposed to postpone establishment of two further Working Groups until the above fundamental decisions had been taken. On the question of existing systems, where there was perhaps a need to consider modifying certain parameters to give a better shape to the Plan, the Committee would be asked to set up an ad hoc Group to consider the matter and propose a course of action to the Committee. In conclusion, the Report of the First Session of the Conference to the Second Session, although not mentioned in Document DT/5, would serve as a basic document in all relevant parts of the discussions.

3.2 The <u>delegate of the USSR</u> said he fully supported the proposed structure for the work of the Committee. However, in view of the fact that both Committee 4 and the Working Group of the Plenary were assigned similar tasks (although for different purposes) under item 3 of the Conference agenda, he proposed, to avoid any possible duplication of work, that the Chairman of Working Group 4-A and the Chairman of the Technical Working Group of the Plenary should coordinate their approach to the issue. - 6 -ORB(2)/121-E

3.3 The <u>Chairman</u> assured the Committee that such coordination would be provided but reminded it that the Technical Working Group of the Plenary, not being subjected to the same time constraints as Committee 4, would be taking its decisions later in the Conference.

3.4 The <u>delegate of the Côte d'Ivoire</u> approved the proposed structure for the work of Committee 4. However, the question of modifying existing systems, on which his Delegation had specific proposals (Document 81), should be discussed first in Committee before establishing an ad hoc Group to consider the matter further.

3.5 The <u>Chairman</u> assured the meeting that any decision on existing systems would be made by the Committee itself. The ad hoc Group would be established merely to prepare the data so that the Committee would be able to take an informed decision.

3.6 The <u>delegate of the United Kingdom</u>, supported by the <u>delegate of Lebanon</u>, welcomed the proposals for the organization of the work of the Committee and endorsed the need to avoid duplication of the work of Working Group 4-A and the Working Group of the Plenary. He urged delegates to make sure that the difficult decisions before the Committee were taken within the time available.

3.7 <u>Mr. Bellchambers (IFRB)</u> reminded the Committee that it would have to make a decision on whether the ad hoc Group should consider new systems in the category of existing systems.

3.8 The <u>delegate of France</u> supported the proposed structure for the work of the Committee. However, a rapid decision was needed not only on criteria (to be dealt with by Working Group 4-A) but also on requirements (Document 28), which were to be dealt with by Working Group 4-B. Perhaps that Working Group should also be convened without delay.

3.9 The <u>delegate of China</u> supported the proposed structure for the work of the Committee and endorsed the proposal to set up an ad hoc Group to consider existing systems.

3.10 The <u>delegate of the Federal Republic of Germany</u> said that on the question of frequency bands for existing systems a review of the proposals concerned indicated a large measure of agreement. A decision could well be arrived at without lengthy discussion, and since it might permit the list of existing systems to be reduced it should perhaps be taken early during the next meeting of Committee 4 rather than being left to Working Group 4-A.

3.11 The <u>Vice-Chairman of the IFRB</u> reminded the Committee that the footnote to the terms of reference of Committee 4 (Document 114) still remained to be allocated to one of the Working Groups of the Committee.

The meeting rose at 1200 hours.

The Secretary:

F.S. LEITE

The Chairman:

1

S. PINHEIRO

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INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988 Corrigendum 1 to Document 122-E 8 September 1988 Original: English

COMMITTEE 5

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 5

<u>Replace</u> paragraph 1.2 by the following:

1.

"1.2 The <u>delegate of India</u> said that he was surprised to hear the first question raised by Mr. Brooks of the IFRB. He considered that the matter had been discussed at length and a decision taken at the First Session. Every administration outside Europe and Malta had been given the opportunity of choosing between the 14 GHz and 17 GHz bands for the feeder link for very downlink channel in the BSS plan.

He was of the view that the plan should be prepared on those lines. However, the question whether an administration could project two up-link frequencies for a single down-link was a different matter that could be considered, if necessary."

2. In the final sub-paragraph of 4.6, <u>replace</u> the words "In response to a request" by "Following a suggestion".

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INTERNATIONAL TELECOMMUNICATION UNION WARC ON THE USE OF THE GEOSTATIONARY SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 122-E 2 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 5

Documents

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 5

(BROACASTING-SATELLITE SERVICE (BSS) MATTERS AND ASSOCIATED PROCEDURES)

Tuesday, 30 August 1988, at 1405 hrs

Chairman: Mr. D. SAUVET-GOICHON (France)

Subjects discussed:

IFRB Report on intersessional activities 19 1. (Feeder link planning) 2. Terms of reference of Committee 5 114 3. Allocation of documents DT/4(Rev.1)4. 115, DT/6 Organization of work 5. 3 + Corr.1, 7, 12,Introduction of documents relating to the establishment of the Plan 17, 19 + Corrs.1 and 2,24, 25, 39 + Corrs.1 and 2, 49, 51, 54, 60, 73

1. IFRB Report on intersessional activities (feeder link planning) (Document 19)

Mr. Brooks (IFRB), presenting the IFRB document on feeder link planning, said 1.1 that the Board's intersessional activities relating to the feeder link plan for the broadcasting-satellite service were summarized in Document 19. Page 1 of the presentation document referred to the decisions taken at the First Session of the Conference and to the feeder link planning method. The relevant intersessional activities, outlined in Chapter 8 of the Report to the Second Session and mentioned in Chapter 5, Section 1 of Document 19, reflected inter alia a decision taken at the First Session that the IFRB should use the software, suitably modified, developed for Region 2 BSS planning. Adjustments to it had been made in the light of further requirements notified by administrations as a result of the first planning exercise. Two series of three planning exercises had been carried out. The first and second had been based respectively on 17 GHz and 14 GHz for administrations indicating preferences for those frequencies, and the third had been based on 17 GHz for administrations which had expressed no preference. The planning method for both feeder link bands had used the general characteristics of the BSS R1/R3 Plan and, as far as possible, linear translation and one translation frequency for a set of transponders serving the channels assigned to the same beam of that administration.

The feeder link technical characteristics were as shown on page 2 of the document. With regard to the three possible usable bands considered at the First Session the Conference had decided that 10.7 - 11.7 GHz would not be used, that 14.5 - 14.8 GHz had insufficient channels to satisfy all feeder link requirements, although it could be used, but that 17.3 - 18.1 GHz would be the main band. In accordance with Article 8 of the Radio Regulations, the band 14.5 - 14.8 GHz was not available to all administrations. The results of the planning exercises referred to on page 3 of the document had been published, allowing an opportunity for administrations to adjust their requirements for the purpose of carrying out identical planning exercises based on the adjusted requirements.

Examples of the two types of translation were given on page 4 of the document. In the first type, the up- and down-links were matching. In the second, in which there were insufficient channels for direct links from 14 to 12 GHz, the first two examples were based on the table set out in section 6.2 of the Report to the Second Session; the third example illustrated a case in which an administration had asked for a common translation frequency.

Committee 5 would have to deal with certain matters summarized on page 5 of the document relating to requirements submitted by administrations. In that connection, there seemed to have been some misunderstanding of the IFRB Circular-letter with regard to multiple-link beams in the up-link, some administrations having requested new test points outside the down-link service area.

Page 6 of the document showed the feeder link planning results for the first and second series, the latter being reproduced in Document 17. The Board was still receiving comments from administrations and possibly had not yet fully understood all the requests submitted to it. With regard to the development of a software package, in accordance with a decision taken at the First Session for the purpose of single orbital position analysis, the BSFL system developed by the Japanese Administration had been made available. It had already been offered to some 40 administrations and could be examined during the current session. - 3 -ORB(2)/122-E

The graphs on page 7 of the document related to the feeder link analysis in respect of the first and second series direct translation. The second exercise, based on amended requests from administrations, still showed some negative margins, but the margins were considerably less than in the first exercise. The graphs on page 8 showed the results of the second series of feeder link exercises, based on 14 and 17 GHz.

Committee 5 would have to decide on a number of items, all covered in the Report to the Second Session before any further planning exercises could take place. Firstly, it must decide whether 17 GHz or a combination of 14 and 17 GHz was to be used. Secondly, administrations' requirements must be confirmed; in that connection, the requirements on which the second set of planning exercises had been based were annexed in microfiche form, to Document 17. Thirdly, the adjacent channel protection ratio had to be decided upon; as shown in the Report to the Second Session, the First Session had been unable to decide whether 21 or 24 dB should be adopted. Fourthly, in order to calculate OEPM, a decision must be taken whether to calculate co-channel protection margins (up- or down-links) or use a combined margin calculated for WARC-77 and add a combined margin for the up-link, using only those points established for WARC-77. The Board could use either method, but the Conference must decide which.

Fifthly, with regard to ULPC, it had to be decided whether to use the two nominal power values on the basis of clear skies with compensation, for rain attenuation, or to calculate on the basis of faded signals for the wanted signal; if the latter, the question was on what fading figure, climatic zone and rainfall the calculation would be based. Sixthly, Committee 5 must address the question of the sense of polarization; in some cases, requests from administrations did not conform to the 1977 values. Seventhly, clarification was needed in regard to pointing, since two values $(0.1^{\circ} \text{ and } 0.2^{\circ})$ had been used for up-links and down-links. Eighthly, the technical parameters used in the planning analysis must be confirmed, or others must be clearly specified.

1.2 The <u>delegate of India</u> said that it appeared from the First Session that administrations were free to choose one or both frequency bands.

1.3 <u>Mr. Brooks</u> (IFRB) said that since separate planning exercises had been carried out based on different frequencies, there seemed to be some doubt about whether a firm decision on that point had been taken at the First Session.

Replying to a question by the <u>Chairman</u>, he said that the technical facilities at the current session included the software system made available by the Japanese Administration as well as the Board's mainframe computer program. No problems were foreseen in handling the proposals tabled hitherto and in carrying out several exercises. In response to an observation by the <u>delegate of the Federal Republic of</u> <u>Germany</u>, he said that the much improved results of the second series of exercises stemmed from amended requirements rather than from any major software changes. In reply to a question by the <u>delegate of Bulgaria</u> about the procedure in cases of negative results and unsatisfied requirements, he said it would be for the planning group to evaluate the results of exercises and decide what adjustments should be made.

1.4 The <u>Chairman</u> said he agreed with that approach. The questions and problems raised by delegations could be assembled for consideration. The general approach had been aligned on the WARC-77 Plan but experience showed that some orbital positions required different calculation techniques.

He thanked Mr. Brooks for his presentation and the IFRB for its intersessional efforts.

2. <u>Terms of reference of Committee 5</u> (Document 114)

2.1 The <u>Chairman</u> invited the Committee to approve the terms of reference as set forth in Document 114, subject to possible editorial revision of paragraph 5; some administrations had seemingly inferred that an additional band to 22.5 - 23 GHz was to be sought in Regions 2 and 3 so as to accommodate HDTV.

Subject to that consideration, the Committee's terms of reference were <u>approved</u>.

3. <u>Allocation of documents</u> (Document DT/4(Rev.1))

3.1 The <u>Chairman</u> said that Documents 86 and 87 were to be added to those listed in Document DT/4(Rev.1). But Documents 6, 43 and 44, however, seemed not to be of direct concern to Committee 5; the Secretariat was asked to check them before the Committee's next meeting.

On that understanding, the allocation of documents was noted.

4. <u>Organization of work</u> (Documents 115, DT/6)

4.1 The <u>Chairman</u>, referring to the provisional schedule set forth in Document 115, said he took it as agreed, in the absence of any comments, that Committee 5 should be able to complete its work by 29 September.

4.2 <u>Mr. Brooks</u> (IFRB), replying to a question by the <u>Chairman</u>, said he thought a deadline should be set for the submission of feeder link requirements: the IFRB would need all the relevant data by the middle of the coming week, although subsequent amendments could still be made, if necessary. The microfiche attachment to Document 17 showed the requirements hitherto used as a basis and a hard copy of the details was also available for perusal.

4.3 The <u>Chairman</u> wondered why some information about climatic zones for each testpoint seemed to be missing, and whether that might delay matters.

4.4 <u>Mr. Giroux</u> (IFRB) thought that there might be some misunderstanding; the exercises had involved computerized retrieval of climatic zones from the latest CCIR maps, which had also been used for the rain-attenuation values notified to administrations for information only, since the exercises had been based on clear-sky conditions. Whether that basis or rain-attenuation values were to be used was for Committee 5 to decide.

4.5 The <u>Chairman</u> proposed, in response to an observation by the <u>delegate of Egypt</u>, that the decision on a deadline be postponed for 24 hours so as to allow time to resolve delegations' queries about the climatic data used for calculation purposes.

It was so <u>agreed</u>.

4.6 The <u>Chairman</u> drew attention to Document DT/6, in which the establishment of two Working Groups and their terms of reference were proposed. He invited the Committee to approve the nomination of Mr. Barton (Australia) as Chairman of Working Group 5-A and of Mr. Dosch (Federal Republic of Germany) as Chairman of Working Group .-B.

The nominations were approved.

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Referring to the allocation of documents to the Working Groups, he said that the additional Documents 86 and 87 would be allocated to Working Group 5-B. In response to a request by the <u>delegate of India</u>, he said he would consult the Working Group Chairmen with a view to avoiding overlaps of meetings and completing the bulk of the computer-related tasks before the third week of the session when the overall demands on the computer would increase.

5. <u>Introduction of documents relating to the establishment of the Plan</u> (Documents 3 + Corr.1, 7, 12, 17, 19 + Corrs.1 and 2, 24, 25, 39 + Corrs.1 and 2, 49, 51, 54, 60, 73)

5.1 The <u>Chairman</u> said that the introduction of documents at the current meeting should be restricted to those aspects concerned with the establishment of the Plan and relevant to the mandate of Working Group 5-A.

Document 3: CCIR Report to WARC ORB(2)

5.2 The <u>representative of the CCIR</u> (Mr. Nickelson), introducing Document 3, said that the CCIR material pertinent to the tasks of Working Group 5-A was contained in Chapter 5 of its Report to the Second Session of the Conference. The first part of the Chapter covered certain technical matters that remained to be decided with regard to the feeder link Plan, notably the questions of power control and a number of technical parameters. The second part of Chapter 5 dealt with the criteria for sharing between feeder links to the BSS at 12 GHz in Regions 1 and 3, and other services.

Document 7: USSR proposals for the work of the Conference

5.3 The <u>delegate of the USSR</u>, introducing Document 7, said that calculations made by his country's Administration with regard to the compatibility of the proposed feeder links showed that even though the values for their co-channel and adjacent channel protection ratios were often below permissible levels, the total protection ratio on the Earth-space-Earth link was not below acceptable levels because of the margin on the space-Earth link. The USSR Administration was therefore proposing that the compatibility of feeder links should be evaluated for planning purposes on the basis of the total protection ratio on the Earth-space-Earth link.

Document 12: United States proposals for the work of the Conference

5.4 The <u>delegate of the United States of America</u> said that his Administration had submitted a number of requirements for inclusion in the feeder link Plan to be adopted at the Conference. He then introduced the seven proposals for Conference action to develop that Plan set out in Document 12.

5.5 The <u>Chairman</u> remarked that the United States requirements included multiple feeder link service areas for broadcasting satellites, along the lines of the Plan adopted for Region 2 in 1983.

Documents 17 and 19: IFRB Report on the results of planning exercises for feeder-links in Regions 1 and 3 and IFRB intersessional activities (ORB) system report

5.6 <u>Mr. Brooks</u> (IFRB) said that most aspects of concern to Working Group 5-A had already been covered by his presentation. He drew attention, however, to Chapter 5, Section 2 of Document 19, which reviewed the main problems arising from the feeder link requirements submitted by administrations, and to the list of comments from administrations at Annex 5 to Chapter 5. 5.7 The <u>Chairman</u> invited administrations to verify that those parts of Document 19 properly reflected their special requirements and to notify corrections in case of need.

Document 24: French proposal on the overall equivalent protection margin to be used for broadcasting satellite feeder links

5.8 The <u>delegate of France</u>, introducing Document 24, explained why, given the fact that the Second Session of the Conference had to choose between the values of 21 dB and 24 dB for the feeder link adjacent channel protection ratio, France was proposing that the formula suggested in the CCIR Report for calculating the overall equivalent protection margin should be used in preference to that advocated in the Report of the First Session.

Document 25: French proposal on the overall protection ratios for feeder links to broadcasting satellites

5.9 The <u>delegate of France</u>, introducing Document 25, explained her Administration's proposal to align the overall protection ratios for feeder links to broadcasting-satellites with those given in Appendix 30 of the Radio Regulations for analysing the down-link plan. If that were not done, use of the lower ratios given in the annex to Chapter 8 of the Report of the First Session could give paradoxical results when calculating overall equivalent protection margins.

Document 39: Proposals of a number of European Administrations for the work of the Conference

5.10 The <u>delegate of the United Kingdom</u>, introducing Document 39 on behalf of its co-authors, said that the proposals relevant to the tasks of Working Group 5-A were draft amendments to Article 10 of Appendix 30A of the Radio Regulations and the technical data in Annex 3 for use in establishing and applying the provisions and the associated Plan.

5.11 The <u>Chairman</u> expressed the view that Document 39 could provide a good basis for the work of the Committee.

Documents 49 and 51: Australian proposals for the work of the Conference and information paper on high rainfall effects

5.12 The <u>delegate of Australia</u>, introducing the relevant section of his Administration's proposals for the work of the Conference, said that on the basis of experience with rain attenuation, it considered that an additional rain-fade compensation margin should be included in the BSS feeder link Plan for Regions 1 and 3. Document 51 gave actual measurements and was useful background for planning to ensure that administrations concerned with rain climates L and above would be able to provide a satisfactory service.

Document 54: Japan's proposals for the work of the Conference

5.13 The <u>delegate of Japan</u> said that the relevant section of Document 54 contained proposals on a number of issues yet to be decided. His Administration intended to submit a further document dealing with the revision of Appendix 30A and its technical parameters. Japan would contribute to establishing a well-coordinated feeder link plan on the basis of experience already gained in operating broadcasting satellite systems.

5.14 The <u>Chairman</u> said that Document 54 merited careful attention because it included a number of new proposals.

Document 60: Canada's proposals for the work of the Conference

5.15 The <u>delegate of Canada</u> said that Document 60 contained only one brief reference to the feeder link plan for Regions 1 and 3. His country anticipated that its incorporation in Appendix 30A would not impact on the Region 2 plan.

Document 73: New Zealand proposals for the work of the Conference

5.16 The <u>delegate of New Zealand</u> said that Document 73 contained no definite proposals but set out his Administration's view on feeder link planning as an aid to the Committee's deliberations.

The meeting rose at 1705 hours.

The Secretary:

G. MESIAS

The Chairman:

D. SAUVET-GOICHON

INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Corrigendum 1 to Document 123-E 9 September 1988 Original: English

COMMITTEE 6

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 6

1. In paragraph 3.4, <u>replace</u> "consideration also to be given to the request" <u>by</u> "consideration also to be given to its request".

2. In paragraph 3.9, <u>amend</u> the second sentence to read:

"He drew attention, in relation to agenda item 3, to the proposed modification to Appendix 29, numbered USA/12/59, 60 and 61, in particular by increasing the delta T/T threshold value from 4% to 6%, and to proposals USA/12/57 and 58 for modifying Appendix 28."

3. <u>Correct</u> the second paragraph numbered 3.12 to read 3.13 in the English and Spanish versions.

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INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 123-E 2 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 6

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 6

(REGULATORY PROCEDURES (OTHER THAN FOR ALLOTMENT PLANNING AND BSS FEEDER-LINKS))

Tuesday, 30 August 1988, at 1400 hrs

Chairman: Mr. J.F. BROERE (Netherlands)

Subjects discussed:

- 1. Opening remarks by the Chairman
- 2. Terms of reference of Committee 6
- 3. General presentation of documents

Documents

114

3 + Corr.1, 4 + Corr.1 and 2, 5, 7, 10, 11, 12, 18, 19 + Corr.1 + 2, 20 + Corr.1, 22, 23, 31, 32, 34, 35

1. <u>Opening remarks by the Chairman</u>

1.1 <u>The Chairman</u> expressed gratitude for the honour accorded him and his Administration by his appointment as Chairman of the Committee. He stressed that hard work and cooperation would be needed to achieve the expected results.

2. <u>Terms of reference of Committee 6</u> (Document 114)

The Committee took note of its terms of reference as set out in Document 114.

3. <u>General presentation of documents</u> (Documents 3 + Corr.1, 4 + Corr.1 and 2, 5, 7, 10, 11, 12, 18, 19 + Corr.1 and 2, 20 + Corr.1, 22, 23, 31, 32, 34, 35)

3.1 The <u>Chairman</u> called for a general presentation of documents, in particular highlighting the broad objectives of administrations, in order to facilitate the task of the Working Groups.

Document 3

3.2 The <u>Chairman of JIWP/ORB(2)</u>, introducing Document 3, recalled that the First Session of WARC ORB had called on the CCIR to provide certain technical information for the Second Session. The necessary work had been carried out by CCIR Study Groups and their IWPs and JIWPs, and the required information was available in the CCIR Report to the Conference. Chapters 3 and 4, contained in Part I of that Report, provided technical information relevant to the work of the Committee.

Document 4 + Corr.1 and 2

3.3 The <u>Vice-Chairman of the IFRB</u> presented the report by the IFRB dealing with the extension of the date of bringing an assignment into use due to launching failures, as contained in Document 4. List of requests for extension of 2C dates concerning notified satellites and List of requests for extension of 2C dates concerning satellite launch delays attributed by the notifying administrations indirectly to launch failures were given in Corrigendum 2 to Document 4, in Table 3. The Board had decided to await the discussions and decisions of the Second Session of the Conference before taking action on the various outstanding cases. In reply to the <u>delegate of Indonesia</u>, he explained that if the Conference endorsed the exceptional extension granted by the Board with respect to the PALAPA B-2 space station then that extension would be entered in the Master Register; if not, the consequent steps would have to be taken.

3.4 The <u>delegate of the United States of America</u> asked that, in addition to the listed networks, consideration also be given to the request which had very recently been sent to the IFRB.

Document 5

3.5 Introducing Document 5, the <u>delegate of Tanzania</u> stressed the importance of ensuring equity between developing and developed countries, in spite of the disproportion between the technological advancement of those groups of countries, especially with respect to space technology, while not entirely sacrificing efficiency.

Document 7

3.6 The <u>delegate of the USSR</u> presented the proposals of the USSR Administration with respect to agenda items 2, 4 and 7, as contained in Document 7.

Document 10

3.7 The <u>Vice-Chairman of the IFRB</u> presented the IFRB's report, contained in Document 10, on sharing criteria used in the application of Article 14. In some cases the Board had been able to develop rules and procedures to identify administrations whose services might be affected, in other cases it had not been possible. For example, in the case of non-geostationary space stations, the Board had no means of identifying the countries likely to be affected and could only indicate in Special Sections those countries having assignments in the same bands, as recorded in the Master Register.

Document 11

3.8 The <u>Vice-Chairman of the IFRB</u> introduced the report of the IFRB on the accuracy of the Master Register, contained in Document 11. In particular, the Board considered that some 5,000 assignments pertaining to INTELSAT networks were no longer in operation but was unable to delete them from the Master Register as no replies about them had been received from the administrations concerned. He presented the IFRB's report on distribution to administrations of IFRB seminar documents, also contained in Document 11.

Document 12

3.9 The <u>delegate of the United States of America</u> presented the views of his Administration with regard to agenda item 2, highlighting proposal USA/12/11 and the opinion that modified Articles 11 and 13 should continue to be the normal means of achieving access to the GSO for the fixed-satellite service in all frequency bands, except as provided for in the Fixed-Satellite Service Allotment Plan. He drew attention, in relation to agenda item 3, to the proposed modification to Appendix 29, numbered USA/12/59, 60 and 61, and to proposals USA/12/57 and 58 for modifying Appendix 28, in particular by increasing the delta T/T threshold value from 4% to 6%. With regard to agenda item 4, he drew attention to his Administration's views concerning the coordination process, to network coordination/notification, especially proposals USA/12/13, 14 and 25, and to the proposed modifications to Article 14 given in USA/12/37 to 56. Concerning agenda item 5, he mentioned proposal USA/12/62 to modify the definition in Article 1 and proposal USA/12/16 to modify Article 8.

3.10 The <u>delegate of Indonesia</u> recognized that, in view of the decision taken by the First Session of the Conference, it was necessary to set a minimum requirement for holding MPMs but pointed out that the holding of such meetings was not compatible with cutting costs. He furthermore considered that it was realistic to contemplate an increase in the coordination threshold value of delta T/T.

Documents 18 and 19 + Corr.1 + 2

3.11 The <u>Vice-Chairman of the IFRB</u> introduced Document 18 which contained a compendium of the IFRB's Rules of Procedure and interpretations of the Radio Regulations, leaving it for the Conference and the administrations to comment as they saw fit. Document 19 and its corrigenda presented the Board's intersessional activities and the ORB System. Although no instructions had been given to the Board relating to the improved procedures or the simplified procedures, the existing software used by the Board as well as that developed for the planning of the fixed-satellite service in the Allotment Plan might be useful in the improved procedures, as indicated in Chapter 3 of Document 19.

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Documents 20 + Corr.1, 22, 23, 31, 32 and 34

3.12 The <u>delegate of France</u> presented Document 34 which summarized, in particular, Documents 20, 22, 23, 31 and 32. He drew attention to the views of the French Administration on improved procedures, simplified procedures, and to proposed amendments to Sections I and II of Article 11, Article 13 and Appendices 3, 4 and 29.

Document 35

3.12 The <u>delegate of Brazil</u>, introducing Document 35, noted that the proposed concepts of satellite network coordination for inclusion in Article 11 had already been used successfully and that the proposed notification procedure would facilitate the task of administrations in the application of Article 13 to satellite systems.

The meeting rose at 1530 hours.

The Secretary:

The Chairman:

K. ARASTEH

J.F. BROERE

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

ORB-88 CAMR SUR L'UTILISATION DE L'ORBITE DES SATELLITES GÉOSTATIONNAIRES ET LA PLANIFICATION DES SERVICES SPATIAUX UTILISANT CETTE ORBITE SECONDE SESSION, GENÈVE, AOÛT/OCTOBRE 1988

Document 124(Rev.1)-E 31 August 1988 Original: French

COMMITTEE 4

Note by the Chairman of Committee 4

TERMS OF REFERENCE OF GROUP 4 AD HOC 1

1. To review the characteristics of existing systems set out in Annex 1B to Chapter 2 of Document 19 from the IFRE with a view to identifying any possible modifications to those characteristics.

2. <u>Consideration of the status to be conferred on</u>

2.1 Modifications to existing networks as defined in section 3.3.4.9 of the Report of the First Session.

2.2 New networks communicated to the IFRB after 8 August 1985 for advance publication.

Note du Président de la Commission 4

MANDAT DU GROUPE 4 AD HOC 1

1. Réexaminer les caractéristiques des systèmes existants énoncés à l'annexe lB chapitre 2 du Document 19 de l'IFRB en vue de déterminer les éventuelles modifications possibles de ces caractéristiques.

2. <u>Examen du statut à donner</u>

2.1 Aux modifications aux réseaux existants selon la définition de la section 3.3.4.9 du Rapport de la première séance.

2.2 Aux nouveaux réseaux communiqués à l'IFRB après le 8 août 1985 aux fins de publication anticipée.

Nota del Presidente de la Comisión 4

MANDATO DEL GRUPO 4 AD HOC 1

1. Reexaminar las características de los sistemas existentes que figuran en el anexo 1B del capítulo 2 del Documento 19 de la IFRB para determinar las eventuales modificaciones de esas características.

2. <u>Examinar el carácter que se ha de reconocer</u>

2.1 A las modificaciones a las redes existentes según la definición de la sección 3.3.4.9 del Informe de la Primera sesión.

2.2 A las nuevas redes comunicadas a la IFRB después del 8.8.85 a efectos de la publicación anticipada.

S. PINHEIRO Chairman of Committee 4 **ORB-88** WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 124-E 30 August 1988 Original: French

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 4

Note by the Chairman of Committee 4

TERMS OF REFERENCE OF GROUP 4 AD HOC 1

1. To review the characteristics of existing systems set out in Annex 1B to Chapter 2 of Document 19 from the IFRB with a view to identifying any possible modifications to those characteristics.

2. <u>Consideration of the status to be conferred on</u>

2.1 Existing systems modified after 8 August 1985.

2.2 New systems communicated to the IFRB after 8 August 1985 for advance publication.

S. PINHEIRO Chairman of Committee 4

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ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 125-E 30 August 1988 Original : English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 4

Note by the Secretary-General

IFRB REPORT

ON THE EXISTING NETWORKS

At the request of Committee 4, I have the honour to transmit to the Conference the above-mentioned Report.

R.E. BUTLER Secretary-General

Attachment

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SITUATION OF EXISTING NETWORKS

1. Committee 4 asked the Board to prepare a document indicating the situation of the existing networks including modifications notified to the Board. This report contains the updated situation as extracted from document 19 together with annexes relating to modifications which were not adopted by the Board. Annex 1 contains the Table of existing networks in the bands adopted for the Allotment Plan.

2. Recognizing that the data collected represented a combination of worst-case scenarios, with the smallest published earth station characteristics and the maximum published power density figures being used, the Board invited the administrations concerned to examine the technical parameters which were published for their existing networks in IFRB Circular-letter No. 720, and to submit modifications that would improve the planning situation. A response has now been received from all but two of these administrations: Canada and Ireland have not responded to the Board's invitation. Annex 2 describes the changes made by those administrations which did respond to the Board's invitation.

3. Since the First Session the Board was notified modifications to existing networks. Modifications to Pacstar 1 and 2 and GDL-6 were considered by the Board as not being capable of improving the planning and were left for decision by this Conference. Modifications to Pacstar 1 and 2 are described in Annex 2. The modifications to GDL-6 other than those indicated in Annex 2 consisted in replacing the service area "LUX" with the -10 dB gain contour as reproduced in Annex 3.

4. Concerning the question raised by the Delegation of Pakistan with respect to their networks Paksat 1 and 2, the documents available to the Board indicate the following situation:

a) Paksat 1 and 2 were received by the Board on 12/08/83 and published in the Special Sections AR11/A/90 and 91 without an expiry date for comments because some of the characteristics listed in Appendix 4 were not communicated. In accordance with RR1045, the Board consider the advance publication to be completed when all the information listed in Appendix 4 is communicated to it. For this reason Paksat 1 and 2 were not published among the existing networks.

b) On 05/08/85 the Board received from the Administration of Pakistan a new set of characteristics which when published in the Special Sections AR11/A/90 Ad.1 and AR11/A/91 Ad.1 without an expiry date for comments as the information was not complete.

c) On 18/12/85 the Board received the missing information which was published in the Special Sections AR11/A/90 Ad.2 and AR11/A/91 Ad.2.

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SYSTEM	NEIWORK		AIM.	4.5- 4.8	6.425-7.075	10.7-10.95	11.2-11.45	12 . 75-13.25		CONTRACT	
POTOK ¹⁾	1 2 3	13.5W 80E 168W	urs		NOT USE	D IN THE	PLANNING	EXERCISE	9		
SIMISIONAR	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	26.5W 170W 35E 45E 85E 128E	us	X X X X X X	X X X X X X		-		с с с с с	Gldæl. Gldæl Gldæl Gldæl. Gldæl Gldæl	AR11/C/1168 AR11/C/1169 AR11/C/1170 AR11/C/1171 AR11/C/1172 AR11/C/1173
FOICN	1 2 3	15W 81.5E 169.5W	æ	X X X	x x x				A C A	Glcbal. Glcbal. Glcbal.	AR11/A/235 AR11/C/1015 AR11/A/237
INSAL	2A 2B 2C	83E 93.5E 74E	DNI	X X X	X X X				C C C	Figs. 16-17 Figs. 16-17 Figs. 16-17	AR11/C/1081 AR11/C/1082 AR11/C/1083
USASAT	13D 13E 13H 13H	56W 58W 57W 45W	USA		x x	x x x x			C C A C	Figs. 18-19 Figs. 18-19 Figs. 20-22 Figs. 23-25	AR11/C/701 AR11/C/702 AR11/A/177 AR11/C/866
EIRESAT ,	1.	31W	IRL			X		x	A	Figs.26-29	AR11/A/182
GT'	4 5 6	20W 1E 19.2E	ШΧ		X X X (2)	X X X	x x x		C C N	Figs.30-31 Figs.30-31 Figs.30-31	AR11/C/610 AR11/C/612 AR11/C/614

These networks utilize the band 4.5 - 4.8 GHz for the Earth-to-space direction
 Under coordination

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ORB(2)/125-E

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ANNEX 1

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						FREQUENCY (GHz)	Y BAND				
SYSTEM	NEIWORK	IONSEILDE	ADM.	4.5-4.8	6.425-7.075	10.7-10.95	11.2-11.45	12.75-13.25	SELUALION	2EFMINOD	PUBLICATION
STR .	CSERN ESERN WEERN	95E 160W 16W	URS			X X X	X X X		N N N	Figs. 32-35 Figs. 36-37 Figs. 38-39	AR11/C/69 AR11/C/72 AR11/C/67
SSF0-2	CSSRD-2 VSSRD-2 ZSSRD-2	77E 167E 16W	urs				x x x		N N C	Figs.41-44 Figs.45-46 Figs.47-48	ARI1/A/188 ARI1/A/187 ARI1/C/880
SIRIO *	SIRID	65E	I	NCT U	SED IN THE	SES	X (3)				
L-SAT	INSAI	19W	F/ESA					х	N	Figs.49-53	AR11/C/782
MEXIT	MSALL .	106 . 5W	CAN					X (3)	A	Fig. 54	AR11/A/56 AD-1
FACSIAR	1 2	167.0E 175.0W	ING		x x				c c	Fig. 55-56 Figs.55-56	ĀR11/C/1179 AR11/C/1180
EUIELSAT	I I-2 I-3 I-4	10.0E 13.0E 7E 16.0E	F/Eut				X (3) X (3) X (3) X (3) X (3)		C C N C	Fig. 57 Fig. 58 Fig. 40 Fig s.59-6 0	AR11/C/444 AR11/C/445 AR11/C/446 AR11/C/874

ORB(2)/125-E

ANNEX 1 (continued)

* This network was notified to be brought into use on 30 June 1983 and to be operated for a period of normally one year. The Board is consulting the administrations on the need to retain it as an existing network.
(3) Only for TT and C

- 5 -ORB(2)/125-E

ANNEX 2

CHANGES TO TECHNICAL PARAMETERS FOR EXISTING NETWORKS CONCERNING THE ALLOTMENT PLANNING EXERCISES

Administration	Network	Changes
FRANCE	LSAT	The transmit earth station antenna gain was increased from 52 dBi to 56 dBi.
		NOTE: The Board considered that this change will improve the planning situation.
	EUTELSAT I EUTELSAT I-2 EUTELSAT I-3 EUTELSAT I-4	The power density level fed to the transmitting antenna on the space station was reduced from 9.0 dBW/MHz to -8.5 dBW/MHz.
		NOTE: The Board considered that this change will improve the planning situation.
*****	*****	*******
INDIA	INSAT 2A INSAT 2B INSAT 2C -	The power density level fed to the transmitting earth station antenna is to be changed from 27.2 dBW/MHz to 27.0 dBW/MHz The earth station antenna side-lobe gain envelope is to be changed from 37.8- 25.0*log(theta) to 29.0-25.0*log(theta) The power density level fed to the transmitting space station antenna is to be changed from 10.0 dBW/MHz to 6.0 dBW/MHz The test points used for C/I calculations for the plan are to be changed to be the same as the test points for beam INDOIFRB of IFRB Circular-letter No. 720

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Changes to technical parameters for existing networks concerning the allotment planning exercises (cont.)

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Administration	Network	Changes
LUXEMBOURG	GDL 4 GDL 5 GDL 6	 The power density fed to the transmitting antenna on the space station was corrected The geographical points used for ellipse generation were corrected and this resulted in corrected beam characteristics. The earth station transmit antenna gain was increased from 52.5 dBi to 54.5 dBi The earth station side-lobe characteristic was changed from 32-25logx to 29-25logx The power density fed to the transmitting earth station antenna was corrected The receive earth station antenna gain was added The earth station noise temperature was added NOTE: The Board considered that these changes will improve the planning situation.

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Changes to technical parameters for existing networks concerning the allotment planning exercises (cont.)

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Administration	Network	Changes
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PAPUA NEW GUINEA	PACSTAR 1	When these networks were published at
· -	PACSTAR 2	the advance publication phase they each
-* *		had 24 spot beams. After 8 August 1985
		the Appendix 3 data for coordination were
1	· ·	published in which these spot beams were
-	4	replaced with a hemispheric beam and a
		quarter earth coverage beam. These two
		beams have much higher earth station power
		levels which if used will result in greater
		difficulty in producing a Plan.
		Specifically the following changes result:
	• •	PI goes from -14.6 dBW/MHZ to 12.0 dBW/MHZ
	-	GI goes from 52.5 dB1 to 51.7 dB1
· ·	-	C^2/C^3 as from k^2 9 dPi to 26 0 dPi
· .		32/35 go from 42.5 dB1 co 20.0 dB1
		Additionally the orbital position of
		PACSTAR 1 is changed from -167 00 degrees
		to -167 45 degrees
		00 107,45 00 <u>5</u> 2005.
		NOTE: The Board considered that these
		changes are not within the values that were
		submitted before 8 August 1985 and,
		therefore, they are not included in the
		planning exercises.
· .		
****	*****	***************************************
110 4	HEAGAT 13 D	No changes
USA	USASAI IJ-D	No changes
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	USASAT 13-E	No changes
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Changes to technical parameters for existing networks concerning the allotment planning exercises (cont.)

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Administration	Network	Changes
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USA	USASAT 13-H USASAT 13-I	 The following changes are indicated as being applicable to the beams USA13HB1, USA13HB2, USA13IB1, and USA13IB2: Power fed to transmitting earth station antenna reduced from 26.4 dBW/MHz to 11.6 dBW/MHz Transmit earth station antenna gain increased from 47.8 dBi to 49.5 dBi Transmit earth station antenna side-lobe gain reduced from 32-25logx to 29-25logx.
		NOTE: The Board considered that this change will improve the planning situation.
*******	******	************
USSR	STATSIONAR D-1 STATSIONAR D-2 STATSIONAR D-3 STATSIONAR D-4 STATSIONAR D-5 STATSIONAR D-6	The earth station receive antenna gain is changed from 25 dBi to 31 dBi. NOTE: The Board considered that this change will improve the planning situation.
	FOTON 1 FOTON 2 FOTON 3	 The orbital positions of these three satellites are changed as follows: Fl was -15.0, now -13.5, F2 was 81.5, now 80.0, F3 was -169.5, now -168.0 The earth satellite antenna boresights are revised according to the new sub-orbital point NOTE: The Board considered that the change of the orbital position may be included in the planning exercise to the extent that it does not limit the service arc of requirements having very small arcs. The space station power density is reduced from 5 dBW/MHz to -8 dBW/MHz The earth station on-axis gain is increased from 43.4-25logx to 32-25logx NOTE: The Board considered that this change will improve the planning situation.

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Changes to technical parameters for existing networks concerning the allotment planning exercises (cont.)

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Administration	Network	Changes
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USSR	SDRS CSDRN	For beam 1: - Visible arc changed from 82.5 - 96.0 to -15.0 - 96.0 - Antenna boresight changed from 47.1, 53.7 to 40.57, 56.18 Main and the changed
		 Major axis beamwidth changed from 1.39 degrees to 0.97 degrees Minor axis beamwidth changed from 0.91 degrees to 0.97 degrees The space station power density is reduced from -7.0 dBW/MHz to -10 dBW/MHz The earth station on-axis gain is increased from 49.3 dBi to 62.0 dBi The earth station noise temperature is changed from 201 K to 160 K
		For beam 2: - Visible arc changed from 82.5 - 96.0 to -161.0 - 82.0 - Antenna boresight changed from 139.7 52.6 to
		140.5, 53.17 - Major axis beamwidth changed from 1.34 degrees to 0.97 degrees
and a start of the		 Minor axis beamwidth changed from 1.07 degrees to 0.97 degrees The space station power density is reduced from -7.0 dBW/MHz to -10 dBW/MHz The earth station on-axis gain is
andra an		increased from 49.3 dBi to 62.0 dBi - The earth station noise temperature is changed from 201 K to 160 K
	· · · ·	NOTE: The Board considered that this change will improve the planning situation.
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Changes to technical parameters for existing networks concerning the allotment planning exercises (cont.)

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Administration	Network	Changes
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USSR	SDRS ESDRN	 Visible arc changed from 161.5 - 82.5 to -161.0 - 82.0 Antenna boresight changed from 146.6, 51.1 to 140.5, 53.17 Major axis beamwidth changed from 1.49 degrees to 0.97 degrees Minor axis beamwidth changed from 0.86 degrees to 0.97 degrees The space station power density is reduced from -7.0 dBW/MHz to -10 dBW/MHz The earth station on-axis gain is increased from 49.3 dBi to 62.0 dBi The earth station noise temperature is changed from 201 K to 160 K
	SDRS WSDRN	 NOTE: The Board considered that this change will improve the planning situation. Antenna boresight changed from 34.4, 54.0 to 40.57, 56.18 Major axis beamwidth changed from 1.53 degrees to 0.97 degrees Minor axis beamwidth changed from 0.96 degrees to 0.97 degrees The space station power density is reduced from -7.0 dBW/MHz to -10 dBW/MHz The earth station on-axis gain is increased from 49.3 dBi to 62.0 dBi The earth station noise temperature is changed from 201 K to 160 K The geographical points used for ellipse generation were corrected and this resulted in corrected beam characteristics. NOTE: The Board considered that this change will improve the planning situation.

Changes to technical parameters for existing networks concerning the allotment planning exercises (cont.)

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Administration	Network	Changes
USSR	SSRD-2 CSSRD-2	For beam 1: Service arc changed from 76.0 - 78.0 to 76.9 - 77.1 Antenna boresight changed from 113.5, 51.8 to 113.5, 52.1 Major axis beamwidth changed from 1.45 degrees to 1.14 degrees Minor axis beamwidth changed from 1.30 degrees to 1.14 degrees The space station power density is reduced from -7.0 dBW/MHz to -10 dBW/MHz The geographical points used for ellipse generation were corrected and this resulted in corrected beam characteristics For beam 2:
		54.0 - 173.0 to -15.0 - 96.0 - Service arc changed from 76.0 - 78.0 to 76.9 - 77.1 - Antenna boresight changed from 41.0, 55.7 to 40.8, 55.7
		 Major axis beamwidth changed from 1.53 degrees to 1.14 degrees Minor axis beamwidth changed from 1.27 degrees to 1.14 degrees The space station power density is reduced from -7.0 dBW/MHz to -10 dBW/MHz
		NOTE: The Board considered that this change will improve the planning situation.

Changes to technical parameters for existing networks concerning the allotment planning exercises (cont.)

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Administration	Network	Changes
USSR	SSRD-2 VSSRD-2	<pre>Service arc changed from 166.0 - 168.0 to 166.9 - 167.1 - Antenna boresight changed from 116.1, 51.6 to 113.5, 52.1 - Major axis beamwidth changed from 3.22 degrees to 1.14 degrees - Minor axis beamwidth changed from 0.80 degrees to 1.14 degrees - The space station power density is reduced from -7.0 dBW/MHz to -10 dBW/MHz - The geographical points used for ellipse generation were corrected and this resulted in corrected beam characteristics NOTE: The Board considered that this change will improve the planning situation.</pre>
USSR	SSRD-2 ZSSRD-2	 Service arc changed from 15.95 - 16.05 to 15.9 - 16.1 Antenna boresight changed from 33.6, 53.5 to 40.8, 55.7 Major axis beamwidth changed from 2.91 degrees to 1.14 degrees Minor axis beamwidth changed from 1.16 degrees to 1.14 degrees The space station power density is reduced from -7.0 dBW/MHz to -10 dBW/MHz The earth station on-axis gain is increased from 53.0 dBi to 62.0 dBi The earth station noise temperature is changed from 201 K to 160 K NOTE: The Board considered that this change will improve the planning situation.

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Changes to technical parameters for existing networks concerning the allotment planning exercises (cont.)

<u>Administration</u>	Network	<u>Changes</u>	
India	Insat 2-A	Space Transmit Power:	6 dBW/MHz
	Insat 2-B	Earth Transmit Power:	27 dBW/MHz
	Insat 2-C	Earth Station Antenna:	29-25 log (0)



Antenna Gain Contours

INTERNATIONAL TELECOMMUNICATION UNION

WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 126-E 31 August 1988 Original: English

COMMITTEE 6

Luxembourg

PROPOSAL FOR THE WORK OF THE CONFERENCE AGENDA ITEM 4

PROPOSAL FOR SIMPLIFICATION AND IMPROVEMENT OF ARTICLE 11 OF THE RADIO REGULATIONS

ARTICLE 11

Coordination of Frequency Assignments to Stations in Space Radiocommunication Service Except Stations in the Broadcasting Satellite Service and to Appropriate Terrestrial Stations¹

	Section 1 Procedures for the Advance
LUX/126/1	Publication of Information on
MOD	Planned Satellite Networks ²

NOC 1041 Publication of Information

LUX/126/2

MOD

ADD

1042

s1 (1) An administration (or one acting on behalf of a group of named administrations) which intends to establish a satellite system shall, prior to the coordination procedure in accordance with No. 1060 where applicable, send to the International Frequency Registration Board, not earlier than five years and preferably not later than two years before the date of bringing into service each satellite network of the planned system, the information listed in Appendix [3/4].

LUX/126/3

1042A A standard form of notice is used for advance publication, coordination, notification and registration. Each satellite network requires a separate form of notice.

<u>Reason:</u> Appendices 3 and 4 have been combined. This will make possible the design of one form of notice for advance publication and coordination. This form of notice could also be used for notification and registration. The use of a standard form for all steps will facilitate the mechanization of the process and should eventually allow administrations to send and receive this information using micro-computers and floppy diskette.

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LUX/126/4	MOD	A.11.1 in t	¹ For the coordination of frequency assignments to stations he broadcasting satellite service and other services in the uency bands 11 7-12 2 GHz (in Regions 2 and 3) and 11 7-12 5
		GHz	(in Region 1), see also Article 15.
LUX/126/5	NOC A.11.2 ² These procedures may be applicable to stations on board satellite launching vehicles.		
	MOD	1043	(2) Any amendments to the information sent concerning a planned satellite system in accordance with No. 1042 shall also be sent <u>on the standard form of notice</u> to the Board as soon as they become available.
LUX/126/6		<u>Reason:</u>	Submitting information on a standard form of notice facilitates updating.
2011, 120, 0	ADD	1043A	If amendments to the information involve: an orbital position outside the published service arc, a different frequency range or a different coverage area provision No. 1042 must be applied from the start for the satellite network being modified.
		<u>Reason:</u>	These types of amendments could materially affect the satellite systems which are the subject of other advance publications.
LUX/126/7			
	MOD	1044	(3) The Board shall publish within thirty days of receipt the information sent under Nos. 1042 and 1043 in a special section of its weekly circular. This information shall be published in the same format (standard form of notice) as the format in which it is received. Upon receipt of the first form of notice for a given satellite network the Board will assign a code to this network and

this code will henceforth be used to identify the satellite network through all stages of advance publication, coordination, notification and registration. All IFRB weekly circular letters must contain a table of contents giving its annexes.

and-shall--also,-when-the-weekly-circular-contains-such information,--so--advise--all--administrations--by--circular telegram.--The-circular-telegram-shall-include-the-frequency bands--to--be--used--and,--in--the--case---of--geostationary satellite,-the-orbital-position-of-the-space-station. <u>Reason:</u> Late publication of information submitted under No. 1042 creates hardships for administrations.

> The use of a standard form of notice should eventually allow administrations to submit information on diskette and this in turn will shorten the time required by the Board to publish.

> Associating a code with a satellite network ensures quick identification of the network and the status of the network with respect to advance publication, coordination, notification and registration. When a form of notice is first received by the IFRB it is assigned a code and this code identifies the network.

> The same code with a suffix to designate each of the above steps indicates which step the network has reached. For example these suffixes could be defined as follows:

A - advanced publication

- C coordination
- N notification

R - registration

A further numeric suffix would indicate the version of each of the above steps. For example the code XXXXA1 would indicate the first advance publication of network XXXX and code XXXXA2 would indicate the updated version of network XXXXA1 which may have resulted in the process of resolving interference problems caused by network XXXXA1.

LUX/126/8

MOD 1045

(4) If the information is found to be incomplete³, the Board shall <u>not</u> publish it under No. 1044 and <u>but shall</u> immediately seek, from the administration concerned any clarification and information not provided. In such cases, the period of four months specified in No. 1047 shall count from the date of publication, under No. 1044, of the complete information.

<u>Reason:</u> This will prevent incomplete notices from being published and thus adding to the workload.

NOC 1046 Comments on Published Information LUX/126/9

MOD 1047 \$2. If, after studying the information published under No. 1044, any administration is of the opinion that interference which may be unacceptable may be caused to its existing or planned space--radiocommunication--services satellite network, it shall, within four months after the the weekly circular publishing the complete date of information listed in Appendix [3/4], send its comments to A copy of these comments the administration concerned. If no such comments are shall also be sent to the Board. received from an administration within the period mentioned above, it may be assumed that that administration has no basic objections to the planned satellite network(s) of that system on which details have been published.

³ The Conference shall define what is meant by incomplete.

- 4 -ORB(2)/126-E
- <u>Reason:</u> To make explicit reference, to satellite network rather than space services since the coordination is done on a network basis.
- NOC 1048 to 1050

LUX/126/10 MOD

- the administration responsible for the plannea 1051 (a) system <u>network</u> shall first explore all possible means of meeting its requirements, taking into account the characteristics of the geostationary satellite networks of other systems, and without considering the possibility of adjustment to systems networks of other administrations. If no found, the administration such means can be free to apply to other concerned is then administrations concerned to solve these difficulties;
- NOC 1052 (b) an administration receiving a request under No. 1051 shall, in consultation with the requesting administration, explore all possible means of meeting requirements of the requesting administration, for example, be relocating one or more of its own geostationary space stations involved, or by changing the emissions, frequency usage (including changes in frequency bands) or other technical or operation characteristics;
- MOD 1053 (c) if after following the procedure outlined in Nos. 1051 and 1052 there are unresolved difficulties, the administrations concerned shall together make every possible resolve effort to these means of mutually acceptable difficulties by adjustments, for example, to geostationary space station locations and to other characteristics of the systems networks involved in order to provide for the normal operation of both the planned and existing systems.
 - <u>Reason:</u> To emphasize that the resolution of difficulties is done on a network basis.
 - NOC 1054 (3) In their attempt to resolve the difficulties mentioned above administrations may seek the assistance of the Board.
 - NOC 1055 Results of Advance Publication

LUX/126/12

LUX/126/11

MOD 1056

s4. An administration on behalf of which details of planned satellite networks have been published in accordance with the provisions of Nos. 1042 to 1044 shall, after the period of four months specified in No. 1047, inform the Board whether or not comments provided for in No. 1047 have been received and of the progress made in resolving any difficulties. Additional information on the progress made in resolving any remaining difficulties shall be sent to the Board at intervals not exceeding six months prior to the commencement of coordination or the sending of the notices to the Board. The Board shall within thirty days of receipt publish this information in a special section of its weekly circular and-shall-also,-when-the-weekly-eircular contains-such-information;-so-inform-all--administrations-by eircular-telegram.

- 5 -ORB(2)/126-E

<u>Reason:</u> To allow for timely publication of this information. It is proposed in MOD No. 1044 that the IFRB weekly circular letter contain a table of contents giving its annexes.

LUX/126/13

1058

MOD

5. In complying with the provisions of Nos. 1049 to 1054, an administration responsible for a planned satellite network shall after the four month period referred to in MOD. No. 1056, if necessary, initiate the coordination procedure. -if-necessary, -defer-its-commencement-of-the coordination-procedure,-or,-where-this-is-not-applicable, the-sending-of-its-notices-to-the-Board,-by-six-months-after the-date-of-the-weekly-circular-containing-the--information listed-in-Appendix-4-on-the-relevant-satellite-network. However,-in-respect-to-those-administrations-with-which difficulties-have--been-resolved-or-which-have-responded favourably,-the-coordination-procedures,--where-applicable, may-be--commenced-prior-to-the-expiry-of-the-six-months mentioned-above:

<u>Reason:</u> Coordination is a continuing process.

- NOC Section II. Coordination of Frequency Assignments to a Space Station on a Geostationary Satellite or an Earth Station Communicating with such a Space Station in Relation to Stations of Other Geostationary-Satellite Networks
- NOC 1059 Requirement for Coordination

LUX/126/14

MOD

1060 **s** 6. (1) Before an administration (or, in-the-ease-of-a space--station; one acting on behalf of a group of named administrations) responsible for a satellite network notifies to the Board or brings into use any associated frequency assignment to a space station on a geostationary satellite or to an earth station that is to communicate with a space station on a geostationary satellite, it shall, except in the cases described in Nos. 1066 to 1071, effect coordination of the assignment with any other administration whose assignment, for a space station on a geostationary satellite or for an earth station that communicates with a space station on a geostation on a geostationary satellite or for an earth station that communicates with a space station on a geostationary satellite, might be affected.

Reason: Consequential to coordination on a network basis.

NOC 1061 to 1071

NOC 1072 Coordination Data LUX/126/15

MOD 1073 s 7. (1) For the purpose of effecting coordination, the administration requesting coordination shall send to any other administration concerned under No. 1060 all the information listed in Appendix [3/4] required for the coordination. The request concerning coordination of a space station or an associated earth station may specify all or some of the frequency assignments expected to be used by that space station, but thereafter each assignment shall be dealt with individually.

<u>Reason:</u> Consequential to the merging of Appendices 3 and 4.

LUX/126/16

MOD 1074 (2) The administration requesting coordination shall at the same time send to the Board a copy of the request for coordination, with all the information listed in Appendix [3/4] required for coordination and the name(s) of the administration(s) with which coordination is sought.

<u>Reason:</u> Consequential to the merging of Appendices 3 and 4.

An administration believing that the provisions of Nos. 1066 to 1071 apply to its planned assignment may send to the Board the relevant information listed in Appendix 3, either under this provision or in accordance with Nos. 1488 to 1491. In-the-latter-case,-the-Board-shall-immediately inform-all-administrations-by-eircular-telegram.

<u>Reason:</u> It is proposed in MOD No. 1044 that all IFRB weekly circular letters contain a table of contents giving its annexes.

NOC 1075 s 8. On receipt of the information referred to in No. 1074, the Board shall:

LUX/126/17

- MOD 1076
- a) immediately examine this information with respect to its conformity with No. 1503 and;-as-soon-as possible;-send--a-telegram--to-all-administrations indicating-the--identity-of-the-satellite-network; its-findings-with-respect-to--No:--1503--and--the <u>The</u> date of receipt of this information this-date shall be considered as the date from which the assignment will be taken into account for coordination;
- <u>Reason:</u> It is proposed in MOD No. 1044 that all IFRB weekly circular letters contain a table of contents giving its annexes.
- NOC 1077 b) examine the information received with a view to identifying those administrations whose services might be affected, in accordance with No. 1060, and inform the administrations concerned to interactions

LUX/126/18

MOD 1078

- c) publish within thirty days of receipt a special section of its weekly circular the information received under No. 1074 and the result of the examination under Nos. 1076 and 1077, together with a reference to the weekly circulars in which details of the satellite network were published in accordance with Section I of this Article. When the-weekly-circular-contains-such-information,-the Board--shall--so--inform-all--administrations--by circular-telegram.
- <u>Reason:</u> It is proposed in MOD No. 1044 that all IFRB weekly circular letters contain a table of contents giving its annexes.
- NOC 1079 to 1082

NOC 1083 Examination of Coordination Data and Agreement Between Administrations

LUX/126/19

- MOD 1084 (1) On receipt of the coordination data, s 11. an administration shall promptly examine the matter with regard to interference¹ which would be caused to the service rendered by its stations in respect of which coordination is sought under No. 1060 or caused by these stations. In so doing, it shall have regard to the proposed date of bringing into use of the assignment for which coordination was requested. It shall then, within four months from the date of the relevant weekly circular, notify the administration requesting coordination of its agreement. If, however, the administration with which coordination is sought does not agree, it shall, within the same period, send to the administration seeking coordination the technical details upon which its disagreement is based, including those relevant characteristics contained in Appendix [3/4] which have not previously been notified to the Board, and make such suggestions as it is able to offer with a view to a satisfactory solution of the problem. A copy of these comments shall also be sent to the Board. NOC 1084.1
 - NOC 1085 (2) Either the administration seeking coordination or an administration with which coordination is sought may request additional information which it may require to assess the interference to the services concerned.
 - 1086 Results of Coordination

LUX/126/20

MOD 1087

- s 12. An administration which has initiated a coordination procedure under the provisions of Nos. 1060 to 1074 shall communicate to the Board, on expiry of the period of four months following the date of the relevant weekly circular mentioned in No. 1078, the names of the administrations with which an agreement has been reached and any changes in the characteristics of its frequency assignment. The changes to the characteristics shall be done by submitting the information on the standard form of notice. It shall also inform the Board of the progress made in effecting coordination with the other administrations or of any difficulties. Such a communication shall be made to the Board every six months after the above-mentioned period. The Board shall within thirty days of receipt publish this information in a special section of its weekly circular-and, when-the--weekly-circular-contains-information-on-changes-in the--characteristics--published;--its--shall--so--inform-all administrations-by-circular-telegram.
- <u>Reason:</u> To insure that information is submitted in standard format. It is proposed in MOD. No. 1044 that all IFRB weekly circular letters contain a table of contents giving its annexes.
- NOC 1088 to 1094
- NOC 1095 Action to Be Taken by the IFRB
- MOD 1096 s 14. (1) Where the Board receives a request under No. 1090, it shall within ten days of receipt send a telegram to the administration concerned requesting immediate acknowledgement.
 - MOD 1097 (2) Where the Board receives an acknowledgement following its action under No. 1096, or where the Board receives a request under No. 1091, it shall within ten days of receipt send a telegram to the administration concerned requesting an early decision in the matter.
 - NOC 1098 (3) Where the Board receives a request under No. 1093, it shall endeavour to effect coordination in accordance with the provisions of No. 1060. The Board shall also act in accordance with No.s 1075 to 1078. Where the Board receives no acknowledgement to its request for coordination within the periods specified in No. 1082 it shall act in accordance with No. 1096.

LUX/126/23

LUX/126/21

MOD 1099

(4) Where necessary, as part of the procedure under Nos. **1089** to **1094**, the Board shall assess the interference. In any case, the Board shall inform <u>within thirty days of</u> <u>receipt</u> the administrations concerned of the results obtained.

NOC 1100 to 1105
INTERNATIONAL TELECOMMUNICATION UNION

WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 127-E 31 August 1988 Original: English

COMMITTEE 6 WORKING GROUP OF THE PLENARY

Luxembourg

PROPOSAL FOR THE WORK OF THE CONFERENCE AGENDA ITEM 4

PROPOSAL FOR COMBINING AND REVISING APPENDICES 3 AND 4 OF THE RADIO REGULATIONS

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LUX/127/1

APPENDIX [3/4]

NOTICES RELATING TO SPACE RADIOCOMMUNICATIONS AND RADIO ASTRONOMY STATIONS

(See Articles 11 and 13)

Section A. General Instructions

1. A separate <u>standard form of</u> notice¹ shall be sent to the International Frequency Registration Board for notifying:

- each new frequency assignments in a satellite network² to an earth station for transmitting or to be received or a space station for transmitting or to be received;
- any change in the characteristics of a frequency assignment recorded in the Master International Frequency Register (hereinafter called the Master Register);
- any total deletion of a frequency assignment recorded in the Master Register.

<u>Reason:</u> Consequential to notification on a network basis.

2. When submitting notices for frequency assignments of a satellite network, separate notices shall be submitted to the Board for each assignment of a satellite network. In each of these cases where the basic characteristics are identical, with the exception of the frequency, a single notice may be submitted covering all basic characteristics and listing the assigned frequencies. In the case of a reflecting satellite system, only earth transmitting and receiving assignments shall be notified.

<u>Reason:</u> Consequential to notification on a network basis.

¹The standard form of notice is used for advance publication, coordination, notification and registration.

²Note: If the same antenna is used for Ku and C band operation the beams associated with each band will be different and by definition (see LUX/ /7) each frequency band will be part of a different satellite network.

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3. In the case of a satellite system employing multiple space stations with the same general characteristics, a separate notice shall be submitted to the Board for each space station for transmitting or receiving assignments:

- when it is aboard a geostationary satellite;
- when it is aboard a non-geostationary satellite except when a number of satellites have the same radio frequency characteristics and orbital characteristics (excluding the ascending node position); in the latter case, one notice covering all such space stations may be submitted to the Board.

4. The following basic information shall be shown on the notice:

- a) the serial number of the notice <u>as assigned by the administration</u> and the date on which the notice is sent to the Board;
- b) the name <u>symbol</u> of the notifying administration. <u>Symbols from</u> the Preface to the International Frequency List should be used;
- c) sufficient data to identify the particular satellite network in which the earth or space station will operate, including in the case of a geostationary satellite its orbital position;
- d) whether the notice reflects:
 - 1) the first use of a frequency by a station;
 - a change in the characteristics of a frequency assignment recorded in the Master Register (indicate whether the change is a replacement, addition or deletion of existing characteristics);
 - 3) a deletion of an assignment in all of its notified characteristics;
- e) reference to the IFRB weekly circular providing the advance publication information required in accordance with No. 1042 <u>and</u> <u>the code assigned by the IFRB to the satellite network;</u>
- f) basic characteristics as outlined in Section B, C, D, E, or F as appropriate;
- g) any other information which the administration considers to be relevant, e.g., any factors taken into account when applying Appendix 28 for determination of the coordination area and also any indication that the assignment concerned would be operating in accordance with No. 342, information concerning the use of the notified frequency if such use is restricted, or, in the case of notices pertaining to space stations, if the transmissions of the station are to be permanently switched off after a certain period.

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Section B. GENERAL CHARACTERISTICS RELATING TO A SATELLITE NETWORK

B1 NAME OF THE SATELLITE NETWORK

Indicate the identity of the satellite network and the name of the associated space station.

B2 DATE OF BRINGING INTO USE

a) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) of bringing the frequency assignment into use.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in Section <u>B, C, D, E, and F</u> the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

B3 OPERATING ADMINISTRATION OR COMPANY

Give the name of the operating administration or company and the postal and telegraphic addresses of the administration to which communications should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of stations (see Article 22).

B4 UPLINK AND DOWNLINK BEAMS OF THE SATELLITE NETWORK

Indicate the names or designations given to the uplink and downlink beams.

B5 TRANSLATION FREQUENCY

.

Indicate the translation frequency in kHz.

B6 ORBITAL INFORMATION RELATING TO THE SPACE STATION

a) In the case of a space station aboard a geostationary satellite, give the planned nominal geographical longitude on the geostationarysatellite orbit and the planned longitudinal tolerance and inclination excursion. Indicate also:

 the arc of the geostationary-satellite orbit over which the space station is visible, at a minimum angle of elevation of 10° at the Earth's surface, from its associated earth stations or service areas;

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- 2) the arc of the geostationary-satellite orbit within which the space station could provide the required service to its associated earth stations or service areas;
- 3) in the event that the arc defined in paragraph 2) above is less than the are defined in paragraph 1) above, provide the reasons therefor.

NOTE: The arcs specified in 1) and 2) will be indicated by the geographical longitude of the extremes of these arcs on the geostationary-satellite orbit.

b) In the case of space station(s) aboard non-geostationary satellite(s), indicate the angle of inclination of the orbit, the period, the altitudes in kilometres of the apogee and perigee of the space station(s) and the number of satellites used having the same characteristics.

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Section C. BASIC CHARACTERISTICS TO BE FURNISHED IN NOTICES RELATING TO FREQUENCIES USED IN THE EARTH-SPACE SEGMENT

C1 ASSIGNED FREQUENCY (FREQUENCIES) AND FREQUENCY BAND

a) Assigned frequency (frequencies)

Indicate the assigned frequency (frequencies) in MHz.

b) Assigned frequency band

Indicate the bandwidth of the assigned frequency band in kHz (see No. 141).

C2 CLASS OF STATION AND NATURE OF SERVICE

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10.

C3 UPLINK SERVICE AREA

a) Indicate the name by which the station is known or the name of the locality in which it is situated.

b) Indicate the country or geographical area in which the station is located. Symbols from the Preface to International Frequency List should be used.

c) Indicate the geographical coordinates of the transmitter site (longitude and latitude in degrees and minutes).

d) If a "typical" earth station is used, indicate the coordinates (maximum 10) or eirp contour plotted on a radial satellicentric projection delineating the service area.

C4 EARTH STATION TRANSMITTING ANTENNA CHARACTERISTICS

a) Indicate the isotropic or absolute gain (dB) of the antenna in the direction of the maximum radiation (see No. 154).

b) Indicate the beamwidth in degrees between the half power points (describe in detail if not symmetrical).

c) Either attach the measured radiation diagram of the antenna (taking as a reference the direction of maximum radiation) or indicate the reference radiation diagram to be used for coordination.

d) Indicate graphically the horizon elevation angle for each azimuth

around the earth station.

e) Indicate in degrees from the horizontal plane the planned minimum operating angle of elevation of the antenna in the direction of maximum radiation.

f) Indicate in degrees, clockwise from True North, the planned range of operating azimuthal angles for the direction of maximum radiation.

g) Indicate the type of polarization of the transmitted wave in the direction of maximum radiation; also indicate the direction in the case of circular polarization and the plane in the case of linear polarization. (See Nos. 148 and 149.)

h) Indicate the altitude (metres) of the antenna above mean sea level.

C6 SPACE STATION RECEIVING ANTENNA CHARACTERISTICS

For each receiving beam:

a) in the case of a space station aboard a geostationary satellite that is intended to communicate with an earth station, indicate the maximum gain of the space station receiving antenna and the gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite on to a plane perpendicular to the axis from the centre of the Earth to the satellite. The isotropic or absolute gain at each contour which corresponds to a gain of 2, 4, 6, 10 and 20 dB and at 20 dB intervals thereafter, as necessary, below the maximum gain, shall be indicated. Whenever possible the gain contours of the space station receiving antenna should also be provided in the form of a numerical equation or in tabular form;

b) in the case of a space station aboard a geostationary satellite in which the antenna radiation beam is directed towards another satellite, or in the case of a space station aboard a nongeostationary satellite, indicate the isotropic or absolute gain of the space station receiving antenna in the direction of maximum radiation and indicate the antenna radiation pattern, taking the gain in the direction of maximum radiation as a reference;

c) indicate the type of polarization of the antenna. In the case of circular polarization, indicate the direction of polarization (see Nos. 148 and 149). In the case of linear polarization, indicate the angle (in degrees) measured anticlockwise in a plane normal to the beam axis from the equatorial plane to the electric vector of the wave as seen from the satellite. Indicate also if consent is given to the general use of this information in the determination of the need for coordination with other satellite networks according to Appendix 29.

d) indicate, for a geostationary satellite, the pointing accuracy of the antenna;

e) in the case of a space station aboard a geostationary satellite

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operating in a band allocated in the Earth-to-space direction and in the space-to-Earth direction, also indicate the gain of the space station receiving antenna in the direction of those parts of the geostationary-satellite orbit which are not obstructed by the Earth, by means of a diagram showing estimated antenna gain versus orbit longitude.

C7 NOISE TEMPERATURE OF SPACE RECEIVING STATION

Indicate, in kelvins, the total receiving system noise temperature referred to the output of the receiving antenna of the space station.

C8 CLASS OF EMISSION, NECESSARY BANDWIDTH AND DESCRIPTION OF THE TRANSMISSION

In accordance with Article 4 and Appendix 6:

- a) indicate the class of emission;
- b) indicate the carrier frequency or frequencies of the emissions

c) indicate, for each carrier, the class of emission, necessary bandwidth and description of the transmission.

C9 MODULATION CHARACTERISTICS

For each carrier, according to the nature of the signal modulating the carrier and the type of modulation, indicate the following characteristics:

a) carrier frequency modulated by a frequency-division multi-channel telephony baseband (FDM/FM) or by a signal that can be represented by a multi-channel telephony baseband: indicate the lowest and highest frequencies of the baseband and the r.m.s. frequency deviation of the test tone as a function of baseband frequency;

b) carrier frequency modulated by a television signa: indicate the standard of the television signal (including, where appropriate, the standard used for colour), the frequency deviation for the reference frequency of the pre-emphasis characteristics and the pre-emphasis characteristic itself. Also indicate, where applicable, the characteristics of the multiplexing of the video signal and the sound signal(s) or other signals;

c) carrier phase-shift modulated by a pulse code modulation signal (PCM/PSK): indicate the bit rate and the number of phases;

d) amplitude modulated carrier (including single-sideband): indicate as precisely as possible the nature of the modulating signal and the kind of amplitude modulation used;

e) for all other types of modulation, provide such particulars as

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may be useful for an interference study;

f) for any type of modulation as applicable, indicate the characteristics of energy dispersal, such as the peak-to-peak frequency deviation (MHz) and the sweep frequency (kHz) of the energy dispersal wave form.

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Section D. BASIC CHARACTERISTICS TO BE FURNISHED IN NOTICES RELATING TO FREQUENCIES USED IN SPACE-EARTH SEGMENT

ASSIGNED FREQUENCY (FREQUENCIES) D1

a) Assigned Frequency (Frequencies)

Indicate the assigned frequency (frequencies) in MHz.

b) Assigned frequency band

Indicate the bandwidth of the assigned frequency band in kHz (see No. 141).

D2 CLASS OF STATION AND NATURE OF SERVICE

Indicate the class of station and nature of service performed, using the symbols as shown in Appendix 10.

D3 DOWNLINK SERVICE AREA

Indicate the name by which the receiving earth station is known a) or the name of the locality in which it is situated.

b) Indicate the country or geographical area in which the station is located. Symbols from the Preface to the International Frequency List should be used.

c) Indicate the geographical coordinates (longitude and Latitude in 🖍 degrees and minutes).

d) If a "typical" earth station is used indicate the coordinates (maximum 10) or eirp contour plotted on a radial satellicentric projection delineating the service area.

CHARACTERISTICS AND POWER OF SPACE TRANSMITTING STATION D4

Indicate for each carrier the peak envelope power (dBW) supplied a) to the input of the antenna.

b) Indicate the total peak envelope power (dBW) and the maximum power density per Hz $(dB(W/Hz))^3$ at the input of the antenna, averaged

³The most recent version of CCIR Report 792 should be used to the extent applicable in calculating the maximum power density per Hz.

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over the worst 4 kHz band for carriers below 15 GHz or averaged over the worst 1 MHz band for carriers above 15 GHz.

c) Indicate for each carrier the minimum value of the peak envelope power supplied to the input of the antenna.

D5 SPACE STATION TRANSMITTING ANTENNA CHARACTERISTICS

For each service area or antenna radiation beam:

a) in the case of a space station aboard a geostationary satellite that is intended to communicate with an earth station, indicate the maximum gain of the space station transmitting antenna and the gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite on to a plane perpendicular to the axis from the centre of the Earth to the satellite. The isotropic or absolute gain at each contour which corresponds to a gain of 2, 4, 6, 10 and 20 dB and at 20 dB intervals thereafter, as necessary, below the maximum gain, shall be indicated. Whenever possible the gain contours of the space station transmitting antenna should also be provided in the form of a numerical equation or in tabular form;

)

b) in the case of a space station aboard a geostationary satellite in which the antenna radiation beam is directed towards another satellite, or in the case of a space station aboard a nongeostationary satellite, indicate the isotropic or absolute gain of the space station transmitting antenna in the direction of maximum radiation and indicate the antenna radiation pattern, taking the gain in the direction of maximum radiation as a reference;

c) indicate the type of polarization of the radiation emitted by the antenna. In the case of circular polarization, indicate the direction of polarization (see Nos. 148 and 149). In the case of linear polarization, indicate the angle (in degrees) measured anticlockwise in a plane normal to the beam axis from the equatorial plane to the electric vector of the wave as seen from the satellite;

d) for a geostationary satellite, indicate the pointing accuracy of the antenna;

e) in the case of a space station aboard a geostationary satellite operating in a band allocated in the Earth-to-space direction and in the space-to-Earth direction, also indicate the gain of the space station transmitting antenna in the direction of those parts of the geostationary-satellite orbit which are not obstructed by the Earth, by means of a diagram showing estimated antenna gain versus orbit longitude.

D6 EARTH STATION RECEIVING ANTENNA CHARACTERISTICS

Earth station receiving antenna characteristics:

a) Indicate the isotropic or absolute gain (dB) of the antenna in

the direction of maximum radiation (see No. 154).

b) Indicate the beamwidth in degrees between the half power points (describe in detail if not symmetrical).

c) Either attach the measured radiation diagram of the antenna (taking as a reference the direction of maximum radiation) or indicate the reference radiation diagram to be used for coordination.

d) Indicate graphically the horizon elevation angle for each azimuth around the earth station.

e) Indicate in degrees the horizontal plan the planned minimum operating angle of elevation of the antenna in the direction of maximum radiation.

f) Indicate in degrees, clockwise from True North, the planned range of operating azimuthal angles for the direction of maximum radiation.

g) Indicate the altitude (metres) of the antenna above mean sea level.

h) Indicate the type of polarization of the antenna. In the case of circular polarization, indicate the direction of polarization (see Nos. 148 and 149). In the case of linear polarization, indicate the plane of polarization. Indicate also if consent is given to the general use of this information in the determination of the need for coordination with other satellite networks according to Appendix 29.

D7 NOISE TEMPERATURE, LINK NOISE TEMPERATURE AND TRANSMISSION GAIN

a) Indicate, in kelvins, the lowest total receiving system noise temperature referred to the output of the receiving antenna of the earth station under "quiet sky conditions". This value shall be indicated for the nominal value of the angle of elevation when the associated transmitting station is aboard a geostationary satellite and, in other cases, for the minimum value of angle of elevation.

b) When simple frequency-changing transponders are used on the associated space station, indicate the lowest equivalent satellite link noise temperatures under the conditions of Item 9a) for each assignment (see No. 168).

c) Indicate the value of transmission gain associated with each equivalent satellite link noise temperature given in Item 9b). The transmission gain is evaluated from the output of the receiving antenna of the space station to the output of the receiving antenna of the earth station.

D8 CLASS OF EMISSION, NECESSARY BANDWIDTH AND DESCRIPTION OF TRANSMISSION

In accordance with Article 4 and Appendix 6:

•

a) indicate the class of emission;

b) indicate the carrier frequency or frequencies of the emission(s);

c) indicate for each carrier, the class of emission, necessary bandwidth and description of transmission.

D9 MODULATION CHARACTERISTICS

For each carrier, according to the nature of the signal modulating the carrier and the type of modulation, indicate the following characteristics:

a) carrier frequency modulated by a frequency-division multi-channel telephony baseband (FDM/FM) or by a signal that can be represented by a multi-channel telephony baseband: indicate the lowest and highest frequencies of the baseband and the r.m.s. frequency deviation of the test tone as a function of baseband frequency;

b) carrier frequency modulated by a television signa: indicate the standard of the television signal (including, where appropriate, the standard used for colour), the frequency deviation for the reference frequency of the pre-emphasis characteristics and the pre-emphasis characteristic itself. Also indicate, where applicable, the characteristics of the multiplexing of the video signal and the sound signal(s) or other signals;

c) carrier phase-shift modulated by a pulse code modulation signal (PCM/PSK): indicate the bit rate and the number of phases;

d) amplitude modulated carrier (including single-sideband): indicate as precisely as possible the nature of the modulating signal and the kind of amplitude modulation used;

e) for all other types of modulation, provide such particulars as may be useful for an interference study;

f) for any type of modulation as applicable, indicate the characteristics of energy dispersal.

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Section E. COORDINATION AND AGREEMENTS

E1 COORDINATION

Give the name of any administration with which the use of this frequency has been successfully coordinated in accordance with Nos. 1060 and 1107 and, if appropriate, the name of any administration with which coordination has been sought but not effected.

E2 AGREEMENTS

Give, if appropriate, the name of any administration with which agreement has been effected to exceed the limits prescribed in these Regulations, and the contents of such agreement.

Section F. BASIC CHARACTERISTICS TO BE FURNISHED IN NOTICES RELATING TO FREQUENCIES TO BE RECEIVED BY RADIO ASTRONOMY STATIONS

- UNCHANGED -

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 128-E 31 August 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988.

COMMITTEE 5

Note by the Chairman of Committee 5

FEEDER-LINK REQUIREMENTS

1. The feeder-link requirements submitted for the broadcasting-satellite service in Regions 1 and 3 and used during the second series of planning exercises (Annex 2 of Document 17) have been published on microfiche only (Annex 1 of Document 17).

2. To facilitate the work of Delegations, the requirements of each administration have also been printed on paper and <u>one copy</u> of these national requirements will be distributed to the Delegation concerned.

3. This distribution to Delegations will take place today, Wednesday, 31 August 1988 at 1400 hours on level D of the CICG. One Member of the Delegation will be asked to acknowledge receipt on behalf of the Delegation.

4. Delegations are invited to review the requirement used. Any correction or modification necessary or requested (in particular columns 19 and 22 concerning the rain climatic zone) shall be appropriately indicated on a copy of the hand-out referred to in paragraph 3. Such a marked-up copy of the requirement only shall be returned to the D level in the CICG by Monday, 5 September 1988, 1800 hours, Geneva time. Timely return of the marked copy will ensure the inclusion of the modifications in the planning exercise to be carried out later in week two. In the absence of any requested modification, the requirements as published in Document 17 will be used.

5. In the case where an administration wishes to submit a new requirement, it is invited to apply the provisions of IFRB Circular-letter No. 664 of 5 August 1986, i.e. the procedure used to establish the initial list of requirements.

D. SAUVET-GOICHON Chairman of Committee 5

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INTERNATIONAL TELECOMMUNICATION UNION

ORDOCO WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 129-E 5 September 1988 Original: English

COMMITTEE 4

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 4

(ALLOTMENT PLANNING AND ASSOCIATED PROCEDURES)

Tuesday, 30 August 1988 at 1550 hrs

Chairman: Mr. S. PINHEIRO (Brazil)

Subjects discussed:

Documents

- 1. Designation of Chairman of Working Group 4-A
- 2. CCIR presentation on intersessional work related to the Allotment Plan
- 3. Choice of 300 MHz in the band 6 425 7 075 MHz

3 + Corr.1

7, 12, 19 + Corrs.1 + 2, 34, 38 + Corrs.1 + 2, 46, 53, 69, 81

7, 12, 19 + Corrs.1 + 2, 33, 34, 53, 59, 65, 66, 69, 81, 83

4. Existing systems

1. Designation of Chairman of Working Group 4-A

1.1 The <u>Chairman</u> suggested that Mr. Y. Ito (Japan) should act as Chairman of Working Group 4-A.

It was so <u>decided</u>.

2. <u>CCIR presentation on intersessional work related to the Allotment Plan</u> (Document 3 + Corr.1)

2.1 The <u>Chairman of JIWP ORB(2)</u>, introducing the document, said that, in the interests of economy and efficiency, most of the CCIR's technical work for the current session had been carried out in CCIR IWPs and JIWPs. The consolidated results of that work had been considered by JIWP ORB(2) in December 1987, and it had been decided that the CCIR report should consist of three documents: the executive summary giving an overview of the information in the main report, in which the reference numbers in parentheses related to sections of the Report of the First Session and those in square brackets to the main CCIR report itself, Part I, which provided the information that would be of interest to Committee 4, particulary Working Group 4-A; and Part II with which Committee 5 would be mainly concerned. It should be noted that the CCIR had not adopted, proposed or recommended any specific values: that was a task for Working Group 4-A or the Working Group of the Plenary.

The Committee took note of the document.

3. <u>Choice of 300 MHz in the band 6 425 - 7 075 MHz</u> (Documents 7, 12, 19 + Corrs.1 + 2, 34, 38, + Corrs.1 + 2, 46, 53, 69, 81)

3.1 The <u>Chairman</u> asked delegates to indicate whether they were prepared to confirm their acceptance of the values proposed by the IFRB for the 300 MHz to be chosen for the up-link in the band concerned.

3.2 The <u>delegates of the USSR</u>, the <u>United States</u>, the <u>Federal Republic of Germany</u>, speaking on behalf of the 21 administrations listed in Document 38 + Corrs.1 and 2, <u>Brazil</u>, <u>Kenya</u>, <u>Côte d'Ivoire</u>, <u>China</u>, <u>Venezuela</u>, <u>Mexico</u>, <u>Indonesia</u> and <u>Colombia</u> endorsed the values proposed by the IFRB.

3.3 The <u>delegate of Japan</u> observed that for the reasons given in Annex 1-6 to Document 53, his Administration had proposed the choice of 6 570 - 6 870 MHz. In view of the majority favouring the IFRB proposal, however, Japan would not press that view.

3.4 The <u>delegate of India</u> said that his Administration had proposed the choice of 6 425 - 6 725 MHz, for reasons similar to those advanced by Japan. He too would not press that proposal, but wondered whether at a later stage it might not prove possible to allow for different choices of the up-link band provided that did not affect the Plan.

3.5 The <u>Chairman</u> said that although that point might be raised later, the decision on the choice of the band should not be left open at that stage. He suggested that the Committee should endorse the values of 6 725 - 7 025 MHz proposed by the IFRB.

It was so <u>decided</u>.

4. <u>Existing systems</u> (Documents 7, 12, 19 + Corrs.1 + 2, 33, 34, 53, 59, 65, 66, 69, 81, 83)

4.1 The <u>Chairman</u> suggested that an ad hoc Working Group should be set up to prepare modifications, as far as possible, to the characteristics of existing systems, in agreement with the owner administrations, in order to facilitate the integration of those systems in the Plan and the final decision on how existing systems were to be treated. The Group could be presided over by Mr. C.T. N'Diongue (Senegal), Vice-Chairman of the Committee.

It was so <u>decided</u>.

4.2 The <u>Chairman</u> said that the Committee also had to decide whether to endorse the definition of existing systems given in section 3.3.4.9 of the Report of the First Session. Unless there was very widespread support for any change, it would be advisable to abide by a decision already taken by the Conference. The IFRB might wish to give some additional information on the subject.

4.3 The Vice-Chairman of the IFRB pointed out that Annex 1A to Chapter 2 of Document 19 contained very detailed information on the characteristics of all the existing systems as defined by the First Session and that Annex 1B gave a list of all the existing networks within the 300 MHz band selected for planning. In the first list, only two space stations had not been taken into account in the planning exercise, although that did not mean that they had been eliminated from the list: those were the Italian SIRIO network, not taken into account because the duration of life at the time of notification had been announced as one year, and the USSR POTOK network, which used the bands in the reverse direction, whereas terrestrial services had not been taken into account in planning.

Of the networks listed in Annex 1A, some were at the operational stage, some at the coordination stage and others at the advance publication stage. The First Session had decided that the adjustments to be adopted for existing systems should take account of their stage of development, a point that the ad hoc Working Group should bear in mind.

In addition to the existing systems as defined by the First Session, 16 new networks had been notified, none of them in the 4.6 GHz band, 12 in the 11 GHz band and four in the 13 GHz band. Only three of those networks were at the coordination stage, all the rest being at the advance publication stage.

4.4 The <u>delegates of the USSR</u>, the <u>United States</u>, <u>France</u>, <u>Algeria</u>, <u>Kenya</u>, <u>Côte d'Ivoire</u> and <u>Senegal</u> said that they could accept the definition in section 3.3.4.9 of the Report of the First Session. The <u>delegate of Canada</u> said that his Administration had proposed a slightly different wording of the definition on page 14 of Document 53 and perhaps that non-substantive change could be considered in the ad hoc Working Group.

4.5 The <u>delegate of Luxembourg</u>, referring to proposal LUX/66/7 in Document 66, said that in his Administration's opinion the reference to the receipt of information of advance publication by the IFRB before 8 August 1985 was misleading. For example, the parameters taken into account by the IFRB for his country's GDL system were not those supplied by his Administration.

4.6 The <u>delegate of Papua-New Guinea</u> said that, although his Administration had no objection to the definition, it considered that since there was no moratorium on satellite systems, account should be taken of all systems observing the existing rules. It should be borne in mind that modifications were very often made to systems at the coordination stage and that the use of the latest information on existing systems could only facilitate the elaboration of a generally satisfactory allotment plan.

4.7 The <u>delegate of Pakistan</u> said that information for advance publication concerning a satellite network of his Administration had been submitted to the IFRB before 8 August 1985 but that the network had been omitted from the list of existing systems, presumably because other services added to the system had been notified after that date. The additions should not be regarded as modifications and the original system should have been taken into account in the planning exercise.

4.8 The <u>Vice-Chairman of the IFRB</u> said that it was for the Conference to decide whether the planning exercise should take account of modified networks or only of the characteristics published before the deadline. In at least two cases, the Board had considered that systems had been modified to such an extent that they could not be included in the exercise.

4.9 The <u>Chairman</u> noted that the Committee endorsed the definition of existing systems adopted at the First Session and suggested that the question of modifications should be discussed in the ad hoc Working Group in light of a document the IFRB would prepare on the subject.

It was so <u>agreed</u>.

The meeting rose at 1700 hours.

The Secretary:

F.S. LEITE

The Chairman

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S. PINHEIRO

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ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTULZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Corrigendum No. 1 to Document 130-E 16 September 1988 Original : English

COMMITTEE 4

SUMMARY RECORDS

OF THE

THIRD MEETING OF COMMITTEE 4

Amend paragraph 2.5 as follows : 1.

> "2.5 The delegate of Canada said that proposal CAN/59/3 (Document 59), arrived at after lengthy study, described in detail the regulatory procedures associated with the concept of an individual compatible PDA. However, Canada could also see advantages in the common overlapping PDA concept but, as described in CAN/59/3, with a number of differences of detail compared to the United States proposal."

2. In the first line of paragraph 2.22, delete the words "had three" so that the text reads :

"2.22 The delegate of Japan said that his Administration had Orbit II programs"

3. Delete the last part of paragraph 3.17 so that it reads :

"3.17 The delegations of Algeria, Côte d'Ivoire, Ecuador, Kenya and Zimbabwe were in favour of including subregional systems in the plan from the beginning."

INTERNATIONAL TELECOMMUNICATION UNION

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 130-E 2 September 1988 Original: English

COMMITTEE 4

SUMMARY RECORD

OF THE

THIRD MEETING OF COMMITTEE 4

(ALLOTMENT PLANNING AND ASSOCIATED PROCEDURES)

Wednesday, 31 August 1988, at 1400 hrs

Chairman: Mr. S. PINHEIRO (Brazil)

Subjects discussed:

- 1. Multi-band or separate plan
- 2. Predetermined arc

3. Subregional beams

Documents

7, 12, 19, 48, 49, 59, 82, 97, 118

7, 12, 19, 53, 59, 66, 81, 82, 97

5, 7, 12, 53, 59, 66, 84, 88, 95, 120

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1. <u>Multi-band or separate band plan</u> (Documents 7, 12, 19, 48, 49, 59, 65, 82, 97 and 118).

1.2 The <u>delegate of the USSR</u> said that although Document 7 contained no specific proposal on the subject his Delegation would prefer a multi-band plan .

1.3 The <u>delegates of the United States</u> (Document 12) and <u>Australia</u> (Document 49) said their proposals were for a multi-band plan. However, they would like the option of a separate band plan kept open in case a multi-band plan proved impossible in practice.

1.4 The <u>delegates of Brazil</u> (Document 48) <u>Canada</u> (Document 59), <u>Algeria</u> (Document 65), <u>Senegal</u> (Document 82), <u>Mexico</u> (Document 97) and <u>China</u> (Document 118) said that, for economic reasons, their proposals were in favour of a multi-band plan.

The Committee <u>decided</u> to recommend that the plan be prepared on a multi-band basis.

2. <u>Predetermined arc</u> (Documents 7, 12, 19, 53, 59, 66, 81, 82 and 97)

2.1 The <u>Chairman</u> reassured the <u>delegates of the USSR</u> and <u>Cuba</u>, who stressed the need for a specified orbital position for each allotment, that the decision of the First Session that every ITU Member should have at least one allotment in the plan consisting of an orbital position in a predetermined arc was not open for re-discussion; the issue before the Committee at present was what kind of predetermined arc (PDA) to be used in establishing the plan.

2.2 The <u>delegate of the USSR</u> said his preference was for the predetermined arc described in Japanese proposal J/53/1.

2.3 The <u>delegate of Japan</u> said that proposal J/53/1 was for a predetermined arc based on the progressive reduction of the individual overlapping arc segments described in the Report of JIWP ORB(2). To start with, each satellite would be given an initial orbital position and a predetermined arc segment within which it could be repositioned. The PDA would then be reduced in three stages: a pre-design, a design and an operational stage. The method proposed offered a high degree of flexibility with regard to subsequent modification of the plan and guaranteed equitable access to the geostationary orbit.

The <u>delegate of the United States</u> said that proposal USA/12/6 recommended 2.4 predetermined arcs based on the concept of common overlapping arc segments. In that approach, administrations capable of sharing an arc segment because of the geographical separation of their service areas and the separation of their space stations would be grouped together and each group given a common arc segment. It was emphasized that that process took place at the planning stage, not after establishment of the plan. Within each group, space station placement was then possible on any one of a number of possible orbital positions within the common arc segment. That output data would then be processed by a synthesis program at both planning and implementation stages to determine specific placement. The proposed method doubled or tripled the orbital re-use factor, allowing over 200 different space stations to be accommodated in any given allotment plan. Furthermore, it provided flexibility in accommodating changes in parameters with minimal impact on allotments outside the common arc and ensured access to the geostationary orbit both at the planning stage and as administrations were converting their plan allotments to assignments.

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2.5 The <u>delegate of Canada</u> said that proposal CAN/59/3 (Document 59), arrived at after lengthy study, gave preference to the concept of an individual compatible PDA. However, Canada could also see advantages to the common overlapping PDA concept, when it made its second option, but, as described in CAN/59/3, with a number of differences in detail compared to the United States proposal.

2.6 The <u>delegates of Luxembourg</u> (proposal LUX/66/4) and <u>Senegal</u> (proposal SEN/82/1) said their proposals were for a PDA based on the concept of common overlapping arc segments.

2.7 The <u>delegate of the Côte d'Ivoire</u> said that proposal CTI/81/5 had opted for an individual PDA since it gave the best guarantee of equitable access, required no coordination in converting an allotment to an assignment and offered greater flexibility in use.

2.8 The <u>delegate of Mexico</u>, referring to proposal MEX/97/4, said that either an individual or a common overlapping PDA would be acceptable. The essential issue was that the approach chosen should be flexible enough to ensure that allotments for administrations with satellites already in operation should be compatible with their present positions.

2.9 In reply to the <u>delegate of the USSR</u>, who said that Document 13 appeared to indicate that the common overlapping arc approach was impracticable, <u>Mr. Giroux</u> (IFRB) explained that the results given in Annex 3 of that Document referred to planning exercises with two PDA approaches other than the common overlapping arc segment. The latter had not been covered since the report had been issued before the latest version of the NASARC software necessary to apply the common overlapping arc method had been made available to the IFRB. The Board was at present now running NASARC on its computer and would possibly be in a position the following day to report on its feasibility for developing a plan with the requirements and other needs to be decided by the Committee.

2.10 The <u>delegate of the United States</u> said that the software it had designed to apply the common overlapping arc approach had been successfully used to solve the multi-band problem for requirements only, meeting C/I ratios of 26 dB or better, and was capable of doing so in three to four hours of CPU time in addition to the 14 hours for the ORBIT-II program. The real problem which the Conference had to address was to develop a plan that made allowance for existing systems and subregional groupings as well as requirements. That was a very difficult task whatever PDA approach was used. It was estimated that solution of the full problem (requirements and existing system) by the common overlapping arc approach would take four hours of CPU time for the NASARC section of the work and 20 hours CPU time for the ORBIT-II portion. The principal difficulty, which was common to all approaches, was that without some modification of the characteristics of existing systems it would not be possible to obtain a C/I ratio of under 26 dB.

2.11 The <u>delegate of Japan</u> said he had difficulty in accepting the common overlapping arc concept since it provided a shorter service arc for each user and was thus an additional constraint on planning. Furthermore, it would be premature to decide in favour of the approach before there was practical evidence that it would work.

2.12 The <u>delegate of the United States</u> said that the NASARC program appeared a more constrained approach merely because it represented a further step towards the solution of the planning problem.

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2.13 The <u>delegate of Cuba</u> said that since the First Session of the Conference had decided that each allotment should correspond to a specified orbital position, no PDA could be adopted until after the orbital position of an allotment had been determined.

2.14 The <u>delegate of India</u>, supported by the <u>delegates of Ethiopia</u>, <u>Morocco</u>. France and <u>Saudi Arabia</u>, expressed a preference for the individual PDA concept in view of its greater simplicity of implementation, mainly with respect to the associated regulatory procedures.

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2.15 The <u>delegate of Yugoslavia</u> said that all three PDA options mentioned in the debate appeared feasible but the common overlapping segment concept appeared to him to be most in keeping with the idea of allotments as conceived during the First Session. As the relevant software was already in operation, it would be useful to see what results it gave in practice.

2.16 The <u>delegate of Jordan</u> supported the individual PDA concept but considered that the orbital position should not be specified until the time the allotment was being transferred to an assignment.

2.17 The <u>delegate of Pakistan</u> said that his country favoured a planning method based on a definite orbital position for each country in an individual predetermined arc as the only means of providing maximum guarantee of access and simplification of procedures.

2.18 The <u>delegate of the United Kingdom</u> said that the Conference was faced with the joint problems of time constraints and insufficient information to permit a rational choice, yet that choice would be an irreversible one. If the two countries which had provided the software could make the results of their planning exercises available in some simple form, delegations might be able to judge which approach was most likely to produce a plan containing a built-in guarantee of access to the orbit for every country in the world, which would accommodate existing systems once characteristics were defined, and have some degree of flexibility.

2.19 The <u>delegate of the Federal Republic of Germany</u> fully endorsed those sentiments. His country also considered that in relying on only one test run during the Conference, Member countries would virtually be handing over their sovereignty to the IFRB computer. He asked if it would be possible for the Board to run the planning programs on a different ITU computer to enable comparisons to be made. To that end the Secretary-General might usefully be asked to ensure that the computer was kept free for the work of the Conference. It should also be possible for the two administrations which had provided the software and the IFRB to work together to find a compromise solution by using NASARC and then defining individual orbital positions with the help of Orbit II. Such an exercise should be feasible and would need less CPU time.

2.20 The <u>Secretary-General</u> said that when the question of computer time had arisen the previous day he had given an assurance that during conferences priority was given to conference work; he had also stated that the four factors mentioned were somewhat conservative insofar as CPU time was concerned. Studies were under way at the present time to see whether there could be a shorter operational period but there were certain constraints in the way of input and output, the question of adjustments and particularly the number of beams involved. Work had now been distributed between the two mainframes and a decision had been taken as to the work to be put off. He was confident that his colleagues in the Board, which was the main user of both mainframes, would also rethink some of their internal priorities, as would he, as a 25% user of both mainframes. In any event an answer should be possible the following day.

The <u>delegate of the United States</u>, replying to the question raised by the 2.21 delegate of the United Kingdom, said that his Administration had had successful results with an allotment plan using requirements only, where the 26 dB C/I had been fully met with the standard parameters used by the Board for both the 4/6 and 11 - 12/14 GHz frequencies. He would discuss with the Chairman after the meeting the best way of making those results available to other delegations. However, the Committee was discussing requirements, subregional systems and existing systems, all of which combined to make the problem very difficult if not impossible under certain sets of parameters and characteristics. If there was to be a successful output, no matter what approach was used, there would have to be some agreement on possible modifications of parameters, the total set of requirements and subregional systems and existing systems. Again, it might best be decided in consultation with the Chairman, when those runs could be made under the new conditions. His Delegation had a connection to a computer in the United States and some runs could be made on that during the Conference to ease the burden, if the Conference so wished. The difficulty would be that his Delegation would have to be provided with up-to-date beam files, requirement files and all the necessary files to make those runs on the basis of the latest information.

2.22 The <u>delegate of Japan</u> said that his Administration had had three Orbit II programs and was operating some in Japan, but as the Vice-Chairman of the IFRB had stated the previous day, the Board had made considerable modifications to the computer software provided by Japan. As a result his Delegation was unwilling to provide information which might be misleading to the Conference. Also, as Committee 4 and ad hoc Group 4/1 were studying the question, it might be better for discussions on adjustments or accommodation of existing systems and consultations on characteristics to proceed in order to give the Board the information for the computer run which would provide answers at an early stage. Japan's definition of the PDA did not require the use of computer software. It was a concept developed in the early stage of the plan of $\pm 10^{\circ}$ which was reduced according to the development of the satellite system. That approach could therefore be used if the Conference so decided.

2.23 The <u>Chairman</u> asked the Board whether it would be possible for it to carry out an exercise once the Committee had defined the modified characteristics of existing systems using first of all Orbit II alone and then both NASARC and Orbit II.

2.24 <u>Mr. Bellchambers</u> (IFRB) said that although NASARC was running there were still certain problems. However, the Board was looking into the time required with the Secretary-General and it was hoped that better news would be available the following day. If so, the type of exercise requested might be possible. On the subject of the number of beams required, it should be understood that if the number increased significantly, then the time required would also increase. It was therefore important that the number of beams was limited.

2.25 The <u>Chairman</u> proposed that the discussion on the predetermined arc be suspended for the time being pending further information on the time factor.

It was so <u>agreed</u>.

2.26 The <u>delegate of Colombia</u> requested that the planning exercises to be put into the computer should also take account of national requirements for existing systems as well as subregional requirements, particularly in view of the five Andean countries' indicated requirements for a subregional arc.

3. <u>Subregional beams</u> (Documents 5, 7, 12, 53, 59, 66, 84, 88, 95, 97 and 120)

3.1 The <u>Chairman</u> said that the Committee needed to decide whether to uphold the decision of the First Session of the Conference as set forth in paragraph 3.3.4.1 of the Report to the Second Session, i.e. that subregional systems should be included in the associated procedures, or whether it now wished subregional systems to be part of the plan itself. For the time being he did not wish the Committee to concern itself with the question as to whether subregional systems should be considered or implemented in lieu of national allotments or in addition to them. The decision taken at the First Session would be upheld unless there was a large number of administrations in favour of modifying it. Delegations which had submitted written proposals were invited to comment first.

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3.2 The <u>delegate of Tanzania</u> said that his Administration's Document 5 dealt rather with the second issue. However, it had no objection to upholding the decision of the First Session.

3.3 The <u>delegate of the USSR</u> said that, as was clear in Document 7, his Delegation wished to reconfirm the decision of the First Session that the Allotment plan should be limited to national systems providing domestic services. Any need for subregional beams should be decided by combining, for example, allotments earmarked for one of the national systems or, later on, through a procedure for modifying the plan.

3.4 The <u>delegate of the United States</u> said that his Administration, in Document 12, proposed that subregional systems should be treated in two ways: firstly, by regulatory procedures which would provide subregional systems for use by administrations for an initial implementation of service so that that type of service could be accommodated. In that respect it supported the decision of the First Session. The second approach was to permit a group of administrations to use subregional systems as their guarantee of access, in lieu of a national guarantee of access, if they so wished.

3.5 The <u>delegate of Japan</u> said that his Administration proposed in Document 53 that the conclusions of the First Session should be upheld, so that in the initial plan, requirements should be restricted to domestic services. It also proposed that there should be a procedure for accommodating requirements for subregional systems at a later stage.

3.6 The delegate of Canada said that Canada had no intention of participating in a subregional system. However, Appendix ZZ in Document 59 contained the basis for a complete set of regulatory procedures for an allotment plan based on compatible predetermined arcs, and Article 9 of that appendix described a way of dealing with additional requirements after the plan was developed, by giving those requirements an assignment in the Master Register without it being associated with an allotment. That treatment would be consistent with the Report to the Second Session. It did, however, require spare capacity to be available after the plan was developed. A second possibility was contained in Article 10 of the Canadian proposal which dealt with the interim procedure of combining for the duration of one spacecraft the allotments of administrations participating in a subregional system. That set of procedures was similar to the interim procedure developed in 1983, but it would be applied differently. There was some danger in that method, however, in the fixed-satellite service, in that combination might not be possible if allotments of participating countries were much separated in the geostationary orbit. The third possibility was to include subregional systems in the Allotment plan, an approach which Canada favoured, because in Region 2 there was enough orbital capacity to accommodate such systems.

3.7 The <u>Chairman</u> said that he therefore took it that Canada wished to modify the decision of the First Session to include subregional systems as allotments in the plan.

3.8 The <u>delegate of Luxembourg</u> said that his Administration confirmed that the procedures should allow administrations to combine the allotments in subregional systems. It also considered that the constraint mentioned in the report concerning adjacent territories should be removed and administrations without adjacent territories be allowed to combine their allotments. Implementation of the plan would be easier if such combinations were arranged before the plan was developed.

3.9 The <u>delegate of Senegal</u> said that his Delegation wished to uphold the decisions of the First Session.

3.10 The <u>delegate of Venezuela</u> said that his country's position, set forth in Document 88, was that subregional systems should not be detrimental to national systems.

3.11 The <u>delegate of Viet Nam</u> said that his Administration, in Document 95, expressed its wish to include subregional systems in the plan but at the same time considered that a procedure should be established in the plan to allow countries in different regions to set up the necessary multi-administration system.

3.12 The <u>Chairman</u> said that as he understood it, Viet Nam wished to reserve some capacity but not necessarily include subregional systems in the plan.

3.13 The <u>delegate of Mexico</u> said that his Administration, in Document 97, was in favour of considering subregional systems; he would comment later on their form of inclusion and treatment.

3.14 The <u>delegate of Colombia</u> said that his Administration, in Document 120, would like to include the requirements of subregional beams in the plan. That view was fully compatible with what had been agreed at the First Session, namely, that each country should have as a minimum one allotment in the plan. Document 120 made it clear that the plan should be established by region so that national networks and existing subregional systems could satisfactorily be accommodated. Subregional systems were a reality and reflected the international cooperation promoted by the ITU for technical and economic reasons, particularly for developing countries.

3.15 The <u>Chairman</u>, summing up, said that the majority of those speakers were clearly in favour of upholding the decision of the First Session. If that was the Committee's final decision, it would avoid the problem of trying to give all administrations present the opportunity to indicate whether or not they wished to be part of a subregional system, and thereby the additional problem of an increased number of beams and might even make the plan impracticable. He invited delegations which had not submitted written proposals to express their views.

3.16 The <u>delegations of Brazil</u>, <u>Cameroon</u>, <u>China</u>, <u>Indonesia</u>, <u>Jordan</u>, <u>Liberia</u>, <u>Mali</u>, <u>Paraguay</u>, <u>Saudi Arabia</u>, <u>Uruguay</u> and <u>Yugoslavia</u> were in favour of retaining the decision taken by the First Session. The <u>delegate of Yugoslavia</u> added that there should be a more precise definition of adjacent countries, some indication of how many countries could combine their allotments and how many such allotments would be possible. A number of speakers expressed the wish that the Board should estimate the number of subregional beams that might be required.

3.17 The <u>delegations of Algeria</u>, <u>Côte d'Ivoire</u>, <u>Ecuador</u>, <u>Kenya</u> and <u>Zimbabwe</u> were in favour of including subregional systems in the plan from the beginning, thereby modifying the decision taken at the First Session.

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3.18 The <u>delegate of Ecuador</u> added that his country, together with Colombia, Bolivia, Peru and Venezuela, had submitted subregional requirements out of concern that it would be difficult for each country to implement the plan individually for economic reasons. They had agreed to form an association, had a number of satellite projects in the pipeline and therefore needed to have subregional systems included in the plan. The <u>delegate of Côte d'Ivoire</u> added that if there was concern about the increased number of beams, the Board should first run a computer exercise to see what precise effect that would have. The <u>delegate of Colombia</u> echoed the views of those two speakers. The <u>delegate of Kenya</u> added that the approach proposed by Canada whereby subregional systems would be treated as allotments was a good one. It might be simpler if the Board could work out a hypothetical figure for such allotments since a number of administrations might not be in a position to give all the necessary data.

3.19 The <u>Chairman</u>, summing up, observed that the majority of delegates who had spoken were in favour of maintaining the decision of the First Session, although a number of other speakers had expressed the wish to see subregional systems included in the plan. He therefore asked the Board whether it would be possible to allow administrations to indicate the number of subregional systems they would like to establish during the Conference and whether the Board could then carry out an exercise in the time available.

3.20 <u>Mr. Bellchambers</u> (IFRB) said that the Board had been informed of a number of possible subregional systems, but also knew of a number of administrations which had not confirmed their requirements as participants in such systems. Since Members not present should also be consulted, the process could be a lengthy one. In addition, he was somewhat concerned about the number of possible exercises the Conference might wish the Board to run, and since it was already considering another aspect, it could not give a direct answer at the present time. As far as regional beams were concerned it might be useful for administrations to consult Document 28 where 25 high-power subregional beams had been included. Since there could be no satisfactory plan with such beams, an exercise on those lines would be unnecessary.

3.21 The <u>Secretary-General</u> said that the Committee should bear in mind that the Conference was trying to achieve assured access in practice, not for a normal planning period but for an infinite period of time. Decisions had been taken at the First Session to allocate certain bands specifically oriented to that aspiration. It had already been made clear in the Board's presentation that once additional requirements were included in the planning process there could be a deluge of subregional systems put forward making the plan impractical, even if runs could be made. The Committee should therefore recognize the value of the decision of the First Session and the Chairman's own advice that the best solution would be achieved by including subregional systems in the procedural process.

3.22 The <u>Chairman</u> proposed that following the procedure adopted in Committee 4, the Committee should uphold the decision taken at the First Session that subregional systems be implemented by means of associated procedures.

It was so <u>agreed</u>.

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3.23 The <u>delegate of Luxembourg</u> asked when the Committee would address the question of the replacement of national allotments by subregional systems which made more sense from an economic point of view and would also make planning easier.

3.24 The <u>Chairman</u> said that subregional systems would possibly make planning easier if the number of systems were limited.

The meeting rose at 1720 hours.

The Secretary:

F.S. LEITE

The Chairman:

S. PINHEIRO

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INTERNATIONAL TELECOMMUNICATION UNION

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 131-E 2 September 1988 Original: English

COMMITTEE 5

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 5

(BROADCASTING-SATELLITE SERVICE (BSS) MATTERS AND ASSOCIATED PROCEDURES)

Wednesday, 31 August 1988, at 0905 hrs

Chairman: Mr. D. SAUVET-GOICHON (France)

Subjects discussed:

Documents

- 1. Feeder link requirements DT/10
- Introduction of documents relating to items 1 and 2 of the terms of reference of Committee 5
 - 3 + Corr.1, 7, 8, 9, + Add.1, 12, 18, 26, 39 + Corr.1, 49, 54, 58, 59, 60, 69, 93, 95

1. <u>Feeder link requirements</u> (Document DT/10)

1.1 <u>Mr. Brooks</u> (IFRB) introduced Document DT/10. He pointed out that, in paragraph 5, the date of 5 August 1988 should read 5 August 1986. In response to a query by the <u>delegate of Egypt</u> concerning paragraph 4, he said that the reference to columns 19 and 22 related to the microfiche attachment to Document 17, not to the list mailed to administrations. With regard to the date and time shown in square brackets in that paragraph, for the return of copies showing administrations' revised requirements, he suggested that 1800 hours be understood as local time in Geneva, and that telegrams on the subject sent to administrations not present at the Conference should specify the deadline accordingly.

The requirements procedure proposed in Document DT/10 was <u>approved</u>. It was also <u>agreed</u> to delete the square brackets from the deadline of Monday, 5 September 1988, 1800 hours, shown in paragraph 4, and to specify that the time referred to local time in Geneva.

2. <u>Introduction of documents relating to items 1 and 2 of the terms of reference of Committee 5</u> (Documents 3 + Corr.1, 7, 8, 9 + Add.1, 12, 18, 26, 39 + Corr.1, 49, 54, 58, 59, 60, 69, 93, 95)

Document 3 + Corr.1: CCIR Report to WARC ORB(2)

2.1 The <u>representative of the CCIR</u> introduced Document 3.

Document 7: USSR proposals for the work of the Conference

2.2 The <u>delegate of the USSR</u>, referring to Document 7, drew attention to the proposal URS/7/14; its purpose was to correct a small mistake which had crept in during the revision of Appendix 30 by the First Session, as explained on page 5 in the English text of the document.

2.3 The <u>Chairman</u> said that the matter would be taken up by Working Group 5-B.

Document 8: Brazil's proposals for the revision of Appendix 30A

2.4 The <u>delegate of Brazil</u>, introducing Document 8, said that his Administration's proposals for modifications and additions to Appendix 30A were mainly concerned with the mutual compatibility of the Plans for Regions 1 and 3 and for Region 2 and any changes thereto. They also proposed criteria for sharing between feeder links of the BSS in the 17.7 - 18.1 GHz frequency band and other services.

<u>Document 9 + Add.1: IFRB Report on the review of Appendices 30 and 30A to the</u> <u>Radio Regulations</u>

2.5 <u>Mr. Brooks</u> (IFRB) introduced Document 9 + Add.1 which contained the text of IFRB Circular-letter No. 719 on the review of Appendices 30 and 30A and the responses from administrations. Referring to an observation by the <u>Chairman</u> about certain administrations' reactions to the Board's report, he felt that it was for the Working Group to consider the various responses. As far as matters related to Appendix 30A, the latter could readily be revised without affecting Region 2; with regard to Appendix 30, however, the Conference might have to decide whether certain modifications were within its competence or not.

2.6 The <u>delegate of Argentina</u> said that his Administration would issue a further document, as quickly as possible, in the hope of shedding more light on its own position in that regard.

2.7 The <u>Chairman</u> said that the Chairman of Working Group 5-B would have to determine whether the various questions raised related to errors or to matters of substance; the latter should be reported to the Committee.

<u>Document 12: Proposals by the United States of America for the work of the</u> <u>Conference</u>

2.8 The <u>delegate of the United States of America</u>, introducing Document 12, said that his Administration was generally in favour of the IFRB's proposed revisions; its comments appeared in Document 9. He drew attention to his Administration's specific proposals with regard to items 1 and 2 of the Committee's terms of reference.

Document 18: IFRB Report on Rules of Procedure

2.9 <u>Mr. Brooks</u> (IFRB), introducing Document 18 which had been prepared in response to a request made at the First Session for an interpretation of the Radio Regulations and in particular, the Board's interpretation of Appendix 30. Although the matter was not one for the current Conference to examine in detail, Committee 5 might wish to comment on it and Working Group 5-B might wish to note the Board's interpretations relating to Appendix 30A and consider whether any clarification was required.

Document 26: Proposal by France relating to Appendix 30A

2.10 The <u>Chairman</u> in his capacity of delegate from France said that Document 26 related also to interim systems but did concern some paragraphs of Appendix 30A. The possibility had been considered of extending Resolution SAT-R2 to Region 1; the existing texts of Appendices 30 and 30A had been studied accordingly. The matter should be considered by Working Group 5-B.

<u>Document 39 + Corr.1: Proposals by a number of European administrations for the</u> work of the Conference

2.11 The <u>delegate of the United Kingdom</u> said that Document 39 referred to the technical and regulatory procedures relating to the feeder link Plan for Regions 1 and 3, but was based on the relevant Region 2 texts included in the Final Acts of ORB-85. The purpose of the proposed modifications was to ensure that the Plan established by the Conference would be supported by competent procedures. Although many of the proposals were editorial, some were of substance and should be considered by Working Group 5-B.

Documents 49 and 52: Australia's proposals for the work of the Conference and information paper on possible changes to orbital position allotments

2.12 The <u>delegate of Australia</u> drew attention to his Administration's proposed amendments to Appendix 30 concerning orbital position limitations, contained under agenda item 8 in Document 49, and to the background to those proposals provided in Document 52.

Document 54: Japan's proposals for the work of the Conference

2.13 The <u>delegate of Japan</u> introduced his Administration's proposals for the modification of Appendices 30 and 30A in Document 54, Annex 2. A further document was in preparation which would contain suggested regulatory procedures for the feeder link Plan and proposals for corresponding amendments to Appendix 30.

Document 58: CITEL resolutions

2.14 The <u>delegate of Argentina</u>, on behalf of CITEL member countries, drew attention to the Resolution No. 7 on feeder-link planning adopted by that organization in January 1988 and transmitted to the Conference for information as Annex 3 to Document 58.

Document 60: Canada's proposals for the work of the Conference

2.15 The <u>delegate of Canada</u> said that his Administration's position on the possible correction of Appendix 30 was set out in proposal (CAN/60/265). The Canadian reply to the points raised by the IFRB's review of Appendices 30 and 30A was available in Document 9.

Document 69: Kenya's proposals for the work of the Conference

2.16 The <u>delegate of Kenya</u> said that his Administration's proposals relevant to Conference agenda items 6 and 8 were in sections 5 and 6 of Document 69. With regard to Appendix 30A, Kenya proposed that the existing Article 4.2.1.6 be retained in the revised version.

Document 93: Venezuela's comments on the review of Appendices 30 and 30A

2.17 The <u>delegate of Venezuela</u>, introducing Document 93, said that it listed only the points on which his Administration agreed with the review of Appendices 30 and 30A carried out by the IFRB. He drew particular attention to Venezuela's view that Article 4.2.13 should be retained in the revised Appendix 30A, despite any possible overlap with Resolution No. 42.

2.18 The <u>delegate of Canada</u> said that in view of the many proposals made for amending Appendices 30 and 30A, he wished to recall that the Conference's agenda item 6 authorised it only to revise the Radio Regulations as necessary for the purposes of incorporating the plan for feeder links to BSS stations in Regions 1 and 3.

2.19 <u>Mr. Brooks</u> (IFRB) said that the Conference would have to consider any consequences for Region 2 resulting from incorporation of the Plan for Regions 1 and 3. It was to be hoped that there would be no serious spill-over effects but the Conference clearly had the necessary competence to amend Appendix 30A and it would be for administrations to judge the implications of the new Plan.

2.20 The <u>delegate of the United Kingdom</u> pointed out that the Conference's agenda item 12 gave it greater freedom to amend the Radio Regulations than agenda item 6.

The meeting rose at 1030 hours.

The Secretary:

The Chairman:

G. MESIAS

D. SAUVET-GOICHON

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

ORB-88 CAMP SUR L'UTILISATION DE L'ORBITE DES SATELLITES GÉOSTATIONNAIRES ET LA PLANIFICATION DES SERVICES SPATIAUX UTILISANT CETTE ORBITE SECONDE SESSION, GENÈVE, AOÛT/OCTOBRE 1988

Corrigendum 1 au Document 132-F/E/S ler septembre 1988

PROPOSITIONS POUR LE TRAVAIL DE LA CONFERENCE

Ajouter "Pérou" dans dans la liste des pays coauteurs de ce document.

PROPOSALS FOR THE WORK OF THE CONFERENCE

Add "Peru" to the list of countries cosponsoring this document.

PROPOSICIONES PARA EL TRABAJO DE LA CONFERENCIA

Añádase "Perú" en la lista de los países coautores de este documento.

Pour des raisons d'économie, ce document n'a été tiré qu'en un nombre restreint d'exemplaires. Les participants sont donc priés de bien vouloir apporter à la réunion leurs documents avec eux, car il n'y aura pas d'exemplaires supplémentaires disponibles. **RB-88** WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT Document 132-E 31 August 1988 Original: Spanish

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 4

Colombia, Ecuador, Venezuela

NEED TO TAKE INTO ACCOUNT THE SPECIAL GEOGRAPHICAL SITUATION CHARACTERIZED BY HIGH RAINFALL IN ESTABLISHING THE ALLOTMENT PLAN

<u>Agenda item 1</u>

1. <u>Introduction</u>

The First Session of WARC-ORB adopted a planning principle to allow for the technical aspects of special geographical situations (section 3.2.4 of the Report to the Second Session of the Conference) stipulating that "the planning method should take into account the relevant technical aspects of the special geographical situation of particular countries".

The purpose of this contribution is to highlight the effects on the results of the Allotment Plan in the bands above 10 GHz of a special geographical situation, namely the high rainfall prevailing in rain climatic zones "P" and "N", and to urge that those effects be taken into account when establishing the Allotment Plan.

Accordingly, it is suggested that certain minimum values of elevation angle should be taken into account when drawing up the Allotment Plan, in order to avoid as far as possible the high attenuations which occur in the aforementioned rain climatic zones on account of the high rain rates recorded there.

2. <u>Planning assumption used by the IFRB with respect to the problem of rain</u> <u>attenuation</u>

The relationship which exists between elevation angle and rain attenuation is well-known. In particular, it is known that at elevation angles below 30.0° attenuation increases dramatically, reaching extremely high values, especially for "P" and "N" type zones in the bands above 10 GHz. A number of examples of this relationship may be found in Figures 2 to 5 of Chapter 2, section 3, page 9, Rev.1 of the IFRB's ORB SYSTEM document.

Chapter 2, section 3, § 3.6, Rev.l of the above document states that "... the Board has decided to use for the planning exercises a rain attenuation based on a value of 0.1% of the year for the 14/11-12 GHz band, limited, however, to a maximum attenuation of 10 dB, ...".

Below, we indicate the rain attenuation values obtained for different zones, draw attention to the disadvantages which application of the IFRB's assumption entails in the results of the Allotment Plan and put forward relevant proposals.
3. Results according to the CCIR model

A series of calculations were conducted, using the method described in CCIR Report 564-3, to evaluate attenuation levels at various points in the Andean subregion located in "P" and "N" zones and at points located in other types of zone.

The parameters used in all of the calculations were as follows:

Frequency : 13.25 GHz

Polarization : horizontal

Percentage of time: 0.1%.

The basic results obtained as regards attenuation levels may be summarized as follows:

- a) Rain climatic zones other than zones "P" and "N":
 - attenuation never exceeds 15.0 dB;
- b) "P" zones:
 - an attenuation of 40.4 dB is obtained at an elevation angle of 10°;
 - an attenuation of less than 15.0 dB is obtained only at elevation angles greater than 51.3°;
 - lowest possible attenuation: 12.5 dB;
- c) "N" zones:
 - an attenuation of 24.4 dB is obtained at an elevation angle of 10°;
 - an attenuation of less than 15.0 dB is obtained only at elevation angles greater than 23.6°.

Clearly, if no limit is placed on the service arc or, equivalently, no minimum value of elevation angle is set, according to the ORBIT-II procedure orbital positions could be obtained which give rise to attenuation levels in "P" zones as high as 40.4 dB, in stark contrast to the value obtained for other zones, which does not exceed 15.0 dB. In practical system terms, with an attenuation of 40.4 dB the system would not be feasible.

Hence, it is pointless to place an artificial limit of 10.0 dB on the value of rain attenuation when it is known that attenuations as high as the values indicated above may be obtained.

Accordingly, the obvious solution to the problem consists in limiting the service arc within which a space station may be located so as to guarantee a minimum value of elevation angle and hence an attenuation level which does not exceed a predetermined value. The predetermined value could be 15.0 dB, thereby ensuring that all zones are treated on an equal footing. Moreover, the option of setting a minimum elevation angle is available in the ORBIT-II program.

4. <u>Conclusions</u>

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In the light of the above, it is <u>proposed</u> that, in order to guarantee that rain attenuation does not exceed approximately 15.0 dB, the following minimum elevation angles should be used:

52° for "P" zones; and

24° for "N" zones.

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Document 133-E 31 August 1988 Original: Spanish

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 4

Colombia, Ecuador, Venezuela

INFORMATION DOCUMENT: CONTRIBUTIONS TO THE WORK OF THE CONFERENCE

ACCURATE METHOD OF DETERMINING THE MINIMUM COVERAGE ELLIPSE

Agenda item 1 - Allotment plan for the fixed-satellite service

The First Session of the WARC-ORB decided, among other things, to establish an allotment plan for the fixed-satellite service in certain frequency bands. In pursuance of this decision, the IFRB was instructed to develop the software necessary for the preparation of the Allotment Plan. The IFRB chose the ORBIT II computer program for the purpose.

Since ORBIT II was to be the main tool used by the Second Session of the Conference, the Association of State Telecommunication Undertakings of the Andean Subregional Agreement (ASETA) thought it would be as well to install the program, so as to understand the way it worked, to carry out a few planning exercises and to study the theory aspects in some detail. Through the good offices of the IFRB, it obtained version 3.87 of the ORBIT II program together with the appropriate theory manual.

As regards the theory aspects, it was felt that it would be of interest to study an alternative method of finding the minimum ellipse, a method which would require less computer time than the corresponding subroutine of version 3.87, in view of the fact that the subroutine was being used repeatedly.

This work resulted in the development of a theory basis and the corresponding ad hoc computer program. The annex shows how the theory was developed and the results obtained, which indicate that the execution time required is in fact less by at least an order of magnitude.

The administrations mentioned above, whose respective state telecommunication undertakings are members of ASETA, are submitting this paper and invite the Conference to take note of it. They are also making it available in case it should be of any help for present or future applications of ORBIT II as decided by the Conference.

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ANNEX

Determination of the ellipse of minimum area that will circumscribe a set of N points in a plane

Summary

An accurate method is developed for determining the ellipse of minimum area that will circumscribe a set of N points in a plane, and on that basis an ad hoc computer program is worked out.

Introduction

To optimize the use of the geostationary-satellite orbit, the International Telecommunication Union has a computer program in the FORTRAN language known as ORBIT-ITU.

Any calculation designed to optimize the use of the orbit implies repeated application of a portion of this program to determine the ellipse of minimum area that will circumscribe the earth stations making up the service area of a particular satellite.

Because the corresponding portion of the ORBIT-ITU accepts a maximum of ten points and takes an appreciable time to determine the ellipse, it was decided to investigate the possibility of developing a program that could operate with an arbitrary number of points and complete the calculation in a shorter time.

The essence of the method is, by modifying the coordinates of the given points, to convert the task of finding the ellipse into that of finding the circle of minimum area, which is less difficult.

On the basis of this central idea, the HORMIGA program has been developed in QUICK BASIC 4.0 language.

The method

Suppose the equation for the ellipse of minimum area, with axes parallel to the system (X, Y), that will circumscribe N given points (Xi, Yi) to be:

$$((X-Xo)/A)^{2}+((Y-Yo)/B)^{2}=1,$$

where (Xo, Yo) is the centre and A and B are the semi-axes of the ellipse in question. Alternatively, equation (1) can be written thus:

$$(X-Xo)^{2}+(A/B)^{2}*(Y-Yo)^{2}=A^{2},$$
 (2)

which, with the following definitions:

U=X, V=(A/B)*Y, (3)

takes the form

 $(U-U_0)^2+(V-V_0)^2=A^2$,

(4)

(0)

(1)

which represents a circumference with centre at (Uo, Vo) and radius A. It has to be noted that Uo, Vo, A and A/B are unknowns.

Assume that the maximum and minimum abscissas and ordinates are Umax, Umin, Vmax and Vmin. Points (Ui, Vi) are circumscribed by the rectangle of minimum area, with sides parallel to the axes of the system (U, V), with centre at the point (Umax + Umin)/2, (Vmax + Vmin)/2 and with semi-axes of length Al = (Umax - Umin)/2 and Bl = (Vmax - Vmin)/2. It can be shown that the elliptical axial ratio A/B lies within the following range:

$$(A1/B1)/2^{0.5} < = A/B < = (A1/B1)*2^{0.5},$$
 (5)

so that if in equation (2) we take, instead of A/B, the quantity

$$Q*(A1/B1)$$
 with $1/2^{0.5} < = Q < = 2^{0.5}$ (6)

the centre and radius of the circumference can be calculated directly.

The way to determine the centre of the circumference is to calculate the maximum distances from the origin in the four semi-planes: upward, RU; downward, RD; right, RR; and left, RL. We then compare RU with RD and RR with RL. If RU = RD and RR = RL, the centre of the circumference is at the origin. If RU is different from RD or RR is not equal to RL, we have to make them equal by moving each axis separately. Once the centre of the circumference has been determined, we find its radius by calculating the maximum distance from this point. Then we restore the initial coordinates and find the area of the ellipse. A new axial ratio Q*(A1/B1) is then taken until we get the one that yields the ellipse of minimum area.

After this we rotate the original system and repeat the calculations described above until we get the angle and axial ratio that produce the ellipse whose area is the minimum minimorum.

Finally we use the Rosenbrock minimization process [1] to refine the calculation.

The program

On the basis of this method, a program known as HORMIGA has been developed in the language QUICK BASIC 4.0, consisting essentially of the following stages:

- 1) acquisition of the N points to be circumscribed;
- placing of the origin of the system at the centre of gravity of the N points;
- 3) selection of the angle of calculation;
- 4) rotation of the system through the angle chosen;
- 5) calculation of the maximum and minimum coordinates;
- 6) determination of the centre and semi-axes of the rectangle of minimum area that circumscribes the N points;
- 7) selection of the axial ratio of calculation;

- 8) determination of the maximum distances in the four semi-planes: upward, RU; downward, RD; right, RR; and left, RL;
- 9) determination of the abscissa of the centre of the circumference on the basis of the ratio between RR and RL;
- 10) determination of the ordinate of the centre of the circumference on the basis of the ratio between RU and RD;
- 11) calculation of the radius of the circumference on the basis of the maximum distance from its centre;
- 12) calculation of the semi-axes of the ellipse and of its area;
- 13) selection of the angle and axial ratio corresponding to the ellipse of minimum area;
- 14) Rosenbrock minimization taking as starting values the angle and axial ratio obtained in the previous stage;
- 15) printing of the coordinates of the centre, the lengths of the semi-axes and the angle of orientation of the ellipse of minimum minimorum area.

Results and conclusions

For purposes of comparison, a series of tests were made of the HORMIGA program and the corresponding part of the ORBIT II program, version 3.87, on an IBM PC-AT microcomputer with an INTEL 80287 co-processor. The HORMIGA program was coded in FORTRAN language so that the tests could be carried out under the same conditions. The storage requirements were as follows:

> HORMIGA 8343 bytes ORBIT II 37629 bytes.

The tests covered twenty cases in which the number of points and their coordinates were generated randomly while two cases covered points belonging to ellipses determined analytically. See Table I.

The results of the tests made show that the HORMIGA program is between 7 and 42 times as fast as the corresponding module of ORBIT II. Furthermore, in half the cases, the HORMIGA program is more accurate than the ORBIT II one, although the ellipse determined by HORMIGA is slightly bigger. See Table II.

The tolerance was defined by the following expression:

 $((Xi/A)^{2}+(Yi/B)^{2}-1)*100,$

where (Xi, Yi) is a point <u>outside</u> the ellipse and A and B are the calculated semi-axes of the ellipse. Errors due to truncation are the main reasons why some points are not actually contained within the ellipses calculated.

The main reason for the better performance of the HORMIGA program is that it reduces the problem of minimizing five variables as in the ORBIT II module (two coordinates of the centre, two semi-axes and the orientation of the ellipse) to just two (axial ratio and orientation of the ellipse), since the other three are calculated directly.

¢.

Despite the satisfactory nature of these results, further efforts are needed to arrive at a more efficient minimization process than the one used, as regards both accuracy and speed.

Finally, the possibility arises of carrying out the whole ORBIT-ITU program on a microcomputer in the light of what was achieved with the HORMIGA program.

<u>Reference</u>

[1] Algorithm 450, Rosenbrock Function Minimization [E4], Mareck Machura and Andrzej Mulawa, COLLECTED ALGORITHMS FROM CACM, Vol. II, New York, 1978.

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TABLE I. LIST OF POINTS USED IN COMPARATIVE TESTING OF THE HORMIGA PROGRAMME AND THE CORRESPONDING PART OF THE ORBIT-II PROGRAMME, VERSION 3.87

Case		Poir	nts (Xi, Yi)		
1	(3.3870,-0.1948) (-0.1242, 2.1316)	(2.8664,-1.1516) (2.4202,-4.5085)	(-2.8625, 2.9462) (-1.7102, 1.5245)	(0.5710, 3.8454) (-2.9524,-5.5374)	(-1.5352, 0.9447)
2	(1.1785,-2.1092) (2.2778, 1.7621)	(-0.8952,-1.8420) (-4.1886, 1.8511)	(-3.1780, -0.9523) (1.0643, -0.9970)	(1.0576,-4.2396) (2.1191, 2.1638)	(0.5644, 4.3522)
3	(1.6249, 1.5988)	(-1.6202, 2.0885)	(-0.2838, -2.20 34)	(0.2791,-1.4839)	
4	(2.6548, 3.5863) (1.0958, -4.9193)	(-9.8451, -3.9429) (-4.5224, -3.4632)	(2.5186,-3.3844) (3.0786, 4.7004)	(-4.1991, 2.9035)	(0.2088, 4.5249)
5	(-1.0679,-1.0243)	(0.2003,-0.2865)	(-1.5762, 1.1762)	(2.5438, 0.1346)	
6	(-0.9042, 1.8044) (4.5770,-1.7365)	(-2.6034,-0.5161)	(1.0653, 1.0760)	(1.2209, 4.2525)	(-3.3555, -4.9104)
7	(-4.2148,-1.6678) (-4.9393, 2.0037)	(3.1367,-5.0971) (1.9139, 0.3915)	(1.7848,-0.5937)	(3.1082, 0.0 746)	(-0.7895, 4.8788)
8	(2.2369, -3.3420) (2.1750, -1.3127)	(-3.7504, 1.8353) (-0.4403,-0.1319)	(2.4600, 0 .4900) (2.5515, 3.4051)	(-4.1415, -1.1585)	(-1.1111, 8 .2147)
9	(-4.7727, 0.3673) (2.0520, 0.5356)	(2.5412,-4.7872) (2.9671, 3.9417)	(1.5000, 2.3229)	(1.1150, 2.9256)	(-5. 4390, -5. 3065)
10	(4.2848, -2.6579)	(-2.0920, 2.7299)	(0.2288, -4.3034)	(0.5707,-1.2193)	(-2.9923, 5.4507)
11	(-2.3585, 3.0186) (3.4391, 3.2086)	(-5.9015,-4.7190) (-0.2204, 0.9946)	(1.9289, -5.6449)	(1.2081, 1.4241)	(1.9344, 1.7188)
12	(-2.7354, 8.8 545) (-1.1313,-4.6884)	(-4.5809, 3.8134) (2.1853,-3.5874)	(1.3285, 1.5330) (1.1496, 2.0399)	(4.3565, 2.9511) (2.1290,-4.8175)	(-2.5214, 1.7914)
13	(- 0. 5 738, -5. 5412)	(-1.7216, 2.5275)	(1.7701,-0.2731)	(0.5253, 3.2868)	
14	(0.5148,-4.0687) (-2.3153, 3.4796)	(-2.1553, 3.3611)	(1.1200, 4.3497)	(-2.8250, -1.5755)	(5.6210,-5.5462)
15	(0.5146, -1.5334) (0.1966, -2.5151)	(-3. 1395, -2. 2810)	€ (1.5282, 2.4807) €	(0.7837, 0.0137)	(0.1163, 3.8351)
16	(-3.1656, 2.3967)	(-1.7044, 0.5495)	(4.5568,-5.0643)	(-2.7868, 2.1182)	
17	(-4.4293,-0.2035) (0.9150, 1.1846)	(0.2539,-2.4852)	(1.3363,- 0 .1671)	(2.0618, 0.8347)	(-8.1397, 8.8364)
18	(-3. 5630, -8. 2105) (2. 4785, -4. 2674)	(-0.4395, -2.1396) (-3.5035, -1.1537)	(-3.9850, 4.5504) (1.4582, 2.0218)	(0.1519,-3.8526) (-1.1198, 1.8209)	(1.5152, 3.2307)
19	(-4.7684, 2.2653) (-4.2478, -4.0725)	(1.5389, 0.9101) (3.3457, 2.3401)	(-4.5065,-0.3741) (-4.5004, 2.4620)	(4.3935, 1.4028) (3.0703,-1.5080)	(-2.7225, -3.3255)
20	(3.9275,-2.2821) (0.7612, 3.1103)	(-4.8928, -2.7580)	(-3.9740, 1.7004)	(1.7710, 1.0542)	(-8, 5938, -8, 8189)
21	(3.5320,-1.2033) (-3.5329, 1.2003)	(2.5188, -2.5311)	(1.0000, 1.7321)	(-1.0000,-1.7321)	(-2.5160, 2.5311)
22	(-), 3000, +3, 2047)	(1, 2030, -0, 3947)	(0.2020. 1.5055)		

TABLE II. COMPARISON OF THE RESULTS OBTAINED WITH THE HORMIGA PROGRAMME AND THE CORRESPONDING PART OF THE ORBIT-II PROGRAMME, VERSION 3.87

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Case	HORMIGA	ORBIT II
1 Centre Semi-axes Orientation Duration (see Tolerance	(-0.6249, -1.1325) 5.3645, 4.0210 85.9314 5/) 7.9 8.49%	(-0.5869, -1.2185) 5.2351, 4.0156 85.7163 144.9 0.55%
2 (ditto)	(-0.5511, 0.6498) 5.2428, 3.1665 -63.3561 13.7 9.44%	(-0.6737, 0.5293) 5.0757, 3.2193 -68.8402 164.2 8.07%
3 (ditto)	(-0.2015, 0.4920) 2.7166, 1.8989 81.4188 3.5 2.05%	(-0.0753, 0.4915) 2.7193, 1.8798 `-88.3841 100.2 0.08%
4 (ditto)	(-0.5539, 0.2568) 6.2401, 4.3443 75.3452 12.0 5.11×	(-0.4825, 0.2189) 6.0243, 4.4794 72.9513 138.6 6.48%
5 (ditto)	(-0.0552, 0.0745) 2.5954, 1.2847 -7.1636 4.8 0.02%	(-0.0917, 0.0848) 2.6753, 1.2493 -4.1973 81.2 0.00%
6 (ditto)	(0.5801, −1.1838) 5.9743, 3.8182 63.5356 6.2 9.74≭	(0.8749, -0.7035) 6.0963, 3.6915 53.9335 116.9 9.62%
7 (ditto)	(-0.6262, -0.5453) 6.2300, 3.7339 -64.1823 13.4 9.23*	(-0.6525, -0.5456) 6.2277, 3.7120 -64.1906 144.3 9.20%
8 (ditto)	(-0.0120, 0.1438) 4.3731, 4.0464 -2.6697 6.6 0.00%	(0.0212, 0.0327) 4.3510, 4.0098 15.9181 149.2 0.35%
9 (ditto)	(-0.4830, -1.3623) 6.4083, 4.5583 47.7310 18.2 9.44%	(-0.4738, -1.3881) 6.4206, 4.5281 48.2356 133.0 9.54%

10	(ditto)	(0.5931, -0.6716) 7.1345, 2.4869 -57.3907 3.7 5.26%	(0.4760, -0.4822) 6.8921, 2.5080 -57.9910 100.0 5.64%
11	(ditto)	(-0.5945, -1.5049) 6.2576, 4.8244 40.3415 9.9 7.13×	(-8.7093, -1.6987) 6.4382, 4.6167 53.2551 130.7 10.78%
12	(ditto)	(-0.1634, 0.3069) 5.6694, 5.2362 -52.7152 19.2 11.76×	(0.0144, 0.4702) 5.7735, 4.9990 -51.4256 155.3 11.36%
13	(ditto)	(-0.0881, -0.9525) 5.1630, 1.9244 -84.4111 11.0 0.88%	(-0.1573, -0.9897) 4.8497, 1.9871 -85.1559 103.5 0.43%
14	(ditto)	(1.1734, -1.2734) 6.9194, 3.8034 -63.4035 8.4 8.83%	(1.3433, -0.9055) 6.3984, 3.9649 -54.8913 117.3 9.92%
15	(ditto)	(-0.8359, -0.2708) 4.3857, 1.9322 68.8083 6.1 6.45×	(-0.7841, -0.1561) 4.2550, 1.9487 69.4857 112.2 6.48%
16	(ditto)	(0.7885, -0.4290) 6.2558, 1.3511 -48.4656 4.8 1.86%	(0.7045, -0.3496) 6.2107, 1.3035 -48.3259 91.9 1.76×
17	(ditto)	(-1.0179, -0.7215) 3.8551, 2.0385 . 9.0869 5.2 0.04%	(-0.7100, -0.6284) 3.8846, 1.9508 2.7213 139.1 0.00%
18	(ditto)	(0.3090, 0.4671) 5.5467, 3.2492 -53.7579 13.9 9.327	(0.3455, 0.4887) 5.5517, 3.2364 -55.7628 157.5 9.51%

- 9 -ORB(2)/133-E

	(ditto)	(0.2936, -0.4728) 5.7612, 3.9870 -24.2828 22.1 1.53%	(0.2585, -0.4523) 5.7448, 3.9543 -22.8642 154.3 1.10%
i	(ditto)	(-0.0279, -0.9803) 5.2669, 3.6692 30.3932 6.2 3.14%	(-0.0627, -0.6569) 5.2933, 3.5737 18.2851 115.4 0.56%
•	(ditto)	(0.0000, 0.0000) 3.9355, 2.0000 -30.0000 4.1 2.38%	(-0.0076, 0.0056) 3.9498, 2.0014 -30.0931 107.5 2.33%
?	(ditto)	(-0.0000, -0.0000) 1.6095, 1.1547 -90.0000 1.9 0.00%	(-0.0102, -0.0013) 1.6116, 1.1536 -88.5239 81.3 0.07%

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Document 134-E 31 August 1988 Original: Spanish

COMMITTEE 5

PROPOSALS FOR THE WORK OF THE CONFERENCE

Colombia, Ecuador and Venezuela

AGENDA ITEM 9 - SATELLITE SOUND BROADCASTING

For some years past, the CCIR has carried out studies on the introduction of the satellite sound-broadcasting service for mobile receivers.

At WARC-79, a number of administrations proposed band allocations for this service in the range 0.5 - 2.0 GHz. Since the Conference did not accept the allocations proposed, Resolution No. 505 was adopted to allow further studies by administrations and the CCIR.

At the First Session of WARC-ORB, Recommendations were adopted and included in a Report to the Second Session. With regard to the Recommendations in this Report (section 7.3), attention should be drawn to a contradiction between a) and b), since the former recommends that administrations should continue to carry out studies on frequency of operation within, as well as outside but near 0.5 - 2.0 GHz, while the latter recommends that the Second Session of the Conference should consider the results of the various aspects of this system as outlined in Resolution No. 505. The contradiction consists of the fact that Resolution No. 505 of WARC-79 does not envisage the possibility of assignments outside the range 0.5 - 2.0 GHz.

This latter point gave rise to various discussions at the First Session of the Conference without producing a definitive Resolution on the subject. It should be pointed out that this contradiction persists in "recommends" of Recommendation PLEN/C, despite the fact that under "recognizing" the Conference states that it "is competent only for the frequencies in the band between 0.5 and 2.0 GHz".

The Report to the Second Session says (section 7.2.3.3) that "the development of national sound broadcasting-satellite services in the frequency range 0.5 - 2.0 GHz will only be possible through the allocation of an appropriate frequency band on an exclusive basis". It emerges from the results of the latest CCIR studies that satellite sound-broadcasting systems possessing the appropriate characteristics for mobile or portable receivers would be incompatible with terrestrial service systems.

CLM/EQA/ VEN/134/1

In view of the foregoing arguments and given the great importance of the terrestrial services in the band 0.5 - 2.0 GHz for the telecommunications of the administrations indicated above, <u>it is proposed</u> that the Resolution on the introduction of satellite sound-broadcasting systems should be deferred until such time as more detailed information becomes available on these systems and the proposals which may be put forward concerning the revision of the Table of Frequency Allocations in the Radio Regulations.

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For reasons of economy, this document is printed in a limited number of copies. Participants are therefore kindly asked to bring their copies to the meeting since no others can be made available.

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 135-E 31 August 1988 Original: Spanish

COMMITTEE 5 WORKING GROUP 5-B

Argentine Republic

PROPOSAL UNDER AGENDA ITEM 8

1. <u>Introduction</u>

Under item 8 of its agenda, the Conference is: "to consider the possible correction of minor errors in the revision of Appendix 30 (ORB-85) on the basis of a list to be submitted by the IFRB after consultation with administrations. Such corrections shall be made without impact on either Plan, on the interactions between the two Plans, or on the balance of the provisions relating to the various services in different Regions".

After analyzing the above item 8, the Argentine Administration considers that Appendix 30 (ORB-85) contains a world agreement and that it is not possible to correct minor errors, even assuming that such errors exist.

It is also the opinion that, as expressly provided in agenda item 8, this Conference, which is not competent to revise Appendix 30, cannot take into consideration any reports, suggestions or proposals which directly or indirectly in fact imply modifications or alterations of any degree or kind in the agreement contained in Appendix 30.

It therefore hopes that the Conference will take into consideration the antecedents, arguments and reasons set out in sections 2 and 3 of this document, which constitute the substance of the Argentine proposal.

2. <u>Antecedents</u>

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Appendix 30 (ORB-85) contains a world agreement, which was adopted after a long process of preparation, the antecedents of which reach far back in time.

The World Administrative Radio Conference for Space Telecommunications, Geneva, 1971, in its Resolution Spa2-2, stipulated that stations in the broadcastingsatellite service should be established and operated in accordance with <u>agreements</u> and associated plans adopted by World or Regional Administrative Conferences.

The WARC-77 consequently adopted the provisions and associated Plan for the broadcasting-satellite service in the frequency bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1), stipulating that the Final Acts should be regarded as including a <u>world agreement</u> (section 13.2).

Notwithstanding, the 1977 Conference requested that the adopted provisions and associated Plan should be annexed to the Radio Regulations, in the form and to the extent deemed most appropriate, without thereby affecting their content or integrity (Resolution SAT-4/1977).

The WARC-79 annexed the provisions applicable to all the services and the associated Plan, regarded as a world agreement currently in force (Articles 13 and 15) as Appendix 30 to the Radio Regulations (see <u>resolves</u> 1 of Resolution No. 502 (WARC-79).

The same WARC-79, in the light of Resolution No. 701 (WARC/79), which convened the ARC-SAT-R2/83, decided that the Final Acts of the Regional Conference should replace the provisional provisions for Region 2 which appeared in Appendix 30 (WARC-79).

In its <u>Resolution No. 507 (WARC-79</u>), the WARC-79 also reiterated the principle of the aforementioned Resolution Spa2-2/71 (which it replaced), whereby stations in the broadcasting-satellite service should be <u>established and operated in accordance with</u> <u>agreements and associated plans</u> adopted by administrative conferences.

The ARC-SAT-R2 later adopted the provisions and Plans for the broadcastingsatellite service in the frequency band 12 - 12.7 GHz and for the associated feeder links in the frequency band 17.3 - 17.8 GHz for Region 2.

The 1983 Conference requested the WARC ORB(1) to incorporate into the Radio Regulations the aforementioned provisions and Plans <u>without modifying them</u> (Recommendation No. 1 (SAT-R2)).

The WARC ORB-85 adopted the provisions and Plans as incorporated in Appendices 30 and 30A of the Radio Regulations (it may be pointed out that the adoption of a world or regional agreement is independent of its subsequent incorporation in the Radio Regulations).

To consider only Appendix 30, which is the only instrument referred to in agenda item 8, it may be noted that its Article 12 stipulates explicitly that the provisions and associated Plan should be regarded as including a <u>world agreement</u>, in accordance with <u>resolves</u> 1 of Resolution No. 507.

Article 14 of Appendix 30, on the other hand, stipulates that the provisions and associated Plans should <u>remain in force until their revision</u> by a <u>competent</u> administrative radio conference convened in accordance with the relevant provisions of the Convention.

Lastly, the WARC ORB-85, in compliance with the agenda approved by Resolution No. 895 of the Administrative Council (section 5.3), proposed the agenda for the Second Session, which appears in Recommendation No. 1 of the Conference.

In that decision, despite the fact that the Final Acts of WARC ORB-85 and ARC-SAT-R2 were specifically considered, <u>no reference was made to Appendix 30</u>.

3. <u>Conclusions</u>

In the light of the above antecedents and arguments, the Argentine Administration considers that it is not possible to correct minor errors, even assuming that such errors exist, for the legal, regulatory and factual reasons listed below:

- a) Appendix 30 includes a world agreement which remains in force until modified by a conference which is competent to revise it (in conformity with Articles 12 and 14 of Appendix 30 and Resolution No. 507).
- b) Item 8 of the agenda of the Conference does not make the Second Session competent to revise Appendix 30, as observed by the IFRB in Document 9, Annex I (Annex to Circular-letter No. 719, section 1.3).

- c) Since this Conference is not competent to revise, it cannot consider modifications or alterations in a text of the agreement which has been adopted and is in force.
- d) Without detracting from the value of the detailed and careful study produced by the IFRB in Document 9, the latter contains suggestions which imply modifications, alterations or variations in the text and content of the agreement in Appendix 30. The suggestions are not corrections based on the existence of minor errors.
- e) The same remark applies to proposals put forward by some administrations.
- f) Even the analysis of minor errors would imply in practice that this Conference would be acting as a revising conference, since it would need to check that the corrections of these minor errors did not modify, alter or contradict the provisions and the Plan which have been adopted.

4. <u>Proposal</u>

In the light of the above arguments, the Argentine Administration proposes:

ARG/135/1

That this Conference should declare that the correction of minor errors in Appendix 30 (ORB-85) cannot be considered.

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INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT Document 136-E 31 August 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 4

G R E E C E

PROPOSALS FOR THE WORK OF THE CONFERENCE

In conformity with the provisions of the Report of the lst Session of the WARC-ORB/1 (85) to the 2nd Session of the Conference, ORB/2 (88), the planning methods for the establishment of the FSS allotment plan in the bands 6/4 and 14/11-12 GHz, should be based, inter alia, upon the following principles:

a. Guarantee, in practice, for all countries, equitable access to the GSO and the frequency bands allocated to the space service by taking into account the special geographical situation of particular countries, as well as the relevant technical aspects related to that situation.

b. Ensure efficient and economical use of the limited orbit/spectrum natural resource.

c. Ability to accomodate multi-service and/ or multi-band satellite networks, without imposing undue constraints.

d. Ensure that the administrative cost for the development and the application of the plan must be as low as possible.

As it is well known, Greece is highly mountainous everywhere --on the mainland and islands. The particularity of its special geographical situation consists of the fact that most of the greek main cities and other human (urban and rural) settlements are located in Greece's small and low altitude valleys, surrounded by high mountains, as well as on the lower slopes of its mountains. Therefore, local horizons, in the large majority of cases, exceed 10° or even 15°. Consequently, Greece has to confront serious and, mainly, unresolved problems if the elevation angle is less than 30°.

IFRB, when it proceeds to the planning exercises, has not enough information to take into account the above-mentioned facts and, therefore, the orbital position it attributes to Greece imposes to the country undue constraints in positioning earth stations in the service area.

On the other hand, Greece possesses limited economical resources and considers that it is a luxury for small and/or less industrialised countries to establish and operate a national satellite system in frequency bands from different orbital positions. It is a factor, which enormously affects the feasibility and viability of any domestic system.

In view of the above, the Administration of Greece proposes:

GRC/136/1 In developing the allotment plan due care should be taken as to ensure that countries with highly mountainous morphology be alloted an orbital position with minimum elevation angles <u>not</u> less than /30°7.

GRC/136/2

The allotment plan should allow that same orbital position in 6/4 and 14/11-12 GHz bands can be used.

Corrigendum 1 to Document 137-E 9 September 1988 Original: English

COMMITTEE 6

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 6

1. In paragraph 1.9, <u>replace</u> "proposals were made to merge Appendices 3 and 4" by "proposals were also made to update Appendices 3 and 4".

2. In paragraph 1.14, <u>replace</u> "While Article 37 provided a framework ..." by "While Article 31 of the Convention provided a framework ...".

3. <u>Replace</u> the first part of paragraph 1.24 (incorrectly numbered 1.14 in the English and Spanish versions) by:

"1.24 The <u>Vice-Chairman of the IFRB</u> took note of the decision of the Conference to withdraw Document 111 ...".

4. <u>Insert</u> a new paragraph 2.3 as follows, and renumber existing paragraphs 2.3 and 2.4 as 2.4 and 2.5 respectively:

"2.3 The <u>delegation of the United States</u> supported the Chairman's proposed structure and requested clarification of agenda item 4 issues which were to be considered in Working Group 6-C.".

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INTERNATIONAL TELECOMMUNICATION UNION

WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 137-E 5 September 1988 Original: English

COMMITTEE 6

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 6

(REGULATORY PROCEDURES (OTHER THAN FOR ALLOTMENT PLANNING AND BSS FEEDER-LINKS))

Wednesday, 31 August 1988, at 1400 hrs

Chairman: Mr. J.F. BROERE (The Netherlands)

<u>Subje</u>	cts discussed:	Documents
1.	General presentation of documents (continued)	30, 43, 44, 47, 49, 53, 55, 56 + Corr., 58, 59, 60, 65, 67, 68, 69, 71, 73, 74, 75, 76, 77, 81, 85, 88, 91, 92, 95, 111
2.	Organization of the work	DT/7
3.	Designation of Chairmen of Working Groups	DT/7
4.	Attribution of documents to the Working Groups	DT/7

1. <u>General presentation of documents (continued)</u> (Documents 30, 43, 44, 47, 49, 53, 55, 56 + Corr., 58, 59, 60, 65, 67, 68, 69, 71, 73, 74, 75, 76, 77, 81, 85, 88, 91, 92, 95, 111).

Document 30

1.1 The <u>Vice-Chairman of the IFRB</u>, introducing Document 30, noted that coordination on a network basis presented no difficulty to the Board but he drew attention to the regulatory and legal problems posed by the notification and registration of networks.

1.2 The <u>delegate of the USSR</u> stressed that the question of notification should be examined carefully.

1.3 Documents 43 and 44 were introduced on behalf of the CEPT countries by the <u>delegates of the United Kingdom</u> and <u>Sweden</u> respectively.

Document 49

1.4 The <u>delegate of Australia</u>, presenting Document 49, drew attention to his Administration's views on improved regulatory procedures for the fixed-satellite service and to its proposals AUS/49/18 to 32.

Document 53

1.5 The <u>delegate of Japan</u> drew the attention of the Committee to the proposals contained in Annexes 2-1, 3-1 and 3-2 to Document 53.

Document 56 + Corr.

1.6 Introducing Document 56, the <u>delegate of the United States</u> drew attention to proposals USA/56/6 to 14 and USA/56/17 to 27.

Document 58

1.7 The <u>delegate of Argentina</u>, on behalf of the CITEL Member countries, presented Document 58 for information only.

Document 59

1.8 The <u>delegate of Canada</u> introduced Document 59 and drew attention to his Administration's comments on MPMs, given in section 2.1.4 of the document, as well as to proposals CAN/59/1 and 2. He stressed that Articles 11 and 13 provided the main mechanism for gaining access to the geostationary-satellite orbit/spectrum resources and that MPMs should only be resorted to in case of difficulties.

Document 60

1.9 The <u>delegate of Canada</u> drew attention to the proposals contained in Document 60 concerning Articles 1, 8, 11, 13, 14, new 15B, 27 and 69. In particular, under Article 14, proposals were made to merge Appendices 3 and 4. Proposals relating to various Resolutions and Recommendations were also included.

Document 65

1.10 The <u>delegate of Algeria</u> drew attention to the views of his Administration on improved procedures, in relation to agenda item 2, as set out in Document 65. In particular, he voiced concern about the financial and legal implication of MPMs.

Document 67

1.11 Presenting Document 67, the <u>delegate of Luxembourg</u> said that the normal process for gaining access to the geostationary orbit/spectrum resources should be by the application of improved Articles 11 and 13 procedures; MPMs should be a last resort in difficult situations.

Document 68

1.12 The <u>Vice-Chairman of the IFRB</u> presented the report of the IFRB on the application of Resolution No. 4 as contained in Document 68. He drew attention to the table showing the period of validity of space stations. In particular, the peaks at 10 and 20 years and the fact that three networks were indicated as having a 25-year validity.

Document 69

1.13 The <u>delegate of Kenya</u> presented Document 69 and drew attention to his Administration's proposals with respect to agenda item 2.

Documents 73 and 74

1.14 The <u>delegate of New Zealand</u> presented Documents 73 and 74. His Administration supported equitable access for all countries to the geostationary-satellite orbit and the radio frequency bands allocated to space services and considered that the coordination procedure should be responsive to the needs of administrations. While Article 37 provided a framework for coordination, the holding of MPMs at fixed intervals would not necessarily improve access. Normal coordination procedures should be used, with recourse to MPMs only if necessary.

Document 81

1.15 The <u>delegate of Côte d'Ivoire</u> introduced Document 81 and stressed that provisions adopted by the Conference dealing with MPMs should ensure equitable access for all countries to the orbit/spectrum resources.

Documents 88, 91 and 92

1.16 The <u>delegate of Venezuela</u> noted that Document 88 summarized Documents 91 and 92, and she outlined the proposals that they contained. Her Administration considered that the MPM would constitute a financial burden and might prolong administrative delays.

Document 95

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1.17 The <u>delegate of the Socialist Republic of Viet Nam</u> presented Document 95, drawing attention to his Administration's proposals relating to agenda items 2 and 4.

Documents 47, 55, 71, 75, 76, 77 and 85

1.18 Documents 47 (Brazil), 55 (Sweden), 71 (Federal Republic of Germany), 75 (United States), 76 (United States), 77 (United States) and 85 (Senegal) were presented by their respective delegations. Document 111

1.19 The <u>Vice-Chairman of the IFRB</u>, introducing Document 111, pointed out that the title of the document should be corrected to read: "IFRB report on application of provisions Nos. 858 and 863". He stressed that there was no intention whatsoever to modify the Radio Regulations or to draw up a new definition of the European Region. The aim of Document 111 was to draw the attention of the Conference to the difficulties experienced by the Board in interpreting Nos. 858 and 863 in the hope of eliciting comments which would be recorded in the minutes and serve as guidance. There was no need for the Conference to take any formal decision on the subject. He apologized for the original choice of title for Document 111, "IFRB report on definition of Europe", and regretted any confusion that it might have caused.

1.20 The <u>delegate of Turkey</u> made the following statement:

"Concerning the IFRB proposal on the definition of European Broadcasting Area in Document 111, whatever the reasons and criteria selected by the IFRB, the separation of Turkish territory into two broadcasting areas is not acceptable to my Administration. This application means that if an earth station is intended to be located in one half of the beautiful city of Istanbul it is considered to be in the European Broadcasting Area while if that station is located on the other side of the Bosphorus, it is considered as being in another broadcasting area.

Therefore, the first approach of the IFRB reflected in Annex 1 to the above-mentioned document is not acceptable and I would like to raise my Administration's strong objection to this approach.

The second approach, reflected in Annex 2 and which is a modified version of the existing definition of RR 404 which goes along the Turkish - USSR border line in the southeast and covers the whole of Turkish territory and Cyprus is acceptable to my Administration."

1.21 The <u>delegate of Greece</u> regretted the politically contentious approach adopted in Document 111. It seemed odd, at the end of the twentieth century, to be seeking a definition of Europe. It was important to distinguish between a political definition of Europe, which included not only Turkey and Cyprus but also countries such as Israel and Malta, and a definition of the broadcasting area, which should be drawn up solely on the basis of technical criteria.

1.22 The <u>delegate of the USSR</u> thought there was no need for the document or the maps that it contained to be placed before the Conference. Such a document would only give rise to discussion extraneous to the technical aspects that had to be addressed. He suggested that Document 111 be withdrawn and that the Conference deal with the interpretation of Nos. 858 and 863 in the context of overall planning procedures.

1.23 The <u>delegates of Greece</u>, <u>Israel and Turkey</u> supported the suggestion that the document be withdrawn.

1.14 The <u>Vice-Chairman of the IFRB</u> accordingly withdrew Document 111 and proposed the submission of a new document dealing with difficulties faced in the application of Nos. 858 and 863.

2. <u>Organization of the work</u> (Document DT/7)

2.1 The <u>Chairman</u> suggested that three Working Groups be set up as outlined in Document DT/7: Working Group 6-A to deal with improved procedures, Working Group 6-B to deal with simplified procedures, and Working Group 6-C to deal with other issues within the Committee's terms of reference. In reply to the concern expressed by the <u>delegates of the Côte d'Ivoire</u> and <u>Colombia</u>, he said that every effort would be made to avoid holding simultaneous meetings of Working Groups 6-A and 6-B in order to allow for the participation of small delegations.

2.2 The <u>delegate of Spain</u> advocated a vigorous approach to the work of the Committee and pointed out that there was no logical need to split the Comittee into Working Groups if those Groups were not going to meet simultaneously.

2.3 The <u>delegate of the USSR</u> suggested that Working Groups 6-A and 6-B be merged.

2.4 The <u>delegate of Switzerland</u> considered that the structure imposed by the establishment of three Working Groups would expedite progress.

It was agreed to establish three Working Groups, as outlined in Document DT/7.

3. <u>Designation of Chairmen of Working Groups</u> (Document DT/7)

The following were <u>designated</u> Chairmen of Working Groups:

Working Group 6-A: Mr. G.H. Railton (New Zealand) Working Group 6-B: Mr. A. Carew (Canada) Working Group 6-C: Mr. L.M. Palmer (United States)

The meeting rose at 1700 hours.

The Secretary:

K. ARASTEH

The Chairman:

J.F. BROERE

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INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 138(Rev.1)-E 5 September 1988 <u>Original</u>: English

Source: Document DT/7

COMMITTEE 6

STRUCTURE OF COMMITTEE 6 AND PRELIMINARY ATTRIBUTION OF DOCUMENTS

following:

Working Group 6-A: Improved procedures

Agenda items: 2 and 12

Chairman : G. Railton (NZL)/Box 360

Secretary : K. Arasteh .../Box 1065

Documents : 3(CCIR) + Corr.1; 5(TZA); 7(URS) + Corr.1; 12(USA); 31(F); 34(F); 49(AUS); 58(CITEL); 59(CAN); 65(ALG); 67(LUX); 69(KEN); 73(NZL); 74(NZL); 75(USA); 81(CTI); 85(SEN); 88(VEN); 92(VEN); 95(VTN); 116(CHL); 118(CHN) + Corr.1; 120(CLM); 141(IND); 154(CLM); 156(J); 157(J); 165(SG)

To establish the improved regulatory procedures 3 for the fixed-satellite service in the bands:

3 700 - 4 200 MHz 5 850 - 6 425 MHz 10.95 - 11.20 GHz 11.45 - 11.70 GHz 11.70 - 12.20 GHz in Region 2⁴ 12.50 - 12.75 GHz in Regions 1 and 3⁴ 14.00 - 14.50 GHz 18.10 - 18.30 GHz⁴ 18.30 - 20.20 GHz 27.00 - 30.00 GHz

according to the principles and methods established at the First Session (agenda item 2).

⁴ In these bands the improved procedures shall apply between networks of the FSS only.

³ The establishment of improved regulatory procedures may require the review of the regulatory procedures applicable to services sharing the same frequency bands with the FSS.

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To prepare such consequential amendments in the Radio Regulations as may be necessitated from the viewpoint of the improved regulatory procedures developed (agenda item 12).

Working Group 6-B: Simplified procedures

Agenda items: 4 and 12

Chairman : A. Carew (CAN)/Box 378

Secretary : P. Korobenkov .../Box 1069

Documents : 3(CCIR) + Corr.1; 4(IFRB) + Corrs.1 + 2; 7(URS) + Corr.1; 10(IFRB) + Corr.1; 11(IFRB); 12(USA); 18(IFRB); 20(F) + Corr.1; 22(F); 23(F); 30(IFRB); 32(F); 34(F); 35(B); 47(B); 49(AUS); 53(J); 55(S); 56(USA) + Corr.1; 59(CAN); 60(CAN); 68(IFRB); 73(NZL); 75(USA); 76(USA); 77(USA); 88(VEN); 91(VEN); 95(VTN); 116(CHL); 126(LUX); 127(LUX); 141(IND); 144(USA); 154(CLM)

To review and revise, as necessary, the regulatory procedures pertaining to space services and frequency bands not to be subject to planning (agenda item 4).

To prepare such consequential amendments in the Radio Regulations as may be necessitated from the viewpoint of the improved regulatory procedures developed (agenda item 12).

Working Group 6-C: General issues

Agenda items: 5, 7, 12 and 13 Chairman : L. Palmer (USA)/Box 331 Secretary : P.N. Natarajan .../Box 1072 Documents : 6(Rev.) (SG); 7(URS) + Corr.1; 11(IFRB); 12(USA); 35(B); 43(CEPT) + Corr.; 44(CEPT) + Corr.; 49(AUS); 53(J); 54(J); 56(USA) + Corr.1; 60(CAN); 67(LUX); 68(IFRB); 69(KEN); 70(D); 71(D); 88(VEN); 103(MEX); 106(PRG); 109(PRG); 111(IFRB)*; 117(F); 141(IND)

To review and revise, as necessary, the definitions relating to space services (agenda item 5).

To consider, subject to the adoption of a suitable feeder-link assignment plan for Region 1, the amendment of the relevant articles of the Radio Regulations and associated Resolutions and Recommendations, if it is appropriate, to permit the use of the band 10.7 - 11.7 GHz (Earth-to-space) in Region 1 for all modes of fixed-satellite service operation, taking into account the frequency bands identified for planning under items 1 and 2 of the agenda (agenda item 7).

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* Or its revision.

To prepare such consequential amendments in the Radio Regulations as may be necessitated from the viewpoint of the improved regulatory procedures developed (agenda item 12).

To consider, revise as necessary, and take other appropriate action upon the relevant Resolutions and Recommendations (agenda item 13).

J.F. BROERE Chairman of Committee 6

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INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 138-E 31 August 1988 Original: English

<u>COMMITTEE 6</u>

STRUCTURE OF COMMITTEE 6 AND PRELIMINARY ATTRIBUTION OF DOCUMENTS

Working Group 6-A: Improved Procedures

<u>Source</u>: DT/7

Agenda items: 2 and 12

Chairman : G. Railton /Box 360

Documents: 3(CCIR) + Corr.1; 5(TZA); 7(URS); 12(USA); 31(F); 34(F); 49(AUS); 58(CITEL); 59(CAN); 65(ALG); 67(LUX); 69(KEN); 73(NZL); 74(NZL); 75(USA); 81(CTI); 85(SEN); 88(VEN); 92(VEN); 95(VTN); 118(CHN); 120(CLM).

To establish the improved regulatory procedures³ for the fixed-satellite service in the bands:

3 700 - 4 200 MHz 5 850 - 6 425 MHz 10.95 - 11.20 GHz 11.45 - 11.70 GHz 11.70 - 12.20 GHz in Region 2⁴ 12.50 - 12.75 GHz in Regions 1 and 3⁴ 14.00 - 14.50 GHz

> 18.10 - 18.30 GHz⁴ 18.30 - 20.20 GHz 27.00 - 30.00 GHz

according to the principles and methods established at the First Session (agenda item 2).

To prepare such consequential amendments in the Radio Regulations as may be necessitated from the viewpoint of the improved regulatory procedures developed (agenda item 12).

4 In these bands the improved procedures shall apply between networks of the FSS only.

For reasons of economy, this document is printed in a limited number of copies. Participants are therefore kindly asked to bring their copies to the meeting since no others can be made available.

³ The establishment of improved regulatory procedures may require the review of the regulatory procedures applicable to services sharing the same frequency bands with the FSS.

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-Working Group 6-B: Simplified Procedures

Agenda items: 4 and 12

Chairman : A. Carew /Box 378

Documents: 3(CCIR) + Corr.1; 4(IFRB) + Corr.1+2; 7(URS); 10(IFRB) + Corr.1; 11(IFRB); 12(USA); 18(IFRB); 20(F) + Corr.1; 22(F); 23(F); 30(IFRB) + Corr.; 31(F); 32(F); 34(F); 35(B); 47(B); 49(AUS); 53(J); 55(S); 56(USA); 59(CAN); 60(CAN); 68(IFRB); 75(USA); 76(USA); 77(USA); 88(VEN); 91(VEN); 92(VEN); 95(VTN); 120(CLM).

To review and revise, as necessary, the regulatory procedures pertaining to space services and frequency bands not to be subject to planning (agenda item 4).

To prepare such consequential amendments in the Radio Regulations as may be necessitated from the viewpoint of the improved regulatory procedures developed (agenda item 12).

Working Group 6-C: General Issues

Agenda items: 5, 7, 12 and 13

- Chairman : L. Palmer /Box 331
- Documents: 6(Rev.)(S.G.); 7(URS); 11(IFRB); 12(USA); 35(B); 43(CEPT) + Corr.; 44(CEPT); 49(AUS); 53(J); 56(USA); 58(CITEL); 60(CAN); 67(LUX); 68(IFRB); 69(KEN); 71(D).

To review and revise, as necessary, the definitions relating to space services (agenda item 5).

To consider, subject to the adoption of a suitable feeder-link assignment Plan for Region 1, the amendment of the relevant Articles of the Radio Regulations and associated Resolutions and Recommendations, if it is appropriate, to permit the use of the band 10.7 - 11.7 GHz (Earth-to-space) in Region 1 for all modes of fixed-satellite service operation, taking into account the frequency bands identified for planning under items 1 and 2 of the agenda (agenda item 7).

To consider, revise as necessary, and take other appropriate action upon the relevant Resolutions and Recommendations (agenda item 13).

Editorial Group:

To align the texts to be presented to Committee 6 by the above mentioned Working Groups without changing the sense of the substance of the text.

J.F. BROERE Chairman of Committee 6

INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

<u>Document 139-E</u> 31 August 1988 <u>Original</u>: English

COMMITTEE 5

FIRST REPORT OF WORKING GROUP 5-A TO COMMITTEE 5

1. <u>Organization of the work</u>

The Working Group approved for the organization of its work Document DT/9 + Addendum 1 which provides for two Sub-Working Groups:

Sub-Working Group 5-A-1 to be chaired by Mr. Tomati, Italy; and

- Sub-Working Group 5-A-2 to be chaired by Mr. Koumoto, Japan.

2. Frequency bands to be used for feeder links

Following some discussion of the Report to the Second Session and proposals contained in Documents 3, 7, 12, 39, 54, 73 and 95, the Group decided that the next planning exercise should use the frequency bands 17.3 - 18.1 GHz and 14.5 - 14.8 GHz (for countries outside Europe and for Malta).

3. <u>Presentation of documents</u>

The following documents were introduced:

3, 7, 12, 17, 19 + Corrs.1 + 2, 24, 25, 39 + Corr.1, 49, 51, 54, 73, 95.

4. <u>Rain climate zone data</u>

Following discussion of the options available, the Group proposed that the rain data contained in the CCIR, 1986 Volume V be used for planning.

R.M. BARTON Chairman of Working Group 5-A

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INTERNATIONAL TELECOMMUNICATION UNION

Document 140-E 30 August 1988 Original : English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

4 AD HOC 1

Note by the Secretary-General

IFRB REPORT

ANALYSIS OF PLANNING EXERCISES 1-1-2-1 AND 1-1-3-1

At the request of the Chairman of Group 4 Ad hoc 1, I have the honour to transmit to the Conference a copy of the above-mentioned Report.

> R.E. BUTLER Secretary-General

Attachment

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ANALYSIS OF PLANNING EXERCISES 1-1-2-1 AND 1-1-3-1

At the request of the Chairman of Group 4 ad hoc 1, an analysis of planning exercises 1-1-2-1 and 1-1-3-1 was performed by the IFRB using modified existing networks.

- Annexes 1 and 2 contain the results for planning exercises 1-1-2-1 and 1-1-3-1.
- Annexes 3 and 4 contain tables showing the five worst single entry interferences (C/I) for these planning exercises.

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ANNEX 1

DESCRIPTION

- 1. Beam Name
 - 2. Orbital Position (decimal degrees)
 - 3. Ellipse Boresight Longitude (decimal degrees)
 - 4. Ellipse Boresight Latitude (decimal degrees)
 - 5. Ellipse Major Axis (degrees)
 - 6. Ellipse Minor Axis (degrees)
 - 7. Major Axis Orientation (degrees counter-clockwise from Equator)
 - 8. Up-link e.i.r.p. (dBW/MHz)
 - 9. Down-link e.i.r.p. (dBW/MHz)
- 10. Up-link Frequency (GHz)
- 11. Down-link Frequency (GHz)
- 12. Worst Aggregate C/I
- 13. Western Limit of Service Arc
- 14. Eastern Limit of Service Arc

<u>COLUMN</u>

- PLAN D'ALLOTISSEMENT EXERCICE 1-1-2-1 I PARTIE RESULTATS DE SYNTHESE ALLOTMENT PLANNING EXERCISE 1-1-2-1 PART I SYNTHESIS RESULTS PLAN DE ADJUDICACION EJERCICIO 1-1-2-1 I PARTE RESULTADOS DE SINTESIS ORB (2) ORB (2) ORB (2)

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S 00000 SCN0IFRB SDN0IFRB SEN00000 SEY0IFRB SLM0IFRB SLM0IFRB SLM0IFRB SLM00000 SMR00000 SMR00000 SMR00000 SMR00000 SMR00000 SMR00000 SMR00000 SVR00000 TCD0IFRB SU10IFRB SU10IFRB SU200000 TCD0IFRB TCH00000 TCD0IFRB TCH00000 TCD0IFRB TCH00000 TCN01FRB TCH00000 TUV00000 TUV00000 TUV00000 TUV00000 TUV00000 TUV00000 TUV00000 TUV00000 TUV00000 TUV00000 TUS00002 URS00000 URS00000 URS00000 VTN0IFRB VEN00000 VEN0 VEN0 VEN0 VEN0 VEN0 VEN0	$\begin{array}{c} -0.64\\ -107.11\\ -5.55\\ 100\\ -15.55\\ 100.482\\ -351.309\\ -1405.4320\\ -351.552\\ -345.8804\\ -351.552\\ -345.8804\\ -62.33.625\\ -345.8804\\ -255.2339\\ -126.2336\\ -126.224\\ -345.8804\\ -22.33660\\ -126.224\\ -1126.202\\ -126.224\\ -126.226\\ -105.55.269\\ -126.269\\ -126.269\\ -126.299\\ -1124.990\\ -1124.940\\ -158.920\\ -1124.940\\ -158.920\\ -1124.940\\ -26.439\\ -26.$	$\begin{array}{c} 16.18\\ -62.90\\ -14.29\\ 159.40\\ -155.40\\ -159.00\\ -170.585\\ -56.30\\ -170.585\\ -55.30\\ -17.583\\ -55.338\\ -17.583\\ -55.338\\ -17.59\\ -56.61\\ -11.59\\ -56.99\\ -11.59\\ -56.99$	$\begin{array}{c} 60.833\\ 17.570\\ -8.6223\\ -9.59500555776\\ -13.4.79600555776\\ -14.5.6223\\ -14.5.6223\\ -14.5.6223\\ -14.5.796\\ -1.5.795\\ -14.5.796\\ -1.5.795\\ -1.5.795\\ -1.5.795\\ -2.15033\\ -1.235\\ -2.15033\\ -1.235\\ -1.15033\\ -1.15$	1.09 0.80 3.78 1.17 0.80 0.80 0.80 0.80 0.80 0.80 0.80 0.8	0.880 2.300 0.800 0.880 0.800 0.880 0.800 0.800 0.800 0.800	$\begin{array}{c} 142.71\\ 90.00\\ 108.63\\ 118.47\\ 90.00\\ 158.80\\ 9178.291\\ 178.291\\ 108.392\\ 90.001\\ 198.392\\ 90.001\\ 198.392\\ 90.001\\ 198.392\\ 90.001\\ 198.392\\ 90.001\\ 198.392\\ 90.001\\ 198.392\\ 90.001\\ 198.392\\ 90.001\\ 90.000\\ 90.00$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	6.88 6.88 6.88 6.8888 6.888 8888 6.88888 6.8888 6.8888 6.8888 6.8888 6.8888 6.88888 6.8888 6.8888 6.8888 6.8888 6.8888 6.8888 6.888888 6.8888 6.8888 6.8888 6.8888 6.8888 6.88888 6.8888 6.8888 6.8888 6.8888 6.88888 6.88888 6.8888 6.8888 6.88888 6.88888 6.8888 6.8888 6.88888 6.88888 6.8888 6.8888 6.888888 6.88888 6.88888 6.88888 6.88888 6.88888888	55555555555555555555555555555555555555	$\begin{array}{c} 16.86\\ 11.50\\ 22.82\\ 12.77\\ 33.90\\ 32.78\\ 22.69\\ 20.135\\ 35.09\\ 14.35\\ 122.69\\ 20.135\\ 35.09\\ 14.35\\ 122.69\\ 20.135\\ 35.09\\ 14.35\\ 122.69\\ 20.135\\ 35.09\\ 14.35\\ 25.26\\ 20.135\\ 15.26\\ 20.135\\ 22.68\\ 21.5\\ 25.26\\ 20.135\\ 22.5\\ 22.12\\ 22.5\\ 2$	-7.00 -11.60 -11.60 -11.60 -11.60 -11.60 -11.60 -11.60 -11.60 -11.60 -11.60 -11.60 -11.60 -11.9	$\begin{array}{c} 47.10\\ -12.60\\ 73.30\\ 34.30\\ 107.70\\ 179.00\\ -37.90\\ -147.60\\ 61.50\\ 156.30\\ 102.70\\ 59.40\\ 59.40\\ 59.40\\ -5.80\\ 89.20\\ 90.30\\ 54.40\\ -5.80\\ 89.20\\ 90.30\\ 54.40\\ -120.60\\ 51.40\\ 149.40\\ -120.60\\ 51.40\\ 149.40\\ -120.60\\ -9.90\\ 76.20\\ 77.30\\ 91.60\\ -3.50\\ 65.40\\ 99.50\\ -21.20\\ 150.80\\ -9.90\\ -21.20\\ 150.80\\ -9.90\\ -21.20\\ 150.80\\ -9.90\\ -21.20\\ 150.80\\ -9.90\\ -21.20\\ 113.20\\ 65.40\\ -9.90\\ -21.20\\ 113.20\\ 65.40\\ -169.90\\ -25.50\\ 91.30\\ -26.50\\ -26.50\\ -26.50\\ -26.20\\ -2$

- 7 -ORB(2)/140-E

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ORB (2)	PLAN D'ALLOTISSEMENT EXERCICE	1-1-2-1	-	I PARTIE	-	RESULTATS DE SYNTHESE
ORB (2)	ALLOTMENT PLANNING EXERCISE	1-1-2-1	-	PART I	-	SYNTHESIS RESULTS
ORB (2)	PLAN DE ADJUDICACION EJERCICIO	1-1-2-1	_	T PARTE		RESHLTADOS DE STNTEST

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1	2	3	4	5	6	7	8	9 .	10	11	12	13	SLI. 1 14
URSSTAD5	84.90	85.00	0.00	17.30	17.30	90.00	160.00	26.20	15.00	4.65	19.16	84.90	85.10
	127.90	-1350		17.30	17.30	90.001	160.00	26.20	15.00	4.65	20.67	127.90	128.10
URSFOT-2	79.90	80.00	0.00	17.30	17.30	90.001	160.00		15 00	4.65	22.74	-13.60	-13.40
URSFOT-3	-168.10	-168.00	0.00	17.30	17.30	90.001	160.00	17.00	15.00	4.65	26 26	-168 10	
INSAT2AT	82.90	80.80	21.60	3.70	3.60	76.00	69.80	129.00	6.88	12.00	57.85	82.90	83.10
INSAT2AR	82.90	81.70	22.40	4.10	3.90	79.00	160.00	37.00	15.00	4.65	52.23	82.90	83.10
INSAT2BT	93.40	81.20	20.40	3.80	3.60	61.00	69.80	129.00	6.88	12.00	47.31	93.40	93.60
I INSAIZOR	93.40	81 60	21.70	4.10	3.80	17.00	160.00	37.00	15.00	4.65	43.79	93.40	93.60
TNSAT2CR	73.90	82 20	21 30	3.90 4 40	3.70	58 001	169.00	129.00	15 00	12.00	57.29	73.90	74.10
USA13IB1	-45.10	-59.60	-1.10	16.19	7.42	100.00	61.10	124 90	6 88	12 00	32.33	/3.90	
USA13IB2	-45.10	-5.20	40.40	2.34	1.93	144.00	61.10	124.90	6.88	12.00	36 87	-45 10	-44.90
USA13HB1	-57.10	-61.50	-2.90	16.91	7.56	103.00	61.10	124.90	6.88	12.00	15.85	-57.10	-56.90
USA13HB2	-57.10	-6.40	40.10	2.36	1.33	127.00	61.10	124.90	6.88	12.00	39.12	-57.10	-56.90
LUXGDL41	-20.10	3.2/	46.90	2.50	2.00	150.00	69.50	135.50	6.88	12.00	58.45	-20.10	-19.90
	19 10	3.24	47.15	3.10	1.60	26.00	69.50	135.50	6.88	12.00	50.21	0.90	1.10
PNGP1B01	167.45	157.00	-4.00	16 00	7 50	153 001	63.50	161 00		12.00	36.UI	19.10	19.30
PNGP1B02	167.45	162.00	18.00	2.80	2.80	90.00	63.70	141.90	6.88	12.00	59 70	167.40	167 60
PNGP2B01	-175.00	-190.00	-6.00	16.00	7.50	102.00	63.70	141.90	6.88	12.00	49.92	-175.00	-174.80
[PNGP2B02	-175.00	-155.00	24.00	2.80	2.80	90.00	63.70	141.90	6.88	12.00	61.89	-175.00	-174.80

- 8 -ORB(2)/140-E

IFRB CONFERENCE PREPARATION

- 9 -ORB(2)/140-E

ANNEX 2

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COLUMN	DESCRIPTION
1.	Beam Name
2.	Orbital Position (decimal degrees)
3.	Ellipse Boresight Longitude (decimal degrees)
4.	Ellipse Boresight Latitude (decimal degrees)
5.	Ellipse Major Axis (degrees)
6.	Ellipse Minor Axis (degrees)
7.	Major Axis Orientation (degrees counter-clockwise from Equator)
8.	Up-link e.i.r.p. (dBW/MHz)
9.	Down-link e.i.r.p. (dBW/MHz)
10.	Up-link Frequency (GHz)
11.	Down-link Frequency (GHz)
12.	Worst Aggregate C/I
13.	Western Limit of Service Arc
14.	Eastern Limit of Service Arc

ORB	(2)	PLAN D'ALLOTISSEMENT EXERCICE	1-1-3-1	-	I PARTIE	-	RESULTATS DE SYNTH	ESE
URB	(2)	ALLOTMENT PLANNING EXERCISE	1-1-3-1		PART I	-	SYNTHESIS RESULTS	

PLAN DE ADJUDICACION EJERCICIO 1-1-3-1 - I PARTE - RESULTADOS DE SINTESIS ORB (2)

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1 2	3	4	5	6	7	8	9	10	11	12	13	14
ABW00000 -119.40 ADL00000 113.00 AFG00000 128.26 AFS00000 -13.58 AGL0IFRB 69.63 ALB00000 56.56 ALS00000 -59.58 ARG00000 -59.58 ARS00000 -59.58 ARS00000 -13.72 ASCSTHTC -38.13 ATGOIFRB -11.97 ATN00000 138.76 AUT00000 -84.80 BAH0IFRB -107.18 BD100000 -84.80 BAH0IFRB -107.18 BD100000 -30.14 BEL00000 -30.14 BEL00000 -30.14 BERNOIFRB -107.05 BOT00000 -31.43 BA01FRB -48.04 BGD00000 23.00 BRNOIFRB -9.30 BRMOIFRB -9.30 BRMOIFRB -9.30 BUUOFRB -24.26 CANNW000 -126.30 CAR00000 119.32 CBGOIFRB -36.40 CH	$\begin{array}{c} -69.122\\ 67.860\\ 147.860\\ 17.860\\ 17.860\\ 17.860\\ 17.860\\ 17.880\\ -155.760\\ -158.661\\ 135.780\\ -66.105\\ -66.105\\ -79.875\\ -66.105\\ -79.875\\ -66.105\\ -79.875\\ -66.105\\ -79.875\\ -66.105\\ -79.88605\\ -25.469\\ -97.460\\ -99.299\\ -1122.680\\ -55.3860\\ -55.366\\ -55.462\\ -99.29\\ -1122.68\\ -25.25\\$	$\begin{array}{c} 12.39\\ -66.35\\ -29.50\\ -12.57\\ 41.07\\ 27.79\\ 57.44\\ -38.52\\ 23.42\\ -19.61\\ 17.00\\ 14.83\\ -25.78\\ 47.62\\ -19.61\\ 17.00\\ 14.83\\ -25.78\\ 47.62\\ -10.93\\ 22.62\\ 24.05\\ -3.37\\ 50.19\\ 9.37\\ 22.42\\ 05\\ 26.07\\ -16.71\\ 19.38\\ 4.50\\ 42.88\\ 55.89\\ 55.88\\ 55.88\\ 55.88\\ 55.88\\ 55.88\\ 55.88\\ 55.88\\ 55.88\\ 55.88\\ 55.88\\ 55.88\\ 132.87\\ 27.36\\ 35.74\\ 41.88\\ 35.10\\ 35.74\\ 41.88\\ 35.10\\ 35.44\\ 41.88\\ 35.10\\ 35.44\\ 41.88\\ 35.10\\ 35.44\\ 41.88\\ 35.10\\ 35.44\\ 41.88\\ 35.16\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 35.16\\ 35.44\\ 41.88\\ 35.16\\ 35.44\\ 35.44\\ 35.44\\ 35.44\\ 35.44\\ 35.44\\ 35.$	80 80 80 80 80 80 80 80 80 80 80 80 80 8	0.80 0.80 0.80 2.18 1.33 0.80 1.53 3.48 1.66 1.80 0.80 5.70 0.80 5.70 0.80 0.80 0.80 0.80 0.80 0.80 0.80 0	90.00 90.00 90.00 43.03 70.88 111.81 90.00 54.54 0.77 99.81 125.22 76.21 90.06 69.76 150.99 15.92 83.63 138.65 40.07 90.00 90.00 21.50 21.50 90.00 90.32 89.26 90.00 90.26 90.00 90.26 90.00 90.26 90.00 90.26 90.00 90.26 90.00 90.26 90.00 90.26 90.00 90.26 90.00 90.27 55.22 90.00 90	399 35.010 55.010 56.01420 56.01420 56.01452 59.01.00247 59.00247	35.11 26.11 30.87 31.57 31.88 32.51 30.43 29.34 30.57 30.43 30.43 30.43 29.34 30.43 30.43 30.43 29.34 30.43 29.34 30.43 29.34 30.43 20.44 20.43 20.44 20.45 20.44 20.45 20.44 20.45 20.44 20.45 20.44 20.45 20.44 20.45 20.57 20.45 20.45 20.57 20.45 20.57 20.45 20.57 20.45 20.57	13.00 13.000 13.0000 13.0000 13.000 13.000 13.000 13.0	11. 20 11. 20	$\begin{array}{c} 25.28\\ 20.75\\ 25.13\\ 21.4\\ 34.72\\ 21.81\\ 26.665\\ 21.83\\ 21.10\\ 14.96\\ 19.10\\ 14.96\\ 18.60\\ 18.60\\ 18.33\\ 17.40\\ 27.45\\ 18.60\\ 18.60\\ 18.60\\ 18.60\\ 18.60\\ 18.60\\ 18.60\\ 18.60\\ 18.60\\ 18.60\\ 18.60\\ 19.10\\ 14.96\\ 18.60\\ 14.96\\ 18.60\\ 14.96\\ 19.10\\ 14.96\\ 19.60\\ 19$	$\begin{array}{c} -119.\ 400\\ 113.\ 000\\ -15.\ 620\\ -37.\ 29.\ 980\\ -37.\ 990\\ -57.\ 800\\ -77.\ 800\\ -138.\ 500\\ -113.\ 600\\ -38.\ 500\\ -113.\ 600\\ -38.\ 500\\ -113.\ 600\\ -38.\ 500\\ -113.\ 600\\ -38.\ 500\\ -113.\ 600\\ -38.\ 500\\ -110.\ 800\\ -101.\ 500\\ -101.\ 800\\ -101.$	$\begin{array}{c} -18.90\\ 114.30\\ 128.30\\ 73.60\\ 72.30\\ 69.80\\ -72.30\\ 69.80\\ -70\\ -147.60\\ -56.40\\ 103.20\\ -27.10\\ -11.40\\ -17.70\\ 159.90\\ -55.30\\ -21.90\\ -32.20\\ 90.40\\ -27.10\\ -11.50\\ -32.40\\ -27.10\\ -11.50\\ -32.40\\ 157.40\\ 19.80\\ -27.10\\ -32.40\\ -27.10\\ -32.40\\ -27.10\\ -11.50\\ -32.40\\ -27.10\\ -11.50\\ -32.40\\ -27.10\\ -32.40\\ -27.10\\ -30.40\\ 155.50\\ -34.80\\ -36.10\\ -34.80\\ -36.10\\ -34.80\\ -36.10\\$

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ORB (2) ORB (2) ORB (2) PLAN D'ALLOTISSEMENT EXERCICE 1-1-3-1 - I PARTIE - RESULTATS DE SYNTHESE ALLOTMENT PLANNING EXERCISE 1-1-3-1 - PART I - SYNTHESIS RESULTS PLAN DE ADJUDICACION EJERCICIO 1-1-3-1 - I PARTE - RESULTADOS DE SINTESIS

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					and the second		Watara .						
1	2	3	4	5	6	7	8	9	10	11	12	13	SLT. 1 14
DMA01FRB DNK00002 DNK00072 DOW001FRB EQ4000000 F 00000 F 00000 F 1101FRB FLKSTGGL GAB01FRB GDL00000 GAB01FRB GDL00000 GAB01FRB GRC00000 GNE01FRB GRL000000 GVI01FRB GRL000000 GUIMMRA00 GUY000000 HUL000000 HUL000000 HUL000000 HUL000000 IND01FRB INS000000 IND01FRB J 000000 IND01FRB J AC00000 ISR01FRB J AC00000 ISR01FRB J AC00000 ISR01FRB J AC00000 JOR00000 KEN00000 JOR00000 KEN00000 KEN00000 KEN00000 L00000 KEN000000 KEN000000 KEN000000 KEN000000 KEN000000 KEN000000 KEN000000 KEN000000 KEN0000000 KEN00000000 KEN000000000 KEN0000000000	$\begin{array}{c} -10.54\\ -40.077\\ -37.61.19\\ -20.710\\ -33.61.19\\ -38.48.140\\ -38.1803\\ -125.6.20\\ $	$\begin{array}{c} -61.30\\ 11.53\\ -7.18\\ -70.40\\ -28.16\\ -83.66\\ 99.95\\ 178.95\\ -44.86\\ 99.5\\ 178.95\\ -44.86\\ -9.5\\ -11.37\\ -15.350\\ -44.86\\ -11.87\\ -5.15.50\\ -161.87\\ -5.50\\ -461.87\\ -5.50\\ -15$	$\begin{array}{c} 15.33\\ 56.747\\ 140.311\\ 426.313\\ 140.311\\ 426.313\\ 150.747\\ 140.311\\ 426.313\\ 140.311\\ 426.313\\ 150.747\\ 155.991\\ 155.991\\ 155.991\\ 155.991\\ 155.991\\ 155.991\\ 155.991\\ 155.991\\ 155.100\\ 155.35\\ 100.3$	0.80 0.81 0.80 1.28 2.10 1.98 2.10 1.98 2.10 3.75 1.48 1.828 0.80 0.80 0.80 0.80 0.80 0.80 0.80	0.80 0.80 0.80 0.80 1.39 0.80 1.39 0.80 1.43 0.80 0.80 0.80 0.80 0.80 0.80 0.80 0.8	$\begin{array}{c} 90.00\\ 158.16\\ 90.00\\ 158.16\\ 90.00\\ 137.58\\ 119.79\\ 165.73\\ 82.11\\ 165.10\\ 171.21\\ 20.03\\ 144.64\\ 90.00\\ 171.21\\ 20.03\\ 144.64\\ 90.00\\ 171.21\\ 20.03\\ 144.64\\ 90.00\\ 171.21\\ 20.03\\ 145.64\\ 90.00\\ 90.00\\ 145.64\\ 90.00\\ 90.00\\ 148.80\\ 90.00\\ 148.80\\ 90.00\\ 148.80\\ 90.00\\ 148.80\\ 90.00\\ 148.80\\ 90.00\\ 148.80\\ 90.00\\ 148.80\\ 90.00\\ 90.00\\ 148.80\\ 90.00\\ 148.80\\ 90.00\\ 148.80\\ 90.00\\ 123.91\\$	5.04 5.04 5.024859 5.024859 5.024859 5.024959 5.024959 5.024959 5.024959 5.024959 5.024959 5.024959 5.024959 5.024555 5.02455555555555555555555555555555555555	$\begin{array}{c} 34.73\\ 29.69\\ 26.142\\ 34.701\\ 30.622\\ 31.78\\ 329.005\\ 37229\\ 30.051\\ 329.205\\ 3776\\ 29.005\\ 3776\\ 29.055\\ 3776\\ 29.055\\ 3776\\ 29.055\\ 3776\\ 29.055\\ 3776\\ 20.07\\ 35867\\ 329.055\\ 3776\\ 329.05\\ 3775\\ 3036\\ 3775\\ 3036\\ 30465\\ 30465\\ 30455\\ 30445\\ 30455\\ 30445\\ 30455\\ 30445\\ 30455\\ 30445\\ 30455\\ 30445\\ 30455\\ 30445\\ 30455\\ 30445\\ 30455\\ 30445\\ 30455\\ 30455\\ 30455\\ 30455\\ 30445\\ 30455\\ 30455\\ 30445\\ 30455$	13.00 13	11.20 11	$\begin{array}{c} 15.93\\ 16.59\\ 14.16\\ 27.73\\ 17.44\\ 21.75\\ 293\\ 294.18\\ 17.49\\ 294.18\\ 17.29\\ 294.18\\ 17.29\\ 294.18\\ 17.29\\ 20.19\\ 20.39\\ 21.30\\ 20.19\\ 20.39\\ 21.30\\ 20.18\\ $	$\begin{array}{c} -112.10\\ -40.80\\ -40.80\\ -120.30\\ -120.30\\ -127.60\\ -33.50\\ -13.90\\ -13.90\\ -38.50\\ -38.50\\ -38.50\\ -38.50\\ -38.50\\ -38.50\\ -13.90\\ -13.90\\ -13.90\\ -14.70\\ -41.90\\ -113.00\\ -24.40\\ -113.00\\ -24.40\\ -113.00\\ -24.220\\ -109.30\\ -24.20\\ -109.30\\ -24.80\\ -109.30\\ -24.80\\ -109.30\\ -24.80\\ -109.30\\ -24.80\\ -109.30\\ -24.80\\ -109.30\\ -24.80\\ -109.30\\ -24.80\\ -109.30\\ -109.30\\ -109.30\\ -109.30\\ -109.30\\ -109.30\\ -109.30\\ -109.30\\ -109.80\\ -109.80\\ -109.80\\ -109.80\\ -109.80\\ -22.50\\ -109.80\\ -109.80\\ -23.30\\ -109.80\\ -23.30\\ -109.80\\ -23.50\\ -29.30\\ -109.80\\ -23.50\\ -29.30\\ -109.80\\ -23.50\\ -29.30\\ -109.80\\ -23.50\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -29.30\\ -20.50\\ -20$	$\begin{array}{c} -10.50\\ -38.60\\ -38.60\\ -20.50\\ 50.70\\ 90.30\\ -39.20\\ 106.90\\ 5.70\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -27.10\\ 46.80\\ -23.10\\ -147.60\\ 54.10\\ 144.50\\ 25.70\\ 144.50\\ 25.70\\ 144.50\\ 25.70\\ 106.60\\ -12.20\\ 102.90\\ -147.60\\ 105.70\\ 106.60\\ -12.20\\ 105.70\\ 106.60\\ -12.20\\ 105.70\\ 106.60\\ -12.20\\ 105.70\\ 106.60\\ -12.20\\ 105.70\\ 106.60\\ -12.20\\ 105.70\\ 106.60\\ -12.20\\ 105.70\\ 106.60\\ -12.20\\ 105.70\\ 106.60\\ -12.20\\ 105.70\\ 106.60\\ -27.80\\ -27.80$

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- PLAN D'ALLOTISSEMENT EXERCICE 1-1-3-1 I PARTIE ALLOTMENT PLANNING EXERCISE 1-1-3-1 PART I PLAN DE ADJUDICACION EJERCICIO 1-1-3-1 I PARTE ORB (2) **RESULTATS DE SYNTHESE** SYNTHESIS RESULTS
- ORB (2) ORB (2) PLAN DE ADJUDICACION EJERCICIO 1-1-3-1 **RESULTADOS DE SINTESIS**

5 6 7 SLT. 1 8 1 2 3 4 9 10 11 12 13 14 LBROIFRB 35.97 -9.43 0.95 36.97 30.73 6.53 115.27 57.47 0.80 13.00 11.20 27.99 -59.60 40.60 27.83 13.00 13.00 2.21 LBY00000 15.81 122.18 90.00 -41.62 0.93 56.80 11.20 19.92 -43.50 77.90 LIEOIFRB 54.35 9.52 0.30 49.82 28.75 11.20 18.71 -36.50 55.50 LSOOIFRB -40.10 -29.50 28.40 0.80 0.80 90.00 49.75 28.68 11.20 13.00 22.16 -40.10 96.90 11.20 LUX00000 -53.90 6.19 49.81 0.80 0.80 90.00 49.10 28.25 13.00 17.07 -53.9066.10 MAUOIFRB 8.00 57.50 -20.17 11.20 11.20 0.80 0.80 90.00 55.04 34.84 13.00 41.84 8.00 107.00 MCOOIFRB -41.44 7.40 43.67 53.77 0.80 0.80 90.00 31.68 13.00 20.62 -41.8056.60 MDGCIFRB MDW00000 MEX00000 -0.70 -159.95 -127.36 -18.62 28.22 23.35 46.21 11.20 11.20 2.57 0.80 67.44 62.55 37.73 13.00 38.66 -0.7091.90 25.84 35.59 37.70 35.39 -177.42 26.33 0.80 0.80 90.00 46.01 13.00 -169.80 -147.60 -104.31 5.56 2.24 156.32 70.41 11.20 11.20 13.00 21.39 -136.10 -71.80 63.55 61.75 MLA00000 65.60 107.16 4.04 2.37 1.10 2.71 91.87 13.00 29.69 65.60 152.40 22.85 MLDOIFRB 31.17 72.65 2.22 2.48 0.80 11.20 13.00 21.10 124.90 11.20 11.20 11.20 11.20 11.20 11.20 11.20 MLIOIFRB -46.40 -4.83 2.53 17.68 2.06 109.47 66.49 35.10 13.00 38.90 MLT00000 -39.10 14.71 24.24 16.00 16.68 -39.10 57.00 -10.60 36.12 0.80 0.80 90.00 51.54 29.99 13.00 68.50 MNGOIFRB 60.69 101.04 46.57 2.94 0.94 164.33 58.42 30.99 13.00 148.90 MOZOIFRB 33.70 -7.41 -10.60-17.82 3.36 1.06 61.11 65.00 37.42 13.00 79.50 31.08 37.71 31.58 31.07 13.00 13.00 13.00 13.00 13.00 13.00 MRC00000 35.82 42.50 29.96 3.21 0.80 58.14 17.01 -56.80 43.00 MRL00000 127.75 174.79 2.32 8.86 0.99 105.45 63.01 127.50 18.08 179.00 37.73 60.03 54.97 MTNOIFRB -9.42 2.59 61.77 19.98 1.29 21.73 -63.10 42.70 MWIOIFRB 92.00 34.42 -13.25 107.23 -25.00 -13.90 -134.20 1.50 0.80 11.20 18.37 93.70 32.65 37.06 36.26 MYT00000 -6.19 -45.20 -12.83 0.80 90.00 0.80 54.80 11.20 44.01 5.70 11.20 11.20 11.20 11.20 11.20 11.20 11.20 11.20 NCGOIFRB -128.26 -84.95 13.00 13.00 13.00 13.00 13.00 13.00 12.91 1.00 108.01 57.78 18.22 0.80 -36,30 NCL00000 113.00 166.10 -21.20 0.80 90.00 26.69 25.89 0.80 56.01 113.00 114.30 NGROIFRB NIGOIFRB NIU00000 60.37 31.76 37.49 9.20 1.23 1.61 17.24 2.47 55.81 59.86 -44.20 60.70 7.68 -32.61 9.79 1.99 86.85 64.24 22.23 30.27 -36.90 54.90 55.04 57.17 57.13 -120.34 -169.89 -19.050.80 0.80 90.00 34.82 -175.00 -120.10NMBOIFRB NOR00000 114.50 15.70 144.14 80.83 20.35 -21.09 2.67 0.82 13.0013.0034.29 23.20 21.24 20.16 30.84 -45.40 82.50 31.48 12.96 2.98 63.26 0.80 30.63 14.50 33.50 NPLOIFRB 30.30 84.00 28.09 1.11 $13.00 \\ 13.00$ 0.80 55.02 32.02 11.20 11.20 11.20 11.20 11.20 11.20 11.20 11.20 11.20 11.20 11.20 11.20 11.20 30.30 137.60 NRUOIFRB 114.50 166.90 0.80 -0.500.80 90.00 55.04 34.72 114.50 179.00 40.41 2.66 1.27 NZL00000 134.50 173.54 -41.49134.50 179.00 -175.00 -101.20 60.42 31.84 13.00 32.42 OCE00000 -101.84 -141.36 35.91 27.30 -16.031.97 67.44 35.09 13.00 21.50 29.67 11.38 00000AM0 120.26 56.54 1.91 2.23 3.32 -9.80 23.00 74.40 0.80 63.48 53.92 29.61 13.00 122.20 31.39 74.40 68.43 PAKOIFRB 1.77 110.19 59.64 30.78 13.00 18.63 118.40 PHLOIFRB 120.93 1.11 102.16 65.20 37.84 13.00 36.00 169.10 -159.95 104.90 -129.40 -10.06 PLM00000 38.04 -169.80 33.62 104.90 19.73 -129.40 15.79 -12.70 17.52 -57.40 -161.42 7.00 0.80 0.80 90.00 52.14 30.43 13.00 -147.60 PNG01FRB PNR01FRB POL00000 PORMDRAZ PRG01FRB 147.42 30.93 37.72 36.96 29.76 30.25 -6.59 2.28 2.03 104.14 66.06 13.00 179.00 -80.30 0.80 8.42 0.86 156.02 57.03 13.00 -31.00 $1.46 \\ 3.76$ 19.75 52.00 0.80 160.17 53.04 13.00 50.90 -5.14 -101.90 -18.03 37.70 1.50 7.79 60.47 13.00 21.10

 17.52
 -57.40

 28.31
 -101.90

 33.39
 -120.40

 23.11
 -175.00

 18.09
 -17.10

 33.22
 -13.90

 16.56
 -16.40

 19.56
 -31.90

-58.84 -23.09 37.44 37.92 1.45 0.97 80.41 60.61 13.00 -14.00 PRU00000 -120.40 -74.83 92.73 -8.38 3.38 1.60 66.94 13.00 11.20 -29.00 PTC00000 -61.04 -130.10 -25.07 0.80 0.80 46.74 90.00 26.55 13.00 11.20 -60.70 QAT00000 -17.10 25.50 51.66 0.80 90.00 47.05 26.86 13.00 11.20 120.00 -21.12 45.67 -2.00 REU00000 -6.19 55.57 0.80 0.80 90.00 55.33 35.58 13.00 11,20 5.70 R0U00000 66.46 25:33 1.27 0.80 20.91 0.80 90.00 54.58 51.61 16.56 31.30 13.00 11.20 66.50 0.80 -31.80 RRWOIFRB 30.00 **0.8**0 30.04 13.00 11.20 -31.80 91.80 S 00000 -7.00 16.11 60.80 1.21 139.65 51.95 0.80 29.60 13.00 11.20 14.77 -7.00 47.10 SCN0IFRB SDN0IFRB -13.43 -62.90 17.33 55.03 0.80 0.80 90.00 34.74 13.00 11.20 19.19 -113.20 -12.60-10.3430.08 13.56 3.73 2.13 108.70 67.77 34.72 13.00 11.20 17.48 -11.60 73.30 SEN00000 -62.70 -14.33 13.77 1.12 -62.70 3.10 117.82 0.80 58.39 36.43 13.00 11.20 21.88 34.30 SEYOIFRB 3.10 55.40 -4.50 0.80 0.80 90.00 55.03 34.85 13.00 11.20 40.92 107.70

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ORB(2)/140-E

ORB (2)	PLAN D'ALLOTISSEMENT EXERCICE	1-1-3-1		I PARTIE		RESULTATS DE SYNTHESE
ORB (2)	ALLOTMENT PLANNING EXERCISE	1-1-3-1	-	PART I	-	SYNTHESIS RESULTS
ORB (2)	PLAN DE ADJUDICACION EJERCICIO	1-1-3-1	-	I PARTE		RESULTADOS DE SINTESIS

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КВ	(2)	PLAN DE ADJUDICACIÓN EJERCICIÓ	1-1-3-1	- I PARTE	 RESULTADOS DE SINTESIS

1 2 3 4 5 6 7 6 9 10 11 12 13 14 14 SLM01FR8 110.00 159.46 -8.73 1.15 0.80 136.52 136.00 112.00 28.40 110.00 177.00 135.24 136.00 112.00 28.40 110.00 177.00 135.24 136.00 112.00 28.40 110.00 177.00 146.00 135.24 146.00 112.00 136.46 51.66 46.16 112.00 136.46 51.66 46.61.00 112.00 17.77 10.10 102.70 58 156.00 56.62 54.67 53.66 13.00 112.20 27.77 13.00 11.20 12.60 12.00 27.77 13.00 11.20 12.60 13.00 12.00 27.77 13.00 11.20 12.60 13.00 12.00 27.77 13.00 11.20 12.60 13.00 11.20 12.60 13.00 11.20 12.60 13.00						CARACTER STRATEGY ST		Virtue.						SIT 1
SLM01FRB 110.90 159.44 -8.73 1.15 0.80 136.32 58.38 77.59 11.20 28.40 110.90 179.09 SMA0000 -159.95 -170.10 -14.22 0.80 0.80 90.00 55.26 15.00 11.20 35.26 -169.80 1-77.90 SMA0000 -159.95 -170.10 -14.22 0.80 0.80 90.00 55.76 15.00 11.20 35.26 -169.80 -147.60 SMA0000 -6.19 -5.64 6.60 0.80 90.00 55.04 35.47 15.00 11.20 18.64 51.40 156.50 61.50 SUBTRB -63.80 -11.90 8.50 0.80 90.00 55.04 35.47 15.00 11.20 21.21 -63.80 46.95 46.95 46.95 46.95 46.95 47.67 47.67 16.00 15.20 23.457 15.00 11.20 22.416 -66.80 55.96 57.66 45.95 46.95 46.92 47.67 47.61 15.00 11.20 24.457 46.95 46.92 <	1	2	3	4	<u>5</u>	6 +	7	8	9	10	11	12	13	
	SLM01FRB SLV01FRB SLV01FRB SMA00000 SMG00000 SMG00000 SMG00000 SMG00000 SMC01FRB SPM00000 SRL01FRB SUI01FRB SWZ00001 TCD01FRB TCH000000 TCD01FRB TCH000000 TCD01FRB TRD000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN01FRB URS00000 URS00000 URS00000 VTN01FRB VEN00000 VTN01FRB VEN00000 VTN01FRB VEN00000 ZA101FRB VEN00000 ZA101FRB USA131B3 USA131B4 USA131B3 USA131B4 USA13DB1 EIREB1000 EIREB200 LUXGDL422 LUXGDL422 LUXGDL422	$\begin{array}{c} 110.90\\ -140.90\\ -140.999\\ -6.999\\ -6.80\\ -2.20\\ -6.80\\ -2.20\\ -6.80\\ -2.20\\ -2.20\\ -6.80\\ -2.20\\ -2$	$\begin{array}{c} + & - & - & - & - & - & - & - & - & - &$	$\begin{array}{c} -8.6293836005559055467613021995661170190281065546000000000000000000000000000000000$	1.150 0.880 0.880 0.880 0.0.80 0.0.80 0.0.0.0.	0.000000000000000000000000000000000000	$\begin{array}{c} 136.32\\ 90.00\\ 104.00\\ 90.00\\ 104.00\\ 10$	58.0668 55.678 55.678 55.5.678 55.5.5777 55.5.57 55.5.57 55.5.57 55.55 5	37.2944992777355623204499273344.556699113347592594499277754445591153477594499273344.556669911534759115347733445597774445973328.10.5593562330247388580000237744442977703344442977703333333333333333333333333333333333		11. 20 11. 20	28.40 35.26 35.267 21.46 17.58 25.37 21.46 17.58 24.94 17.58 24.94 17.58 24.94 17.58 24.94 17.58 24.94 17.58 24.94 27.19 27.17 29.15 28.39 24.54 26.12 29.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27 215.73 26.12 20.27	$\begin{array}{c} -3 \\ -10 \\ -10 \\ -140 \\ -169 \\ -36 \\ -50 \\ -10 \\ -13 \\ -65 \\ -63 \\ -10 \\ -38 \\ -63 \\ -63 \\ -63 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -38 \\ -26 \\ -26 \\ -38 \\ -26 $	

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ORB (2)	PLAN D'ALLOTISSEMENT EXERCICE	1-1-3-1	-	I PARTIE	-	RESULTATS DE SYNTHESE
ORB (2)	ALLOTMENT PLANNING EXERCISE	1-1-3-1	-	PART I	-	SYNTHESIS RESULTS
ORB (2)	PLAN DE ADJUDICACION EJERCICIO	1-1-3-1	-	I PARTE		RESULTADOS DE SINTESIS

SLT												
1 2 3	4	5 6	7	8	9 10	11	12	13	14			
URSCSDR1 94.90 40 URSCSDR2 94.90 140 URSCSDR2 94.90 140 URSCSRD2 94.90 140 URSCSRB1 76.90 113 URSCSRD2 76.90 113 URSCSRD2 76.90 113 URSCSRD2 76.90 113 URSCSRD3 76.90 113 URSCSRD4 76.90 113 URSCSRD5 76.90 103 URSCSRD6 76.90 113 URSCSRD7 76.90 113 URSCSRD7 76.90 113 URSCSRD7 76.90 113 URSCSRD7 -19.10 -4 F_LSAT2 -19.10 15 F_LSAT4 -19.10 15 F_LSAT5 -19.10 -5 CANMSAT0 -106.60 -95 F_E12B1 12.90 8 F_E13B1 6.90 7 F_E14B1 15.90 8	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 90.00\\ 90.00\\ 90.00\\ 90.00\\ 90.00\\ 90.00\\ 90.00\\ 90.00\\ 90.00\\ 90.00\\ 90.00\\ 90.00\\ 164.00\\ 0.00\\ 164.00\\ 0$	$\begin{array}{c} 160.00\\ 160.00\\ 160.00\\ 160.00\\ 160.00\\ 160.00\\ 160.00\\ 74.00\\ 74.00\\ 74.00\\ 74.00\\ 74.00\\ 74.00\\ 160.00\\ 160.00\\ 160.00\\ 160.00\\ 160.00\\ \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	11.20 11.20 11.20 11.20 11.20 12.00 12.00 12.00 12.00 12.00 12.00 12.00 12.00 12.00 12.00 12.00 12.00 12.00 12.00 12.00 12.00 12.00 11.20 11.20	$\begin{array}{c} 23.71\\ 41.13\\ 50.07\\ 45.06\\ 46.80\\ 55.26\\ 45.71\\ 54.81\\ 53.63\\ 55.23\\ 55.23\\ 55.23\\ 54.47\\ 22.50\\ 47.05\\ 48.32\\ 46.81\\ 50.01 \end{array}$	94.90 94.90 -16.10 76.90 166.90 -16.10 -19.10 -19.10 -19.10 -19.10 -19.90 12.90 15.90	$\begin{array}{c} 95.10\\ 95.10\\ -15.90\\ 77.10\\ 77.10\\ 167.10\\ -15.90\\ -18.90\\ -106.40\\ -10.10\\ -100\\ -1$			

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PAG.

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IFRB CONFERENCE PREPARATION

ANNEX 3

***** THE 5 WORST SINGLE INTERFERENCES (C/I) *****

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NO.	NAME	ID	INTER	FERER		and a second state of the second second						
1	PNGP2B01	10	ALS00000	0.574E+02	GUMMRADO	0.589E+02	CAR00000	0.592E+02	CHN00000	0.599F+02	TNSOOOO	0 605E+02
2	PNGP2B02	10	HWA00000	0.625E+02	AL \$00000	0.739F+02	USAVTRET	0 773E+02	10000000	0 7875+02		0.816E+02
3	URSSTAD2		AL \$00000	0.182F+02	JIRSONNA	0 4005+02	CANNWOOD	0.436F+02	ныходооо	0.5316+02	GUMMPAGO	0.0102.02
ā	URSENT-3		ALS00000	0 263E+02		0 5755+02	CANNUOOO	0 5085+02		0. 2175+02	CUMMPAGO	0.0046402
5	ALS00000	F 1	HESCHADS	0.2036+024	UDSECT 7	0.3736402	LDCCTAD	0.5965702		0.0136+02	GUMMRAUU	0.637E+02
2		51	URSSTADZ	0.2096702		0.2900+02	UK221AD6	0.5106+02	URSUUUUZ	0.531E+02	UK200003	0.553E+02
	GUMMAAUU	51	URSSIADZ	U. 200E+02	UKSFUI-3	0.2926+02	URSSIAD6	0.48/E+02 *	URSSIADS	0.516E+02	J 00000	0.555E+02
	HWAUUUUU	51	URSSIADZ	0.249E+02	URSFOT-3	0.279E+02	PNGP2B02	0.301E+02	PNGP1B02	0.413E+02	URSSTAD6	0.519E+02
8	HWL00000	51	URSSTADZ	0.239E+02	URSFOT-3	0.270E+02	URSSTAD6	0.506E+02	PNGP2B01	0.628E+02	PNGP2B02	0.630E+02
9	JAROOOOO	51	URSSTAD2	0.240E+ 02	URSFOT-3	0.270E+02	URSSTAD6	0.516E+02	PNGP2B02	0.605E+02	PNGP2B01	0.610E+02
10	JONOOOOO	51	URSSTAD2	0.239E+ 02	URSFOT-3	0.269E+02	URSSTAD6	0.508E+02	PNGP2B02	0.516E+02	CAR00000	0.624F+02
11	MDW00000	51	URSSTAD2	0.244E+02	URSFOT-3	0.275E+02	URSSTAD6	0.505E+02	PNGP2B02	0.566F+02	PNGP2B01	0 607E+02
12	PLM00000	51	URSSTAD2	0.241E+02	URSFOT-3	0.271E+02	URSSTAD6	0.515E+02	PNGP2B02	0.571F+02	CARONOO	0 5955+02
13	SMA00000	51	URSSTAD2	0.238F+02	URSEDT-3	0.268F+02	URSSTADE	0 507F+02	PNGP2R01	0.571E+02		0.5905+02
14	WAKNNOOD	51	URSSTAD2	0 266E+02	URSENT-3	0 276 E+02	URSSTADE	0 6035+02	DNCD2D01	0.5745.02	DNODODOO	0.0000000
15	SIVOTERR	21	NCGOTEDB	0.2476+02	BI 700000	0.2700102		0.4736702	PNOFZDUI	0.0746702	PNGPZDUZ	0.6192+02
16	CTRODOO		NCCOTERR	0.1625+02	BL200000	0.4076+02		0.4106+02		0.4256+02	MEXUUUUU	0.438E+02
17			OTDOOLEKD	0.1025+02	BLZUUUUU	0.22/E+02	PNRUIFRB	0.379E+02	SLVOIFRB	0.423E+02	HND00000	0.435E+02
1/	DLZUUUUU			U. 162E+U2	NCGUIFRB	0.1/1E+02	GIMUUUUU	0.335E+02	HND00000	0.344E+02	MEX00000	0.355E+02
10	NCGUIFRB		CIRUUUUU	0.157E+02	BLZ00000	0.299E+02	PNROIFRB	0.353E+02	HND00000	0.388E+02	MEX00000	0.430E+02
19	PNRUIFRB		GIMOOOOO	0.243E+02	CTR00000	0.329E+02	MEX00000	0.337E+02	NCGOIFRB	0.348E+02	HNDOCOCO	0.364E+02
20	GTM00000		HND00000	0.153E+02	PNROIFRB	0.205E+02	MEX00000	0.215E+02	NCGOIFRB	0.345E+02	BL Z00000	0.366F+02
21	HND00000		GTM00000	0.181E+02	MEX00000	0.219E+02	JMC00000	(0.285E+02)	NCGOTERB	0.360F+02	FOADOOD	0 3875+02
22	JMC00000		MEX00000	0.169E+02	HND00000	0.173E+02	F0400000	/ 0.208F+02	CUBODOD	0 338E+02	HTTOTEPR	0 3505+02
23	E0A00000		MEX00000	0.262E+02	JMC00000	0.323E+02	PRUDODOD	0 365F+02	PNPOTEPR	0.036E+02		
24	MFX00000		CANNWOOD	0 316E+02	GTM00000	0 320F+02	HNDOOOOO	0.3235+02	EONODOOO	0.3205+02		0.4472402
25	CANNWOOD		MEYODOOO	0 210F+02	TONOTEDR	0 6185402	IICAVIDDI	0.0200020		0.3296402	JUDGOTADO	0.341E+UZ
26	TONOTERB		CANNUOOO	0.2176+02	NTHODOOD	0.4100402	MEYODOOO	0.4001102	LUDCCTADO	0.4996402	UKSSTADZ	0.515E+02
27	NTTOTEDB		CURODOO	0.3136+02	MICOODOO	0.3926402	MEXODOUD	V.425ETU2	VURSSIADZ	0.485E+02	URSSIAD6	0.512E+02
20				0.1005.02	JICOUUUU	0.3496+02	MEXUUUUU	0.368E+02	USAVIRPI	0.443E+02	PRU00000	0.451E+02
20			CKU00000	0.1906+02	MEXUUUUU	0.304E+0Z	JMC00000	0.380E+02	~PRU00000	0.419E+02	TKL00000	0.434E+02
29				U. 349E+UZ	COROCOCO	0.381E+02	URSSTAD2	0.480E+02	NIUOOOOO	0.488E+02	URSSTAD6	0.513E+02
20	PRUUUUUU		EQAUUUUU	0.3/1E+02	ABM00000	0.443E+02	NIU00000	0.448E+02	B 00000	0.491E+02	CLM00000	0.494E+02
31	N1000000		PRUDUUUU	0.307E+02	CKH00002	0.326E+02	TONOIFRB	0.399E+02	URSSTAD2	0.484E+02	TKL00000	0.489E+02
32	ABW00000		PRU00000	0.282E+02	CLM00000	0.375E+02	VEN00000	0.375E+02	CKH00002	0.396E+02	ATN00000	0.432E+02
- 33	CKH00002		TKL00000	0.364E+02	NIU00000	0.397E+02	ABW00000	0.426E+02	URSSTAD2	0.481E+02	PRU00000	0.503E+02
- 34	GRDOIFRB		VCTOIFRB	0.157E+02	BRBOIFRB	0.259E+02	TRD00000	0.291E+02	VENDDDDD	0 319F+02	DMAGTERR	0 3765+02
35	VCTOIFRB		GRD0IFRB	0.157E+02	BRBOIFRB	0.197E+02	TRD00000	0.271F+02	DMANTERR	0 317E+02	VENDODOD	0.3775+02
36	BRBOIFRB		TRD00000	0.170E+02	VCTOTERB	0.197F+02	GRDOTERB	0 258E+02	DMAGTERB	0.2716+02	VENDODDO	0.3276402
37	TRD00000		BRBOTFRB	0.166F+02	VENGOOO	0 263E+02	VCTOTERS	0.2675+02	DMAGTEDB	0.2775+02		0.3105402
38	URGONOOO		B 00000	0 342F+02	DMADIERB	0.3725+02	DOGOTEOR	0.207E-02		0.6015.00		U. 200E+U2
žõ	DMADIERB		ATGOTERR	0.143E+02	SCNOTEDB	0.0726.02 %	POPOTEOD	0.3076402		0.4210+02	UKSSTADI	U.499E+U2
č ń	ATCOTERS		SCHOTERR	0.1605-02	DMAGTED	0.2076402	ATUGOOOO	0.2096702		0.282E+02	AINUUUUU	0.289E+02
61	SCHOTEDD		ATCOLERD	0.1000402	DHAUIFRD	0.1036402	AINUUUUU	0.2296+02	USAVIRPI	0.267E+02	VEN00000	0.356E+02
41	CUNCTERD		AIGUIFRD	0.1000+02	AINUUUUU	0.1586+02	GUYUUUUU	0.1966+02	USAVIRPT	0.241E+02	DMAOIFRB	0.254E+02
42	GUTUUUUU		SUKUIFKB	0.1/2E+02	VENUUUUU	0.228E+02	SCN01FRB	0.305E+02	CLM00000	0.376E+02	B 00000	0.392E+02
43	A I N O O O O O		VEN00000	0.166E+02	SCNOIFRB	0.190E+02	CLM00000	0.227E+02	SUROIFRB	0.238E+02	USAVIRPT	0.257E+02
- 44	SUROIFRB		GUY00000	0.159E+02	VEN00000	0.160E+02	ATN00000	0.257E+02	CLM00000	0.366E+02	B 00000	0 385F+02
45	VEN00000		CLM00000	0.159E+02	ATN00000	0.266E+02	SUROIFRB	0.306E+02	GUYDDDDD	0 347F+02	USAVIRET.	0 3675+02
46	CLM00000		VEN00000	0.160E+02	BOLOTERB	0.224F+02	BAHOTERB	0.303E+02	USAVIPPT	0 3775-02	ATNOOOO	0.0076.02
47	BAHOIFRB		C1 M00000	0.158E+02	BOLDTERB	0 237 E+02	USAVIDDI	0.287 E+02	VENDODOD	0.3776+02	ATNOUUUU	0.4092402
48	BOLDIERB		CIMODODO	0 1785+02	PPCOTEPR	0.2516+02	BAUGTEDB	0.2076-02	VENCOOOD	0.3325702	AINUUUUU	U.45/E+U2
60	PROTERR	878 878	BOINTEDE	~ 0.1/0L·02 ~ 0 1685102~	* 0CE00000	0.2311+02	DANUICKD	0.3235702		0.3906+02	8 00000	0.416E+02
50		mb.	CKHOOOOI	* U. IJOLTUZ:				0.3900+02		0.418E+02	CHL00000	~ 0.485E+02
50				0.3465+02*	" FRGUIFRB	U. 350E+02 *	URSSIADZ	U.485E+02	BULDIFRB	0.516E+02	URSSTAD6	0.520E+02
51	OZAVIKAL		AINUUUUU	U. 393E+02	CLM00000	0.414E+02	SCNOIFRB	0.420E+02	VEN00000	0.420E+02	CKH00001	0.421E+02
- 52	CKH00001		USAVIRPT	U.198E+02	0CE00000	0.252E+02	PNGP2B01	0.398E+02	PNGP1B01	0.398E+02	URSSTAD2	0.482F+02
53	CPVOIFRB		USAVIRPT	0.363E+02	B 00000	0.456E+02	URSSTADI	0.477E+02	MTNOIFRB	0.500F+02	URSSTARS	0.508F+02
54	B 00000		CHL00000	0.193E+02	CANNEOOO	0.471E+02	URSSTADI	0.502F+02	ARG00000	0.517F+02	URGOOOOO	0 5185402
55	CHL00000		B 00000	0.159E+02	CANNEDOD	0.277E+02	BOLDIFRE	0.488F+02	URSSTADI	0.505E+02	ARGOODOOD	0.5256+02
56	CANNE000		CHL00000	0.220E+02	B 00000	0.349E+02	USAVIRPT	0.403E+02	USAIJHBI	0 487F+02	LIDSSTADI	0.5255402
											OUPPINDI	0.2046702

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XXX TH	1E 5 k	IORST INTER	FERORS ***								
57 GNBOIFRB		GMB00000	0.159E+02	MTNOIFRB	0.424E+02	GUI0IFRB	0.429E+02	B 00000	0.442E+02	SEN00000	0.444E+02
58 GMB00000		GNBOIFRB	0.159E+02	MTNOIFRB	0.400E+02	GUIOIFRB	0.433E+02	SEN00000	0.437E+02	B 00000	0.454E+02
59 MTNOIFRB		SRLOIFRB	0.263E+02	SEN00000	0.319E+02	USA13HB2	0.344E+02	GUIOIFRB	0.355E+02	E 00002	0.393E+02
60 SRLOIFRB		MTNOIFRB	0.149E+02	LBROIFRB	0.255E+02	GUIOIFRB	0.298E+02	SEN00000	0.349E+02	CTI00000	0.440E+02
61 CNR00000	23	USAI3HB2	0.213E+02	MTNOIFRB	0.239E+02™	USA13IB2	0.365E+02	PTC00000	0.435E+02	URSSTAD1	0.462E+02
62 E 00002	53	USAISHB2	0.196E+02	MTNOIFRB	0.337E+02	USA131B2	0.347E+02	LUXGDL61	0.406E+02	PTC00000	0.449E+02
65 PICUUUUU		E 00002	0.3/0E+02	CNR00000	0.428E+02	OCE00000	0.493E+02	URSSTAD2	0.496E+02	ARG00000	0.508E+02
4 LDKUIFKD		SENUUUUU	0.1536+02	GUIUIFRB	0.205E+02	SRLOIFRB	0.303E+02	MTNOIFRB	0.367E+02	CTI00000	0.429E+02
65 SENUUUUU		SENODOOO	0.15/E+02	LBRUIFRB	0.1612+02	MINULFRB	0.298E+02	SRLOIFRB	0.375E+02	MLIOIFRB	0.399E+02
67 ARG00000			0.1946+02		0.2595+02		0.2/2E+02°	USAI 3HB2	0.361E+02	MTNOIFRB	0.362E+02
68 USA13HB1	5	VBCUUUUU	0.1506+02	CUIDICKD	0.3010+02	USAISHD2	0.4556+02	ORSSIADI	0.4/1E+02	USAIJIBI	0.474E+02
69 USA13HB2	5	ARG000000	0.1372+02	TUNDOOO	0.3005402	D 00000	0.5116+02	SENUUUUU	0.530E+02	LBRUIFRB	0.538E+02
70 TUN00000	2	USA13HB2	0 200F+02	F 00002	0.401L+02 0.360F+02		0.4026+02	UCALTER	0.520E+U2		0.544E+U2
71 LUX00000		BEL 00000	0.152F+02		0.157E+02		0.9136+02		0.4216+02	USAISHBI	0.4426+02
72 BEL00000		LUX00000	0.156F+02	USA13HB2	0.172E+02	USA131B2	0.200L+02		0.2855+02		0.3496+02
73 HOL00000		USA13IB2	0.197E+02	USA13HB2	0.232F+02	BEL00000	0.241L+02	GHA00000	0.2002+02		0.3485+02
74 GHA00000		CTI00000	0.183E+02	BENOIFRB	0.280F+02	BFAOTFRB	0.287F+02	MITATERS	0.2092-02		0.3136402
75 CTI00000		GHA00000	0.157E+02	BENOIFRB	0.196E+02	BFAOIFRB	0.263F+02	MITOTERB	0.282E+02	GUTOTERB	0.3002+02
76 BENOIFRB		BFAOIFRB	0.161E+02	CTI00000	0.198E+02	GHA00000	0.223E+02	MLIOIFRB	0.244F+02	NGROTERB	0.373E+02
77 BFAOIFRB		MLIOIFRB	0.145E+02	BENOIFRB	0.157E+02	CTI00000	0.248E+02	GHA00000	0.261E+02	NGROTFRB	0.363F+02
78 MLIOIFRB		BFAOIFRB	0.192E+02	USA13IB2	0.243E+02	BENOIFRB	0.307E+02	NGROIFRB	0.350E+02	CT100000	0.372E+02
79 NMBUIFRB		USA13IB2	0.266E+02	USA13IB1	0.269E+02	STPOIFRB	0.292E+02	BOTOOOOO	0.305E+02	AGLOIFRB	0.381E+02
SU SIPUIFRB	,	USAI3182	0.225E+02	USA13IB1	0.237E+02	NMBOIFRB	0.242E+02	MLIOIFRB	0.322E+02	GNEOIFRB	0.356E+02
SI USAISIBI	4	NMBUIFRB	0.355E+02	MLIOIFRB	0.402E+02	STPOIFRB	/0.407E+02)	\ARG00000	0.474E+02	BERCAYMS	0.519E+02
83 BOTOOOOO	4		0.391E+02	NMBUIFRB	0.433E+02	STPOIFRB	0.455E+02	LBY00000	0.578E+02	HOLOGOOO	0.595E+02
84 I BY00000		NCDUTEDB	0.2075+02	ROTOCOC	0.2/8E+02		0.300E+02	AGLOIFRB	0.315E+02	URSSTADI	0.387E+02
85 I SOOTERB		BOTODOOO	0.2036+02		0.3186+02	USAISIBZ	0.35/E+U2	MLIOIFRB	0.381E+02	URSSTAD1	0.383E+02
86 NGROIFRB			0.237L+02	GNEATERR	0.2702402		0.3210+02	GNEUIFRB	0.340E+02	URSSTADI	0.377E+02
87 GNEOIFRB		NGROTERB	0.178F+02	GABOTERB	0.2272+02	CMEDIERD	0.3406702		0.3556+02	NIGUIFRB	0.366E+02
88 IRL00000		DNK00002	0.223E+02	DNK00000	0.269F+02	NGROTERB	0.289E+02		0.3492402	CNEATEDR	0.3746+02
89 MLT00000		LBY00000	0.265E+02	DNK00000	0.287E+02	GRI 00000	0.299E+02	NGROTERR	0.303L+02		0.3000702
90 DNK00000	55	IRL00000	0.245E+02	USA13IB2	0.282E+02	MLTOOOOO	0.303E+02	LUXGDI 41	0.334E+02	URSSTADI	0.370E+02
91 DNK00002	55	IRL00000	0.213E+02	MLT00000	0.332E+02	G 00000	0.367E+02	URSSTADI	0.369E+02	LUXGDI 61	0.370F+02
92 GRL00000	55	MLT00000	0.365E+02	URSSTAD1	0.372E+02	IRL00000	0.438E+02	NGROIFRB	0.485E+02	ISL00000	0.505F+02
93 AGLOIFRB		GABOIFRB	0.166E+02	CMEOIFRB	0.276E+02	COGOIFRB	0.304E+02	URSSTAD1	0.345E+02	CVAOIFRB	0.388E+02
94 CVAUIFRB		SMR00000	0.243E+02	USA13IB2	0.247E+02	AGLOIFRB	0.291E+02	I 00000	0.305E+02	USA13HB2	0.346E+02
95 GADUIFKD		AGLUIFRB	U.166E+U2	CMEOIFRB	0.180E+02	COGDIFRB	0.270E+02	URSSTAD1	0.343E+02	NIGOIFRB	0.372E+02
90 CHEUIFKD 07 SMD00000		GADUIFRD	0.1946+02	CUGUIFRB	0.215E+02	NIGOIFRB	0.271E+02	AGLOIFRB	0.320E+02	URSSTAD1	0.336E+02
Q8 SUITATEPR		SMD00000	0.1425+02		U.234E+U2	CVAULERB	0.242E+02	USA131B2	0.254E+02	I 00000	0.259E+02
99 FGYNTERB		COGOTERB	0.13/6+02		0.2020+02%	L UUUUU	0.253E+02	LUXGDL41	0.291E+02	URSSTAD1	0.325E+02
100 COGOTERB		NTGOTERB	0.2126402	CMEDIEDR	0.2405+02	UKSSTADI	U.315E+U2	LIEUIFRB	0.336E+02	CMEDIFRB	0.366E+02
101 LIFOIFRB		T 00000	0.189E+02	SHITOTERS	0.2076+02	ECYOTEDR	0.2505+02	GABUIERB	0.284E+02	URSSTADI	0.314E+02
102 NIGOIFRB		COGOTERB	0.189F+02	CMEDIERB	0.238E+02	LOTOIPRD	0,2005+02	S ECYOTEDR	0.2825+02	SMRUUUUU	0.290E+02
103 RRWOIFRB		URSSTAD1	0.276E+02	I 00000	0.301F+02	ZATOTERB	0.3022+02	COGOTERB	0.3016+02	ASCSTUTC	0.3925+02
104 I 00000		G 00000	0.164E+02	LIEOIFRB	0.245E+02	URSSTADI	0.275E+02	SUTOTERB	0.305E+02		0.3306702
105 ASCSTHTC	52	URSSTAD1	0.248E+02	NIGOIFRB	0.413E+02	I 00000	0.434E+02	URSFOT-1	0.479F+02	RRWOTERR	0.481F+02
106 BERCAYMS	52	URSSTAD1	0.266E+02	I 00000	0.468E+02	USA13IB1	0.475E+02	URSFOT-1	0.507E+02	DOMOIFRB	0.532E+02
IU/ FLKSTGGL	52	URSSTAD1	0.268E+02	USA13IB1	0.386E+02	ARG00000	0.443E+02	USA13HB1	0.454E+02	I 00000	0.457E+02
×	· Song grade	1. 1. 1. 1. 1. 1. 1.	· · · · · · · · · · · · · · · · · · ·	s som sva vara s	and Stark and June, an and	MALINE JOHN VAL A		~ ~~	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		J.
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	*** THE 5 W	IORST INTERFERORS	XXX								
	108 G 00000 52	I 00000 0.144F	+02 URSSTADI	0.266F+02	LUXGDI 41	0 3295+02	USA13TB2	0 330F+02		0 3055+02	
	109 ZWE00000	URSSTAD1 0.209	+02 ZATOTERB	0 325E+02	AGLOTERR	0.3765+02	BOTOOOOO	0.03592+02	MOZOTEDB	0.3950702	
	110 DITOTERB	URSSTADI 0 1708	+02 YMS00000	0.6155+02		0.0702.02	SOMOTEDR	0.4306+02	CDUCTERD	0.4456+02	
	111 UPSSTADI	ZWE00000 0 1470	+02 7ATOTEDB	0.910000	MDCOTEDB	0.4305402	SUNULERD	0.4426+02	SUNUIFRD	0.4/1E+02	
		UDESTADI 0 17/1	+UZ ZAIUIFRD	0.2306-02	TIDGUIFKD	0.3100+02	AF200000	0.33/E+02	MUZUIFRB	0.374E+02	
	112 GRC00000	URSSIADI U.176	+U2 CTPUUUUU	0.319E+02	1 00000	0.40/E+02	EGYOIFRB	0.433E+02	LUXGDL41	0.439E+02	
		URSSTADI U.2/IL	+02 GRC00000	0.2//E+02	ZAIUIFRB	0.326E+02	IRQOOOOO	0.363E+02	LUXGDL41	0.365E+02	
	114 ZAIUIFRB	URSSIADI 0.283E	+02 /URSFOT-1	0.396E+02	LUXGDL41	0.414E+02	DOMOIFRB	0.443E+02	COGOIFRB	0.457E+02	
	115 DOMOIFRB	ZAIOIFRB 0.278	+02/JURSSTAD1	0.279E+02	BERCAYMS	0.387E+02	LUXGDL41	0.406E+02	URSFOT-1	0.407E+02	
	116 LUXGDL41	ZAIOIFRB 0.610E	+02 ROU00000	0.687E+02	GRC00000	0.693E+02	I 00000	0.701E+02	G 00000	0.720F+02	
	117 BHR00000	QAT00000 0.2028	+02 KWT00000	0.284E+02	URSSTAD1	0.321E+02	TRODODOD	0.331E+02	URSENT-1	0 361E+02	
	118 QAT00000	KWT00000 0.1516	+02 BHR00000	0.201F+02	TRODODOD	0.273E+02	URSENT-1	0 322E+02	UPSSTADI	0.3012.02	
	119 KWT00000	QAT00000 0.156F	+02 TR00000	0 158F+02	YMSOOOOO	0 226 E+02	BHDUUUUU	0.3225+02		0.3401402	
	120 YMS00000	KWT0000 0 266	+02 URSENT-1	0 298E+02	00000000	0.3605+02	LIDSSTADI	0,2022402	043501-1	0.3032+02	
•	121 TR000000	KWT00000 0 1858	+02 AES00000	0.2655+02	UDSEDT-1	0.3475+02	DOUDODOD	0.3496+02	QATUUUUU	0.359E+02	
	122 AFS00000	UPSENT-1 0 2385	102 ALS00000	0.2456+02		0.2405+02	RUUUUUU	0.25/E+UZ	QAIUUUUU	0.328E+02	
	123 151 00000		+02 IN00000	0.3405402	UKSSTADI	0.3596+02	ZAIUIFRB	0.3/6E+02	R0000000	0.384E+02	
	125 ISC00000		+02 KUUUUUU	0.2005+02	AF500000	0.288E+02	1RQ00000	0.330E+02	URSSTAD1	0.359E+02	
	124 KUUUUUUU	IRQUUUUU U.250	+02 URSFUI-1	0.234E+02	AF\$00000	0.277E+02	ISLOOOOO	0.321E+02	URSSTAD1	0.361E+02	
	125 UKSFUI-1	15100000 0.2281	+02 R000000	0.519E+02	GRL00000	0.526E+02	AFS00000	0.538E+02	IRQ00000	0.566E+02	
	126 UMAUUUUU	SUMULERB 0.167E	+02 INSAT2CT	0.251E+02	INSAT2AT	0.251E+02	INSAT2BT	0.251E+02	URSFOT-1	0.338E+02	
	127 SUMULERB	OMA00000 0.1908	+02 SDN0IFRB	0.318E+02	URSFOT-1	0.351E+02	INSAT2CT	0.370E+02	INSAT2AT	0.370E+02	
	128 COMOIFRB	MOZOIFRB 0.1578	+02 MDG0IFRB	0.334E+02	SOMOIFRB	0.353E+02	SDNOIFRB	0.385E+02	SYROOOOO	0 385E+02	
	129 SYR00000	TUR00000 0.1578	+02 SDN0IFRB	0.312E+02	COMOIFRB	0.373E+02	IRQ00000	0.375E+02	URSENT-1	0.389E+02	
	130 MOZOIFRB	SDNOIFRB 0.198	+02 COMOIFRB	0.229E+02	TUR00000	0.350F+02	SOMOTERB	0 384F+02	UPSENT-1	0.0005+02	
	131 TUR00000	SDN0IFRB 0.128	+02 SYR00000	0.206E+02	MOZOTERB	0 302E+02	POLODOD	0.3046+02	TNSATOCT	0.4076+02	G
	132 SDNOIFRB	TUR00000 0.2618	+02 MOZOTERB	0.276F+02	P01 00000	/0 332F+02	SOMOTERS	0.320E+02	LIDSENT_1	0.3746+02	G
	133 POL00000	SDNOIFRB 0.199	+02 TUR00000	0 228E+02		0.2055+02		0.3041402		0.4125+02	Ċ
	134 MDGOIFRB	S 00000 0.410	+02 COMOTERB	0 419F+02	MOZOTERR	0.2996+02	UDSSTADI	0.3056402		0.399E+02	5
	135 5 00000		+02 MDG0TEPR	0.3036+02		0.4225402	POLODODO	0.4646+02	OK221AD2	0.4/0E+02	
	136 LUXGD 51	E 00000 0 5328	+02 5 00000	0.5056-02		0.00000000		0.3386+02	FNLUUUUU	0.41/E+02	5
	137 SEYNTERB	PEN00000 0.3321	+02 3 00000 +02 MDC01EBB	0.0000000		0.0000000	FNLUUUUU	0.743E+02	PORMDRAZ	0.745E+02	ŧ
	138 5 00000 54			0.4105+02		0.431E+02	VURSSIADS	0.453E+02	URSSTAD4	0.479E+02	
	130 CDL 00000 56	USAVIDDI 0.1520		0.3306+02		0.390E+02	S 00000	0.441E+02	USA13HB2	0.463E+02	E
	160 CUE00000 50	D 00000 0.4501	TUZ URSSTADI	0.4596+02	BERCATINS	0.488E+02	"URSFOT-1	0.499E+02	SEYOIFRB	0.529E+02	
	140 GUF00000 56		+UZ URSSTADI	U.456E+U2	URSFUI-1	0.496E+02	SEYOIFRB	0.533E+02	USA13HB1	0.566E+02	
		URSSTADI 0.4471	+UZ URSSIADS	0.480E+02	URSFOT-1	0.485E+02	SEYOIFRB	0.523E+02	B 00000	0.544E+02	
	142 REUUUUUU 56	MDGUIFRB 0.321	+02 MAUDIFRB	0.354E+02	SEYOIFRB	0.385E+02	URSSTAD3	0.457E+02	URSSTAD4	0.484E+02	
	143 SPM00000 56	USA13HB1 0.404E	+02 USA13IB1	0.404E+02	USAVIRPT	0.431E+02	URSSTADI	0.461E+02	LUXGDL 51	0.473E+02	
	144 AFG00000	IRN00000 0.152	+02 INSAT2CT	0.239E+02	INSAT2AT	0.239E+02	INSAT2BT	0.239E+02	MAUOTERB	0.370F+02	
	145 MAUOIFRB	REU00000 0.3498	+02 AFG00000	0.354E+02	URSSTAD3	0.438E+02	MDGOIFRB	0.456E+02	URSSTAD4	0.469E+02	
	146 IRN00000	AFG00000 0.206	+02 FNL00000	0.284E+02	INSAT2CT	0.328E+02	INSAT2AT	0.328F+02	TNSAT2BT	0 328F+02	
	147 FNL00000	IRN00000 0.193	+02 LUXGDL61	0.244E+02	NOR00000	0.324F+02	5 00000	0 440F+02	UPSSTADZ	0.0202.02	
	148 NOR00000	LUXGDL61 0.1858	+02 FNL00000	0.327E+02	LUXGDI 51	0.406F+02	URSSTADS	0 427E+02	\$ 00000	0.4476+02	
	149 LUXGDL61	PORMDRAZ 0.360	+02 NOR0000	0.601F+02	FONN	0 493E+02		0.7205+02		0.40/2402	
	150 PORMDRAZ	IUXGD161 0.110	+01 URSSTADS	0 391F+02	IIPSSTADA	0.0752.02	116112402	0.7396402	06500001	0.7392+02	
	151 NPLOTERB	PAKOTERB 0 170	+02 INSAT2CT	0.2655+02	TNCATOAT	0.9472402	THEATONT	0.4052702	USA13182	0.465E+02	
	152 CI N00000	MIDOTEDE 0 1575	AND HIDSSTADS	0.2476+02	NDI OTEDR	0.2425402	INSAIZBI	0.245E+02	URSSIADS	0.263E+02	
	153 MIDDIERB		+02 DAVOTEDD	0.23/6402	NFLUICKD	0.20/E+02	INSATZCT	0.341E+02	INSAT2AT	0.341E+02	
	156 PAKATEPR	MUDDIEDD 0.10/1	TUZ FARUIFRD	0.2116+02	UKSSTADS	0.2406+02	INSAT2CT	0.288E+02	INSAT2AT	0.288E+02	
	154 LARUIERD		TUZ URSSTADS	0.237E+02	NPLUIFRB	0.248E+02	INSAT2CT	0.283E+02	INSAT2AT	0.283E+02	
	155 UK33TAD3		+02 DDR00000	0.2/2E+02	MRC00000	0.323E+02	URS00001	0.341E+02	NOR00000	0.369E+02	
	157 00000 00000 0 000	UKSSIAUS 0.153	+U2 DDR00000	U.162E+02	LUXGDL61	0.295E+02	URSSTAD4	0.325E+02	LUXGDL41	0.374E+02	
	157 NDK00000	ν 00000 0.155	+02 MRC00000	0.161E+02	URSSTAD3	0.209E+02	LUXGDL61	0.303E+02	URSSTADA	0.312F+02	
	158 MRC00000	URSSTAD3 0.2121	+02 DDR00000	0.244E+02	URSSTAD4	0.307E+02	LUXGDL61	0.372F+02	D 00000	0.401F+02	
	159 URSSTAD4	INDOIFRB 0.244E	+02 BRMOIFRB	0.260E+02	VTNOIFRB	0.263E+02	LACOTERB	0.265E+02	HKGOOOO	0 3655402	
	160 TGOOIFRB	URSSTAD4 🖾 0.1578	+02 URSSTAD3	0.357E+02	URSSTADI	0.493E+02	GHANDOOO	0 651 5402	NTCOTEDD	0 5436702	
	161 SNG00000	BRMOIFRB 0.215	+02 INDOIFRB	-0.282E+02	URSSTAD4	0.308E+02		0.008ET05	HIDSSTAD7	0.0010+02	
	162 BRMOIFRB	INDOIFRB 0,156	+02 URSSTAD4	0.318F+02	INSAT2CT	0 328 F+02	TNSAT2CP	0.4000-02~	TNCATONT	U.413E+02	
						0.3202.02	TUDALECK	0.3306702	TNOALCAL	U.343E+02	
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163	TNDOTERR		ROMOTEOR		
166	TCHOODOO			0.153E+02 INDOLEDR 0.326E+02 INSAL2CK 0.326E+02 INSAL2CK 0.361E+02 LAUULFKB 0.378E+0	2
165			MCONTERB	0.1335+02 TCH00100 0.1895+02 08300001 0.2145+02 08351AD4 0.3245+02 TCH000000 0.3785+0	12
144	MCOOTEPB			0.135E+02 ALCONDOL 0.107E+02 UNSCIDE 0.239E+02 UNSSIAD4 0.337E+02 YUGUUUU 0.356E+0	12
147	LAGATERS		VINOTEDR	0.1652+02 ALGOUDUD 0.2972+02 0RS51AD4 0.3442+02 URS00001 0.348E+02 LUXGDL61 0.377E+0)2
10/			VINULFRD	0.21/E+02 IND01FRB 0.286E+02 BRM01FRB 0.30/E+02 INSAT2CT 0.321E+02 MNG01FRB 0.348E+0	12
100	MINGUIERD		URSUUUUI	0.156E+02 ALGUUUUU 0.302E+02 LAUUIFRB 0.331E+02 IND0IFRB 0.345E+02 INSAT2CR 0.352E+0)2
169	ALGUUUUU		UKSUUUUI	0.263E+02 /MNGUIFRB 0.324E+02 URSSTAD4 0.360E+02 TCD0IFRB 0.393E+02 GIB00000 0.394E+0)2
170	URSUUUUI		MNGUIFRB	U.242E+02/1NSAT2CT 0.332E+02 IND0IFRB 0.350E+02 INSAT2CR 0.375E+02 VTN0IFRB 0.375E+0)2
1/1	VINULERB		HKG00000	0.230E+02% LAOOIFRB 0.286E+02 URS00001 0.344E+02 INSAT2CR 0.372E+02 INDOIFRB 0.384E+0	12
172	CYPSBA00	54	YUGOOOOO	0.185E+02 URS00001 0.260E+02 URSSTAD4 0.377E+02 URSSTAD3 0.432E+02 URSSTAD5 0.446F+0	12
173	GIBOOOOO	54	ALGOOOOO	0.225E+02 YUG00000 0.268E+02 URS00001 0.344E+02 LUXGDL61 0.382F+02 URSSTAD4 0.389F+0	12
174	HKGOOOOO	54	VTNOIFRB	0.156E+02 LA00IFRB 0.392E+02 URSSTAD4 0.399E+02 INSAT2CR 0.405E+02 PNGP2B01 0.414E+0	12
175	YUGOOOOO		URS00001	0.177E+02 CYPSBA00 0.222E+02 HNG00000 0.260E+02 GIB00000 0.294E+02 BU 00000 0.362E+0	12
176	BRUOIFRB		MLA00000	0.246E+02 TCD0IFRB 0.364E+02 VTN0IFRB 0.378E+02 UBSSTADE 0.419E+02 UBSSTADE 0.424E+0	12
177	HNG00000		TCD0IFRB	0.198E+02 URS00001 0.200E+02 YUG00000 0.237E+02 BU 00000 0.202E+02 AUT00000 0.201E+0	12
178	TCDOIFRB		CAFOIFRB	0.275E+02 HNG00000 0.318E+02 HRSSTADA 0.306E+02 BRU0TEDB 0.331E+02 HOLDOUD 0.331E+0	2
179	MLADOOOO		INSAT2CT	0.279F+02 BRUDTERB 0.315F+02 CAEDIERB 0.374E+02 TROUTAND 0.491E+02 TROUTAND 0.497E+02	2
180	CAEDIERB		TCDOTERS	0.2925402 MIA00000 0.3205402 RH 00000 0.3515402 INSATZAT 0.3395402 INSATZAT 0.3395402 INSATZAT 0.339540	12
181	BULOGOOO		CAEDIERB	0.227E+02 [IPS0000] 0.329E+02 B000000 0.331E+02 URS3AD4 0.416E+02 URSSAD5 0.430E+0	12
182	INSATOCT	7	TNDATEDB	0.21/E+02 UBS00001 0.308E+02 MEAD0000 0.315E+02 HNG00000 0.327E+02 YUG00000 0.343E+0	12
183	TNSAT2CD	7		0.5342+02 0A5000001 0.640E+02 0A5000002 0.659E+02 CHN000000 0.675E+02 BRM01FRB 0.701E+0)2
186		5		0.336E+02 AFG00000 0.608E+02 PARUIFRB 0.610E+02 IND0IFRB 0.613E+02 CHN00000 0.615E+0)2
104				0.213E+02 MUTOIFRE 0.355E+02 NMBUIFRE 0.565E+02 KRE00000 0.598E+02 AGLOIFRE 0.598E+0)2
100				0.175E+02 URSSIAD5 0.25IE+02 INSAI2AR 0.276E+02 INSAT2AT 0.279E+02 URS00002 0.288E+0)2
100				0.170E+02 0RSSTAD5 0.250E+02 INSATZAR 0.336E+02 INSATZAT 0.351E+02 TZAOIFRB 0.352E+0	2
10/	INSALZAL	ļ	UKSUUUU2	U.611E+02 CHN00000 0.651E+02 IND0IFRB 0.655E+02 URS00001 0.695E+02 BRM0IFRB 0.744E+0	2
188	INSATZAR	1	URS00002	0.5//E+02 CHN00000 0.610E+02 URS00001/0.611E+02 IND0IFRB 0.612E+02 AFG00000 0.615E+0	2
189	URSSIADS		ZMBOIFRB	0.206E+02 MWI0IFRB 0.267E+02 TZA0IFRB 0.325E+02 SWZ00000 0.372E+02 NMB0IFRB 0.375E+0	12
190	TZAOIFRB		URSSTAD5	0.156E+02 MWI0IFRB 0.176E+02 UGA0IFRB 0.278E+02 SWZ00000 0.285E+02 ZMB0IFRB 0.366F+0	12
191	SWZ00000		URSSTAD5	0.164E+02 TZA0IFRB 0.207E+02 MWI0IFRB \0.345E+02 URSF0T-2 0.393E+02 TNSAT2AR 0.409F+0	12
192	MWIOIFRB		TZAOIFRB	0.156E+02 UGA0IFRB 0.186E+02 URSSTAD5 0.210E+02 ZMB0IFRB 0.360E+02 URSENT-2 0.406E+0	12
193	UGAOIFRB		TZAOIFRB	0.173E+02 MWI0IFRB 0.177E+02 URSSTAD5 0.218E+02 KENOTERB 0.378E+02 URSENT-2 0.411E+0	12
194	INSAT2BT	2	URS00002	0.477E+02 CHN00000 0.606E+02 ARS00000 0.654E+02 TND0TERB 0.690E+02 TNS00000 0.727E+0	12
195	INSAT2BR	2	URS00002	0.443E+02 CHN00000 0.604E+02 URS00001 0.611E+02 IND01ERB 0.611E+02 AEG00000 0.615E+0	12
196	KENOIFRB		INSAT2BR	0.303E+02 INSAT2BT 0.330E+02 URSSTAD5 0.347E+02 UGA0TERB 0.387E+02 ETH00000 0.613E+0	12
197	URS00002		INSAT2BR	0.206F+02 INSAT2BT 0.262F+02 ARS00000 0.266F+02 INSAT2AD 0.367E+02 UNCOTADE 0.413EF0	22
198	ARS00000		URS00002	0.105E+02 INRADIO 0.0197E+02 INNOTEDE 0.272E+02 INSATZAR 0.339E+02 UNSATAD5 0.379E+0	
199	JORODODO		4RS00000	0.138E+02 URNOTEDB 0.176E+02 URNOTEDB 0.276E+02 URS00000 0.266E+02 UNSAL2BR 0.295E+0	12
200	IBNOTERB			0.152F+02 ISPOTEDB 0.160E+02 ISPOTED 0.1046E+02 US000002 0.506E+02 INSAT2BR 0.329E+0	12
201	TSPOTERR		IBNOTEDB	0.142E+02 ISR01FRB 0.104E+02 ARS00000 0.195E+02 INSAT2BR 0.352E+02 URS00002 0.357E+0	12
202	PNCOTERR		SIMOTEDR	0.164E+02 JUK00000 0.196E+02 ARS000000 0.219E+02 INSAT2BR 0.372E+02 INSAT2BT 0.385E+0)2
202				0.364E+02 A0500000 0.383E+02 ETH00000 0.399E+02 URSSTAD6 0.428E+02 URSSTAD5 0.435E+0	12
203			PNOULFRD	0.281E+02 ARS00000 0.368E+02 YEMUIFRB 0.378E+02 URSSTAD5 0.411E+02 KENOIFRB 0.446E+0	12
204	SLIUIFKD		PNGUIFRB	0.312E+02 AUSUUUUU 0.331E+02 CHN00000 0.359E+02 URSSTAD6 0.397E+02 URSSTAD5 0.466E+0)2
205			AUSUUUUU	U.334E+U2 INSA12BR U.338E+U2 INSAT2AR 0.380E+U2 URSSTAD6 U.398E+U2 YEMUIFRB U.401E+U)2
206	TEMULERB		CHNUUUUU	0.128E+02 AUS00000 0.366E+02 ETH00000000.376E+02 ARS00000 0.396E+02 URSSTAD5 0.445E+0	12
207	AUS00000		CHN00000	0.276E+02 URSSTAD6 0.380E+02 NCL00000 0.393E+02 CAR00000 0.421E+02 WAL00000 0.421F+0	12
208	ADL00000	50	AUS00000	0.157E+02 URSSTAD6 0.378E+02 CHN00000 0.417E+02 NRU0IFRB 0.427E+02 URSSTAD5 0.464E+0	12
209	KER00000	50	AUS00000	0.281E+02 URSSTAD6 0.384E+02 CHN00000 0.417E+02 NRU0IFRB 0.455E+02 URSSTAD5 0.458E+0	12
210	NCL00000	50	AUS00000	0.175E+02 NRU0IFRB 0.353E+02 VUT0IFRB 0.372E+02 URSSTAD6 0.377F+02 CHN00000 0.414E+0	12
211	WAL00000	50	AUS00000	0.221E+02 NRU0IFRB 0.331E+02 URSSTAD6 0.386E+02 CHN00000 0.431E+02 SIMOTEPB 0.681E+0	12
212	NRUOIFRB		CAR00000	0.157E+02 AUS00000 0.255E+02 WAL00000 0.287F+02 NCL00000 0.337F+02 UBSSTADE 0.376E+0	12
213	CAR00000		NRUOIFRB	0.330E+02 KIR0IFRB 0.330E+02 URSSTAD6 0.342E+02 CHN00000 0.381E+02 AU300000 0.370E+0	22
214	VUTOIFRB		URSSTAD6	0.318F+02 NCL00000 0.388F+02 0.00000 0.610F+02 0.000000 0.361F+02 AUS00000 0.445E+0	12
215	UAEOIFRB	27 S 27 S	INSAT2CT	0.306F+02 INSAT2AT 0.306F+02 INSAT2BT 0.306F+02 ADS00000 0.436E+02 CARU0000 0.438E+0	12
216	KIROIFRB	8 3 DX	CARONNON	0.157F+02 = 1.00000 = 0.195F+02 = 105874D1 = 0.306E+02 = 0.051AD6 = 0.518E+02 = 0.0101FRB20 = 0.365E+0	12
217	J 00000		URSSTADA	0.295F+02 CHN00000 0.429E+02 CN304D0 0.304E+U2 VUIUIFKB U.413E+02**NRU0IFKB 0.424E+0	12
			SUSSIADO	0.2/32/02 CHM00000 0.300E+02 CAKUUUUU 0.3/2E+02 KIRUIFRB 0.385E+02 URSSTAD5 0.486E+0)2

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*** THE 5 WORST INTERFERORS ***

218	URSSTAD6		J 00000	0.241E+02	URS00003	0.243E+02	CHN00000	0.314E+02	ALS00000	0.384E+02	INS00000	0.501E+02
219	NZL00000		URSSTAD6	0.300E+02	URSSTAD2	0.502E+02	INS00000	0.519E+02	PNGP2B01	0.521E+02	PNGP1B01	0.521E+02
220	URS00003		INS00000	0.183E+02	URSSTAD6	0.352E+02	CHN00000	0.444E+02	J 00000	0.458E+02	INSAT2CT	0.483E+02
221	INS00000		THA00000	0.263E+02	URS00003	0.267E+02	URSSTAD6	0.346E+02	INSAT2CT	0.452E+02	INSAT2AT	0.452E+02
222	THA00000		INS00000	0.160E+02	URSSTAD6	0.358E+02	INSAT2CT	0.383E+02	INSAT2AT	0.383E+02	INSAT2BT	0.383E+02
223	NZLROSSO		MRL00000	0.302E+02	FJIOIFRB	0.367E+02	PHLOIFRB	0.374E+02	URSSTAD6	0.437E+02	TUV00000	0.454E+02
224	FJIOIFRB		MRL00000	0.214E+02	TUV00000	0.294E+02	PHLOIFRB	0.364E+02	NZLROSSO	0.387E+02	URSSTAD6	0.438E+02
225	MRL00000		TUV00000	0.288E+02	FJIOIFRB	0.333E+02	PHLOIFRB	0.339E+02	NZLROSSO	0.437E+02	URSSTAD6	0.440E+02
226	TUV00000		MRL00000	0.163E+02	PHLOIFRB	0.278E+02	FJIOIFRB	0.294E+02	CBG0IFRB	0.425E+02	URSSTAD6	0.439E+02
227	PHLOIFRB		CBGOIFRB	0.220E+02	MRL00000	0.367E+02	INS00000	0.389E+02	URSSTAD6	0.422E+02	TUV00000	0.437E+02
228	CBGOIFRB		PHLOIFRB	0.141E+02	THA00000	0.423E+02	INS00000	0.430E+02	URSSTAD6	0.431E+02	MRL00000	0.459E+02
229	PNGP1B01	9	INS00000	0.539E+02	PHLOIFRB	0.579E+02	CHN00000	0.584E+02	CAR00000	0.596E+02	AUS00000	0.608E+02
230	PNGP1B02	9	CAR00000	0.631E+02	MRL00000	0.646E+02	J 00000	0.676E+02	GUMMRA00	0.766E+02	WAKOOOOO	0.803E+02
				Sec. 4						in.		

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IFRE CONFERENCE PREPARATION

EXERCISE NO. 1-1-3-1

***** THE 5 WORST SINGLE INTERFERENCES (C/I) *****

NO.	NAME	ID	INTER	FERER								
1	URSEEDRN		ALS00000	0.221E+02	GUMMRA00.	-0.409E+02	HWA00000	0.435E+02	MDW00000	0.534E+02	WAKOOOOO	0.558F+02
2	ALS00000	51	URSEEDRN	0.232E+02	URS00002	0.497E+02	USAVIRPT	0.514E+02	CANMSATO	0.516F+02	CHNODOO	0 528E+02
- 3	GUMMRA00	51	URSEEDRN	0.386F+02	1 00000	0 532F+02	CHNDDDD	0 550E+02	TNS00000	0 452E+02	CAROOOOO	0 4505+02
ā	ныдололо	51	URSEEDRN	0 402F+02	CAPOOOO	0 7105+02	USAVIDET	0.7565+02	CHN00000	0.7415+02	1 00000	0.0000
, s		51	UDSEEDDN	0.3835+02		0.7176-02	C1000000	0.7395.02	CHNODOOD	0.7016402		0.7022402
2		51		0.3036402/	TIKLUUUUU	0.00/6-02	CARUUUUU	0.0200+02	CHNUUUUU	0.7032+02	PNGUIFRB	0.705E+02
<u></u>	JAKUUUUU	21	UKSEEDKN	0.3956+02	CARUUUUU	0.6556+02	UCEUUUUU	0.6/2E+02	AUSUUUUU	0.769E+02	USAVIRPT	0.773E+02
	JUNUUUUU	21	URSEEDRN	0.304E+02	CAROOOOO	0.550E+02	CHN00000	0.619E+02 *	MRL00000	0.681E+02	J 00000	0.685E+02
8	MDW00000	51	URSEEDRN	0.263E+02	CHN00000	0.585E+02	J 00000	0.603E+02	USAVIRPT	0.656E+02	URS00002	0.672E+02
9	PLM00000	51	URSEEDRN	0.381E+02	CAROOOOO	0.564E+02	OCE00000	0.761E+02	USAVIRPT	0.763E+02	CHN00000	0.772E+02
10	SMA00000	51	URSEEDRN	0.359E+ 02	WAL00000	0.504E+02	NIU00000	0.587E+02	OCE00000.	0.605E+02	TKL00000	0.617F+02
11	WAK00000	51	URSEEDRN	0.282E+02	CHN00000	0.576E+02	J 00000	0.578E+02	CAROOOOO	0.582F+02	MRI 00000	0 592F+02
12	SLVOIFRB		MEX00000	0.396E+02	CTR00000	0.396F+02	NCGOTERB	0.425E+02	CI M00000	0.510E+02	USA13HB6	0 5515+02
13	CTROOOOO		NCGOTERB	0.359F+02	PNROTERB	0 368F+02	SIVOTERB	0 6235+02	MEYOOOOO	0 0505-02	CLMODDOD	0.0011-02
ĩŭ	PNROTERR		NCGOTERB	0 203E+02	CTRODOD	0 322E+02	MEYNDAAAA	0.3275+02		0.4000-02		0.4/05-02
15	NCGOTERR		DNDATEDR	0.2025-02	MEYOOOOO	0.3225-02		0.32/2+02		0.3916702		0.4166+02
10	FOADDOOD		MEYOOOOO	0.2000402		0.2226402	EQAUUUUU	0.3466+02		0.352E+02	CLMOUUUU	0.424E+02
19	LUAUUUUU			0.1/00102	FRUUUUUU	0.3506402	NCGUIFRB	0.4052+02	PNRUIFRB	0.414E+02	CLM00000	0.462E+02
17	MEXUUUUU		EVAUUUUU	U. 220E+U2	NCGUIFRB	0.31/E+02	CANNWOOD	0.391E+02	PNROIFRB	0.448E+02 🛚	USAVIRPT	0.485E+02
18	CANNWUUU		MEXUUUUU	0.24/E+02	TONOIFRB	0.373E+02	USAVIRPT	0.411E+02	CANMSATO	0.446E+02	EQA00000	0.473E+02
19	TONOIFRB		CANNWOOD	0.361E+02	NIUOOOOO	0.388E+02	MEX00000	0.484E+02	EQA00000	0.560E+02	TKL00000	0.628E+02
20	HTIOIFRB		CUB00000	0.202E+02	MEX00000	0.397E+02	USAVIRPT	0.423E+02	BAHOIFRB	0.448E+02	PRU00000	0.449E+02
21	CUB00000		HTIOIFRB	0.243E+02	MEX00000	0.304E+02	PRU00000	0.353E+02	TKL00000	0.432E+02	BAHOTERB	0.455F+02
22	TKL00000		CUB00000	0.382E+02	NIU00000	0.421E+02	PRU00000	(0.479E+02)	\OCE00000	0.606E+02	TONOIFRB	0.628F+02
23	PRU00000		EQA00000	0.382E+02	ABW00000	0.412E+02	CLM00000	0.421E+02	CUB00000	0.427F+02	NTUDOOO	0.441F+02
24	NIU00000		PRU00000	0.313E+02	TONOIFRB	0.390E+02	TKL 00000	0.421F+02	CUBODODO	0.555E+02	NCF00000	0 599F+02
25	ABW00000		PRU00000	0.280E+02	VEN00000	0.331F+02	CI M00000	0 333F+02	ΔΤΝΛΛΛΛΛ	0 3555+02	GRDOTERR	0.577E+02
26	GRDOIFRB		ATN00000	0.189E+02	VENGODOO	0.210F+02	CIMODOOO	\\n 382F+02	ABUNDON	0.0000E+02	HSAVIDET	0.442202
27	ATN00000		VENDODOD	0.201F+02	GRDOTERB	0 225E+02	CLMODODO	NO. 266E+02	/IISAVTOPT	0.3035+02		0.7000102
28	VENDODOD		CLM00000	0 207E+02	ΔΤΝΟΛΟΟΟ	0 263F+02	USAVIPPT	0. 605F+02	CODATEOR	0.0000000	SUDATEDD	0.3000702
29	CI M00000		VENDODOD	0 221 E+02	BOLOTERR	0.274F+02	BAHOTEPB	0 3125402	SUDDITED .	0.4000+02	UCAUTODT	0.4196402
30	BAHOTERB			0 205E+02	BOLOTERR	0.2/4L-02	CANMSATO	0.3126+02		0.4325402	USAVIKEI	0.45/6402
ξĭ	BOLDIERB		CL M00000	0.2155+02	BAUNTEDB	0.2195+02	CANNEATO	0.3376+02		0.3376402	VENUUUUU	U. 3//E+U2
32	CANMSATO		BAHOTEDB	0.2156+02		0.3100-02	CLMDDDDD	0.3000702	PROUTERD	0.4056+02	B 00000	U.410E+02
22	SUDOTEDB		VENODODO	0.2416+02	CLMODODO	0.3136702	CLINUUUU	0.3336+02	SUKUIFKB	0.354E+02	BULUIFRB	0.3/8E+02
33				0,2075402		0.32/6702	CANFISATO	0.3402+02	BULUIFRB	0.340E+02	R 00000	0.353E+02
75	PROUIERD		DULUIFRD	0.3166+02	UCEUUUUU	0.3206+02	R 00000	0.388E+02	ARG00000	0.482E+02	USAVIRPT	0.488E+02
32			PROUIFRD	0.3612+02	USAVIRPI	0.5192+02	USA13HB4	0.580E+02	CHL00000	0.629E +02	CLM00000	0.676E+02
25	USAVIRPI		AINUUUUU	0.442E+02	B 00000	0.472E+02	CANMSATO	0.474E+02	VEN00000	0.478E+02	CLM00000	0.478E+02
3/	CPVUIFRB		USAVIRPI	0.324E+02	B 00000	0.398E+02	SEN00000	0.487E+02	USA13HB4	0.493E+02	MTNOIFRB	0.508E+02
28	B 00000		CHL00000	0.370E+02	USA13HB4	0.479E+02	ARG00000	0.505E+02	USA13IB4	0.519E+02	USAVIRPT	0.520E+02
- 39	CHL00000		B 00000	0.206E+02	CANNE000	0.264E+02	USA13HB4	0.381E+02	USA13IB4	0.429E+02	ARG00000	0.434E+02
40	CANNE000		CHL00000	0.239E+02	USAVIRPT	0.359E+02	EIREB100	0.399E+02	USA13HB3	0.419E+02	USA13HB4	0.442F+02
41	GNBOIFRB		SEN00000	0.382E+02	B 00000	0.397E+02	GUIOIFRB	0.402E+02	MLIOIFRB	0.428F+02	USA1 3HB4	0 453E+02
42	SRLOIFRB		SEN00000	0.221E+02	GUIOIFRB	0.291E+02	USA13HB4	0.394F+02	MITOTERB	0 427F+02	READTERR	0 5015+02
43	SEN00000		SRLOIFRB	0.247E+02	GUTOTERB	0.255E+02	USA1 3HB4	0 376 E+02	MITOTER	0 6025+02	CNROTEDR	0. 6085.02
44	CNR00000	53	USA13HB4	0.261F+02	GUIDIERB	0.391F+02	ARGOOOOO	0 396F+02	SENGOOOD	0.4025+02		0.4705+02
45	E 00002	53	USA13FB1	0.324F+02	USA1 3HB4	0 325E+02	HSA13DB1	0 380 5+02	FIPEROOO	0.4021402		0.4336702
46	PTC00000		USA13HB4	0 243E+02	F 00002	0 318E+02	ARCOUDDI	0.3505+02		0.0300000		0.4496702
47	GUTOTERB		ARGOOOOO	0 246F+02	SENDODOD	0.2865+02	USAIZHBG	0.3302+02	SDI OTEDR	0.4195402		0.42UE+U2
48	ARGOOOOO		USA1 3HBG	0.220E+02	CUITOTEPR	0.2002.02	USAISTDA	0.6165+02	UCALTUDZ	0.3396702	TILIUITKD	0.3966+02
40	USA13EB1		E 00002	0.2065+02	ABCOODERD	0.3036-02		0.4146702	USAT SUBS	0.4536+02		U.4//E+U2
50	USAIZHBZ	~~~~	BEDCAVMe	0.274LTU2 0.500E102		0.4435702	ULUIFKD	0.4656+02		0.516E+02	LAYUUUUO	U: 537E+02
51		55	ABCOULD	<pre>« U, J))/ETUZ 0 261 E±00 %</pre>	AKGUUUUU	- U. OUSETUZ		0.6446+02	CLMUUUUU	U.683E+02	USAVIRPT	0.688E+02
52		۲		0.33105402	FLK3100L	0.00000002		0.6926+02	B 00000	0.712E+02®	GUIOIFRB	0.785E+02
57	00410001		BEI 00000	0.3105402		0.3646+02		U. 382E+U2	HULUDOOO	U.470E+02	G 00000	0.557E+02
22	BELODOOD			0.19/6402	OSATODRI	0.2546+02	USAI SHBA	U.2/1E+02	EIREB200	0.297E+02	HOL00000	0.308E+02
24				0.1996+02	HULUUUUU	U.252E+02	EIREB200	U.282E+02	USA13DB1	0.310E+02	USA13HB4	0.313E+02

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****	THE	5 WORST SI	NGLE INTERF	ERENCES (C	./1) *****						
55 HOL00000		BEL00000	0.237E+02	GHA00000	0.239F+02	FIREB200	0.275F+02	111200000	0 310E+02	USATTHRA	0 3555+02
56 GHA00000		BFAOIFRB	0.231F+02	MITOTERB	0.323F+02	USAI 3TRA	0 418F+02	HOL 00000	0.621F+02	USAISHBA	0.0000000
57 BFAOIFRB		MITOTERB	0.188F+02	GHANNNN	0.203E+02	USAISTRA	0.346E+02	USA1 3HBG	0.4212402	CUTOTEDR	0.4252.02
58 MITOTERB		USAT 3TRA	0 234F+02	BEANTERS	0.255E+02	GHADDODO	0.3402.02		0.4346+02	CUTOTEDR	0.4495702
50 USA13TR3	٦	BEDCAYMS	0.6885+02	IMC00000	0.2356+02	MITOTEDD	0.3026402	CI MODODO	0.4125402	GUIUIPRD	0.4256+02
40 USA13103	t	BEDCAVMS	0.4001+02	DOMOTEDR	0.0000002	HLIUICKD	0.0000702		0.0026+02	USAVIRPI	0.68/E+U2
(1 BOTODODO	T	DERCATINS	0.4090402	DUMUIFRD	0.0305+02	MLIUIFKB	0.664E+02	JUCODOOD	0.688E+02	GDL00000	0.702E+02
		LSUUIFRD	0.2632+02	GNEUIFRB	0.272E+02	LBYUUUUU	0.300E+02	USAI31B4	0.301E+02	MCOOIFRB	0.399E+02
62 LBTUUUUU		MCOUIFRB	0.2242+02	GNEOIFRB	0.275E+02	MLTOOOOO	0.307E+02	EIREB200	0.333E+02	BOTOOOOO	0.334E+02
63 GNEUIFRB		GABUIFRB	0.260E+02	CMEOIFRB	0.288E+02	LBY00000	0.309E+02 🕷	BOT00000	0.340E+02	COGOIFRB	0.359E+02
64 MCOOIFRB		L BY00000	0.224E+02	EIREB200	0.280E+02	GNEOIFRB	0.348E+02	LUXGDL42	0.374E+02	USA13IB4	0.382E+02
65 IRL00000		EIREB200	0.228E+ 02	G 00000	0.236E+02	DNKOOOOO	0.248E+02	MCOOIFRB	0.312E+02	DNK00002	0.329E+02
66 LSOOIFRB		BOTOOOOO	0.229E+ 02	USA13IB4	0.340E+02	GRL00000	0.369E+02	AFS00000	0.399E+02	DNK00000	0.420E+02
67 DNK00000	55	G 00000	0.208E+02	EIREB200	0.212E+02	IRL00000	0.244E+02	F LSAT4	0.329E+02	LUXGDL 42	0.340E+02
68 DNK00002	55	G 00000	0.185E+02	EIREB200	0.192E+02	IRL00000	0.201E+02	F ISATI	0 322F+02	USA13TB4	0 327E+02
69 GRL00000	55	USA13IB4	0.297E+02	EIREB100	0.329E+02	USA13TB3	0.351E+02	BERCAYMS	0 401F+02	USAT 3HB4	0 415E+02
70 MLT00000		L BY00000	0.271E+02	FTRFB200	0.296E+02	F ISATS	0 387F+02	LILYGDI 42	0 3985+02	BEDCAVMS	0 6125+02
71 GABOIFRB		CMEOIFRB	0.209F+02	ASCSTHTC	0.292E+02	GNEDIERB	0.208E+02	COGOTERB	0.3775+02	BEDCAYMS	0.4126,02
72 ASCSTHTC	52	GABOTERB	0 215E+02	IISA1 3TRG	0.333E+02	CMEDIEDB	0.2902.02		0.3176-02	NTCOTEDR	0.3301702
73 BERCAYMS	52	FTRERIOD	0 309F+02	USA13TR3	0.3336+02	USAIZTRA	0.4146+02	CARATERR	0.4236+02	NIGUIFKD	0.4000702
74 FLKSTGGL	52	USAISTRA	0.307E+02	GAROTER	0.3236402	ADC00000	0.3405+02	USADUIFKD	0.4136+02	OSAISHBS	0.4336+02
75 6 00000	52	ETDEB200	0 1015+02	DNKOOOOO	0.3346+02		0.3405702	USAISHD4	0.3646+02		0.4/8E+02
74 CMEDIEDR	26		0.171L+02	COCOTEDR	0.2405702	GADUIFRD	0.305E+02		0.320E+02	IKLUUUUU	0.327E+02
70 CHEUIFKD		COCOTEDR	0.2000702	LUGUIFRD	0.2055+02	NIGUIERB	0.300E+02	GNEUIFRB	0.3/6E+02	CAFOIFRB	0.422E+02
		LUGUIFRD	0.1916+02	NIGUIFRD	0.284E+02	EIREB200	D. 34/E+02	1CD01FRB	0.380E+02	L BY 0 0 0 0 0	0.392E+02
78 LUGUIFRB		NIGUIFRB	0.202E+02	CMEUIFRB	0.251E+02	EGYO1FRB	/0.313E+02	GABOIFRB	0.334E+02	ZAIOIFRB	0.385E+02
79 NIGUIFRB		CUGUIFRB	0.236E+02	CMEDIFRB	0.292E+02	EIREB200	0.403E+02	EGYOIFRB	0.406E+02	CAFOIFRB	0.418E+02
80 RRWOIFRB	_	BD100000	0.221E+02	ZAIOIFRB	0.287E+02	EIREB200	0,302E+02	UGAOIFRB	0.306E+02	NIGOIFRB	0.321E+02
81 EIREB100	3	BERCAYMS	0.358E+02	JMC00000	0.441E+02	USAVIRPT	0.450E+02	MEX00000	0.519E+02	CANNE000	0.555E+02
82 EIREB200	3	G 00000	0.409E+02	EGYOIFRB	0.449E+02	NIGOIFRB	\0.450E+02	GRC00000	0.453E+02	IRL00000	0.484E+02
83 BDI00000		RRWOIFRB	0.199E+02	ZAIOIFRB	0.248E+02	UGAOIFRB	0.252E+02	EIREB200	0.304E+02	ZMBOIFRB	0.327E+02
84 DJIOIFRB		JOROOOOO	0.276E+02	ZMBOIFRB	0.335E+02	CAFOIFRB	0.349E+02	UGAOTERB	0.372E+02	ZATOTERB	0 382E+02
85 JOR00000		EIREB200	0.262E+02	EGYOIFRB	0.303E+02	DJIGTERB	0.313F+02	GRC00000	0 321F+02	ZMBOTERB	0 366F+02
86 ZMBOIFRB		ZAIOIFRB	0.254E+02	UGAOIFRB	0.309F+02	BDT00000	0 367F+02	JMC00000	0 385E+02	INPANAAA	0.616E+02
87 JMC00000		EIREB100	0.263E+02	BERCAYMS	0 321 F+02	ZMBOTERB	0 619F+02	USAISTRA	0.0365+02	USAIZTBZ	0.4146.02
88 UGADTERB		ZATOTERB	0 230F+02	CAFOTERS	0 2595+02	ZMBOTEDB	0.31/1-02	BDT00000	0.4306+02	DDWDIEDB	0.4405+02
89 5070000		AFSODODO	0.3635+02	ZMROTEDR	0 3665102		0,3002+02		0.3096402		0.3402402
90 GRC00000		CAENTERR	0.343E+02		0.3446402	COAULERD	0.34/6702	MUZUIFKD	0.3516+02	ZAIUIFKB	0.38/E+02
91 CAEDTERB		TCDOTEDB	0.2105+02		0.2000702	F_LSAIS	0.2000+02	EIKEDZUU	0.295E+02	ICDUIFRB	U.3/1E+U2
			0.2196+02	CAEOTEDR	0.24/6402	GREUUUUU	0.313E+02	SUNULFRB	U.419E+U2	UGAUIFRB	0.429E+02
			0.2010+02	CAFUIFRD	0.2056402	GRUUUUUU	0.389E+02	NIGUIFRB	0.404E+02	CMEDIFRB	0.422E+02
JJ ZAIUITKD			0.2036+02	CAPUIFKB	U. 293E+U2	LUXGDL42	0.36/E+02	DOMOIFRB	0.440E+02	SDNOIFRB	0.460E+02
		ZAIUIFKD	U.206E+U2	LUXGDL42	0.3/3E+02	SCNUIFRB	0.435E+02	BERCAYMS	0.437E+02	USAVIRPT	0.443E+02
95 LUXGDL42		ZAIUIFRB	0.402E+02	F 00000	0.517E+02	TCDOIFRB	0.558E+02	KWT00000	0.562E+02	DOMOIFRB	0.566E+02
96 KWIUUUUU	-	LUXGDL42	0.203E+02	F_LSAT3	0.281E+02	ARS00000	0.283E+02	FLSAT2	0.304E+02	F LSAT5	0.314E+02
97 FLSAT1	9	F 00000	0.598E+02	KWTOOOOO	0.627E+02	PORMDRAZ	0.629E+02	ZAIOIFRB	0.634E+02	G00000	0.682E+02
98 FLSAT2	9	F 00000	0.598E+02	KWTOOOOO	0.611E+02	ZAIOIFRB	0.624E+02	POL00000	0.634E+02	PORMDRAZ	0.663E+02
99 FLSAT3	9	GRC00000	0.547E+02	KWT00000	0.590E+02	F 00000	0.603E+02	ZAIOIFRB	0.613E+02	URS00002	0.622E+02
100 FLSAT4	9	KWT00000	0.621E+02	F 00000	0.628E+02	ZAIOIFRB	0.635E+02	URS00001	0.647F+02	P01 00000	0.650E+02
101 FLSAT5	9	PORMDRAZ	0.594E+02	F 00000	0.611E+02	KWT00000	0.621E+02	ZATOTERB	0.625E+02	TCDOTERB	0 690E+02
102 QAT00000		ARS00000	0.195E+02	YMS00000	0.289E+02	SDNOTFRB	0.294F+02	KWTONNO	0 298F+02	LUXGDI 42	0 375F+02
103 YMS00000		ARSODOOO	0.214E+02	SDNOTFRB	0.326F+02	URSWURN	0 362F+02	ZATOTER	0 3725-02	OATOODC42	0.3775+02
104 VCTOIFRB		TRD00000	0.346F+02	SCNOTERB	0 367F+02	DMAGTEDR	0.367	ADBUT CDA	0.0726-02	ATCOTEPP	0. J//LTUZ
105 URSWWDRN		POI 00000	0.535E+02	YMS0000	0 5655+02		0.6076+02	VCTOTEDE	0,0002702	ADCODODO	0.3036402
106 URS77RB1	z > z	POLOGOOO	0 477F+02	WMS00000	0.5056.02	VCTOICO	0.00000702	VDCIULEKD	0.0100702	UUUUUCAA	0.0315+02
107 ARS0000	- M D	SUNUTER	0 228 E+02	8600000%		VMS00000	0.0745402		0.0100402	UKSUUUU2	U.636E+U2
108 AFS00000		MOZOTEPP	0.2235402	VDC00000	0.2345402 /		0.2005402	1200000	0.4012+02	SCNUIFRB	0.409E+02
TOO ME200000		NOTOTLKD	0.2235402	WK200000	V. 289E+U2	CAIUIFRB	U. 355E+02	SCNUIFRB	U.388E+02	12F00000	0.427E+02

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XXXXX THE	5 WORST SINGLE INTER	FERENCES (C/I) *****					
109 ISL00000	LUXGDL42 0.281E+02	AFS00000 0.282E+02	ARS00000	0.302E+02 SCNOTERB	0.337E+02	LUXGDI 52	0 368E+02
110 SCNOIFRB	ATGOIFRB 0.202E+02	DMA01FRB 0.293F+02	AFS00000	0.351F+02 GDL00000	0 359E+02	VCTOIEDE	0.3415+02
111 ATGOIFRB	TRD00000 0.189F+02	SCN01FRB 0 202E+02	DMAGTERB	0 210E+02 BPB0TEPB	0.3315+02		0.3016+02
112 TRD0000	ATGOLERB 0 182E+02	GUY00000 0 223E+02	DMADIEDB		0.3316402		0.3322+02
113 MOZOTERB	SDN0TERB 0 170E+02		COMOTEDR		0.2/82402	VUIUIFRD	0.355E+U2
116 DMADIERB	BORDIEDB 0 2035+02	ATCOLERE 0 2105+02	CUYODOOO	U. SSSETUZ ZALUIFRB	0.400E+02	DMAUIFRB	0.436E+02
115 SDNOTEDR		AIGUIFRD U.ZIUE+UZ	60100000	0.260E+02 IRD00000	0.265E+02	SCNOIFRB	0.293E+02
	NUZUIFRD 0.176E+U2	ZAIUIFRB 0.395E+02	PULUUUUU	0.399E+02 GUY00000	0.416E+02	ARS00000	0.418E+02
	SUNULFRB 0.190E+02	FLSAI3 0.255E+02	LUXGDL42	0.261E+02 FLSAT2	0.268E+02	LUXGDL52	0.270E+02
117 6010000	TRD00000 0.265E+02	BRBOIFRB 0.273E+02	DMAOIFRB	0.326E+02 SDN0IFRB	0.368E+02	GUF00000	0.386E+02
118 BRBUIFRB	DMAOIFRB 0.202E+02	GUY00000 0.223E+02	TRD00000	0.281E+02 GDL00000	0.290E+02	ATGOIFRB	0.331E+02
119 COMOIFRB	MOZOIFRB 0.243E+02	MDGOIFRB 0.344E+02	TUR00000	0.372E+02 REU00000	0.429E+02	SDNOTERB	0.462E+02
120 TUR00000	S 00000 0.298E+02	LUXGDL52 0.349E+02	F 00000	0.350E+02 LUXGDL42	0.365E+02	COMOTERS	0 370E+02
121 S 00000	F 00000 0.185E+02	TUR00000 0.206E+02	LUXGDL 52	0.239E+02 POL00000	0.287F+02		0.296E+02
122 F 00000 56	PORMDRAZ 0.205E+02	LUXGDL52 0.240F+02	LUXGDI 42	0 311E+02 S 00000	.0 316E+02	F ISATI	0.25555402
123 GDL00000 56	BRB01FRB 0.307E+02	DMA01ERB 0.324E+02	ATGOTERS	0 366F+02 SCNOTERB	0 3055+02		0.0075+02
124 GUE00000 56	GUY00000 0 311E+02	B 00000 0 400E+02	USAITEG		0.5015.02		0.40/2+02
125 MYT00000 56	USA13TB6 0 687E+02		8 00000	0.513E+02 03A13HD4	0.5216-02	PURIDRAZ	0.5266+02
126 REU00000 56	MDCOTEPB 0 362E+02	COMOTERR 0.4771+02			0.54/E+02	GUYUUUUU	0.580E+02
127 SPM00000 54	DODMDDA7 0 710E+02		HAUUIFRD	0.462E+02 MUZUIFRB	0.4/6E+02	ZAIUIFRB	0.542E+02
120 0000000 00	FURMURAZ 0.319E+02	LINCOL 0. 351E+U2	USAVIRPI	0.420E+02 LUXGDL52	0.485E+02	CANNE000	0.489E+02
120 FUKIUKAZ	F 00000 0.205E+02	LUXGUL52 U.215E+U2	LUXGDL42	0.308E+02 EIREB200	0.363E+02	LUXGDL62	0.367E+02
129 MUGUIFRB	CUMUIFRE U.416E+U2	MUZUIFRB 0.457E+02	LUXGDL52	0.477E+02 REU00000	0.503E+02	SEYOIFRB	0.510E+02
ISU LUXGDL52	F- 00000 0.443E+02	PORMDRAZ 0.543E+02	MDGOIFRB	0.569E+02 S 00000	0.604E+02	POL00000	0.605E+02
131 SEYOIFRB	MDGOIFRB 0.419E+02	LUXGDL52 0.500E+02	MOZOIFRB	0.563E+02 ZAIOIFRB	0.565E+02	SDNOIFRB	0.602E+02
132 FE13B1	SDN0IFRB 0.516E+02	AR\$00000 0.532E+02	MAUOIFRB	20.580E+02 JOR00000	0.587F+02	CHN00000	0.605E+02
133 MAUOIFRB	REU00000 0.450E+02	MDGOIFRB 0.451E+02	ZAIOIFRB	0.613E+02 F E13B1	0.626F+02	LUXGDI 52	0 666F+02
134 FEU1B1	TUR00000 0.494E+02	CHN00000 0.582E+02	URS00002	0.590F+02 SDN0TERB	0.500E+02	VDSUUUUU	0 601 E+02
135 FE12B1	TUR00000 0.512E+02	CHN00000 0.582E+02	URS00002	0.590E+02 URS00001	0 604E+02	TRNAAAAA	0.6106+02
136 F E14B1	URS00002 0.534E+02	CHN00000 0.560E+02	URSOOODI	0 588E+02 INDOTERB	0 6105+02		0.6705+02
137 LUXGDL62	NOR00000 0.470F+02	S 00000 0 559E+02	URSOOOOI	0. 572E+02 ENL 00000	0.0191402		0.0/95502
138 BGD0000	INDOTERS 0 403E+02	NPLOTERB 0 616E+02	CHN00001		0.0042402		0.6156+02
139 NPLOTERB	PAKOTERB 0 231E+02				0.0426+02	VINULFKB	0.543E+02
	MIDDIEDE 0 20(E.02		INDUIFRB	0.339E+02 BGD00000	0.362E+02	MLDOIFRB	0.374E+02
161 MIDATEDR		NFLUIFRD U.SIGE+UZ	INDUIFRB	U.446E+U2 PAKUIFRB	0.461E+02	INS00000	0.576E+02
162 BAKATEDR	CLNUUUUU 0.253E+U2	PARUIFRB U.268E+U2	INDUIFRB	0.401E+02 NOR00000	0.443E+02	NPLOIFRB	0.470E+02
142 FANUIERD	MLDUIPRB 0.199E+02	NPLUIFRB U.265E+U2	NOROOOOO	0.314E+02 INDOIFRB	0.354E+02	CHNOOOOO	0.428E+02
145 NOR00000	D 00000 0.271E+02	PAKUIFRB 0,294E+02	LUXGDL62	0.299E+02 MLDOIFRB	0.358E+02	LUXGDL 52	0.401E+02
144 D 00000	NURUUUUUU U.201E+02	1 00000 0.208E+02	LUXGDL62	0.285E+02 LUXGDL52	0.381E+02	EIREB200	0.405E+02
145 1 00000	MRC00000 0.183E+02	D 00000 0.295E+02	LUXGDL62	0.307E+02 LUXGDL52	0.393E+02	EIREB200	0.399E+02
146 MRC00000	MTNOIFRB 0.200E+02	LBROIFRB 0.228E+02	I 00000	0.233E+02 LUXGDL62	0.464E+02	ALG00000	0.472E+02
147 LBROIFRB	MRC00000 0.289E+02	MTNOIFRB 0.356E+02	I 00000	0.519E+02 GUI0IFRB	0.545E+02	MLTOTERB	0.580F+02
148 MTNOIFRB	MRC00000 0.221E+02	LBROIFRB 0.334E+02	LUXGDL62	0.467E+02 ALG00000	0 485F+02	MITOTERS	0.5205+02
149 CYPSBA00 54	FNL00000 0.264E+02	DDR00000 0.392E+02	HNG00000	0.488E+02 INDOTERB	0.509E+02	TURNNNNN	0.500E+02
150 GIB00000 54	FNL00000 0.317E+02	MRC00000 0.348E+02	ALGOODOO	0.377E+02 LUXGDL62	0 398E+02	DDBUUUUU	0.610 E+02
151 HKG00000 54	CHN00000 0.385E+02	VTN0IFRB 0.414F+02	INDOTERB	0.420E+02 THA00000	0.636E+02		0.4176402
152 FNL00000	DDR00000 0.201E+02	CYPSBA00 0.295E+02	GTROODOO	0 311E+02 HKG00000	0.3606+02		0.4526402
153 DDR00000	FNL00000 0.180E+02	HNG00000 0 208F+02	YUGOOOOO	0 316E+02 TCH00000	0.3402+02		0.3346702
154 HNG00000	YUG00000 0.199F+02	DDR00000 0 212E+02	тснолол	0.318E+02 Ups00001	0.3426402		0.3366+02
155 YUG00000	SUIDIERB 0 228E+02	HNG00000 0 230E+02	TGOOTEPR	0 277 E+02 TCU00000	0.3396402	AUT00000	0.3406+02
156 TGOOTERB	BENOTERB 0 268E+02	YUG00000 0 396E+02	NCDOTEDB		0.2946+02	AUTUUUUU	0.309E+02
157 SUIDIERB	YUG00000 0 2015+02	AUT00000 0.394E+02	TOUDDODD	U. 46UE+UZ INDUIFRB	0.527E+02	NIGUIFRB	0.535E+02
158 INDOIERB	THADOODO 0.2012+02		TCHUUUUU	U. 292E+UZ LIEUIFRB	0.333E+02	INDOIFRB	0.356E+02
150 1000000	TNDOTEDB 0 1965+02			0.488E+02 MLA00000	0.505E+02	URS00001	0.527E+02
160 BENGTEDD ** ** **	TCOOTERP 10.104C+U2	U_UUUUUU.198E+U2	10600000	U.252E+U2 BENOIFRB	U.260E+02	URS00001	0.291E+02
160 DENUIFRD	1.1.0001FKD 0. 249E+02	INDUIFKB 00.338E+02	ICHU0000	U.412E+02 NGROIFRB	0.420E+02	NIGOIFRB	0.539E+02
161 AULUUUUU	LIEUIFRB U.216E+02	~ ICHU0000 0. 242E+02	SUIDIFRB	0.303E+02 YUG00000	0.314E+02	URS00001	0.366E+02
162 THAUUUUU	CBGUIFRB 0.268E+02	INDUIFRB 0.288E+02	LAOOIFRB	0.316E+02 VTNOIFRB	0.342E+02	CHN00000	0.451E+02
163 LIEUIFRB	AU100000 0.200E+02	THA00000 0.313E+02	SUIOIFRB	0.337E+02 TCH00000	0.340E+02	YUGOOOOO	0.350E+02
164 CBG0IFRB	LAQ0IFRB 0.201E+02	THA00000 0.213E+02	VTNOIFRB	0.261E+02 ALG00000	0.394E+02	TNDOTERB	0.407E+02
165 ALG00000	NGROIFRB 0.284E+02	CBG0IFRB 0.339E+02	CVAOIFRB	0.399E+02 BENOTERB	0.446E+02	ITEOTERB	0.460E+02
166 LADOIFRB	VTNOIFRB 0.202E+02	CBG0IFRB 0.219E+02	THADDOOD	0.293E+02 INDOTERB	0.366F+02	CHNNNNNNN	0 6225+02
167 CVA0IFRB	SMR00000 0.263E+02	ALG00000 0.289F+02	LADOTERB	0.318E+02 STPOTEPR	0 3235+02	10000000	0,766±00
168 STPOIFRB	LADOIFRB 0 381F+02	CVANTERB 0 625E±02	NGPOTEDE	0.668E±02 BENOTEDD	0.5256402		0.3/36402
	LITTLE COULTON		HOROTIKD	0. TOJETUZ DENVIEKD	0.31/6402	ALGUUUUUU	0.5246+02

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EXERCISE NO. 1-1-3-1

*****	THE	5 WORST ST	NGLE TNTER	EPENCES (C	/T) XXXXX						
169 VTNOTERB		I ADDIERR	0 2625+02	MNGOTEDB	0 3146+02	THADDOOD	0 7555+02	CROATERR	0 7005.00		
170 NGROIFRB		VINOTERB	0.2955+02	AL GOOOD	0.3102+02	SMP00000	0.3336+02	CDGUIFKD	0.3826+02	NGRUIFRB	0.395E+02
171 MNGOTERB		VINOTERB	0.1775+02		0.3036+02		0.30/6+02	INGUIERD	0.3826+02	08200001	0.438E+02
172 SMR0000		CVAOTERB	0.2605+02	NCDUIED	0.2755402		0.3705402	UKSUUUUZ	0.3/6E+02	SMKUUUUU	0.383E+02
173 BRIINTERB		MIADDODD	0.2096+02	VINGTERR	0.2755+02		0.2/05+02	MNGUIFKB	0.30/E+02	VINULFRB	0.3/5E+02
174 URS00001		MNGOTERB	0.2326+02	RDUNTEDR	0.3196402	TNDOTEDB	0.3336+02	10200000	0.368E+02	PHLOIFRB	0.390E+02
175 MI 400000		BRUDIERB	0.204C+02		0.3056+02		0.3910702		U.41/E+U2	SMR00000	0.454E+02
176 R000000		URSOOOT	0.196F+02		0.3906+02	AL BOOOOO	0.4000+02		U.420E+02	CHNUUUUU	0.434E+02
177 BUL00000		ALBOOOD	0.190E+02		0.2012/02		0.2905+02	SMR00000	0.4406+02	MLAUUUUU	0.45/E+02
178 AL BOOOD			0.2295+02	AGLOTERR	0.1776-02	POUDDOD	0.2046402		0.4555+02	EIREBZUU	0.465E+02
179 AGI OTERB		AL B00000	0.255E+02	NMBOTERB	0.321E-02		0.3235+02	COCOTEDR	0.4365+02	EIREDZUU	0.442E+02
180 PHI OTERS		TNSODOOD	0.3935+02	MIADDODOD	0.4702-02		0.4036402	DUGUIERD	0.5566402	USAI SHB4	0.5/0E+02
181 TUN00000		PHINTERR	0 270E+02	ALGOODOO	0.3005+02		0.4436+02		0.4910+02		0.50/E+02
182 URSCSRB1	8	URSONOO2	0.660F+02	MNGOTERB	0.5755+02		0.41/6402	CHN00000	0.4250+02	F_LSAI2	U.42/E+U2
183 URSCSRB2	ĕ		0.400L+02	IIRSOOODI	0.5752+02		0.2005+02		0.0590E+02	08200001	0.615E+02
184 KRF00000	•		0 201E+02	NMBOTER	0.3706+02	CHN00000	0.0116702	CYPOODO	0.6742+02	10200000	0./32E+02
185 CYP00000		NMBOTERB	0 336F+02	KREDDODOD	0.3792+02		0.4242402		0.4200702	J 00000	U.458E+U2
186 NMBOTERB		AGLOTERB	0.334E+02	CYPANAAA	0.3902-02	KPENNNN	0.4476402		0.4/05+02	LUNUIFRU	0.476E+02
187 TNS00000			0.218E+02	TZANTEDR	0.3702+02		0.4005702		U. 506E+02	MMIUIFKB	0.514E+02
188 URS00002		TNSOOOOL	0.2185+02	TZAUTIND	0.4016+02		0.4/25+02	FREUIPRD	0.0000+02	TUDOILERB	0.580E+02
180 T7A0TEPR		110500000	0.2100+02	KENOTEDD	0.4296+02		0.4025402	KKEUUUUU	0.468E+02	IRNUUUUU	0.549E+02
100 KENOTEDB			0.17/6402	MUTATEDB	0.2195702		0.2200+02	MMIUIFRB	0.315E+02	SUMUIFRB	0.402E+02
101 MUTOTEDR		VENOTEDB	0.2026+023	TZAOTEDR	0.24/6702	SOMOTERD	0.3136+02	08500002	0.411E+02	INS00000	0.421E+02
102 10505001	7	TENOIPED	0.2195402	UPS60002	0.2155402	SOMOTERD	0.2016+02	ZAIUIFRB	0.446E+02	1NS00000	0.454E+02
	4		0.2305+02		0.4305+02	SUMULERB	/U. 521E+UZ	CHNUUUUU	0.582E+02	URS00001	0.675E+02
106 TPN00000	'		0.4235402		0.4035402	LANOUUUU	0.2//6+02	SUMUIFRE	0.629E+02	INS00000	0.683E+02
105 SOMOTEDR			0.1705+02	VENOTEDR	0.2905+02	LUNUIFRU	U. 336E+UZ	URSOUUUZ	0.350E+02	URSCSDR2	0.396E+02
102 I BNOTEDB			0.1/95+02	TENULEKD	0.3465+02	TLAUIFRE	0.407E+020	MMIUIFRB	0.425E+02	ETHOOOOO	0.451E+02
107 TSPATEDR		LANOTEDA	0.1905+02	TRNUUUUU	0.1995+02	TKAAAAAA	VU. 352E+UZ	SUMULERB	0.411E+02	URS00002	0.426E+02
197 ISKUIFKD			0.2000402		0.2895+02	TKAAAAAA	0.362E+02	CHNUUUUU	0.441E+02	SOMOIFRB	0.466E+02
190 TRODICKD		STHOOOOO	0.3046402	INSUUUUU	0.400E+02		0.4442+02	TKOOOOO	0.45/E+02	ETHOOOOO	0.467E+02
200 ETH00000			0.2305+02	PNGUIFKD	0.2396402	IKNUUUUU	0.3412+02	CHNOUDUU	0.367E+02	ISROIFRB	0.413E+02
200 EIN00000 201 SIMOTEDR			0.2305+02	CUNCOLEKD	U. 2/6E+U2	TEMULERB	0.339E+02	SUMUIFRB	0.382E+02	CHN00000	0.395E+02
201 SLUUIRA		CHNOODOO	0.2900+02		0.3486+02	WALUUUUU	0.469E+02	YEMUIFRB	0.473E+02	CAR00000	0.518E+02
202 ICHUIFKD			0.2215+02		0.3335+02	SLMUIFRB	U.336E+U2	UMAUUUUU	0.418E+02	SOMOIFRB	0.434E+02
203 CHR00000	50	CHNODOOD	0.4045402		0.4896+02	NCLUUUUU	0.4956+02	INS00000	0.496E+02	WAL00000	0.503E+02
205 KED00000	50		0.2005+02	AU200000	0.4/36402	CARUUUUU	0.540E+02	SLMUIFRB	0.545E+02	NRUOIFRB	0.551E+02
205 NEL00000	50		0.1905+02	AUSUUUUU	0.220100	CARUUUUU	0.5/2E+02	SLMUIFRB	0.595E+02	NRUOIFRB	0.598E+02
200 NCL00000	50		0.2705+02	SIMOTEDD	0.3976402	SLMUIFRB	0.494E+02	PNGUIFRB	0.506E+02	NRUOIFRB	0.550E+02
207 MAL00000	50		0.2/25+02	SCHUDIERD	0.4356+02	PNGUIFRB	0.503E+02	NKUUIFRB	0.510E+02	CAROOOOO	0.530E+02
200 NKOUIFKD			0.2035+02		0.3/9E+02	UAEUIFRB	0.493E+02	WALOOOOO	0.497E+02	PNGOIFRB	0.504E+02
210 BHP00000			0.2005+02		0.21467023		0.309E+02	NRUUIFRB	0.35/E+02	IRN00000	0.388E+02
211 CARGOOOD		CHNODOD	0.19/6+02		0.2/95+02	VUTOTEOR	0.2//E+02	IRNUUUUU	0.391E+02	1RQ00000	0.409E+02
212 VIITOTEPR		CARODOOD	0.3396402		0.3035702	VUIUIEKD	0.4566+02	MRLUUUUU	0.486E+02	INS00000	0.513E+02
212 VOIDIFRD		VUTOTEDB	0.3205+02		0.4010+02	CHNOODO	0,4525+02	STUDIERR	0.544E+02	FJIOIFRB	0.549E+02
216 TUV00000		1 00000	0.3205+02		0.3496702	CHNUUUUU	0,3516+02		0.358E+02	UAEUIFRB	0.366E+02
		MPI 00000	0.2306+02		0.23/6402	CHNODOOO	0.4105702	CARDUUUU	0.532E+02	WALOUUUU	0.556E+02
216 MRI 00000		1 00000	0.1835+02	CAP00000	0.3046702		0.4216402	CARUUUUU	0.4946+02	URS00003	0.509E+02
217 FITOTERR			0.1052.02		0.3300402	TUV00000	0.3316702	L DI ULEKD	0.4186+02	AFGUUUUU	0.539E+02
218 AFG00000		CHNODOO	0 271 F+02	1 00000	0.9026702	FITOTEDP	0.9105702	MPL 00000	0.4502402	VUIULERB	0.501E+02
219 N71 00000		A11500000	0 3265+02	20000 291	0.6155+02		0.3705402	MDI 00000	0.37/2402	08200002	0,412E+02
220 URS00003	: •:) •>		0. 180F+02	^{**} KUBUUUUU	0,019E+02 0)287E202		0.027ETU2 0 367E±02	CHNDDDDD	U.052E+U2	CAKUUUUU	0.664E+U2
221 1000000	110		0 3666102				0.3035402		0.3716402	DKMUIFKB	0.4526+02
222 KORAAAAA		11000000	0.0405402	RDMOTEPP	0.0000002		0.3/05702		0.5752+02~	***IN200000	0.603E+02
223 REMOTER		58300003	0.2885+02		0.2096702		0.3005702	AUSODOOD	0.4156+02	SNGUUUUU	0.431E+02
224 SNG00000		BRMATER	0.2001702		0.3//6702		0.4315402		0.4555402	INDUIFRB	0.511E+02
225 UDSVV000			0.1096702		0.3705702	10200000	0.4046+02		U. 433E+02	KORUUUUO	U. 479E+02
EED OKSAAKDI		08300002	0.0906702	CUMODOOD	0.0005702	08200003	0.6392+02	LUNCOTERR	U.6/4E+U2	INDOIFRB	U.684E+02

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Document 141-E 1 September 1988 Original: English

COMMITTEES 4, 5, 6 WG-PL

India

PROPOSALS FOR THE WORK OF THE CONFERENCE

The Indian Administration recognizes the importance of the tasks assigned 1. to the WARC ORB(2), the results of which would be crucial for further development of the space services, utilizing geostationary-satellite orbit, until about the end of this century. The work of WARC ORB(2) will essentially be guided by the Report of the First Session, viz. WARC ORB(1). This report demonstrated the reconciliation of divergent requirements viz. equitable access to the GSO resource for all the countries vis-a-vis the efficient and economical use of the GSO and further technological progress. The WARC ORB(2) will thus have the challenging responsibility of translating the various agreed concepts at the First Session into exact regulatory provisions for incorporation in the Radio Regulations. No doubt, this work will have to be guided by the following items, besides the Report of the First Session.

1.1 Specific proposals made by the administrations as input documents for WARC ORB(2).

1.2 The results of the IFRB's Planning exercises as relevant to agenda items 1, 6, 7 of WARC ORB(2).

1.3 The results of the CCIR up-to-date studies as reflected in the decisions of the XVIth CCIR Plenary Assembly and in particular, the Report of the CCIR JIWP to WARC ORB(2).

Coming specifically to the individual agenda items for WARC ORB(2), the 2. Indian Administration has the following proposals to make, item wise.

IND/141/1

2.1 General aspects relevant to agenda items 1 and 2

The Indian Administration proposes that the elements of the planning principles, as described in section 3.2 of the Report of the WARC ORB(1), should be suitably incorporated in the Final Acts/Regulatory provisions which would be adopted by WARC ORB(2), as a result of deliberations and decisions on agenda items 1 and 2.

3. Agenda Item 1 - Allotment Plan

IND/141/2

3.1 Taking into account the final results of the IFRB's planning exercises - which were not available at the time of preparation of these proposals - the Conference should endeavour to establish, an agreed allotment plan for FSS in

the specific frequency bands indicated in agenda item 1, according to the principles and methods established at the First Session viz. section 3.3.4 of the Report and duly taking into account the requirements projected and proposals made by the Member Administrations.

IND/141/3

3.2 As regards selection of 300 MHz portion of the band 6 425 - 7 075 MHz for allotment planning, the Indian Administration would favour the selection of the sub-band 6 425 - 6 725 MHz.

IND/141/4

3.3 The Allotment Plan should be limited to national systems providing domestic services. All ITU Members should have at least one allotment in the plan, each allotment consisting of an orbital position in a predetermined arc, a minimum bandwidth and a service area. (Refer to paragraphs 3.3.4.3 and 8.2.2.3 of the First Session Report.)

IND/141/5

3.4 The procedures associated with the Plan may permit administrations with adjacent territories to combine all or part of their allotments with a view to forming a subregional service, as indicated in paragraph 3.3.4.1 of the WARC ORB(1) Report.

IND/141/6

3.5 In the establishment of the Allotment Plan, the "existing systems" - as specified in section 3.3.4.9 of WARC ORB(1) Report - shall be included, on an equal basis of the planned allotments. Some adjustments in the parameters of the "existing systems" as well as planned allotments may be considered for development of the Plan, if necessary. The degree of adjustments to which an "existing system" would be subjected, should depend on the stage of development of the "existing system" and be coordinated with the concerned administration. The adjustments on "existing systems" envisaged during the development of the Plan shall be effective when Plan allotments are implemented.

IND/141/7

3.6 The procedures in the Report of the First Session (Appendix to Annex 1 to Chapter 3) should be adopted for developing regulatory provisions for converting an allotment into an assignment, while implementing the Plan.

IND/141/8

3.7 The procedures to be applied for modifying the Plan should be on the lines of similar procedure for modifying the Plan in the BSS, as provided in Appendix 30, Article 4 of the Radio Regulations. Thus, a new appendix which may be labelled as Appendix 30B, be developed and added in the Radio Regulations for the FSS allotment Plan.

IND/141/9

3.8 The duration of the Allotment Plan should be specified to be not less than 15 years, since its coming into force. The exact period could be decided by a consensus, at the Conference.

4. Agenda item 2 - Improved regulatory procedures

IND/141/10

4.1 The improved regulatory procedures for frequency bands for FSS, not covered by allotment planning, should be formulated keeping in view the principles and the guidelines specified in sections 3.3.5.2 and 3.3.5.3 of the Report of the First Session which <u>inter alia</u> indicates features like, simplification of the API procedures, "burden-sharing", consideration of

- 3 -ORB(2)/141-E

existing systems and provision for accelerated coordination process including formal meetings between the administrations, when necessary. The Indian Administration, therefore, proposes to improve the existing Article 11 so as to provide for increased consultations between the administrations - with the assistance of the IFRB whenever necessary - so as to accelerate the process of coordination.

IND/141/11

4.2 One of the essential elements of the improved procedures envisaged at the First Session was the convening of periodical multilateral planning meetings (MPMs). These should be resorted to only in exceptional cases where the coordination cannot be accomplished by using the existing coordination procedures. The option should be available to any administration. The MPMs can also be a useful forum to address subregional coordination problems.

IND/141/12

4.2.1 Considering the various viewpoints developed during the intersessional period, the Indian Administration is of the view that specifying any rigid approach and procedures for the MPMs in the Radio Regulations will give rise to administrative, technical and financial difficulties and the same, on the whole, will not be worthwhile.

IND/141/13

5.

<u>Agenda item 3</u> - <u>Technical standards, parameters and criteria for the</u> <u>fixed-satellite service in the frequency bands subject to</u> <u>"planning"</u>

In view of the non-availability of final results on various planning exercises being carried out by the IFRB, the Indian Administration at this stage is not in a position to make proposals in this regard as the matter would need detailed study of the final results of the Plan exercises, when available. The Indian Administration is, however, of the view that the technical standards that would be adopted for allotment plans should cater for changing and improved technology that would emerge in the future.

6. <u>Regulatory procedures for coordination for space services</u>

The Indian Administration considers that the existing procedures for coordination of space services in the framework of Articles 11, 13 and 14 require improvements on the following lines:

IND/141/14

6.1 Modify Sections I and II in line with the flowchart given in the Report of the First Session (Chapter 4, Section I).

IND/141/15

6.2 Article 13: Modify RR 1503 to clarify and state expressly that examination of a notice shall include verification that the notified date of putting the assignment into use falls within the permitted period of time following the date of receipt by the IFRB of the information for advance publication.

IND/141/16

6.3 Article 13: Modify RR 1550 on the lines of paragraph 4.2.4 of the First Session Report to enable the IFRB to grant suitable extensions in case of genuine difficulties faced by an administration.

7. Agenda item 5 - Definitions relating to space services

This aspect has been studied in detail by the CCIR and Appendix 7-I of CCIR JIWP Report provides guidelines.

7.1 Accordingly, the Indian Administration proposes that the following definitions in Article 1 of the Radio Regulations be considered for modification, as proposed by the CCIR JIWP.

IND/141/17-20

7.1.1:	RR 109:	Feeder Link
7.1.2:	RR 105:	Satellite Systems
7.1.3:	RR 174:	Active Sensor
7.1.4:	RR 175:	Passive Sensor

7.2 In addition, the following new terms and definitions as adopted by the CCIR JIWP Report be considered for adoption for incorporation of new definitions in Article 1.

IND/141/21-27

7.2.1:	Inter-satellite link
7.2.2:	Coverage Area (of a space station)
7.2.3:	Service Area
7.2.4:	Visible Arc
7.2.5:	Data Relay Satellite
7.2.6:	Data Collection Satellite
7.2.7:	Remote Sensing Satellite

IND/141/28

7.3 The definition of "satellite network" (ref. RR 106) needs to be amended so as to avoid repetition of undertaking satellite network coordination under RR 1042 and Appendix 4, when co-located satellites are involved in a satellite system.

7.4 The existing definitions of the terms "allotment" (of RR 18) and "assignment" (of RR 19) in Article 1 of the Radio Regulations do <u>not</u> cover the concept of an "allotment" in the Allotment Plan (as stated in the section 3.3.4.3 of the Report of the First Session) which consists of three elements viz.

- an orbital position in a predetermined arc;
- a minimum bandwidth; and
- a service area.

IND/141/29

The Indian Administration feels that the definitions of these terms in the Radio Regulations at least with reference to space services, needs to be amplified, taking into account the presentation in paragraph 7.2, section 1, Chapter 2 of IFRB's "ORB System".

8. <u>Agenda item 6</u> - <u>BSS feeder link plan for Regions 1 and 3 in</u> 14.5 - 14.8 GHz and 17.3 - 18.1 GHz bands

8.1 The Indian Administration had submitted its requirements of feeder links in the 17.3 - 18.1 GHz band as well as in the 14.5 - 14.8 GHz band. In view of the considerable flexibility that is available in evolving the BSS feeder link Plan; the Indian Administration is optimistic that a satisfactory Plan to meet

the requirements of all concerned administrations, can be evolved at the Conference;

IND/141/30

8.2 The technical parameters given in the First Session Report and summarized in the tabulation at paragraph 6.2.2.22 of the same should, by and large form the basis for feeder link planning;

IND/141/31

8.3 Up-link C/N radio required should be 24 dB for 99% of the worst month and be met at all points within the feeder link service areas;

IND/141/32

8.4 Output power of the satellite transponder should be assumed to be consistent when variations occur in the signal level received by the space station;

IND/141/33

8.5 Linear translation of the frequency assignment plan - as adopted in the BSS Region 1, 3 Plan - into feeder links be adopted, except in cases where there are problems of mutual interference.

IND/141/34

8.6 The criteria for acceptable levels of interference on feeder links shall be on the basis of the requirements of total protection ratio i.e., the entire Earth-to-space-to-earth link as recommended by CCIR JIWP viz. 30 dB co-channel and 14 dB adjacent channel.

9. <u>Agenda item 9</u> - <u>Results of studies on satellite sound broadcasting systems</u> <u>and Resolution No. 505 of WARC-79</u>

9.1 Extensive studies carried out by the CCIR have established the technical feasibility of satellite sound broadcasting in the band 0.5 - 2 GHz, for individual reception by portable or vehicle borne receivers. Paragraph 6.11 of the CCIR JIWP-ORB(2) Report, succinctly, summarizes the conclusions of the studies by the CCIR which advocates a revision of the Table of Frequency Allocations in the Radio Regulations in order to make either an exclusive or shared allocation to this service and endorses a preference to an exclusive band allocation.

IND/141/35

9.2 The Indian Administration is of the view that appropriate frequency allocations would be needed for this service. However, the Second Session may not have enough time at its disposal to decide on frequency allocation for this service - either on a global or a regional basis - and to evolve related regulatory provisions. The Indian Administration, therefore, proposes addition of a new footnote No. 722A in Article 8, Table of Frequency Allocations for the sub-band 1 517 to 1 521 MHz for sound BSS in India, with the stipulation that the use of this band shall be subject to agreement obtained under the procedure set forth in Article 14. This will enable India to carry out experiments and deploy this new system at the earliest to serve her requirements of sound broadcasting from satellite for domestic coverage.

10. Agenda item 10 - Review of Resolution No. 2 (SAT-R2) on the possibility of its long-term applicability:

IND/141/36

The Indian Administration proposes that WARC ORB(2) should adopt a Resolution, to enable the approach specified in Resolution No. 2 (SAT-R2) to be followed by the administrations in all the three regions. This is on the understanding that any interim satellite-broadcasting system, proposed to be introduced by an administration, will not cause increased interference or coordination difficulties with any of the other systems covered by the Plan or terrestrial services.

11. Some of the important additions/modifications to the provision in the Radio Regulations, as a result of above proposals, are indicated in the <u>Annex</u>.

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Annex: 1

ANNEX

ARTICLE 1

IND/141/37

MOD 106 § 4.49 Satellite Network: A satellite system or a part of a satellite system, consisting of only one or more co-located satellite(s) and the cooperating earth stations.

ARTICLE 8

MHz 1 427 - 1 525

		Allocation to Services							
	Region 1	Region 2	Region 3						
	1 427 - 1 429	SPACE OPERATION (Earth-t	to-space)						
		FIXED							
		cal mobile							
		722							
IND/141/38	1 429 - 1 525	1 429 - 1 525							
MOD	FIXED	FIXED							
	MOBILE except aeronautical mobile	MOBILE 723							
	722	722 <u>722A</u>							

IND/141/39

ADD 722A In India, the frequency band 1 517 to 1 521 MHz is also allocated to the broadcasting satellite service (sound) on a primary basis subject to agreement obtained under the procedure set forth in Article 14.

<u>Reasons</u>: To cater for eventual deployment of BSS (sound) for national coverage.

ARTICLE 10

IND/141/40

ADD 999A Convene multilateral meetings of administrations and organizations for resolving coordination problems relating to satellites systems, when specifically requested by one or more administrations and provide necessary assistance and support for successful completion of coordination. - 8 -ORB(2)/141-E

ARTICLE 11

IND/141/41 <u>NOC</u>	in	Coordination of Frequency Assignments to Stations a Space Radiocommunication Service Except Stations in the Broadcasting Satellite Service and to Appropriate Terrestrial Stations
IND/141/42 <u>NOC</u>	Se	ction I. Procedures for the Advance Publication of Information on Planned Satellite Networks
IND/141/43 MOD	1041	Publication of Information along with Board's views.
IND/141/44 MOD	1042	§ 1. (1) An administration (or one acting on behalf of a group of named administrations) which intends to establish a satellite system shall, prior to the coordination procedure in accordance with No. 1060 where applicable, send to the International Frequency Registration Board, not earlier than five years and

<u>Reasons</u>: Consequent to Recommendation in paragraph 1 Chapter 4 of WARC ORB(85) report, concerning merging of Appendices 3 and 4.

information listed in Appendix 4*.

IND/141/45

MOD 1043

(2) Any amendment to the information sent concerning a planned system in accordance with No. 1042 shall also be sent to the Board as soon as they become available. If the information is found to be incomplete, the Board shall immediately seek, from the administration concerned, any clarification and information not provided.

preferably not later than two years before the date of bringing into service each satellite network of the planned system, the

<u>Reasons</u>: To obtain complete information on the planned system before it is examined by the Board.

IND/141/46

MOD 1044

(3) The Board shall identify by using Appendix 29, those administrations whose existing or planned radiocommunication service might be affected by the planned system. The Board shall then publish within six weeks the names of the administrations likely to be affected together with the information sent under Nos. 1042 and 1043 in a special section of its weekly circular and shall also, when the weekly circular contains such information, so

^{*} This is obtained by merging existing Appendices 3 and 4. Consequential (numbering) changes will have to be made, wherever necessary.

- 9 -ORB(2)/141-E

advise all administrations by circular telegram. The circular telegram shall include the frequency bands to be used and, in the case of a geostationary satellite, the orbital location of the space station.

<u>Reasons</u>: To facilitate quicker action by the Board and administrations and to simplify coordination process.

IND/141/47 MOD 1045

(4) If the information is found to be incomplete, the Board shall publish it under No. 1044 and immediately seek, from the administration concerned, any clarification and information not provided. In such cases, The period of four months specified in No. 1047 shall count from the date of publication, under No. 1044, of the complete information.

<u>Reasons</u>: Consequent to MOD 1043.

IND/141/48

MOD 1054

4 (3) In their attempts to resolve the difficulties mentioned above, administrations may seek the assistance of the Board <u>for</u> <u>providing support for bilateral/multilateral discussions including</u> <u>technical analysis as considered appropriate</u>.

<u>Reasons</u>: To clarify the role of the Board for holding multilateral discussions.

ARTICLE 13

IND/141/49

MOD 1550

(4) The projected date of bringing into use of a frequency assignment may be extended on request of the notifying administration by up to 18 four months. In the case where the administration states that, due to exceptional circumstances, it needs a further extension of this period, such extension may be provided but it shall in no case exceed 18 months from the eriginal projected date of bringing into use by the Board taking into account Resolution No. 2 of WARC-79 and the justification provided by the administration.

<u>Reasons</u>: 1) To minimize the difficulties experienced by some administrations in the application of RR 1550; in the event of unforeseen situations like launch failures etc.

2) To take into account paragraph 4.2.4 of WARC ORB(85) Report.

CONF\ORB-2\DOC\141E2.TXS

Document 142-E 1 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 5

United States of America

PROPOSALS FOR THE WORK OF THE CONFERNECE

Agenda Item 15: Revision of No. 480 of the Radio Regulations

Introduction:

1. Radio Regulation No. 480, adopted by the 1979 WARC, states that in Region 2, the use of the band 1605-1705 KHz by stations of the broadcasting service shall be subject to a plan to be established by a regional administrative radio conference. Reference is made to Recommendation No. 504, which calls for a regional conference to develop a plan for the broadcasting service in Region 2 in that band. Recommendation No. 504 indicates that in accordance with the Table of Allocations, and Radio Regulation No. 481, that as of the date decided by the regional conference for the coming into force of the Plan, then the 1605-1625 KHz band will be allocated on an exclusive basis to the broadcasting service. At the same time, the 1625-1705 KHz band will be allocated to the broadcasting service on a primary basis, the fixed and mobile services on a permitted basis, and the radiolocation service on a secondary basis.

The First Session of the Region 2 Administrative Radio 2. Conference, April, 1986, decided to plan the 1605-1705 KHz band on the basis of certain standardized parameters equally applied to all countries of the Region. The RARC recommended to the Administrative Council that the agenda for the Second Session of the RARC include consideration of matters relating to the nonbroadcasting services allocated within the band. The RARC also recommended that RR No. 480 be placed on the agenda of WARC-ORB-88 to reflect the fact that the Plan will be established for all countries in Region 2 and will consider all the radio services in the band. The Agenda for the RARC assigned to the conference the task of preparing a Plan together with procedures governing the use of the band 1625-1705 KHz by other services in Region 2 and procedures to be applied for the implementation of the Plan.

The Second Session of the Regional Administrative Radio 3. Conference adopted in its Final Acts, the Rio '88 Agreement and the Rio '88 Plan concerning ITU Region 2. The Rio '88 Agreement includes provisions governing the use of the band by the broadcasting service, and by the fixed and mobile services as well. RARC BC-R2(2) Resolution COM 5/3 indicates a July 1, 1990, date for the coming into force of the change in the Table of Frequency Allocations, as required by No. 481. That Resolution also adopts a text on No. 480, that ensures that the bringing into service of broadcasting stations in Region 2 in the band 1605-1705 KHz by countries non-parties to the Agreement, is without prejudice to the regional broadcasting Plan, in line with Agenda Item 15 of the WARC-ORB-88. That text was sent to WARC-ORB-88 by the RARC BC-R2(2) in its Recommendation COM 5/A as shown in Document 14.

4. Thus, all the actions envisioned by WARC 1979 have been completed. It is now a matter of modifying No. 480 making reference to the Rio '88 Plan and procedures concerning the nonbroadcasting services. As the Region 2 countries have unamiously recommended a text on No. 480 to the WARC-ORB-88, we believe that this conference should act on their Recommendation and adopt, without change, the modification to the Radio Regulations, as follows:

United States Proposal:

USA/142/1

MOD 480

In Region 2, the use of the band 1 605 -1 705 kHz by stations of the broadcasting service is subject to the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

In Region 2, in the band 1 625 - 1 705 kHz, the relationship between the broadcasting, fixed and mobile services is shown in No. 419. However, frequency assignments to stations of the fixed and mobile services in the band 1 625 - 1 705 KHz, notified under No. 1214, shall take account of the allotments appearing in the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

<u>Reason</u>: To ensure that the Rio '88 Plan is applied to all countries in Region 2 on an equal basis and that procedures for the non-broadcasting services are established. The proposed text is that text which was adopted by the RARC BC-R2(2) in May-June of this year, and was forwarded to the WARC-ORB-88 in its Recommendation COM 5/A.

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Document 143-E 1 September 1988 Original: English

COMMITTEE 4

United Stated of America

RESULTS OF PLANNING EXERCISES USING THE COMMON, OVERLAPPING PREDETERMINED ARC CONCEPT

The United States has conducted allotment planning exercises using the common, overlapping predetermined arc concept. This paper presents the results, which provided allotments for all 208 service areas from the multi-band requirements file. Nominal space station positions were identified and all carrier-to-interference ratios met the 26 dB requirement.

The results presented show one way to conduct a multi-band planning exercise:

- a. Use 6/4 and 14/11-12 GHz requirements.
- b. Establish groupings of administrations and predetermined arcs using 14/11-12 GHz parameters.
- c. Establish space station positions using synthesis program with 14/11-12 GHz parameters.
- d. Perform analysis using 6/4 GHz parameters.

For reasons of economy, this document is printed in a limited number of copies. Participants are therefore kindly asked to bring their copies to the meeting since no others can be made available.

- 2 -ORB(2)/143-E

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SCENARIO SUMMARY

1.	I. Scenario Identifier: Date <u>08/11/88</u> Time <u>02:00</u> Code_	2-3-1-1
2.	2. Scenario Description: NASARC + ORBIT ORBIT	
	Requirements X Existing Systems Subregional	
	Systems Included - C Ku C and Ku	X
	Parameters for NASARC - C Ku_X POS14 GHz DA	ATA
	Parameters for ORBIT - C <u>X</u> Ku <u>X</u> (Ver 7/88)	
	Variations from Standard Parameters: Standard Ku parameters; Serv	ice arcs
	based on 10 ⁰ elevation (POS 14 GHz requirements file).	
3.	. Objective/Purpose: <u>Generate a requirements only NASARC output whi</u>	ch would
	verify Version 4.0 software operation with a successful ORBIT res	ult.
	Evaluate multi band planning approach.	_
4.	Expected Results: All systems to receive PDA allotments; position	IS
	determined by ORBIT achieve minimum of 26 dB C/I for worst case	
	(aggregate)	
5.	. Results Obtained: Expected results were obtained. Worst C/I for	Ku
	analysis was 26.3 dB (range 26-57 dB), for C band analysis 25.6 d	1B

(range 26 - 56 dB).

- Follow-on Exercises:
 parameters through ORBIT.
- 7. Run Time Stats:

Computer:

AMDAHL <u>X</u> VAX	ZAIAZOTHER	
Total CPU Time 2:15 hrs. (NASARC)	9:26 hrs. (ORBIT) Ku	band
Total Elapsed Time_6:30 hrs. (NASARC)	35:48 hrs. (ORBIT) Ku	band
Form dated: 6/19/88	≈ 6 min. (ORBIT) C	band

08/11/88 02:00

ORB(2)/143-

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POS14GHZ

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¥				¥
¥	NASARC	INPUT	PARAMETERS	¥
*				*

DOWNLINK FREQUENCY (GHZ)	=	11.200
UPLINK FREQUENCY (GH2)		13, 000
GROUPING CRITERION (DEG)	æ	0.50
MINIMUM ELLIPSE BEAMWIDTH (DEG)	Ħ	0.80
MINIMUM HPA TRANSMIT POWER (DB)	=	-999.90
NINIMUN TWTA TRANSMIT POWER (DB)	=	-999.90
RAIN ATTENUATION SELECTION FLAG	H	Y
PERCENT OF YEAR RAIN OUTAGE (%)	=	0 100
MAXIMUM RAIN ATTENUATION LIMIT (DB)	1	10.00

EQUATION FOR ALLOTMENT ARC LENGTH:

 $AL = K1 \times (N - 1) \times GRP + K2 \times T + K3 \times N + K4$ WHERE: AL = ALLOTTED ARC LENGTH N = NUMBER OF MEMBERS IN GROUPING

GRP == GROUPING CRITERION

T = TRANSITIONAL ARC LENGTH

K1 = 1.00

K2 = 1.00

K3 = 0.00

K4 = 0.50

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¥:	NASARC	FINAL	RESULTS	¥

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TOTAL AMOUNT OF ORBITAL ARC USED (DEG)	= 235.0
NUMBER OF GROUPINGS ALLOTTED	= 54
NUMBER OF INDIVIDUAL SERVICE AREAS ALLOTTED	= 176
NUMBER OF AFFILIATED SETS ALLOTTED	= 7 (CONTAINING 32 S/A.)
NUMBER OF UNALLOTTED INDIVIDUAL SERVICE AREAS	= 0
NUMBER OF UNALLOTTED AFFILIATED SETS	= 0 (CONTAINING O 5/A.)

	GROUP MEMBERS	ALLOTT	ED ARC	GROUP	ARC	ARC LENGTH	NUM 'OF
		BOUND	ARIES	BOUND	ARIES	(DEG)	MEMBERS
1	MEX MRI SLM TUN	-157.0	-152.0	-157.0	-137.0	5.0	4
2	CAR CUB PNR	-144.0	-140.0	-144.0	-94.0	4.0	3
3	BOL BRE JMC SLV	-126.0	-121.0	-126.0	-73.0	5.0	4
4	CTR DOM GUY	-121.0	-117.0	-126.0	-17.0	4.0	3
5	CPV NCG URG VCT	- 94. 0	-89.0	-94.0	-20.0	5.0	4
6	OCE PRG USA	-88. 0	-84.0	-88.0	82.0	4 . O	З
-7	CAN	83. 0	BO. O	~85. O	-80.0	3. O	1
8	ATS BAH EQA GMB SUR	-75.0	-70.0	-87.0	-39.0	5.0	5
2	ARG HND SEN	70.0	-66.0	80.0	-52 0	4 . O	З
10	CHL GHA GRD HTI PUR	-66. 0	-61.0	-70. O	-54.0	5.0	5
11	BLZ 530 DMA GNB STP	-61.0	-56.0	61.0	-19.0	5.0	5
12	ABW GAB GTM IRL 151. SCN SRL SUI TUN	-52. 0	-45.0	~52. 0	-44.0	7.0	9
13	GUI PRU TCD	-45.0	-41. O	-46.0	-10 0	4 . O	3
1.1	550	-41.0	-38.0	-40. O	-39.0	3.0	1
15	ZAI	-38. 0	-35.0	-39. 0	83.0	3.0	1
16	YUG	-35.0	-32.0	-40. O	75.0	3.0	1
1	520 GNF. MLT	-32. 0	-29.0	-43. 0	-17.0	4.0	3
18	BEL CLH CVA LBR LSO UGA	-28. 0	-22.0	-36.0	-11.0	6.0	6
14	BOT CTI DUI HOL JOK RRW SMR VEN	-22. 0	-15.0	-28.0	-8.0	7.0	ម
20	BOO SDN	-15.0	-11. O	-31. O	-3.0	4 . O	2
ali	ICH	-11.0	-8.0	-38.0	72.0	З. О	1
	AGL ATH BEA HUL KHIT LEN LIE YEM	-9.0	-1.0	-13.0	1 0	7.0	8
83	560 IRG NMB YMS	-1.0	4. O	-6.0	50	5. O	4
2.4	CME MRC TRD	4.0	8.0	1.0	9.0	4 . O	З
10	ALB SOO	8.0	12.0	-7.0	43 0	4 . O	2
96	ISK PUL GAT	12.0	16.0	-17.0	71.0	4.0	3
c.7	LRA MOK	16.0	20.0	15.0	33. 0	4.0	2
28	HNG	20. 0	23. 0	-38.0	78.0	3 . 0	1
	ALG TZA UAE	23. 0	27.0	-13.0	60.0	4 0	3
. O	FNL LUX	27.0	31.0	26.0	33.0	4 . O	2

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	GROUP MEHBERS	ALLOTTED	ARC	GROUP	ARC	ARC LENGTH	NUM OF
		BOUNDAR	IES	BOUND	ARIES	(DEG)	MEMBERS
. 31	BH9 ET4 100	31.0	35.0	29.0	69. 0	4 . O	З
39	AFG COD MLI	35. 0	39.0	9.0	50.0	4 . O	3
33	DDR	39.0	42.0	-43.0	68.0	3.0	1
	NGR OMA ROU	42.0	46.0	-9.0	70.0	4.0	з
12 🗄	MIN TOP	46. O	50. Q	-21.0	53.0	4.0	2
2 E	TUA	50.0	53.0	-44.0	71.0	3.0	1
37	LAO NIG PAK	53.0	57.0	47.0	74.0	4. O	3
20	540 DCD	57.0	61.0	45. 0	61.0	4.0	2
1799 C	PHL TCO URS ZMB	61. O	66. O	55.0	70.0	5.0	4
44.14	AFS BEN IND MCD	66. O	71.0	66. O	71.0	5.0	4
4 1	BDI EGY ZWE	73.0	77.0	-33.0	93.0	4.0	3
4 B	CHN	77.0	80.0	74.0	139.0	3.0	1
43	CAF GRC INS	80. O	84.0	78.0	84.0	4.0	3
14	MOZ UR2	84. O	88.0	75.0	101.0	4.0	2
45	AUS BEM COM MAU MLD SEY SYR	88.0	94. Ü	85.0	101.0	6.0	7
14.	CYP JOO KEN SWZ	94. O	99.0	86.0	100 0	5.0	4
77	ARS MWI VTN	99.0	103.0	39.0	103 0	4.0	3
4 9	CAR IRM MDG	104. 0	108.0	99.0	110.0	4.0	3
40	MNG NPL SOM	108.0	112.0	57.0	112.0	4.0	3
50	500	112.0	115.0	113.0	114.0	3.0	1
51	BGD CBG CK2 CLN PNG SNG UR3	136.0	142.0	136.0	146.0	6.0	-
52	KIR KRE MLA NIU NZ2 TKL VUT	142.0	148.0	123.0	171.0	6.0	7
53	CMH KOP THA	148.0	152.0	135.0	160.0	4 0	3
1 ₂ .4	510 BRU FUI NRU NZE PTC TUV	174. 0	180. 0	173. 0	-175.0	6.0	7

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¥	NASARC PDA ORBITAL REPRESENTATION	*
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90	100	110	120	130	140	150	160	170	180	

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O R B I T ITU VERSION (V.05.88)

EXERCISE NO. 2-3-1-1

Results of 14/12-11 GHz synthesis

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X

X

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XXXXX SATELLITE POSITION AND TOTAL INTERFERENCE XXXXX

X

X

X

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METHOD = 2 : ORDERING + SPACING

TOPO-CENTRIC ANGLE AND REAL DISTANCE

XX FINAL SOLUTION (FINAL SPREAD CASE) XX

WORST NO. = 1

NO		BEAM	SATELLITE	C/N	C/N	C/N	C/I	C/I	C/I
NU.	NAITC	10	PUSITION		DOMN	TUTAL	UP	DOWN	TOTAL
1	MEYAAAAA		-156 0000				(DB)	(DB)	(DB)
2	MDL00000		-156 5000	21.000	15.000	14.02/	40.840	43.616	41.927
ž	SIMOTEDR		-155 6000	21.1//	15.1//	14.204	43.633	42.254	39.8/9
š	TONOTEDR		-155.0000		15.000	14.027	42.856	41.944	39.365
	PNDATEDR		-163 0000		15.000	14.027	44.952	41.169	39.650
6	CANNMOOD		-143.3337	21.1/3	13.1/3	14.202	39.235	40.516	36.830
7	CURODOO		-140 0000		15.005	14.112	42.233	30.400	36.908
Ŕ	SIVATERS		-125 0000		12.001	14.000	40.310	46.106	39.295
ŏ	JMCDDDDD				15.000	14.027	44.338	40.00/	42.431
ιń	ROLOTERR		-123 6000	21.000	15.000	14.027	30.002	30.1/2	35.493
îĭ	REROTEER		-122 9000	21.000	15.000	14.027	42.002	47.340	40.951
12	GUYNDAAA			21.000	15.000	14.02/	32.343	31.093	29.08/
13	DOMOTERS		-119 9000		15.275	14.302	30.392	30.100	,33.3/3
ĩă	CTRODOO			21.000	15 174	14.027	30.490	39.211	33.030
15	VCTOTERR		-93 9999		15.130	14.103	47.472	40./00	44.922
16	URGOOOOO		-93 0000	21 817	15.000	14.027	33.301	30.930	33./39
17	NCGOTERB		-92 3000	21.017	15,010	14.043	JJ.422 65 770	33.412	31.294
18	CPVOIFRB		-91,5000	21 000	15 000	14.027	42.337	22 915	37.110
19	USAVIRPT		-87.9999	21 132	15 132	16 150	30.303	JZ.013 61 657	JI./J4 60 671
ŽÓ	PRGOIFRB		-87.0000	21 070	15 070	16 006	35 054	30 318	36 330
2ĭ	OCEODDOD		-86.6000	21 026	15 026	14.050	JJ.730 66 586	43 254	54.510
22	CANNEOOO		-80.0000	21,616	15 615	14 642	20 253	35 776	28 380
23	SUROIFRB		-74,9999	21.078	15.078	14.105	45 185	68 658	43 510
24	GMB00000		-74.3000	21,000	15.000	16 027	31 776	30 657	28 170
25	EQA00000		-71.6000	21.436	15.436	14.462	48 573	67 823	45 172
26	ATGOIFRB		-70.7000	21.000	15.000	14.027	31.754	36 527	30.505
27	BAHOIFRB		-70.0000	21.231	15.231	14.258	61.861	36 787	35 611
28	SEN00000		-67.9000	21.098	15.098	14,125	37.657	37.792	36.716
29	HND00000		-67.5000	21.086	15.087	14.113	39.317	38,121	35.668
30	ARG00000		-66.9000	21.478	15.478	14.505	40.800	43.941	39,082
31	PORMDRAZ		-65.9999	21.000	15.000	14.027	40.821	35.726	34.555
32	HTIOIFRB		-65.0000	21.000	15.000	14.027	32,155	34.177	30.039
33	GRDOIFRB		-64.6000	21.000	15.000	14.027	36.373	34.699	32.446
34	GHA00000		-64.2000	21.139	15.139	14.166	40.391	40.522	37.446
35	CHL00000		-61.0000	21.102	15.102	14.128	32.034	27.673	26.317
36	STPOIFRB		-60.0000	21.000	15.000	14.027	38.215	39.858	35.949
37	GNBOIFRB		-58.7000	21.000	15.000	14.027	32.496	33.137	29.794
38	BLZ00000		-57.9000	21.114	15.114	14.141	36.798	36.965	33.871

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30 CHM00000 53 -57,5000 21,800 15,800 14,027 36,120 35,831 35,204 43 DHAOTERS -50,000 21,000 15,800 14,027 36,226 35,113 35,204 43 DHAOTERS -50,000 21,000 15,000 14,027 35,313 35,225 35,433 35,225 44 DHAOTERS -50,000 21,000 15,000 14,027 35,313 35,325 35,433 35,433 44 STUDERS -49,3000 21,000 15,000 14,027 35,313 35,3255 35,445 35,451 35,225 35,445 35,451 35,225 35,445 35,451 35,455 35,451 35,455 <th>- 9 - ORB(2)/143-F</th>	- 9 - ORB(2)/143-F
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99 TRD00000	6.6000	21.030	15.030	14.057	31.230	35.571	29.869
100 MRC00000	7 1000	21 444	15 445	16 671	33 601	36 076	71 511
	8 0000	21 2/0	15 2/0	17.7/1	33.401	30.030	21,211
IUI CMEUIFRD	8.0000	21.209	12.209	14.296	47.4/6	48.622	45.001
102 S 00000	9.2000	21.375	15.375	14.402	33.372	33.392	30 372
103 41 800000	11 0000	21 000	15 000	16 027	70 702	70 / 00	36.672
IUS ALBOUUUU	11.0000	21.000	13.000	14.027	39.392	39.480	36.426
104 QAT00000	12.0000	21.000	15.000	14.027	38.561	40.103	36.254
105 POL0000	16 5000	21 000	15 000	16 027	72 607	12 606	20 579
	14.5000	21.000	15.000	14.027	32.493	32.004	29.530
IUG ISRUIFRB	16.0000	21.000	15.000	14.027	39.904	37.857	35.751
107 NOR00000	18.3000	22.445	16.445	15 472	37 807	38 053	36 046
109 1 8200000	10.2000	21 000	15 000	1/ 007	57.077	20.022	34.704
100 1010000	19.2000	21.000	12.000	14.027	33.581	33.625	30.593
109 HNG00000	22.2000	21.199	15.199	14.225	35,149	33,140	31 019
110 HAFOTEDR	23 0000	21 000	15 000	16 027	7/ / 69	75 240	70 001
IIO OALOITAD	23.0000	21.000	15.000	14.027	30.438	35.249	32.801
III IZAUIFRB	23.5000	21.002	15.002	14.028	40.311	39.939	37.111
112 ALG00000	24.1000	21.284	15.284	14 311	36 051	36 675	31 361
113 1 11 00000	27 0000	21 042	15 062	16 000	29.031	34.075	31.341
113 LOXUUUUU	27.0000	21.042	12.042	14.069	28.542	33.006	27,214
j 114 FNL00000	31.0000	21.000	15.000	14.027	36.061	37.041	331513
1 115 T 00000	32 3000	21 009	15 000	16 036	76 610	75 227	70 7/0
116 5700000	72,0000		15.009	14.030	30.410	33.221	32.768
. 110 CIMUUUUU	32.8000	21.000	15.000	14.027	38.312	36.826	34.496
117 BHR00000	33,8000	21.000	15.000	14.027	36 058	37 051	33 514
1 118 MITOTERR	35 0000	21 366	16 344	16 272	67 227		33.310
	33.0000	21.340	12.340	14.3/3	43.223	41.350	39.176
119 COGOIFRB	36.0000	21.332	15.332	14.359	42.133	43.154	39 603
1 120 AFG00000	37 1000	21 367	15 367	16 306	77 267	70 774	22.000
	70 0000	21.307	13.307	14.374	33.23/	39.336	32.299
1 121 DURUUUUU	28.0000	22.152	16.152	15.1/9	31.843	35.032	30.140
1 122 ROU00000	42,9000	21,102	15.103	14,129	31 165	36 665	20 555
1 123 0000000	67 0000	21 000	15 000	16 007	51.105	54.045	27.555
123 ONA00000	43.9000	21.000	12.000	14.027	36.907	38.576	34.651
124 NGROIFRB	44.9000	21.000	15.000	14.027	32.873	32.642	29.746
1 125 TURODOD	48 1000	21 016	15 016	16 063	30 616	77 707	76 077
1 126 MTNOTEDR	F0.1000		15.010	14.045	37.914	31.301	32.2/3
1 120 PHINULEKD	50.0000	21.591	12.241	14.618	38.761	36.316	34.359
127 AUT00000	51.1000	21.297	15.297	14.323	31, 492	36 130	29 607
1 128 PAKOTERB	53 8000	21 010	15 010	16 066		37.137	27.007
	55.6000	21.017	13.017	14.040	51.047	37.436	30.149
I IZY NIGUIFRB	55.4000	21.000	15.000	14.027	40.996	39.054	36.907
I 130 LAOOIFRB	55.8000	21.000	15,000	16 027	36 282	60 802	33 600
1 131 D 00000	E7 (000	22.000	1/ 000	15 100	34.202	40.002	33.407
1 T2T D 00000	57.6000	22.082	10.002	15.109	28.989	34.786	27.974
132 CYPSBA00 54	60.1000	21.000	15.000	14.027	34.477	36 175	31 313
1 133 GTR0000 56	60 1000	21 000	15 000	16 027	65 672	62 807	60.000
1 176 UKO00000 54	(0.1000	21.000	15.000	14.027	43.402	42.093	40.980
1 134 HKGUUUUU 54	60.1000	21.000	12.000	14.027	30.020	39.462	29.552
I 135 ZMBOIFRB	61.0000	21.000	15,000	16 027	60 626	38 788	36 510
1 136 119500001	27 8000	21 207	15 707	16 777	70.767	30.700	30.313
	03.0000	21.707	12.707	14.733	28.838	20.118	26.421
I IST IGUUIFRB	64.4000	21.003	15.003	14.030	30.607	31.286	27.923
I 138 PHLOIFRB	66.0000	21,000	15,000	16 027	30 663	35 405	20 200
1 170 MCOOTERR	67,6000	21.000	15.000	14.027	30.443	33.075	27.309
1 137 NOULEKD	07.4000	21.000	12.000	14.027	35.326	33.028	31.017
140 INDOIFRB	67.9000	21.134	15.134	14.161	35.026	33.774	31 345
1 141 BENOTERB	68.4000	21 017	15 017	14 044	21 404	30 270	27 077
1 162 AECODODO		CI . UI /	T.J. 0 T (17.077	21.000	20.219	21.913
1 142 AFSUUUUU	68.9000	21.444	12.444	14.470	35.036	34.395	31.693
143 ZWE00000	74.6000	21.000	15.000	14.027	29 747	36 220	28 452
1 144 FOYNTERR	76 2000	21 043	15 067	14 070	L/117/		20,492
I ATT ECIDIND	70.2000	ET.043	12.043	14.0/0	32.60/	20.9/5	27.410
1 142 RN100000	76,9000	21.002	15.002	14.028	32.413	32.561	29,476
I 146 CHN00000	77:9000	21.706	15,706	14.732	35 880	32 732	31 010
1. 147 TNS00000	82 6000	21 746	15 745	16 770	33,007	36.136	21.013
1 140 0000000	02.4000	61./42	12./42	14.//2	50.014	54.154	28.592
1 148 GRC00000	0000	21.055	15.055	14.082	34.046	28.218	27,210
149 CAFOIFRB	83,9000	21 552	15.552	14 579	76 76	30 720	36 700
1 150 110500002	86 2000	21 710		14 777	20.203	37.700	34.729
	04.0000	21.310	12.210	14.33/	55./20	57.387	32.167
I ISI MUZOIFRB	86.1000	21.597	15.597	14.623	41,750	39.305	37 347
1 152 SYR00000	88,2000	22 328	16 328	15 354	21 007	22 275	20 075
1 153 SEVATEDR	80 2000	21 000	10.020	14 007	51.202	32.213	27.0/5
1 155 SETUICED	07.2000	21.000	12.000	14.027	35.121	37.042	32.966
I 124 MEDOTEKB	89.6000	21.110	15.110	14.137	37.546	35.109	33 148
155 MAUOIFRB	90,0000	21 000	15 000	16 027	77 677	36 000	22 701
1 154 COMOTERS	01 2000		10.000	17.027	37.373	20.020	33.721
1 130 CUMULERD	71.2000	21.000	12.000	14.027	30.994	36.129	29.833
157 BRMOIFRB	91.8000	21.230	15.230	14.257	32,986	37.366	31.636
1 158 AUS00000	92.4000	21 112	15 119	16 165	61 204	60 601	28 071
1 220 11000000	2 E T T V V V	£1,110	T3'TTO	141143	41.004	40.401	20.021

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***** THE WORST C/I IS 26.317 (DB) AT BEAM NUMBER 35 CHL00000 *****
***** C/I HISTOGRAM DF 208 BEAMS *****

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(NO) 2 (DB) (NO) 4 4 1 4 2 0 1 2 0 0 1 0 1 0 0 0 4 3 0 0 (DB) (NO) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 (DB) (NO) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

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EXERCISE NO. 2-3-1-1

6/4 GHz analysis of multi-band plan

***** SATELLITE POSITION AND TOTAL INTERFERENCE *****

METHOD = 1 : ORDERING

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TOPO-CENTRIC ANGLE AND REAL DISTANCE

**** INPUT-DATA SOLUTION LAUNCH = 8 ****

WORST NO. = 1

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		BEAM	SATELLITE	C/N	CZN	CZN		C / T	0.47	A / T	
ND.	NAME	ID	POSITION	IIP	DOWN	TOTAL				_0/1	
			(DEG_E)	(DR)	(DR)	(DP)		UP	DUWN	TOTAL	
1	MEXAGOO		-156 0000	21 000			(DBJ	(DB)	(DB)	
2	MP1 00000		-156 5000	21.000	12.000	14.027	51	.687	43.639	43.006	
5	CLMOTEDD		-120.2000	21.1//	15.177	14.204	45	.129	41.317	39 807	
Ş	SLMUIFRB		-155.6000	21.000	15.000	14.027	46	184	41 823	60 668	
4	TONOTERB		-154.9000	21.000	15.000	14.027	43	817	66 016	40.400	
5	PNROIFRB		-143.9999	21.175	15,175	14 202		200	74.010	40.905	
6	CANNWOOO		-143.6000	21.086	15 086	16 112	40	.200	30.349	35.921	
7	CUBOODOO		-140 0000	21 661	15 441	14.112	43	.044	42.706	39.862	
Ŕ	SIVOTERB	5	-125 0000	21.001	12.001	14.000	41	.695	45.342	40.136	
ă	IMCOOOOO		-126 7000	21.000	12.000	14.027	46	.213	46.005	43.097	
10	BOLOTEDR		-124.3000	21.000	15.000	14.027	37	.211	38.388	34.749	
11	POPOTEOD		-123.6000	21.000	15.000	14.027	45	.992	47.678	43 743	
11	DKDUIFKD		-122.9000	21.000	15.000	14.027	30	139	30 718	27 600	
12	GUYUUUUU		-120.9999	21.275	15.275	14.302	61	202	36 660	75 500	
13	DOMOIFRB		-119.9000	21.000	15.000	14 027	70	310	70 570	35.508	
14	CTROODOO		-117.0000	21,136	15,136	14 163	50	. 310	30,578	35.432	
15	VCTOIFRB		-93,9999	21,000	15 000	16 027	49	.237	46.201	44.449	•
16	URG00000		-93,0000	21 817	15 817	14.027	26	.505	38.628	34.428	
17	NCGOIFRB		-92.3000	21 000	15.017	14.043	35	.461	41.060	34.404	
18	CPVOTERB		-91 5000	21.000	15,000	14.027	46	.315	34.501	34.224	
19	USAVIRET		-97 0000	21.000	15.000	14.027	43	.087	36.294	35.469	
20	PROTER		-97 0000	21.132	15.132	14.158	46	. 551	38.483	37.854	
21	00500000		-07.0000	21.070	15.070	14.097	39	.156	37.312	35,127	
21	OCEUUUUU		-86.6000	21.024	15.024	14.051	46	.913	41 999	60 785	
24	CANNEUUU		-80.0000	21.615	15.615	14.642	34	354	39 167	33 110	
23	SUKUIFKB		-74.9999	21.078	15.078	14.105	63	023	66 661	62 027	
24	GMB00000		-74.3000	21.000	15.000	14.027	30	836	70.341	42.02/	
25	EQA00000		-71.6000	21.501	15.501	16 528	77 0 0	.030	35.020	32.203	
26	ATGOIFRB		-70.7000	21,000	15 000	16 027	40	. 201	42.058	43.436	
27	BAHOIFRB		-70,0000	21 231	15 231	16 259	33	.0/3	57.745	32.380	
28	SEN00000		-67 9000	21 008	15.000	14.200	45	.092	36.746	35.840	
29	HNDODOOD		-67 5000	21 097	15.090	14.125	36	.212	35.691	32.933	
Rá	ARGODOOO		-66 0000	21.000	15.087	14.113	40	.637	36.996	35.435	
21	PODMDDA7			21.4/8	15.478	14.505	38	.789	36.218	34.306	
72	UTTOTEDD		-63.9999	21.000	15.000	14.027	42	.610	37.642	36 661	
	ODDOTEDD		-65.0000	21.000	15.000	14.027	34	489	34 412	31 660	
- 22	GRUUIFRB		-64.6000	21.000	15.000	14.027	37	698	35 384	22 270	
54	GHAUUUUU		-64.2000	21.139	15.139	14,165	66	955	60 670	70 507	
35	CHL00000		-61.0000	21.102	15.102	14,128	70 27	975	70.970	37.57/	
36	STPOIFRB		-60.0000	21.000	15.000	14 027	31	.0/9	33.426	55.4/0	
37	GNBOIFRB		-58.7000	21.000	15,000	16 027	3/	. 200	57.927	34.581	
38	BLZ00000		-57,9000	21 116	15 116	14.027	36	. 263	38.340	34.351	
			21.7000	61.114	15-114	14.141	38	.022	37.609	34.800	

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39 CNR00000 53 40 E 00002 53 41 DMA0IFRB 42 TUN00000 43 SUI0IFRB 44 SRL0IFRB 45 SCN0IFRB 46 ISL00000 47 IRL00000 47 GAB0IFRB 50 ABM00000 51 TCD0IFRB 52 PRU00000	5 -57.5000 -57.5000 -57.5000 -51.7000 -50.6000 -49.7000 -49.3000 -48.7000 -48.7000 -47.9000 -45.5000 -44.0000	21.000 1 21.889 1 21.000 1 21.000 1 21.000 1 21.000 1 21.000 1 21.000 1 21.000 1 21.000 1 21.000 1 21.000 1 21.000 1 21.335 1 21.118 1 21.211 1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	42.279 38.540 39.347 37.539 37.746 38.109 38.973 37.003 36.646 39.173 36.652 42.488 37.076	38.790 35.259 36.061 35.400 33.920 35.538 33.990 34.924 34.928 37.562 34.816 36.570 32.434
53 GUIOIFRB 54 DNK00000 55 55 DNK00000 55 56 GRL00000 55 57 ZAIOIFRB 58 YUG00000 59 MLT00000 60 GNE0IFRB 61 ASCSTHTC 52 62 BERCAYMS 52 63 FLKSTGGL 52 64 G 00000 52	$\begin{array}{c} -41.0000\\ -39.6000\\ 5 & -39.6000\\ -39.6000\\ -39.6000\\ -37.9999\\ -34.9999\\ -31.7000\\ -31.2000\\ 2 & -30.700\\ 2 & -30.700$	21.765 21.000 21.169 21.000 21.236 21.000 21.236 1. 21.000 1. 21.000 1. 21.574 1. 21.000 1. 21.574 1. 21.000 1. 21.542 1. 21.066 1. 21.066	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	44.969 40.469 39.978 41.291 42.498 38.290 34.754 33.162 30.268 44.284 35.404 45.404 45.658	40.605 38.983 36.494 36.948 41.166 37.655 33.529 29.809 29.699 41.162 32.872 41.366 35.525
65 UGA01FRB 66 LS001FRB 67 LBR01FRB 68 CVA01FRB 69 CLM00000 70 BEL00000 71 VEN00000 72 SMR00000 73 RRN01FRB 74 JOR00000 75 HOL00000 76 DJ101FRB 77 CT100000	-27.9999 -27.5000 -27.1000 -26.8000 -26.3000 -23.9000 -19.7000 -19.7000 -19.0000 -18.6000 -18.2000	21.478 1 21.000 1 21.000 1 21.284 1 21.457 1 21.000 1 21.457 1 21.000 1 21.102 1 21.000 1 21.000 1 21.000 1 21.000 1	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	36.910 36.865 34.304 33.904 32.623 34.340 32.593 36.209 35.021 36.209 35.021 36.298 32.764 34.891	28.714 35.345 33.346 31.202 30.615 31.661 27.975 33.663 31.589 34.546 30.968 33.426
78 BOT00000 79 SDN0IFRB 80 B 00000 81 TCH00000 82 YEM0IFRB 83 LIE0IFRB 84 LBN0IFRB 85 KWT00000 86 BUL00000 87 BFA0IFRB 88 AGL0IFRB 89 ATN00000	$\begin{array}{c} -15.6000 \\ -15.0000 \\ -13.1000 \\ -12.3000 \\ -11.0000 \\ -4.6000 \\ -3.9000 \\ -3.5000 \\ -2.9000 \\ -2.4000 \\ -2.4000 \\ -1.6000 \\ -1.3000 \end{array}$	21.017 1. 21.364 1. 21.114 1. 21.000 1. 21.000 1. 21.000 1. 21.000 1. 21.000 1. 21.000 1. 21.015 1. 21.000 1. 21.273 1. 21.021 1. 21.021 1.	5.017 14.0 5.364 14.3 5.115 14.1 5.000 14.0 5.000 14.0 5.000 14.0 5.000 14.0 5.000 14.0 5.000 14.0 5.015 14.0 5.015 14.0 5.274 14.3 5.021 14.0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	41.889 40.774 39.670 39.861 37.917 36.574 35.295 34.625 33.121 35.032 31.421 32.419	39.689 36.735 36.331 39.541 35.027 32.693 31.707 31.999 30.312 33.666 30.692 30.673
90 YMS00000 91 NMB01FRB 92 IRQ00000 56 93 F 00000 56 94 GDL00000 56 95 GUF00000 56 96 MYT00000 56 97 REU00000 56 98 SPM00000 56	$\begin{array}{c} -1.3000\\ 2.3000\\ 2.7000\\ 3.1000\\ 4.0000\\ 4.0000\\ 4.0000\\ 4.0000\\ 4.0000\\ 4.0000\\ 4.0000\\ 4.0000\end{array}$	21.000 1 21.164 1 21.069 1 21.000 1 22.321 1 21.076 1 21.000 1 21.000 1 21.000 1 21.000 1 21.002 1 21.000 1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	27 36.586 91 37.838 95 35.618 27 37.951 48 42.224 03 34.012 27 31.906 27 45.869 49 48.648 27 42.194	33.049 32.255 32.978 35.142 31.621 39.109 43.530 44.767 49.236	31.456 31.195 31.090 31.518 34.365 29.644 31.149 41.534 43.277 41.411

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99 TRD00000 100 MRC00000 101 CME0IFRB 102 S 00000 103 ALB00000 104 QAT00000 105 POL00000 106 ISR0IFRB 107 NOR00000 109 HNG00000 109 HNG00000 110 UAE0IFRB 111 TZA0IFRB 112 ALG00000 113 LUX00000 114 FNL00000 115 I 00000 115 I 00000 116 ETH00000 117 BHR00000 118 MLI0IFRB 120 AFG00000 121 DDR00000 122 R0U00000 123 OMA00000 124 NGR0IFRB 125 TUR00000 124 NGR0IFRB 125 TUR00000 128 PAK0IFRB 129 NIG0IFRB 129 NIG0IFRB 130 LA00IFRB 131 D 00000 132 CYPSBA00 5 133 GIB00000 5 135 ZMB0IFRB 136 URS00001 137 TG00IFRB 138 PHL0IFRB 138 PHL0IFRB 139 MC00IFRB 139 MC00IFRB 139 MC00IFRB 136 URS0000 143 ZWE00000 144 EGY0IFRB	$\begin{array}{c} 6.6000\\ 7.1000\\ 8.0000\\ 9.2000\\ 11.0000\\ 12.0000\\ 14.5000\\ 14.5000\\ 2000\\ 22.2000\\ 23.0000\\ 23.5000\\ 23.5000\\ 23.5000\\ 23.5000\\ 23.5000\\ 31.0000\\ 32.3000\\ 32.8000\\ 32.8000\\ 33.8000\\ 35.0000\\ 35.0000\\ 37.1000\\ 37.1000\\ 34.9000\\ 44.9000\\ 43.9000\\ 44.9000\\ 55.8000\\ 55.4000\\ 55.4000\\ 55.4000\\ 55.4000\\ 55.4000\\ 55.4000\\ 55.4000\\ 60.1000\\ 55.4000\\ 61.0000\\ 63.8000\\ 64.4000\\ 66.0000\\ 67.4000\\ 68.9000\\ 74.6000\\ 68.9000\\ 74.6000\\ 68.9000\\ 74.6000\\ 68.9000\\ 74.6000\\ 68.9000\\ 74.6000\\ 68.9000\\ 74.6000\\ 68.9000\\ 74.6000\\ 68.9000\\ 74.6000\\ 68.9000\\ 74.6000\\ 68.9000\\ 76.9000\\ 76.9000\\ 82.4000\\ 83.0000\\ 83.$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	14.056 15.128 14.296 14.657 14.027 14.027 14.027 14.027 14.027 14.027 14.225 14.027 14.029 14.311 14.069 14.027 14.026 14.027 14.02	32.773 37.038 46.364 35.907 40.079 42.036 34.783 42.651 39.2473 36.581 39.738 40.856 37.1851 38.892 43.9547 43.9547 44.111 37.402 43.9547 44.111 37.547 34.625 37.017 40.119 39.3274 34.765 35.138 36.977 43.351 35.408 36.694 35.408 36.694 35.408 36.694 35.408 36.694 35.408 36.602 35.172	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	1329726648434444373880548940338707159921729792704
140 INDOIFRB 141 BENOIFRB 142 AFS00000 143 ZWE00000 144 EGY0IFRB 145 BDI00000 146 CHN00000 147 INS00000 148 GRC00000 149 CAF0IFRB 150 URS00002 151 M0Z0IFRB 152 SYR00000 153 SEY0IFRB 155 MAU0IFRB 155 MAU0IFRB 156 COM0IFRB 157 BRM0IFRB 158 AUS00000	67.9000 68.4000 68.9000 74.6000 76.2000 77.9000 82.4000 83.0000 83.9000 84.6000 84.6000 86.1000 89.2000 89.2000 89.2000 91.2000 91.8000 92.4000	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	14.027 14.024 14.044 14.470 14.027 14.070 14.028 14.732 14.772 14.082 14.579 14.537 14.623 15.354 14.027 14.137 14.027 14.027 14.027 14.027 14.021 14.031 14.145	36.694 34.226 31.136 40.458 33.863 37.375 36.081 34.602 35.172 39.445 38.530 39.445 38.574 40.102 40.442 32.207 32.033 42.155	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7297792704488551008673662

159 SWZ00000 160 KEN0IFRB 161 J 00000 162 CYP00000 163 VTN0IFRB 164 MWI0IFRB 165 ARS00000 166 MDG0IFRB 167 IRN00000 168 CAR00000 169 SOM0IFRB 170 NPL0IFRB 170 NPL0IFRB 172 ADL00000 173 KER00000 174 NCL00000 175 WAL00000 176 URS00000 176 URS00000 177 SNG00000 178 PNG0IFRB 182 BGD00000 178 VUT0IFRB 182 BGD00000 183 VUT0IFRB 182 BGD00000 183 VUT0IFRB 182 BGD00000 183 VUT0IFRB 182 BGD00000 183 VUT0IFRB 182 KIR0IFRB 184 TKL00000 185 NZLR0SS0 186 NIU00000 187 MLA00000 188 KRE00000 191 KOR00000 192 CKH00001 193 TUV00000 194 PTC00000 195 NZL00000 195 NZL00000 195 NZL00000 194 PTC00000 195 NZL00000 195 NZL00000 195 NZL00000 194 PTC00000 195 NZL00000 195 NZL00000 195 NZL00000 195 NZL00000 195 NZL00000 195 NZL00000 195 NZL00000 196 NRU0IFRB 199 ALS00000 201 HWA00000 203 JAR00000 204 J0N00000 205 MDH00000 206 PLM00000 207 SMA00000 208 WAK00000 208 WAK00000	999 97 97 97 100 101 102 106 107 100 115 100 115 100 115 100 115 100 115 136 136 136 136 136 136 136 136 136 136	5.7000 6.6000 7.1000 7.9000 1.3000 2.9000 2.9000 2.9000 5.0000 0.2000 0.00			15.046 15.000 15.061 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.100 15.100 15.100 15.100 15.254 15.000 15.100 15.2000 15.2010 15.2000 15.2000 15.2000 15.2000 15.2000 15.2000 15.2000 15.2000 15.2000 15.2000 15.2000 15.2000 15.2000 15.2000 15.2000 15.00000 15.00000 15.0000 15.0000 15.00	144444444444444444444444444444444444444	00202151600005020102122012802002502022777777777777777777777777777			27797155494667822514028362210060618397019680311478	68036600469571326150258878497667245408881977297315526757 	75149620163534012175356273278639664443482117592234370 334333434343545655434333433343335334444433482117592234370	435514087350363454618889710327261372499531875927536060	333685.009941252699900134496996695735200226973366099046	$\begin{array}{c} 3963\\ 43792\\ 4993783785531080485778378553108048577855537878553108048577855531080485778554787855378785537878556785557878555787878787878787878787$
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NASARC SERVICE AREA CODE ITU ELLIPSE BEAM CODE

1	ABW	ABNOOOOO
2	ADL	ADL00000
3	AFG	AFG00000
4	AFS	AF500000
5	AGL	AGLOIFRB
6	ALB	ALB00000
7	ALG	ALG00000
8	ALS	ALS00000
9	ARG	ARGOUDOO
10	ARS	ARS00000
11	ASC	ASCSTHTC
12	ATG	ATGOIFRB
13	ATN	ATN00000
14	AUS	AUS00000
15	AUT	AUT00000
16	BOO	B 00000
17	BAH	BAHOIFRB
18	BDI	BD100000
19	BEL	BELOOOOO
20	BEN	BENOIFRB
21	BER	BERCAYMS
22	BFA	BFAOIFRB
23	BGD	BGDOOOOO
24	BHR	BHROOOOO
25	BLZ	BLZOOOOO
26	BOL	BOLOIFRB
27	BOT	ватооооо
28	BRB	BRBOIFRB
29	BRM	BRMOIFRB
30	BRU	BRUOIFRB
31	BUL	BULOOOOO
32	CAF	CAFOIFRB
33	CAN	CANNEOOO
34	CA2	CANNWOOO
35	CAR	CAROOOOO
36	CBG	CBGOIFRB
37	CHL	CHL00000
38	CHN	CHN00000
39	СКН	CKH00001
40	CK2	CKH00002

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ITU ELLIPSE BEAM CODE

41	CLM	CLM00000
42	CLIN	CLN00000
43	CME	CMEOIFRB
44	CNR	CNROOOOO
45	COG	COGOIFRB
46	COM	COMOIFRB
47	CPV	CPVOIFRB
48	CTI	CT100000
49	CTR	CTROOOO
50	CUB	CUBOOOOO
51	CVA	CVAOIFRB
52	CYP	CYPODODO
53	CY2	CYPSBAOD
54	DOO	D 00000
55	DDR	DDROQOOO
56	DJI	DJIOIFRB
57	DMA	DMAOIFRB
58	DNK	DNKOOOOO
59	DN2	DNKOOOO2
60	DOM ·	DOMOIFRB
61	EOO	E 00002
62	EGY	EGYOIFRB
63	EGA	EQA00000
64	ETH	ETH00000
65	F00	F 00000
66	FJI	FJIOIFRB
67	FLK	FLKSTGGI
68	FNL	ENL00000
69	GOO	G 00000
70	GAB	GABOIERB
71	GDL	GDL00000
72	GHA	GHA00000
73	GIB	GIBOOOOO
74	GMB	GMB00000
75	GNB	GNBOIERB
76	GNE	GNEOIERR
77	GRC	GRC00000
78	GRD	GRDOIFRB
79	GRL	GRI 00000
80	GTM	GTM00000
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	NASARC SERVICE AREA	CODE	ITU ELLIPSE BEAM CODE
81	GUF		GUF00000
82	GUI		GUIOIFRB
83	GUM		GUMMRAOO
84	GUY		GUY00000
85	HKG	:	HKGOOOOO
86	HND		HNDOOOOO
87	HNG		HNGOOOOO
88	HOL		HOLOOOOO
89	HTI		HTIOIFRB
90	HWA		HWAOOOOO
91	HUL		HWLOOOOO
92	100		I 00000
93	IND		INDOIFRB
94	INS		INS00000
95	IRL		IRLOOOOO
96	IRN		IRNOOOOO
· 97	IRQ		IRQOOOOO
- 98	ISL		ISL00000
99	1SR		ISROIFRB
100	JOO		J 00000
101	JAR		JAROOOOO
102	JMC		JMCOOOOO
103	JON		JONOOOO
104	JOR		JOROOOOO
105	KEN		KENOIFRB
106	KER		KEROOOOO
107	KIR		KIROIFRB
108	KOR		KOROOOOO
109	KRE ·		KREOOOOO
110	KNT		KWTOOOOO
111	LAD		LADOIFRB
112	LBN		LBNOIFRB
J13	LBR		LBROIFRB
114	LBY		LBY00000
115	LIE		LIEOIFRB
116	LSD		LSOOIFRB
117	LUX		LUX00000
118	MAU		MAUOIFRB
119	MCD		MCDOIFRB
120	MDG		MDGOIFRB

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ITU ELLIPSE BEAM CODE

121	MDW		MDWOOOOO
122	MEX		MEX00000
123	MLA		MLA00000
124	MLD		MLDOIFRB
125	ML I		MLIOIFRB
126	ML.T		MLT00000
127	MNG		MNGOIFRB
128	MOZ		MOZOIFRB
129	MRC		MRC00000
130	MRL		MRL00000
131	MTN		MTNOIFRB
132	MWI		MWIOIFRB
133	MYT		MYT00000
134	NCG		NCGOIFRB
135	NCL		NCL00000
135	NGR		NGROIFRB
137	NIG		NIGOIFRB
138	NIU		NIU00000
139	NMB		NMBOIFRB
140	NOR	•	NOROOOOO
141	NPL		NPLOIFRB
142	NRU		NRUOIFRB
143	NZL		NZL00000
144	NZ2		NZLROSSO
145	OCE		OCE00000
146	OMA		000000MD
147	PAK		PAKOIFRB
148	PHL		PHLOIFRB
149	PLM		PLM00000
150	PNG		PNGOIFRB
151	PNR		PNROIFRB
152	POL		P0L00000
153	POR		PORMDRAZ
154	PRG		PRGOIFRB
155	PRU		PRUODOOD
156	PTC		PTC00000
157	QAT		QAT00000
158	REU		REU00000
159	ROU		R0U00000
160	RRW		RRWOIFRB

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208 SERVICE AREAS - RU BAND PARAMETERS - WITH RAIN ATTENUATION - NO EXISTING SYSTEMS

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	NASARC SERVICE AREA	CODE ITU	ELLIPSE	BEAM	CODE
161	500		S 000	00	
167	SCN			200	
163	SDN		SDNOIF	'BB	
164	SEN		SENOOC	00	
145	SEY		SEVOIE	RR	
166	SIM		SLMOIE	DR .	
167	SLV		SLVOIE	289	
169	SMA		SMACOC	00	
169	SMR		SMROOC	000	
120	SNG		SNGOOD	000	
171	SOM		SOMOIF	RB	
172	SPM		SPMOOD	000	
173	SRL		SRLOIF	RB	
174	STP		STPOIF	RB	
175	SUI		SUIOIF	RB	
176	SUR		SUROIF	RB	
177	SWZ		SWZOOC	000	
178	SYR		SYROOC	000	
179	TCD		TCDOIF	RB	
180	тсн		TCHOOD	00	
181	TGO		TGOOIF	RB	
182	THA		THAOOO	00	
183	TKL.		TKLOOD	000	
184	TON		TONOIF	RB	
185	TRD		TRDOOD	00	
186	TUN		TUNOOD	00	
187	TUR		TUROOO	00	
188	TUV		TUVOOO	00	
189	TZA		TZAOIF	RB	
190	UAE		UAEOIF	RB	
191	UGA		UGAOIF	RB	
1.72	URG		URGOOO	00	
173	URS .		URSOOD	01	
194	UR2		URSOOD	02	
195	URG		URSOOD	03	
196	USA		USAVIR	PT	
197	VCT		VCTOIF	RB	
198	VEN		VENOOD	00	
199	VTN		VTNOIF	RB	
200	VUT		VUTOIF	RB	

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201	WAK	MAKOODOO
202	WAL	WALOOOOO
203	YEM	YEMOIFRB
204	YMS	YM500000
205	YUG	YUGODOOD
205	ZAI	ZAIOIFRB
207	ZMB	ZMBOIFRB
508	ZWE	ZWE00000

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ORBBORNE WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 144-E 1 September 1988 Original: English

COMMITTEE 6 WG/PL

United States of America

ADDITIONAL PROPOSAL TO WARC ORB(2) REGARDING AGENDA ITEM 4

Introduction

Certain modifications to Article 14 have been proposed to alleviate difficulties experienced by some entities in effecting the necessary agreements for coordination under this Article.

During preparations for WARC ORB(2) the need for a careful reevaluation of the principles established for Article 14 by WARC-79 and decisions on possible changes thereto have been identified.

Aspects such as omission of required time limits, absence of technical standards and criteria to determine coordination area and assess interference levels, and other procedural points need detailed consideration. It is noted that a number of footnotes in the Radio Regulations, requiring application of Article 14, were accepted only because of the philosophy of this Article. A change in this philosophy, without careful revision of the footnotes themselves, could jeopardize the balance achieved in many cases when these footnotes were drawn up.

It is seen to be beyond the scope of WARC ORB(2), in terms of time and competence to perform such an in-depth review of Article 14.

Proposal

It is proposed that WARC ORB(2) adopt the attached Recommendation for a comprehensive review of the principles, philosophy and application of Article 14 of the Radio Regulations by a future, competent, world administrative radio conference.

USA/144/1 ADD

RECOMMENDATION

RELATING TO THE IMPROVEMENT OF THE PROCEDURES OF ARTICLE 14 AND DEVELOPMENT OF TECHNICAL CRITERIA FOR THEIR APPLICATION

The World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, Second Session, Geneva, 1988.

CONSIDERING:

a) that Article 14 in many instances omits required time limits and the steps to be taken when a deadlock is reached between administrations;

 b) that many footnotes of the Table of Frequency Allocations, in which Article 14 is mentioned, do not apply to the space services and, consequently, this Conference may not treat them;

c) that actions taken in relation to Article 14 could also bear on the decisions of other conferences;

d) that in some cases there exist no technical criteria to identify the affected administrations;

e) the lack of appropriate CCIR Recommendations and Reports or IFRB Technical Standards applicable to assess the interference levels in many cases;

f) that recent administrative radio conferences have used extensively the reference to Article 14 when revising existing footnotes or developing new ones;

g) the need for a detailed review of the principles on the basis of which Article 14 was adopted and of the consequential changes necessary for an efficient and simplified application of this article;

 h) that in case the review leads to modification of these principles, some footnotes may need to be modified;

i) that the provisions of Article 14 are applicable by all radiocommunication services and should be reviewed by a conference competent to deal with all services;

NOTING:

that this Conference has reviewed the provisions of Article 14 which refer to space services, and has made the necessary changes to the procedures, until a more extensive revision can be made, covering all the services;

RECOMMENDS:

that a future competent world administrative radio conference should review and revise, as appropriate, the provisions of Article 14 of the Radio Regulations;

REQUESTS the Administrative Council:

to include the review of the procedures of Article 14 and any consequential changes to Article 8 in the agenda of a future competent world administrative radio conference;

INVITES the CCIR:

1. to develop the sharing criteria for different services which are subject to the application of Article 14;

2. to provide technical criteria to identify the affected administrations, as well as to determine interference levels;

URGES Administrations:

to study this matter and to submit proposals for consideration by a future competent world administrative radio conference.

 $CONF \setminus ORB - 2 \setminus DOC \setminus 144E.TXS$

INTERNATIONAL TELECOMMUNICATION UNION **ORB-88** WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 145-E 1 September 1988 Original: English

Source: Document DT\6

COMMITTEE 5

ORGANIZATION OF THE WORK

It was decided to set up two Working Groups with the following terms of reference:

Working-Group 5-A 1.

Terms of reference:

Establishment of the Plan and associated technical standard parameters and criteria for feeder link.

- **_** . to determine the technical parameters to be used for the development of the Plan;
- to establish the requirements to be used;
- to prepare the Plan.

List of documents allocated:

3 + Corr.1, 7 + Corr.1, 12, 17, 19 + Corr.1 & 2, 24, 25, 39 + Corr.1 & 2, 49, 51, 54, 60, 73, 98. 118

Chairman: R.M. Barton, Box No. 139 Secretary: G. Mesias, Box No.1066

2. Working-Group 5-B

Terms of reference:

- to establish the regulatory provisions associated to the Plan and to examine the technical criteria other than those used in preparing the Plan;
- to deal with points 2 to 7 of the Committee 5 terms of reference (Document 114).

List of documents allocated:

3 + Corr.1, 7 + Corr.1, 8, 9 + Add.1, 12, 14, 18, 26, 27, 34, 36, 37, 39 + Corr.1 & 2, 40 + Corr.1 & 2, 41 + Corr.1 & 2, 42 + Corr.1 & 2, 49, 51, 52, 54, 57, 58, 59, 60, 65, 69, 73, 86, 87, 88, 93, 94, 95, 99, 101, 102, 104, 107, 108, 110, 116

<u>Chairman</u>: C. Dosch, Box No. 404 <u>Secretary</u>: S.J. Jaffrey, Box No. 1080

> D. SAUVET-GOICHON Chairman of Committee 5

INTERNATIONAL TELECOMMUNICATION UNION ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 146-E 5 September 1988 Original: English

COMMITTEE 2

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 2

(CREDENTIALS)

Thursday, 1 September 1988, at 1000 hrs

Chairman: Mr. S. SISSOKO (Mali)

Subjects discussed

 1.
 Terms of reference of the Committee
 114

 2.
 Organization of work

Documents

- 2 -ORB(2)/146-E

1. <u>Terms of reference of the Committee</u> (Document 114)

1.1 The <u>Chairman</u> drew attention to the terms of reference of Committee 2 set out in the document and to the decision taken at the First Plenary Meeting that the Committee should present its final report on 29 September 1988.

The Committee took note of its terms of reference.

2. <u>Organization of work</u>

2.1 The <u>Chairman</u> proposed that the Committee should set up a small Working Group, consisting of the Chairman, the Vice-Chairman and the delegates of Argentina, Indonesia and Switzerland. It would hold its first meeting early in the following week.

It was so <u>agreed</u>.

The meeting rose at 1005 hours.

The Secretary:

X. ESCOFET

The Chairman:

S. SISSOKO

INTERNATIONAL TELECOMMUNICATION UNION ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 147-E 1 September 1988 Original: English

Source: Document DT/8(Rev.1)

COMMITTEE 6

NOTE FROM THE CHAIRMAN OF THE WORKING GROUP OF THE PLENARY TO THE CHAIRMAN OF COMMITTEE 6

After presenting the documents related to Appendix 3 and Appendix 4 of the Radio Regulations, the Working Group of the Plenary has a common feeling that this Working Group would appreciate some guidelines from Committee 6 on their regulatory aspects (see annex). Therefore, the Working Group of the Plenary expresses its wishes that Committee 6 give priority consideration to the documents related to Appendix 3 and Appendix 4 of the Radio Regulations, in order that our Working Group may proceed to deal with technical aspects as soon as possible.

> R. RYVOLA Chairman of the Working Group of the Plenary

Annex: 1

- 2 -ORB(2)/147-E

ANNEX

Specific questions and comments concerning Appendices 3 and 4

1. Will Appendices 3 and 4 to the Radio Regulations be merged?

2. If answer is yes, to what extent would the combined appendix be used? (Advance publication, coordination, notification, $\Delta T/T$, C/I, S/N.)

3. If answer to item 1 above is no (Appendices 3 and 4 will be separated), what function would they serve in the Improved Procedures and Simplified Procedures and to what extent would they be used? (See item 2 above.)

4. To be advised as early as possible on the decision concerning the principle of coordination at network level and the use of typical earth stations.

5. To be advised on the expression of views concerning amendments to Appendices 3 and 4 to the Radio Regulations as given in Documents 22 and 23.

CONF ORB - 2 DOC 147E.TXS

INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 148-E 1 September 1988 Original: English

WORKING GROUP 4-B

NOTE FROM THE CHAIRMAN OF COMMITTEE 4 TO THE CHAIRMAN OF WORKING GROUP 4-B

Committee 4 decided that the following items should also be discussed in Working Group 4-B:

i) determination of an objective criterion to take into account special geographic situations of certain countries in relation to their coverage requirements (in close cooperation with Working Group 4-A);

ii) methodology used in the planning software.

S. PINHEIRO Chairman of Committee 4

CONF\ORB-2\DOC\148E.TXS

For reasons of economy, this document is printed in a limited number of copies. Participants are therefore kindly asked to bring their copies to the meeting since no others can be made available.

Corrigendum 1 to Document 149-E 5 September 1988 Original: English

COMMITTEE 4

<u>Replace</u> the last paragraph of page 2 by the following:

"Establish the associated regulatory procedures for the fixed-satellite service in the Allotment Plan bands according to the principles and methods established by the First Session (agenda item 1); prepare such consequential amendments in the Radio Regulations as may be necessary from the viewpoint of allotment planning (agenda item 12); consider, from the allotment planning point of view, revise as necessary, and take other appropriate action upon the relevant Resolution and Recommendations (agenda item 13)."

(This Corrigendum concerns only the English version.)

S. PINHEIRO Chairman of Committee 4

CONF\ORB-2\DOC\149C1E.TXS

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 149-E 1 September 1988 Original: English

Source: Document DT/5

COMMITTEE 4

STRUCTURE OF COMMITTEE 4 AND PRELIMINARY ATTRIBUTION OF DOCUMENTS

Committee 4 decided to set up three Working Groups and one ad hoc Group as described in the following.

Main decisions on planning would be taken at the Committee level and ad hoc or Drafting Groups would be created as required.

Working Group 4-A: Technical criteria for planning

Agenda items: 3

Chairman: Dr. Y. Ito (J), Box No. 959

Documents: 3(CCIR) + Corr.1; 7(URS); 48(B); 49(AUS); 53(J); 56(USA); 59(CAN); 69(KEN); 73(NZL); 81(CTI); 82(SEN)

Consider for adoption the appropriate technical standards, parameters and criteria pertaining to the fixed-satellite service in the Allotment Plan frequency bands.

Working Group 4-B: Allotment Plan

Agenda item: 1

Chairman: Mr. C.T. N'Diongue (SEN), Box No. 635

Documents: 3(CCIR) + Corr.1; 5(TZA); 7(URS); 12(USA); 13(IFRB); 19(IFRB); 28(IFRB); 33(F); 38(CEPT); 46(B); 48(B); 49(AUS); 53(J); 65(ALG); 66(LUX); 73(NZL): 81(CTI); 82(SEN); 89(VEN); 97(MEX); 105(PRG); 116(CHL); 118(CHN); 120(CLM); 132(CLM, EQD, VEN)

Establish the Allotment Plan for the fixed-satellite service in the frequency bands:

- 4 500 - 4 800 MHz and 6 425 - 7 075 MHz; and

10.70 - 10.95 GHz, 11.20 - 11.45 GHz and 12.75 - 13.25 GHz

according to the principles and methods established by the First Session.

<u>Working Group 4-C</u>: Procedures associated with the Plan

Agenda items: 1, 12 and 13

Chairman: Mr. E.D. DuCharme, Box No. 372

Documents: 7(URS); 12(USA); 29(F); 45(CEPT); 53(J); 56(USA); 59(CAN); 65(ALG); 66(LUX); 72(D); 81(CTI); 89(VEN); 95(VTN); 97(MEX); 105(PRG); 116(CHL)

Establish the associated regulatory procedures for the fixed-satellite service in the Allotment Plan bands (agenda item 1); prepare such consequential amendments in the Radio Regulations as may be necessitated from the viewpoint of allotment planning (agenda item 12); consider, from the allotment planning point of view, revise as necessary, and take other appropriate action upon the relevant Resolution and Recommendations (agenda item 13).

> H.S. PINHEIRO Chairman of Committee 4

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INTERNATIONAL TELECOMMUNICATION UNION

 Image: State of the sector of the sector

Document 150-E 6 September 1988

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

LIST OF DOCUMENTS (Documents 101 to 150)

> PL = Plenary Meeting C = Committee

WG = Working Group

No.	Origin	Title	Destination
101	MEX	Proposals for the work of the Conference - Agenda Item 10	C.5
102	MEX	Proposals for the work of the Conference - Agenda Item 11	C.5
103	MEX	Proposals for the work of the Conference - Agenda Item 13	C.4, C.5, C.6
104	MEX	Proposals for the work of the Conference - Agenda Item 15	C.5
105	PRG	Proposals for the work of the Conference	C.4
106	PRG	Proposals for the work of the Conference - Agenda Item 5 - Definitions relating to space services	C.6
107	PRG	Proposals for the work of the Conference - Agenda Item 9 - Satellite sound-broadcasting systems	C.5
108	PRG	Proposals for the work of the Conference - Agenda Item 10	C.5
109	PRG	Proposals for the work of the Conference - Agenda Item 13	C.5, C.6
110	PRG	Proposals for the work of the Conference Agenda Item 15	C.5
111	IFRB	IFRB Report on definition of Europe	C.5, C.6
112	SG	Minutes of the first Plenary Meeting	PL
113	SG	Secretariat of the Conference	-
114	SG	Structure of the Second Session of the WARC on the use of the geostationary-satellite orbit and the planning of space service utilizing it (ORB-88) (Geneva, 1988)	-

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No.	Origin	Title	Destination
115 (Rev. 1)	SG	General schedule of the work of the Conference	-
116	CHL	Proposals for the work of the Conference	C.4, C.5, C.6
117	F	Proposal (Agenda Item 5) - Revision of Article 1, No. 109 (Feeder-link)	C.6
118 + Corr.1	CHN	Proposals for the work of the Conference	C.4, C.5, C.6
119	SG	Allocation of documents	-
120	CLM	Proposals for the work of the Conference - Agenda Item 1	C.4, C.6
121	C.4	Summary Record of the first meeting of Committee 4	C.4
122	C.5	Summary Record of the first meeting of Committee 5	C.5
123	C.6	Summary Record of the first meeting of Committee 6	C.6
124 (Rev.1)	C.4	Terms of reference of Group 4 Ad Hoc 1	C.4
125	IFRB	IFRB Report on the existing networks	C.4
126	LUX	Proposals for the work of the Conference - Agenda Item 4 - Proposal for simplification and improvement of Article 11 of the Radio Regulations	C.6
127	LUX	Proposal for the work of the Conférence - Agenda Item 4: Proposal for combining and revising Appendices 3 and 4 of the Radio Regulations	C.6, WG/PL
128	C.5	Note by the Chairman of Committee 5 - Feeder-link requirements	C.5
129	C.4	Summary Record of the second meeting of Committee 4	C.4

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No.	Origin	Title	Destination
130	C.4	Summary Record of the third meeting of Committee 4	C.4
131	C.5	Summary Record of the second meeting of Committee 5	C.5
132 + Corr. 1	CLM EQA PRU VEN	Need to take into account the special geographical situation characterized by high rainfall in establishing the allotment plan	C.4
133	CLM EQA VEN	Information document - Accurate method of determining the minimum coverage ellipse	C.4
134	CLM EQA VEN	Proposals for the work of the Conference Agenda Item 9 - Satellite sound broadcasting	C.5
135	ARG	Proposal under Agenda Item 8	C.5, WG 5B
136	GRC ·	Proposals for the work of the Conference	C.4
137	C.6	Summary Record of the second meeting of Committee 6	C.6
138	C.6	Structure of Committee 6 and preliminary attribution of documents	C.6
139	GT 5A	First report of Working Group 5-A to Committee 5	C.5
140	IFRB	IFRB Report - Analysis of planning exercises 1-1-2-1 and 1-1-3-1	4 Ad Hoc 1
141	IND	Proposals for the work of the Conference	C.4, C.5, WG/PL
142	USA	Proposals for the work of the Conference - Agenda Item 15: Revision of No. 480 of the Radio Regulations	C.5
143	USA	Results of planning exercices using the common, overlapping predetermined arc concept	C.4

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No.	Origin	Title	Destination
144	USA	Additional proposal to WARC-ORB(2) regarding Agenda Item 4	C.6, WG/PL
145	C.5	Organization of the work	C.5
146	C.2	Summary Record of the first meeting of Committee 2	C.2
147	GT PL	Note from the Chairman of the Working Group of the Plenary to the Chairman of Committee 6	C.6
148	C.4	Note from the Chairman of Committee 4 to the Chairman of Working Group 4-B	WG 4-B
149 + Corr. 1	C.4	Structure of Committee 4 and preliminary attribution of documents	C.4
150	SG	List of documents (101 to 150)	SG

INTERNATIONAL TELECOMMUNICATION UNION ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 151-E 1 September 1988 Original: English

Source: Document DT/9 + Add.1

WORKING GROUP 5-A

ORGANIZATION OF THE WORK

It was decided to establish two sub-groups:

Sub-Working Group 5-A-1

- establish the requirements for the Plan;
- prepare the Plan.

Items for discussion:

- confirmation of requirements;
- allowance for ULPC;
- translation frequencies (linear or non-linear);
- variation of e.i.r.p.

List of documents allocated: 3, 7, 12, 17, 19, 54, 73

Chairman: Mr. Tomati, Box No. 624

Sub-Working Group 5-A-2

determine the technical parameters to be used for the development of the Plan;

prepare guidelines for the use of ULPC.

Items for discussion:

- which frequency band(s) to be used;
- adjacent channel protection ratio;
- calculation of OAPM;
- sense of polarization;
- pointing error;
- technical parameters.

List of documents allocated: 3, 7, 12, 19, 24, 25, 39, 49, 51, 54, 95 <u>Chairman</u>: Mr. Komoto, Box No. 964

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R.M. BARTON Chairman of Working Group 5-A

INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 152-E 2 September 1988

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

CONFERENCE CHAIRMANSHIPS (as approved at the second Plenary Meeting)

Chairman of the Conference	: Prof. Dr. I. Stojanović (Yugoslavia)
<u>Vice-Chairmen of the</u> <u>Conference</u>	: Mr. S. Bouhadeb (Algeria) Mr. Z. Song (China) Mr. A.R. Bahrainian (Iran (Islamic Rep. of)) H.E. Mr. J. Dondelinger (Luxembourg) Mr. A.L. Badalov (USSR) Mr. T.F. Brophy (USA) H.E. Mr. P. Martín Leyes Hernández (Colombia)
Committee 1 (Steering)	:(composed of the Chairman and Vice-Chairmen of the Conference and of the Chairmen and Vice-Chairmen of the other Committees and Working Group of the Plenary)
Committee 2 (Credentials)	: <u>Chairman</u> : Mr. S. Sissoko (Mali) <u>Vice-Chairman</u> : Mr. J. Székely (Hungary)
Committee 3 (Budget Control)	: <u>Chairman</u> : Dr. M.K. Rao (India) <u>Vice-Chairman</u> : Mr. G.I. Warren (Canada)
Committee 4 (Allotment Planning and Associated Procedures)	: <u>Chairman</u> : Mr. S. Pinheiro (Brazil) <u>Vice-Chairman</u> : Mr. C.T. N'Diongue (Senegal)
Committee 5 (Broadcasting Satellite Service (BSS) Matters and Associated Procedures)	: <u>Chairman</u> : Mr. D. Sauvet Goichon (France) <u>Vice-Chairmen</u> : Mr. K. Kosaka (Japan) Mr. C.A. Merchan Escalante (Mexico)
Committee 6 (Regulatory Procedures (other than for Allotment Planning and BSS Feeder-Links))	: <u>Chairman</u> : Mr. Jan F. Broere (Netherlands) <u>Vice-Chairman</u> : Mr. S.K. Kibe (Kenya)
<u>Committee 7</u> (Editorial)	: <u>Chairman</u> : Mr. P. Aboudarham (France) <u>Vice-Chairmen</u> : Dr. K.C. Shotton (United Kingdom) Mr. J.A. Prieto Tejeiro (Spain)
Working Group of the Plenary (Technical and Miscellaneous Matters)	: <u>Chairman</u> : Mr. R. Ryvola (Czechoslovakia) <u>Vice-Chairman</u> : Mr. H.K. Al Shankiti (Saudi Arabia)

WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 153-E 2 September 1988 Original: English

COMMITTEE 4

<u>Canada</u>

DEMONSTRATION OF OPTIMIZING ORBIT CAPACITY

1. <u>Introduction</u>

Canada favours a world-wide fixed-satellite allotment plan with sufficient flexibility to accommodate different orbital capacities and requirements in different regions. The attached planning exercise is intended to demonstrate the enhanced capacity of the Region 2 portion of the GSO, and is presented without prejudice to the Region 1 and Region 3 portions of the Plan.

One indication of this enhanced capacity in Region 2 is contained in the IFRB Plans 2.1.1.1 and 2.1.1.3, which have one allotment per service area. In these plans there is a much lower density of allotments in the arc $60^{\circ}W$ to $180^{\circ}W$ than in the arc $60^{\circ}W$ to $80^{\circ}E$, due principally to the geography of the regions and the isolation of Region 2, separated from the other regions by the Atlantic and Pacific Oceans.

This contribution reports the results of a planning exercise carried out by the Canadian Administration to estimate the orbital capacity available in Region 2 without reducing the ability to achieve an acceptable plan in the other regions of the world.

2. <u>The planning exercise</u>

The starting point for the planning exercise described here is the dual-band Plan 2.1.1.1 made available by the IFRB at the Third Information Meeting. The question addressed in the planning exercise reported in this contribution is how the available orbital capacity can best be utilized in Region 2 without affecting the capability to develop an acceptable plan in the other regions.

In carrying out this exercise, assumptions had to be made on where to make the additional allotments. Efforts were made in doing this to respect the principle of equity throughout the region.

3. <u>Results of the study</u>

In the augmentation of Plan 2.1.1.1, it was possible to locate a total of 65 Region 2 allotments. (In this contribution a multi-beam allotment at a single orbit location is counted as one allotment.) Of this total, there were:

- a total of five subregional multiadministration allotments, based in part, on information available from Appendix 30 of the Radio Regulations;
- a total of six existing systems, at 45°W, 107.3°W, 56°W, 57°W, 58°W and 31°W, using the existing orbit positions and beams of these networks and based on standard technical parameters; and

- allotments to some administrations, with existing or planned systems in other bands, at the same orbit locations as those networks.

An additional feature achieved in the exercise was the placing of multiple subregional national allotments in close proximity in the GSO, to simplify spacecraft design and to permit the adaptation of the exercise results to an arc segmentation planning approach.

In the augmented plan, all aggregate C/I values are greater than 26 dB, but, on average, were less than the values in the initial plan 2.1.1.1. Reducing those values, while keeping them above 26 dB, is the key to both the planning technique and its ability to increase significantly the available orbital capacity.

3.1 <u>The allotment positions in the augmented plan</u>

The orbital positions in the augmented plan in the 0°W to 180°W arc are indicated in Table 1.

3.2 <u>Adaptation of the results to a common overlapping predetermined arc</u> <u>type of plan</u>

Because the multiple allotments of a national or subregional service area are placed close together in the GSO - in part to ease the implementation costs of the planned satellites - the plan of Table 1 can be easily changed to a common overlapping predetermined arc plan. That type of plan for this exercise is indicated in Table 2.

4. <u>Conclusion</u>

As demonstrated by concrete examples in Tables 1 and 2, enhanced orbital capacity is available to Region 2 without degrading in any way the capacity available to Regions 1 and 3. Canada continues to support the concept of a world-wide plan, with sufficient flexibility to account for regional differences. This can be achieved by means of either a specific orbital position plan or by an arc segmentation approach.
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TABLE 1

Demonstration of Capacity:

	Orbital Positions in an Augmented Plan 2.1.1.1 in the Arc O°W to 180°W				
CAR	-179.00	VEN	-131.00	SUR	-79.70
OCE	-175.00	HND	-129.00	GUI	-78.60
MRL	-170.00	VEN	-127.00	PRU	-77.90
CKH-1	-163.00	BOL	-126.10	PRG	-76.50
PT C	-159.00	JMC	-124.00	GUY	-75.40
CKH-2	-154.50	BOL	-122.20	ABW	-72.50
BLZ	-153.00	ANDGRP	-117.8	В	-70.00
NIU	-152.20	MEX	-116.80	DOM	-69.00
TKL	-150.30	CAN	-114.90	MRC	-67.40
SLV	-149.00	BRB	-114.0	BFA	-66.50
TON	-148.50	MEX	-113.00	В	-66.50
ALS	-147.60	CAN	-111.10	STP	-64.40
GUM	-147.60	TRD	-110.3	BAH	-63.80
HWA	-147.60	MEX	-109.20	SMR	-62.90
HWL	-147.60	CANMSAT	-107.30	LBR	-62.10
JAR	-147.60	ANDGRP	-106.0	В	-61.20
JON	-147.60	USAVIRG	-101.90	USA13E	-58.00
MDW	-147.60	CARGRP	-98.00	USA13HB1	-57.00
PLM	-147.60	CHL	-96.00	USA13HB2	-57.00
SMA	-147.60	CPU	-94.7	USA13HB3	-57.00
WAK	-147.60	CTR	-94.0	USA13HB4	-57.00
PNR	-146.70	ATG	-92.5	USA13D	-56.00
CAMGRP	-142.70	CHL	-89.50	MLI	-54.00
EQA	-141.00	CARGRP	-88.10	COG	-52.80
GTM	-138.70	CHL	-86.00	TGO	-50.50
EQA	-136.90	ATN	-84.80	HOL	-49.50
CUB	-136.00	HTI	-83.00	LSO	-48.00
NCG	-134.10	PRU	-82.00	USA13IB1	-45.00
CUB	-132.20	PRG	-80.50	USA13TB2	-45.00

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TABLE 1 (contd.)

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USA13IB3	-45.00	GRD	-23.30	TCH	-2.50
USA13IB4	-45.00	YEM	-22.60	GHA	-1.60
NGR	-43.50	YUG	-21.80	IRL	-0.90
SEN	-41.40	ASCTHTC	-20.00	SDN	-0.10
ALB	-40.40	BERCAY	-20.00		
ZAI	-39.50	FLK	-20.00		
DNK-1	-38.60	G	-20.00		
DNK - 2	-38.60	TZA	-19.30		
GRL	-38.60	URG	-18.50		
DMA	-37.80	AUT	-18.20		
CTI	-37.00	GNB	-17.50		
ARG1	-36.30	LYB	-16.60		
ARG2	-36.30	SCN	-16.10		
PORMDRAZ	-35.30	SEY	-15.60		
СҮР	-33.80	ISL	-15.20		
CLM	-33.00	DJI	-14.40		
BEN	-32.00	POL	-13.50		
EIREB1	-31.00	URG	-13.10		
EIREB2	-31.00	ALG	-12.50		
ARG1	-30.30	MAU	-11.60		
ARG2	-30.30	NIG	-10.70		
SW2	-29.60	VCT	-9.60		
CLM	-29.00	Ε	-8.50		
ALG	-28.30	CNR	-8.50		
COM	-26.80	ARS	-7.50		
CAF	-26.00	NMB	-6.70		
GMB	-25.20	MTN	-5.90		
SYR	-24.50	TUN	-5.00		
ARG1	-24.10	GAB	-4.20		
ARG2	-24.10	ZMB	-3.30		

TABLE 2

Demonstration of Capacity:

<u>Common Overlapping Predetermined Arc</u> <u>Form of the Augmented Plan 2.1.1.1</u>

Predetermined Arc	Predetermined Arc Occupants
180°W to 154°W	CAR, OCE, MRL, CKH-1, PTC, CKH-2
154°W to 142°W	BLZ, NUI, TKL, SLV, TON USA multi-beam allotment
142°W to 126.5°W	EQA, GTM, CUB, NCG, VEN, HND
126.5°W to 121°W	BOL, JMC
121°W to 104°W	ANDGRP, MEX, CAN, BRB, TRD
104°W to 85°W	USAVIRG, CARGRP, CHL, CPV, CTR, ATG
85°W to 74°W	ATN, HTI, PRU, PRG, SUR, GUI, GUY
74°W to 60°W	ABW, B, DOM, MRC, BFA, STP, BAH, SMR, LBR
60°W to 44.5°W	USA, MLI, COG, TGO, HOL, LSO
44.5°W to 36.5°W	NGR, SEN, ALB, ZAI, DNK, GRL, DMA, CTI
36.5°W to 24.0°W	ARG, PORMDRAZ, CYP, CLM, BEN, EIRE, SWZ, COM, CAF, GMB, SYR
24°W to 13°W	GRD, YEM, YUG, TZA, URG, AUT, GNB, LBY, SCN, SEY, ISL, DJI, POL, G multi-beam allotment
13°W to 0°W	ALG, MAU, NIG, VCT, E, CNR, ARS, NMB, MTN, TUN, GAB, ZMB, TCH, GHA, IRL, SDN

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ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988 Addendum 1 to Document 154-E 12 September 1988 Original: Spanish

COMMITTEE 6

COLOMBIA

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 4

Under its agenda, the Conference is required to establish the machinery or provisions permitting the implementation of the procedures for the use of geostationary satellites and especially the coordination procedures provided for under Article 11 of the Radio Regulations, for the purpose of specifying the action to be taken in the event of non-compliance. To this effect, the Colombian Delegation submits for the Conference's consideration proposals for the review and revision of the regulatory procedures and standards relating to the space services and the frequency bands not identified for planning.

ARTICLE 11

Coordination of Frequency Assignments to Stations in a Space Radiocommunication Service Except Stations in the Broadcasting-Satellite Service and to Appropriate Terrestrial Stations

NOC 1041-1059

CLM/154/2

MOD 1060

§ 6. (1) Before an administration (or, in the case of a space station, one acting on behalf of a group of named administrations) notifies to the Board or brings into use any frequency assignment to a space station on a geostationary satellite or to an earth station that is to communicate with a space station on a geostationary satellite, it shall, except in the cases described in Nos. 1066 to 1071, effect coordination of the assignment with any other administration whose assignment, for a space station on a geostationary satellite or for an earth station that communicates with a space station on a geostationary satellite, might be affected. Any frequency assignment or satellite network for a space station installed on board a geostationary satellite without such coordination being effected may not be recorded by the Board in the Master Register.

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ORB-88 WARC ON THE USE OF THE GEOSTATIONARY SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

<u>Document 154-E</u> 2 September 1988 <u>Original</u>: Spanish

COMMITTEE 6

<u>Colombia</u>

PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda items 2 and 4

Under its agenda, the Conference is required to establish the machinery or provisions permitting the implementation of the procedures for the use of geostationary satellites and, in particular, the standards of Article 11 of the Radio Regulations, for the purpose of specifying the action to be taken in the event of non-compliance.

Proposal for the review and revision of the regulatory procedures and standards relating to space services, which means improving the text of Article 11 of the Radio Regulations.

ARTICLE 11

Coordination of Frequency Assignments to Stations in a Space Radiocommunication Service Except Stations in the Broadcasting-Satellite Service and to Appropriate Terrestrial Stations

NOC 1041-1584

CLM/154/1

ADD 1585

A frequency assignment to a space station which has not followed the procedures of the Radio Regulations for its notification and recording in the Master International Frequency Register may not be recorded in the Master Register by the Board. Therefore, it may not obtain international recognition of the use of the frequency or frequency bands which it intends to use.

$CONF \setminus ORB - 2 \setminus DOC \setminus 154E.TXS$

INTERNATIONAL TELECOMMUNICATION UNION **ORB-88** WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 155-E 2 September 1988 Original: English

COMMITTEE 5

Egypt

PROPOSAL RELATING TO FEEDER-LINKS PLANNING

Introduction

The Report to the Second Session of the Conference states in section 6.2.2.13 that in case of a uniform frequency translation the sense of polarization of feeder links should be either: all <u>opposite</u> to their corresponding down-links, or all <u>the same</u> as that of their corresponding down-links.

In the Radio Regulations the sense of circular polarization is defined as the direction of rotation of the electric field as observed in the direction of propagation; this implies that for a single polarized antenna the transmitted signals should have an opposite sense of polarization to that of the received signal. This is explained below.

Explanation

The following figure gives self-explanation to the case in which the feeder-link signal is LHCP and the down-link signal is RHCP. It is obvious that the antenna itself has only a single polarization, but the sense of polarization of the feeder-link signal is opposite to that of the down-link signal.



Explanation of using opposite polarizations for the feeder link and down-link, to allow the use of single satellite antenna, with single polarizer for both transmission and reception

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<u>Conclusion</u>

The selection of the <u>opposite</u> sense of polarization for the feeder links with respect to their corresponding down-links would permit the use of simple single satellite antenna for transmission and reception, which means great saving in costs.

EGY/155/1

Based on the above, Egypt <u>proposes</u> that the sense of polarization of all the feeder links to the same orbit position should be opposite to that of the corresponding down-links.

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

<u>Document 156-E</u> 2 September 1988 <u>Original</u>: English

COMMITTEE 6 WG/PL

<u>Japan</u>

FREQUENCY BANDS IN WHICH IMPROVED REGULATORY PROCEDURES SHALL BE APPLIED

Agenda items 2 and 14

1. Procedures to be applied in the 12,20 - 12,50 GHz (Region 3)

Proposal

J/156/1

Improved procedures shall be applied in the frequency band 12.20 - 12.50 GHz in Region 3.

<u>Reasons</u>: In Region 3, 12.20 - 12.75 GHz band (down-link) and 14.0 - 14.5 GHz band (up-link) are allocated to the fixed-satellite service and there are several satellites using these bands in this region.

However, WARC ORB(1) decided that improved procedures were to be applied in 14.0 - 14.5 GHz and 12.5 - 12.75 GHz leaving 12.2 - 12.5 GHz as the non-planned bands in which existing procedures shall be applied.

This imply that two different procedures would be applied in the frequency bands which would be used by a single satellite. When satellite communications systems are planned to be established using this band, this might cause technical difficulties in applying Radio Regulation procedures.

The Japanese Administration considers that it is necessary to apply a single set of procedures in these bands in order to solve the above-mentioned problems

2. Procedures applied to the 18.1 - 20.2 and 27.0 - 30.0 GHz bands

<u>Proposal</u>

J/156/2

Existing procedures shall be applied to the frequency assignments of 18.1 - 20.2 and 27.0 - 30.0 GHz to a space station or an earth station in the geostationary-satellite networks of the fixed-satellite service.

<u>Reasons</u>: The CCIR intersessional works which were carried out in preparation for WARC ORB(2) reached the conclusion that it would be extremely unwise for the 30/20 GHz bands to be applied for planning.

CONF\ORB-2\DOC\156E.TXS

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Document 157-E 2 September 1988 Original: English

COMMITTEE 6

<u>Japan</u>

PROPOSAL ON THE IMPROVED REGULATORY PROCEDURES

<u>Agenda item 2</u>

The First Session of the WARC ORB decided that the planning shall consist of two parts, "an allotment plan" and "the improved procedures" and the Second Session of the WARC ORB is to establish the improved regulatory procedures under agenda item 2.

The basic idea of the existing provisions of the Radio Regulations is to effect coordination through bilateral negotiations between the administrations concerned. Japan considers that this mechanism has been working well to guarantee in practice for all countries equitable access to the GSO/spectrum.

However, in the bands 6/4 GHz and 14/11 - 12 GHz in which the FSS is heavily used and the growing trend of use is expected, it could be envisaged that coordination would have to be effected with a greater number of administrations requiring longer time to complete it. Therefore, Japan considers that the existing procedures would allow for some improvement.

In the bands 6/4 GHz and 14/11 - 12 GHz, more efficient utilization of the GSO/spectrum would be required to accommodate more systems to guarantee equitable access by all countries to the GSO/spectrum. To attain this objective, burden sharing among the administrations concerned would be essential.

This burden sharing could be accomplished by a multilateral coordination meeting participated in by administrations whose systems are affected.

Under this agenda item 2, Japan proposes regulatory procedures and a multilateral coordination meeting which shall be part of Article 11 of the Radio Regulations in order to guarantee for all countries equitable access to the GSO/spectrum and to allow for the efficient utilization of it, as annexed.

The annexed proposal is based upon the separate Japanese proposal concerning the frequency bands in which the improved procedures apply.

Annex: 1

ANNEX

J/157/1

Section IIA. Supplementary Procedure to be Applied to Coordination of Frequency Assignments to a Space or an Earth Station in the Fixed-Satellite Service in the Frequency Bands 3 700 - 4 200 MHz, 5 850 - 6 425 MHz, 10.95 - 11.20 GHz, 11.45 - 11.70 GHz, 11.70 - 12.20 GHz (R2), 12.20 - 12.50 GHz (R3), 12.50 - 12.75 GHz (R1, R3) and 14.00 - 14.50 GHz in Relation to Stations of Other Networks in the Fixed-Satellite Service

1. Frequency bands and service

1.1 The provisions of this section apply to coordination of frequency assignments to a space or an earth station in the fixed-satellite service in the frequency bands

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3 700 - 4 200 MHz 5 850 - 6 425 MHz 10.95 - 11.20 GHz 11.45 - 11.70 GHz 11.70 - 12.20 GHz 12.20 - 12.50 GHz (R3) 12.50 - 12.75 GHz (R1, R3) 14.00 - 14.50 GHz

in relation to the stations of other networks in the fixed-satellite service.

1.2 The provisions of this section supplement the provisions of Section II of Article 11 and all other provisions of the Radio Regulations apply to the frequency bands and the service under 1.1.

2. <u>Multilateral coordination meeting</u>

2.1 A multilateral coordination meeting shall be convened to effect coordination under No. 1060 in the frequency bands and the service under 1.1.

3. <u>Timing and place to convene the meeting</u>

3.1 A multilateral coordination meeting shall be convened at the time and place agreed upon by the administrations participating in the meeting.

4. <u>Request for a multilateral coordination meeting</u>

4.1 An administration which is responsible for following frequency assignments may request a multilateral coordination meeting to effect coordination with other administrations with which coordination has not been reached by an agreement when:

- a) the coordination procedures for assignments under No. 1060 have been initiated;
- b) four months from the date of the relevant weekly circular under No. 1078 have expired; and

c) coordination of frequency assignments with more than two administrations has not reached an agreement.

4.2 An administration requesting coordination under 4.1 shall inform the Board of the names of the administrations with which an agreement has been reached and those with which an agreement has not been reached, any changes in characteristics of frequency assignments, as well as the time and place to convene the meeting. Such a communication shall be made to the Board not later than five months before the requested date of the meeting.

4.3 The Board shall publish the following information in a special section of its weekly circular based on the information under 4.2 with:

- a) the name of an administration requesting a multilateral coordination meeting, identity of the satellite network, reference number of the relevant weekly circular mentioned under No. 1044 and any changes in the characteristics of frequency assignments communicated under 4.2;
- b) the names of administrations with which coordination at a multilateral coordination meeting has been sought and identities of the satellite networks concerned; and
- c) the requested time and place to convene the meeting.

4.4 All administrations requested to attend the meeting under 4.2 shall confirm attendance and send any comment on the time and place of the meeting to the Board and the requesting administration.

4.5 The Board shall inform all administrations of the time and place agreed upon and attending administrations of the meeting not later than one month before the date of the meeting.

5. <u>Action to be taken by an administration with which coordination at a</u> <u>multilateral meeting has been sought</u>

5.1 An administration with which coordination has been sought under 4.3 shall be present at a multilateral coordination meeting.

5.2 Administrations attending a meeting shall make every effort to resolve any difficulties exploring all possible means to meet requirements of the administrations concerned.

6. Assistance by the Board

6.1 The Board shall provide administrations with all possible technical assistance at a meeting necessary to resolve the difficulties.

7. <u>Results of a meeting</u>

7.1 The administration which sought a multilateral coordination meeting shall communicate to the Board the following information as soon as possible:

a) the name of the administration seeking coordination, identity of the satellite network, and reference number of the relevant weekly circular mentioned under No. 1044 of the Radio Regulations;

- b) the names of administrations with which coordination has been sought and identities of the satellite networks concerned;
- c) the names of the administrations with which an agreement has been reached; and
- d) any changes in the characteristics of frequency assignments of all the networks concerned in the meeting.

7.2 The Board shall publish the information communicated under 7.1 by the special section of its weekly circular.

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 158-E 2 September 1988 Original: English

Source: Document DT/13

SUB-WORKING GROUP 5-A-1

TERMS OF REFERENCE OF THE AD HOC GROUP 5-A-1

1. To examine together with the IFRB the submitted requirements with the aim to identify missing data and errors, if it is the case.

2. To identify the cases of incompatibilities in the Plan produced by the IFRB.

3. To contact the administrations concerned in order to find satisfactory solutions.

L. TOMATI Chairman of Sub-Working Group 5-A-1

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INTERNATIONAL TELECOMMUNICATION UNION ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Corrigendum 1 to Document 159-E 8 September 1988 Original: English

COMMITTEE 6

1. <u>Paragraph 2</u> to read:

"The terms of reference for the Group as contained in Document 138(Rev.) were approved."

in place of:

"The terms of reference for the Group as contained in Document 138 were approved."

2. <u>Paragraph 5</u> to read:

"... representatives from the USA, UK, AUS, CAN, CHN, B, J, F, I, IRN, URS, TUR, LBY, LUX."

in place of:

"... representatives from the USA, UK, AUS, CAN, CHN, B, J, F, I, IRN, VEN, URS."

A.V. CAREW Chairman of Working Group 6-B

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For reasons of economy, this document is printed in a limited number of copies. Participants are therefore kindly asked to bring their copies to the meeting since no others can be made available.

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 159-E 2 September 1988 Original: English

COMMITTEE 6

FIRST REPORT OF WORKING GROUP 6-B. TO COMMITTEE 6

1. Working Group 6-B held a meeting on 1 September 1988.

2. The terms of reference for the Group as contained in Document 138 were approved.

3. The attribution of documents for consideration by Working Group 6-B was reviewed. Document 116 (CHL) was added to the list and other amendments were made in keeping with the various instructions.

4. It was decided during the discussion of proposals that coordination under Article 11 would be done at the network level in accordance with several principles suggested by the USSR Delegation. These principles will be included in a document for consideration by the Working Group.

5. It was decided to set up one sub-group and one ad hoc Group, both chaired by Mr. Sonesson of Sweden. Sub-Working Group 6-B-1 will deal with proposals concerning Articles 11 and 13 and the ad hoc Group will consider proposals relevant to Appendices 3 and 4. Both Groups will consider the requirement for consequential regulatory amendments in accordance with agenda item 12. The ad hoc Group is comprised of representatives from the USA, UK, AUS, CAN, CHN, B, J, F, I, IRN, VEN, URS.

6. The proposals to amend Article 14 of the Radio Regulations will be considered in detail at Working Group 6-B.

7. Close coordination between the Working Group of the Plenary and Committee 6 was felt necessary on the matter of Appendices 3 and 4.

A.V. CAREW Chairman of Working Group 6-B

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RB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 160-E 1st September 1988 Original : English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEES 4, 5 & 6

NOTE BY THE CHAIRMAN OF COMMITTEE 3 TO THE CHAIRMEN OF COMMITTEES 4, 5 and 6

The Nairobi 1982 Plenipotentiary Conference made an addition to the terms of reference of conference budget control committees to the effect that the reports of such committees to the plenary meetings and Administrative Council must show the amount of expenditure that may be entailed for implementation of the decisions taken. Reference may be made in this connection to Article 80 of the Nairobi Convention and Resolution 48 of the 1982 Plenipotentiary Conference published in Document 16 of the present Conference.

To enable me to provide the plenary meetings with the necessary information, I should be grateful if you would supply me with regular, and if possible weekly, reports on the decisions taken, together with an estimate of their financial implications.

In this respect, I would like to draw your attention in particular to the fact that the expenditure limit for the ORB Conference established by Additional Protocol I to the Nairobi Conference, 1982, at 11,100,000 Swiss francs, is now left with a margin of the order only of 236,000 Swiss francs and that it is obviously imperative that this expenditure limit should not be exceeded.

> M.K. RAO Chairman of Committee 3

Document 161-E 7 September 1988 Original: English

COMMITTEE 3

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 3

(BUDGET CONTROL)

Thursday, 1 September 1988, at 0900 hrs

Chairman: Dr. M.K. RAO (India)

Subjects discussed:		Documents
1.	Terms of reference of the Committee	114
2.	Budget of the Conference	61
3.	1989 budget for WARC ORB(2) post-Conference work	64
4.	Expenditure limit for WARC ORB	63
5.	Financial responsibilities of administrative conferences	16
6.	Contributions of recognized private operating agencies and non-exempt international organizations	62

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1. <u>Terms of reference of the Committee</u> (Document 114)

The Committee \underline{took} note of its terms of reference as set out in the document.

2. <u>Budget of the Conference</u> (Document 61)

2.1 The <u>Deputy Secretary-General</u> introduced the document.

The Committee took note of Document 61.

3. <u>1989 budget for WARC ORB(2) post-Conference work</u> (Document 64)

3.1 The <u>Deputy Secretary-General</u> introduced the document, drawing special attention to the last two paragraphs, from which it would be seen that the sum of 615,000 Swiss francs provided for in the budget could not be used without the previous agreement of the Budget Control Committee.

3.2 The <u>delegate of the Netherlands</u> observed that the very fact that the sum in question was available might cause the Conference to exercise pressure on Committee 3 to use it and might even tempt it to defer some of the tasks before it for post-Conference work.

3.3 The <u>Deputy Secretary-General</u> pointed out that the Administrative Council had quite rightly recognized the Committee's responsibility in the matter, which must be exercised with scrupulous observance of the relevant provisions of the Convention. The <u>delegate of Spain</u> agreed that the Council had been correct in indicating the availability of funds for tasks which might have to be performed after the Conference and added that it was for the Conference itself, acting through Committee 3, to take rational decisions on the amounts to be allocated or reserved in the light of the decisions taken.

3.4 In reply to a question by the <u>delegate of France</u>, the <u>Chief of</u> <u>the Finance Department</u> said that the cost of rental or purchase of computer equipment was not calculated in connection with the five IFRB posts to be continued, but at a rate of 200,000 Swiss francs per year for intersessional and post-Conference work.

3.5 The <u>Chairman</u>, supported by the <u>delegate of Spain</u>, suggested that the Committee should reconsider the question at a later meeting, when more would be known about the volume of post-Conference work required.

It was so <u>agreed</u>.

4. <u>Expenditure limit for WARC ORB</u> (Document 63)

4.1 The <u>Deputy Secretary-General</u> introduced the document, pointing out that the figures were given for the values prevailing on 1 September 1982 and emphasizing the need to make every effort to avoid incurring excess expenditure.

In reply to a question by the <u>delegate of the Federal Republic of</u> 4.2 Germany concerning the margin of 235,400 Swiss francs referred to on page 2, the Chief of the Finance Department said that the current Conference was the first to have run into difficulties with regard to expenditure limits. It should be borne in mind that WARC ORB expenditure appeared under two sections of the budget - 11.5 for the Conference itself and 17 for common services. It was estimated that the limits under section 11.5 would probably not be exceeded, but the situation with regard to common services expenditure was more problematic: the credits of some seven million Swiss francs under that section were distributed according to the volume of work for various activities during the year, and the share allocated to WARC ORB was approximately 17%; any increase in common services expenditure would result in a corresponding increase in that share, leading to overall excess expenditure. For example, on the basis of the experience of recent WARCs, a global credit of 200,000 Swiss francs had been provided for overtime in the 1988 budget, and 90,000 Swiss francs of that sum had already been spent; there was thus a considerable risk of exceeding the limit with respect to common service expenditure.

4.3 In reply to questions by the <u>delegates of the Netherlands</u> and the <u>Federal Republic of Germany</u>, the <u>Chief of the Finance Department</u> said that the figures for 1986 and 1987 in the second column of the second table on page 1 would be broken down into IFRB and CCIR expenditure in a revised version of the document and that the cost of any prolongation of the Conference would be approximately 50,000 Swiss francs per day.

The Committee took note of Document 63.

5. <u>Financial responsibilities of administrative conferences</u> (Document 16)

5.1 The <u>delegate of Spain</u> suggested that the Chairman of Committee 3 should send a note to the Chairmen of the other Committees and to the Heads of the permanent organs of the ITU reminding them of the importance of limiting the financial implications of decisions and requesting them to notify Committee 3 of such implications.

The Committee took note of Document 16 on that understanding.

6. <u>Contributions of recognized private operating agencies and non-exempt</u> <u>international organizations</u> (Document 62)

6.1 The <u>Deputy Secretary-General</u> introduced the document, observing that the Conference had approved a list of the agencies and organizations concerned, which could be supplemented by a corrigenda if further bodies were added to the list.

The Committee took note of Document 62.

The meeting rose at 0940 hours.

The Secretary:

The Chairman:

R. PRELAZ

Dr. M.K. RAO

INTERNATIONAL TELECOMMUNICATION UNION WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 162-E 6 September 1988 Original: English

COMMITTEE 5

SUMMARY RECORD

OF THE

THIRD MEETING OF COMMITTEE 5

(BROADCASTING SATELLITE SERVICE (BSS) MATTERS AND ASSOCIATED PROCEDURES)

Thursday, 1 September 1988, at 1405 hrs

Chairman: Mr. D. SAUVET-GOICHON (France)

<u>Subjects</u>	discussed:	Documents
1.	First report of Working Group 5-A	139
2.	Introduction of documents concerning Committee 5 terms of reference, item 4 (Interim systems)	7, 12, 27, 41, 57, 60, 88, 95, 101, 108
3.	Introduction of documents concerning Committee 5 terms of reference, item 3 (Satellite sound broadcasting systems)	3, 7, 12, 34, 40

1. <u>First report of Working Group 5-A to Committee 5</u> (Document 139)

1.1 The <u>Chairman of Working Group 5-A</u> reported that it had set up two Sub-Working Groups, 5-A-1 (Chairman, Mr. Tomati, Italy) and 5-A-2 (Chairman, Mr. Komoto, Japan). Its work had begun well and the Working Group had already decided that the IFRB's next planning exercise should use both frequency bands 17.3 - 18.1 GHz and 14.5 - 14.8 GHz. The Group had also considered a number of documents and taken note of others to be dealt with later. Finally, it had agreed to propose that the latest and most accurate rain climate zone data available from the CCIR (1986 Volume V) should be used in future planning.

1.2 The <u>Chairman</u> asked if the Committee wished to approve the Working Group's decision with respect to the use of both frequency bands in the next planning exercise.

It was so <u>decided</u>.

1.3 <u>Mr. Brooks</u> (IFRB), replying to an enquiry from the <u>Chairman</u>, confirmed that the computer software available was capable of accommodating the Working Group's proposal concerning the rain climate zone data to be used in future planning. In reply to a further question from the <u>delegate of Egypt</u>, he said that the computer calculations of interference could be based either on faded signals or on clear sky conditions, whichever the Committee decided.

1.4 <u>Mr. Nickelson</u> (CCIR) asked if the IFRB was to apply the latest rain climate zone data to the rainfall model contained in the Report of the First Session.

1.5 The <u>Chairman of Working Group 5-A</u> said that the only decision taken concerned the data to be used. How it was to be used had still to be decided, on advice from Sub-Working Group 5-A-2.

1.6 The <u>Chairman</u> proposed, and it was <u>agreed</u>, that further consideration of the issue on propagation be deferred.

An additional problem which Working Group 5-A should examine was that of administrations which had submitted requirements in both frequency bands for a given down-link beam. Finally, he recalled the deadline set for administrations to correct and confirm their requirements.

1.7 <u>Mr. Brooks</u> (IFRB) said, in reply to an enquiry by the <u>delegate of Oman</u>, that telex messages had been sent requesting administrations not yet registered at the Conference to notify any changes to their requirements. All those received in time would be taken into consideration.

2. Introduction of documents concerning Committee 5 terms of reference, item 4 (Interim systems) (Documents 7, 12, 27, 41, 57, 60, 88, 95, 101 and 108)

Document 7: USSR proposals for the work of the Conference

2.1 The <u>delegate of the USSR</u>, outlining his Administration's views on interim satellite-broadcasting systems, introduced its proposal that the Conference should adopt a Resolution similar in content to Resolution No. 2 (SAT-R2) for all three regions.

Document 12: United States proposals for the work of the Conference

2.2 The <u>delegate of the United States</u> said that his Administration considered the procedures of Resolution No. 2 (SAT-R2) to be an essential component of the Region 2 BSS Plan. It therefore proposed that the Conference should incorporate them into the Radio Regulations by making Resolution No. 42 (ORB-85) permanent, with minor amendments and inclusion of the provisions of the annex to Resolution No. 2 (SAT-R2) in the text.

Document 27: French proposal relating to Conference agenda item 10

2.2.1 The <u>delegate of France</u> said that his Administration proposed the incorporation of Resolution No. 2 (SAT-R2) into the Radio Regulations for Region 2, with modifications to ensure that it provided guarantees of protection for all other services concerned, since that seemed not yet to be the case. But the Conference should not extend the provisions of the Resolution to Regions 1 and 3.

2.2.2 The <u>delegate of the United States</u> expressed the conviction that it would be possible to develop a text that met the French Administration's concerns.

<u>Document 41</u>: <u>Proposal on Conference agenda item 10 by 20 European</u> Administrations

2.3 The <u>delegate of the United Kingdom</u>, speaking on behalf of 20 European Administrations, said that their proposal comprised a draft Resolution very similar to Resolution No. 2 (SAT-R2) which took account of the discussion of that Resolution at WARC ORB(1). It represented a complete text for Region 2 and could be incorporated into the Radio Regulations after consideration by the Conference. The proposal did not contemplate the extension of interim systems to Regions 1 and 3.

<u>Document 57</u>: <u>Brazil's proposal on the long-term applicability of</u> <u>Resolution No. 2 (SAT-R2)</u>

2.4 The <u>delegate of Brazil</u> said that his Administration proposed the definitive incorporation of Resolution No. 2 (SAT-R2) into the Radio Regulations with appropriate modifications.

Document 60: Canada's proposals for the work of the Conference

2.5 The <u>delegate of Canada</u> said that his Administration's proposal CAN/60/288 was for the Conference to adopt Resolution No. 2 (SAT-R2) for application in Region 2. His Delegation would be pleased to discuss any concern felt by other administrations on the subject.

Document 88: Venezuela's proposals for the work of the Conference

2.6 The <u>delegate of Venezuela</u> said that his Administration's view on Conference agenda item 10 was that Resolution No. 2 (SAT-R2) could be incorporated into the Radio Regulations, but only for the duration of the BSS Plan for Region 2 of which it formed part.

Document 95: Vietnam's proposals for the work of the Conference

2.7 The <u>delegate of Vietnam</u> said that when considering the possibility of the long-term applicability of Resolution No. 2 (SAT-R2), account must be taken

of the point that the implementation of interim systems conforming to Plan parameters would encounter great technical difficulties.

Document 101: Mexico's proposal on Conference agenda item 10

2.8 The <u>delegate of Mexico</u> said that his Administration proposed the definitive inclusion in the Radio Regulations of the suitably modified provisions of Resolution No. 2 (SAT-R2), for application in Region 2.

Document 108: Paraguay's proposal on Conference agenda item 10

2.9 The <u>delegate of Paraguay</u> said that his Administration proposed the revision of Resolution No. 2 (SAT-R2) with a view to incorporating its provisions in the Radio Regulations. Similar provisions would be needed for all three regions.

2.10 <u>Mr. Nickelson</u> (CCIR) pointed out that section 5.2.5.2 of the CCIR Report to the Conference (Document 3) was also relevant to the coordination of modifications to feeder-link plans and interim systems.

2.11 <u>Mr. Brooks</u> (IFRB) said that the Board's comments on the application of Resolution No. 2 (SAT-R2) were to be found on page 251 of the Report on IFRB Rules of Procedure (Document 18), under Table AP30, Art. 5.2.1d.

2.12 The <u>Chairman</u>, summing up, said that the first problem to be considered was that of incorporating Resolution No. 2 (SAT-R2) into the Radio Regulations, suitably amended so as to take account of the concerns of administrations in all three regions. The second problem was whether the provisions of the Resolution should be extended to Regions 1 and 3. The opposing views expressed would have to be discussed with all the administrations concerned.

3. Introduction of documents concerning Committee 5's terms of reference. item 3 (Satellite sound broadcasting systems) (Documents 3 (Annex, Part II, Chapter 6), 7, 12, 34, 40 + Corr.1 and 2)

<u>Document 3 (Annex, Part II, Chapter 6)</u>: <u>Technical information to define the</u> <u>practical system parameters for satellite sound broadcasting</u>

3.1 At the invitation of the Chairman, Mr. Nickelson (CCIR) gave a summary presentation of Part II, Chapter 6 of the CCIR Report to WARC ORB(2), which dealt with the technical information relating to item 3 of Committee 5's terms of reference. The terms of reference for the studies referred to stemmed from Decision 43/3 of the XVIth CCIR Plenary Assembly. The studies showed that it was feasible, using current technology, to provide a sound broadcasting service to vehicles and portable receivers; advanced digital systems could facilitate band sharing, and their complexity was no barrier to their use. The difficulty lay in band sharing with other services, but the CCIR intersessional work had shown that sharing would be possible on the basis of geographical separation in some circumstances - possibly through the use of a wideband in which a number of services could coexist, provided an adequate segment was available for SBS. The allocation of a suitable frequency band thus remained the fundamental problem. The studies showed that the use of advanced technology presented a number of advantages over conventional FM systems, such as a 10 - 15 dB increase in sound channel quality, greater possibility of sharing between the broadcasting and terrestrial services and a better use of the orbit spectrum. Chapter 6 also contained a detailed analysis, including tables, relating to the key issue of inter-service sharing.

3.2 The <u>Chairman</u> expressed the Committee's thanks for the introduction of the CCIR's technical studies.

Document 7: Proposals by the USSR for the work of the Conference

3.3 The <u>delegate of the USSR</u> drew attention to his Administration's observations relating to item 9 of the Conference agenda.

<u>Document 12</u>: <u>Proposals by the United States of America for the work of the</u> <u>Conference</u>

3.4 The <u>delegate of the United States of America</u> introduced his Administration's observations relating to satellite sound broadcasting.

Document 34: Proposals by France for the work of the Conference

3.5 The <u>delegate of France</u> briefly summarized his Administration's observations on satellite sound broadcasting.

Document 40 + Corr.1 and 2: Proposals by a group of European Administrations for the work of the Conference

3.6 The <u>delegate of Switzerland</u> introduced, on behalf of the administrations mentioned in Document 40 + Corr.1 and 2, together with the administration of San Marino, the observations, proposals and Recommendation contained in Document 40 relating to satellite sound broadcasting systems.

3.7 The <u>delegate of Spain</u> requested an editorial correction to the Spanish text of Document 40: on the last page, on the eighth line of <u>recomienda</u>, the figure 0.5 - 0.2 GHz should read 0.5 - 2 GHz.

3.8 The <u>Chairman</u> said that the correction would be made, and that the introduction of texts relating to item 3 of the Committee's terms of reference would be continued at the next meeting.

The meeting rose at 1530 hours.

The Secretary:

The Chairman:

G. MESIAS

D. SAUVET-GUICHON

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WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 163-E 8 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 4

SUMMARY RECORD

OF THE

FOURTH MEETING OF COMMITTEE 4

(ALLOTMENT PLANNING AND ASSOCIATED PROCEDURES)

Thursday, 1 September 1988, at 1405 hrs

Chairman: Mr. S. PINHEIRO (Brazil)

Subjects discussed:

Documents

- Designation of Chairmen of Working Groups 4-B and 4-C
- 2. Oral reports by Working Group Chairmen
- 3. Pre-determined arc (continued)
- 4. Requirements

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5, 7, 12, 19 + Corr.1 and 2, 28, 33, 34, 48, 49, 59, 65, 66, 69, 73, 95, 120

1. <u>Designation of Chairmen of Working Groups 4-B and 4-C</u>

1.1 The <u>Chairman</u> announced that Mr. C.T. N'Diongue (Senegal) and Mr. E.D. DuCharme (Canada) had been designated Chairmen of Working Groups 4-B and 4-C, respectively.

2. <u>Oral Reports by Working Group Chairmen</u>

2.1 The Chairmen of Working Group 4 ad hoc 1 said that the Group had held two meetings, during which it had examined the two main questions assigned to it. In the first place, with regard to possible modifications to existing systems in order to improve the results of planning, the principle adopted was to use the latest coordinated characteristics for an analysis, the results of which would be made available shortly. The Group considered that the possibility of further modifications after the analysis might be considered, in accordance with the technical parameters adopted by Working Group 4-A. Secondly, the Group had had to consider whether three networks should be regarded as existing systems. In the light of statements by representatives of the IFRB, it had been decided that the networks of Papua New Guinea and Pakistan should be regarded as existing systems, the first because the modifications had been made under the existing rules of the Radio Regulations, and the second because the missing information had not prevented the original advanced publication. The Luxembourg network, however, could be regarded as an existing system, but without the modification concerning the service area. He was prepared to discuss the matter informally with the Luxembourg Delegation and the IFRB.

2.2 The <u>Chairman of Working Group 4-A</u> said that his Group had discussed the carrier-to-noise (C/N) ratio to be used for planning, but had deferred the decision until the next meeting. It was decided to adopt a value of C/I = 26 dB. The question of earth station antenna characteristics had been discussed, and it was to be hoped that agreement could be reached after two more meetings. Finally, one delegation had raised the problem of the methodology of computer programs with reference to the programming interference algorithms: in his opinion, the matter was not one for Working Group 4-A, since it was not concerned with technical parameters, and the methodology should be further explained by the IFRB.

2.3 The <u>Vice-Chairman of the IFRB</u> said that, although the methodology had been explained at length at the information meetings, a special information session could be held to provide further details. Once that had been done, the effect of the conclusions on possible modifications would have to be considered.

2.4 The <u>Chairman</u> said that all problems relating to the Plan itself and on the procedures for running the computer programs should be dealt with by Working Group 4-B.

3. <u>Pre-determined arc</u> (continued)

3.1 <u>Mr. Bellchambers</u> (IFRB), responding to the request for information made at the previous meeting, said that, although the NARSAC system was running on the ITU computer, it was not producing usable results, since positions were being found for only 205 of the 208 beams. United States experts were working on the problem, but for the time being no comparison could be made between the NARSAC and ORBIT-II systems. 3.2 The <u>delegate of the United States of America</u> observed that the problem lay in the method of handling situations where the C/I ratios did not meet the established criteria, both programs in effect produced the same results by different procedures.

3.3 In reply to the <u>delegate of Japan</u>, <u>Mr. Bellchambers</u> said that the 208 beams concerned did not include existing systems.

After some further discussion it was <u>agreed</u> to return to the problem at a later meeting, perhaps in connection with the treatment of existing systems.

4. <u>Requirements</u> (Documents 5, 7, 12, 19 + Corr.1 and 2, 28, 33, 34, 48, 49, 59, 65, 66, 69, 73, 95, 120)

4.1 The <u>Chairman</u> drew attention to section 3.2.8 of the Report of the First Session entitled "Different planning solutions in different circumstances". Since the decision on the matter had to be taken at the current Conference, he suggested that the Committee should first address the question of the number of coverages each administration should have in the context of a single world-wide plan. After taking that decision, it should consider whether different plans should be adopted for different regions and, if so, how that could best be done.

4.2 The <u>delegates of Tanzania</u>, <u>Colombia</u> and <u>Canada</u> pointed out that it would be difficult to decide on the number of coverages without first deciding whether there should be one plan or more. Planning exercises already carried out led to the conclusion that requirements would be better satisfied on a regional rather than a world-wide basis.

At the request of the Chairman, Mr. Bellchambers (IFRB), reviewed the 4.3 timing of various programs including the assumption that the ITU computer resources were entirely devoted to the work of the Conference. Using the ORBIT-II program with 208 beams, the central processing time for ordering and analysing was 75,000 seconds and for positioning a further 300,000 seconds, giving a CPU time of 105,000 seconds (or about 300 hours or 5 days) bearing in mind that certain other users had access to the computer at the same time. The estimate could be reduced to 3.5 days by restricting use of the computer to Conference work; to that core processing time of 3.5 days, a further 2 days should be added for data capture, including modifications, multibeam data and ellipses, and 1.5 days for paper printing, publications and minor corrections, making a total of 7 days for 208 beams. If more beams were used, that core time would increase exponentially, although the time for data capture and publication would remain roughly the same. Further increases would be caused if existing systems were included in the plan, and owing to the adoption of the multi-band planning approach, the elapsed time including existing systems could no longer be estimated with any accuracy.

The first run would use the 4/6 GHz band, and the derived orbital positions would then be used for analysis on the 11/14 GHz band. With the existing systems using 77 beams and 2 x 229 beams - because the exercise would have to be performed twice - the total would amount to 535 beams, an area in which the Board as yet had no experience concerning the elapsed time required, although it could certainly not be less than 2 weeks. Moreover, a further extension of the elapsed time would be needed if the analysis in the 11/14 GHz band did not produce satisfactory C/I ratios and the program would have to be rerun in reverse order. Those times made no allowance for operational margins, error correction, possible slip-ups and so forth, and the number of available options was therefore limited; if existing systems were included and additional coverages were allowed, the task would clearly exceed the time limits of the Conference.

- 4 -ORB(2)/163-E

He did not think that the IFRB could be accused of lack of foresight in intersessional planning: it had proposed three options for intersessional work after the First Session, and the Administrative Council had chosen for the least expensive option for economic reasons. Recognizing the financial constraints, the Board had nevertheless tried to develop the ORBIT-II program to the maximum possible extent within the resources provided, but it had not proved practical to take account of all the probabilities to be foreseen at the Second Session. Every effort would be made to accommodate any suggestions for overcoming the difficulties, but it should be borne in mind that those difficulties would increase with any extension of the number of beams.

4.4 The <u>delegates of the USSR</u>, <u>the United Kingdom</u>, <u>Algeria</u> and <u>Ethiopia</u> considered that a single world-wide plan should comprise one coverage per administration. The <u>delegate of Cuba</u> also expressed that view, drawing attention to the last indent of section 3.3.4.7 of the Report, concerning procedures to ensure that new Members of the ITU obtained an allotment in the Plan.

4.5 The <u>delegate of Canada</u> said that another principle adopted by the First Session which should not be ignored was that set out in section 3.2.4 of the Report, "The technical aspects of geographical situations", as well as the eight special geographical situations referred to in section 3.4.2.1.3. It would be impossible to achieve a satisfactory plan without taking account of the different situations prevailing in various parts of the world.

4.6 The <u>delegates of Morocco</u>, <u>France</u>, <u>Japan</u>, <u>Mali</u>, <u>the Federal Republic of</u> <u>Germany</u>, <u>the United States of America</u> and <u>Indonesia</u> supported the principle of one coverage per administration under a world-wide plan, allowing for consideration of certain special geographical situations under the Associated Procedures.

4.7 The <u>Chairman</u> noted that that was the majority view and said that the criteria for special geographical situations would be examined in Working Groups 4-A and 4-B.

4.8 The <u>delegate of Canada</u> said that his country, with its vast area and harsh climatic conditions, required very extensive satellite communications, for which one coverage would clearly not suffice. Detailed Canadian studies had determined that a considerable orbit capacity was available in Region 2 for more than one coverage without in any way degrading planning capacities in Regions 1 and 3, because Region 2 was separated from those regions by the Atlantic and Pacific Oceans. To say that Region 2 should have an inadequate plan because of the congestion problem in Region 1 was contrary to the principle of the efficient use of the geostationary orbit. While Canada did not wish to see a repetition of the planning differences of 1977 and 1983, it believed that consideration should be given to countries where more than one coverage was clearly required. - 5 -ORB(2)/163-E

4.9 The <u>delegate of the United States of America</u> said that his Delegation was submitting a paper (Document 143) on the results of a successful planning exercise it had conducted using the common, overlapping pre-determined arc approach. United States computer experts were working with those of the IFRB in an attempt to solve the problem using the ITU computer.

The meeting rose at 1540 hours.

The Secretary:

The Chairman:

F.S. LEITE

S. PINHEIRO

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Corrigendum No. 1 to Document 164-E 16 September 1988 Original : English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 4

SUMMARY RECORD

OF THE

FIFTH MEETING OF COMMITTEE 4

- 1. In the middle of paragraph 1.17, replace the reference to "Regions 1 and 2" by "Regions 1 and 3".
- In paragraph 1.18, replace the words "special requirements" by "additional requirements".

INTERNATIONAL TELECOMMUNICATION UNION WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 164-E 8 September 1988 Original: English

COMMITTEE 4

SUMMARY RECORD

OF THE

FIFTH MEETING OF COMMITTEE 4

(ALLOTMENT PLANNING AND ASSOCIATED PROCEDURES)

Friday, 2 September 1988, at 1100 hrs

Chairman: Mr. S. PINHEIRO (Brazil)

Subjects discussed:

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1. Requirements

Documents

5, 7, 12, 19, 28, 33, 34, 48, 49, 58, 59, 65, 66, 69, 73, 95, 97, 118, 120, 136 1. <u>Requirements</u> (Documents 5, 7, 12, 19, 28, 33, 34, 48, 49, 58, 59, 65, 66, 69, 73, 95, 97, 118, 120 and 136)

1.1 The <u>delegate of Colombia</u> endorsed the statement made by the <u>delegate of</u> <u>Canada</u> at the previous Committee meeting to the effect that there was sufficient capacity in Region 2 to allow a regional Plan to be drawn up to provide more than one national orbital position for the countries of the region. The guarantee of one national position world-wide was essential, but the fact that a global planning solution had been adopted should not exclude the possibility of applying different planning methods for regional purposes where that would have no impact on other regions, especially since some countries had to cope with special geographical conditions and since congestion was not a problem everywhere. By such means the efficient, effective and economic use of the geostationary orbit could be guaranteed. The Committee was referred to section 3.2.8 of the Report to the Second Session which stated that the possibility of having different planning methods for different regions should not be excluded.

1.2 The <u>Chairman</u> noted that at its previous meeting the Committee had decided in favour of a world-wide Plan that ensured one coverage for each country. The question now before the Committee was to consider whether different approaches would be permitted in certain circumstances in different regions and, if so, how that task should be tackled.

1.3 The <u>delegate of Tanzania</u>, introducing proposal TZA/5/3, said that development of a world-wide Plan with provision of one guaranteed national coverage should not be incompatible with retention of the right to participate in regional or subregional systems. The essential principle to maintain was that of equitable access.

1.4 The <u>delegate of the USSR</u> said that the basic principle should be for a world-wide Plan that guaranteed one coverage per national territory throughout the world (some countries, such as the USSR, would require more than one position to provide that coverage). Other aspects of planning could be dealt with by means of procedural methods.

1.5 The <u>delegate of the United States of America</u>, referring to proposals USA/12/2 and USA/12/3, said that to guarantee equitable access, planning should be on a world-wide basis with provision of a single national coverage. The Committee's decision to treat subregional systems through regulatory procedures, which reflected the substance of the Report to the Second Session, was a correct one and was adequate to meet the needs different countries might have for additional requirements or subregional systems.

1.6 The <u>delegate of France</u>, referring to proposal F/33/2, said the primary purpose of the Plan, as had already been decided by the Committee, should be to meet national needs through a single national coverage, taking account of geographical particularities. It was essential, to guarantee that and avoid complications where regions merged, for planning to be carried out on a world-wide basis. Subregional systems could be accommodated as necessary through regulatory procedures.

1.7 The <u>delegate of Brazil</u> said that, as shown in Document 48, the satellite density in the orbital arc used by Region 2 was much lower than that in the arc used by Regions 1 and 3, clearly indicating the greater capacity available to Region 2. Proposal B/48/4 was to use that extra capacity to achieve a better plan that would provide more satisfactory, not necessarily more numerous, orbital positions to allow for specific geographical conditions in parts of the region. 1.8 The <u>delegate of Australia</u> drew the attention of the Committee to his Administration's proposals AUS/49/1, 2, 3 and 5, as contained in Document 49. He recognized that the last of those proposals might be difficult to achieve and, if so, his Administration would not press it. His Administration was in favour of a uniform world-wide Plan and, through its proposals, endorsed the principle of one coverage per country.

1.9 The <u>delegate of Canada</u> supported the views expressed by the delegates of Brazil and Colombia. His Administration favoured a world Plan with the same technical standards for all three regions. The administrative procedures for implementing the Plan should also be uniform and the Plan should be fully compatible at the boundaries of the regions. Within that framework, however, there should be sufficient flexibility for administrations to take advantage of the orbit/spectrum resource. He referred to the CITEL Resolution reproduced in Annex 2 to Document 58, calling for consideration of other planning objectives where there was a lower density of requirements. Such was the case for Region 2, and the results of studies (to be made available in Document 153) showed that the capacity of the Region 2 orbit could be used to the greater advantage of Region 2 Administrations without reducing the orbit capacity available to Regions 1 and 3.

1.10 The <u>delegate of Algeria</u> considered that, in the light of the results of the First Session of the Conference, planning had to be carried out on a world-wide basis. The proposals contained in Document 65 had been made on that assumption. Each country should have a single coverage which, for a limited number of countries, might include several orbital positions.

1.11 The <u>delegate of Luxembourg</u> considered that subregional systems should be dealt with through procedures allowing administrations to combine allotments into subregional systems but that, in that case, the use of national allotments should either be replaced or suspended while the subregional system was in use.

1.12 The <u>delegate of Kenya</u> was in favour of a world Plan. His Administration was satisfied with a single beam coverage for his country.

1.13 The <u>delegate of New Zealand</u> said that, as indicated in Document 73, his Administration was in favour of a single world-wide allotment Plan providing one coverage for each administration. Such a Plan should have a modification procedure providing sufficient flexibility to accommodate those administrations requiring more than one orbital position.

1.14 The <u>delegate of the Socialist Republic of Vietnam</u> drew attention to his Administration's view on the provision of orbital positions for multiadministrative and subregional systems, as set out in section 1.2 of Document 95.

1.15 The <u>delegate of Mexico</u> was in favour of a single world-wide Plan that was sufficiently flexible to allow for optimum use of the resource. As proposed in Document 97, for areas with a lower density of requirements, other planning objectives could be achieved, taking advantage of the geographical features of different parts of the world. Such improvements to the Plan could, in particular, be applied in Region 2.

1.16 The <u>delegate of Greece</u> considered that a world-wide Plan would be the best solution, as long as it took the special peculiarities of countries into account. He presented Document 136 which described the geographical contraints faced by Greece and put forward proposals to resolve the problems they raised. 1.17 The <u>delegate of the United Kingdom</u> drew the attention of the Committee to the fact that, at the equator, the countries of Region 1 stretched more than half way round the world. It was simply impossible to extend the territorial limits of the three regions up into the sky. Furthermore, there was a huge overlap between the countries of Regions 1 and 2 at the equator. It was evident that there had to be a single unified global Plan, using the same parameters and procedures throughout, with no artificial divisions of the orbit on any regional basis. As far as the sparsely occupied length of the orbit was concerned, the countries exploiting their good luck should do so through a Plan modification procedure, under Article 4, following the adoption of the equitable and unified global Plan.

1.18 The <u>delegate of China</u> introduced Document 118. His Administration was in favour of a unified world-wide Plan, with a single coverage per country. Countries' special requirements, including those of his own country, should be dealt with through modification procedures in the implementation of the Plan at subregional level.

1.19 The <u>Chairman</u> concluded, stating that in view of the opinions so far expressed, a possible solution would be a world-wide Plan taking into account the special geographic situations. However, a final decision would only be taken at the next meeting of Committee 4.

The meeting rose at 1205 hours.

The Secretary:

The Chairman:

F.S. LEITE

S. PINHEIRO

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 165-E 2 September 1988 Original: English

WORKING GROUP 6-A

INFORMATION NOTE BY THE SECRETARY-GENERAL

At the request of the Chairman of Working Group 6-A, I present for the information of the Conference, Document 177 and Corr.1 of the First Session of the Orbit Conference relating to Conferences and Meetings of the Union.

R.E. BUTLER

Secretary-General

Attachments: 2

- 2-ORB(2)/165-E

INTERNATIONAL TELECOMMUNICATION UNION

ORDESSION, GENEVA, AUGUST/SEPTEMBER 1985

Document 177-E 26 August 1985 Original: English

COMMITTEE 5 WORKING GROUP 5A

NOTE BY THE SECRETARY-GENERAL

In response to questions on the application of :

Chapter XI (Rules of Procedure of Conferences and other Meetings);

Article 31 (Special Arrangements);

Article 32 (Regional Conferences, Arrangements and Organizations);

No. 271 (provisional resolution of matters not covered by the Convention, the Administrative Regulations and their annexes and which cannot await the next competent conference for settlement); and

No. 286 (providing "the secretariat of other telecommunication meetings on a contractual basis"),

the following is a resumé of the answer provided orally by the Secretary-General to Working Group 5A on Friday 23 August 1985 :

Leaving aside the Plenipotentiary Conference and the Administrative Council, the conferences and meetings organized within the framework of the Union, which have the competence to take decisions in a formal sense, are :

 Administrative Conferences organized within the framework of Articles 7, 54 and 62/63 of the Convention and
- 2 -ORB-85/177-E

2. Plenary Assemblies and meetings of the International Consultative Committees, for which the provisions of Chapter XI apply, except that they may adopt such additional rules which must, however, be compatible with the Convention. In the case of the CCIs (Plenary Assemblies and Study Groups) the rules must be published in the form of a Resolution of the Plenary Assemblies.

Notwithstanding the above, the Convention and the Administrative Regulations do recognize that other conferences, not within the framework of the Union, but recognized by the Union, do take place.

For example, there is a link between Article 31 of the Convention and Article 7 of the Radio Regulations, in particular No. 376 thereof :

"Members may, under the provisions for special arrangements in Article 31 of the Convention, conclude, on a worldwide basis, and as a result of a conference to which all Members have been invited, special agreements concerning the assignment of frequencies to those of their stations participating in a specific service, on condition that such assignments are within the frequency bands allocated exclusively to that service in Article 8."

In a more restricted way, provisions exist in Nos. 374 and 375 ("Two or more Members \dots ") of the Radio Regulations.

In all cases arrangements which have produced special agreements under Nos. 374-376 shall not be in conflict with the provisions of the Radio Regulations (see No, 377 thereof).

Furthermore :

- (a) Advance notice of such conferences, as well as the terms of the agreement concluded, shall be conveyed to the Secretary-General;
- (b) Provision is also made to enable the IFRB to send (on invitation) representatives to participate in an advisory capacity in regard to such conferences.

- 3 -ORB-85/177-E

During the meeting, possibilities have been advanced for "multilateral planning meetings" which, it is to be recognized, do not, under the existing provisions of the Convention, correspond to decision making conferences or meetings of the Union.

On the other hand, if new circumstances necessitate additional recognition of a specialized conference or a meeting, within the framework of the Convention, or as an enlargement of application of Article 31, then there is still the possibility of the application of No. 271 of the Convention for provisional resolution of the matter of such new decision making conference or meeting arrangements, which do not fall within the existing provisions referred to above. In this regard, it should not be overlooked that the Plenipotentiary Conference is scheduled to take place in 1989, i.e. some 6-9 months after the Second Session of the WARC-ORB Conference in 1988. Bearing in mind that the Final Acts of the WARC-ORB 1988 would be unlikely to enter into effect before 1990, then the matters arising from any additional or new mechanisms of decision making could be appropriately treated by the Plenipotentiary Conference 1989.

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No. 286 of the Convention defines the role of the Secretary-General in servicing, and providing staff for, conferences and meetings of the Union. It also provides the authority to supply services under contractual arrangements for "other telecommunication meetings" i.e. those which are not strictly within the framework of the Union.

As regards conferences and meetings within the framework of the Union, it is useful to recall that the International Telecommunication Convention of 1959 did, in fact, provide for a different "Administrative Conference" structure than the Montreux Convention of 1965, the provisions of which were carried over in the Malaga-Torremolinos Convention, 1973 and now the Nairobi Convention, 1982. Indeed, in the 1959 Convention there were provisions for special conferences which included :

> "Extraordinary Administrative Conferences"; "Special Regional Conferences"; and "Special Service Conferences, world or regional".

- 4 -ORB-85/177-E

If required, legislative ways and means could be found to provide for a specialised "conference" or "multilateral planning meeting" with power of decision. The title "conference". or "meeting" would be a matter for further consideration, once the principles were adopted. In any case it would seem clear that in this respect there would be need for :

a) modification of the Convention, and

b) complementary and detailed provisions to be inserted into the Radio Regulations to deal with the application of any specialised decision-making multilateral forum for planning related to a particular service.

> R.E. BUTLER Secretary-General

- 6 -ORB(2)/165-E

INTERNATIONAL TELECOMMUNICATION UNION

WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT Corrigendum 1 to Document 177-E 27 August 1985 Original : English

FIRST SESSION, GENEVA, AUGUST/SEPTEMBER 1985

COMMITTEE 5 WORKING GROUP 5A

NOTE BY THE SECRETARY-GENERAL

Pages 1 and 2, replace paragraph beginning with "Leaving aside" by the following :

Leaving aside the Plenipotentiary Conference and the Administrative Council, the conferences and meetings organized within the framework of the Union, which have the competence to take decisions in a formal sense, are :

- 1. Administrative Conferences organized within the framework of Articles 7, 54 and 62/63 of the Convention and
- 2. Plenary Assemblies and meetings of the International Consultative Committees,

for which the provisions of Chapter XI apply, except that they may adopt such additional rules which must, however, be compatible with the Convention. In the case of the CCIs (Plenary Assemblies and Study Groups) the rules must be published in the form of a Resolution of the Plenary Assemblies.

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ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 166-E 5 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 7

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 7

(EDITORIAL)

Thursday, 1 September 1988, at 1100 hrs

Chairman: Mr. P. ABOUDARHAM (France)

Subjects discussed:

- 1. Terms of reference of the Editorial Committee
- 2. Organization of work
- 3. Structure of the Final Acts of the Conference

- 2 -ORB(2)/166-E

1. <u>Terms of reference of the Editorial Committee</u>

1.1 The <u>Chairman</u> pointed out that the Committee's terms of reference were set out in Nos. 473 and 474 of the Nairobi Convention and stressed the importance of Nos. 120 and 121 of that instrument for the composition of the Committee and for its work.

The Committee took note of its terms of reference.

2. <u>Organization of work</u>

2.1 The <u>Chairman</u> said that, whereas the Committee could operate with two members for each language during the first two or three weeks of the Conference, it may have to work in two shifts during the last two and a half weeks, and perhaps even in three shifts during the final days. At least four members for each language should therefore be available during that period. Moreover, one person for each language should be made responsible for incorporating the changes made in Plenary Meetings to texts submitted by the Committee.

3. <u>Structure of the Final Acts of the Conference</u>

3.1 The <u>Chairman</u> said that a structure of the Final Acts which was being discussed with the Committee Secretariats would be agreed with the Vice-Chairmen of Committee 7 and would then be submitted to the Steering Committee for approval.

The meeting rose at 1110 hours.

The Secretary:

The Chairman:

P.D. CROSS

P. ABOUDARHAM

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 167(Rev.1)-E 5 September 1988 Original: English

COMMITTEE 4

FIRST REPORT OF WORKING GROUP 4-A TO COMMITTEE 4

Working Group 4-A approved the values for technical parameters following suggestions made in DT/11(Rev.1).

- Total C/N value of 16 dB under rain fading conditions, implying up-link C/N of 23 dB and down-link C/N of 17dB.
- Minimum transmitter power density of 0 dBW/MHz.
- Aggregate carrier to interference ration C/I = 26 dB. In the event that this value does not yield satisfactory results in the planning exercise a lower value of C/I will be used, in conjunction with the total value of C/N = 16 dB above.
- Earth station antenna size of 7 metres for 6/4 GHz and 3 metres for 14/11-12 GHz
- Earth station antenna pattern shown in Appendix 29, with side-lobe pattern of 32 -25 log θ . If so desired by an administration the improved side-lobe pattern of 29 -25 log θ will be used.
- Earth station receiving noise temperature of 140 K for 4 GHz and 200 K for 11 12 GHz
- Space station antenna characteristics as depicted in SAT-83 with fast fall-off characteristics when so specified by the administrations. Minimum beamwidths of 0.8 deg. for 14/11-12 GHz and 1.6 deg. for 6/4 GHz.
- Space station receiving system noise temperature of 1000 K for 6 GHz and 1500 K for 14 GHz.
- 70% efficiency for earth station antennas and 55% for space station antennas as used by the IFRB.
- 0.2 deg. antenna pointing error.
- Minimum elevation angle of 10 deg. for A to G climatic zones, 20 deg. for H to L climatic zones and 30 deg. for M,N and P climatic zones as used by the IFRB.

- These values were the subject of a long debate and constitue the majority opinion. Once the planning exercise has been carried out, the resulting elevation angles for certain administrations will be reviewed.
- The only remaining item to be decided by the Working Group 4-A is the maximum rain margin to be included in the planning exercise.

Y. ITO Chairman of Working Group 4-A

INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 167-E 2 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 4

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- Earth station receiving noise temperature of 140 K for 4 GHz and 200 K for 11 - 12 GHz
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- Space station receiving system noise temperature of 1000 K for 6 GHz and 1500 K for 14 GHz.
- 70% efficiency for earth station antennas and 55% for space station antennas as used by the IFRB.
- 0.2 deg. antenna pointing error.
- Minimum elevation angle of 10 deg. for A to G climatic zones, 20 deg. for H to L climatic zones and 30 deg. for M,N and P climatic zones as used by the IFRB.
- The only remaining item to be decided by the Working Group 4-A is the maximum rain margin to be included in the planning exercise.

Y. ITO Chairman of Working Group 4-A

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INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 168-E 2 September 1988 Original: English

SUB-WORKING GROUP 5-A-2

REPORT OF SUB-WORKING GROUP 5-A-2 AD HOC 1 TO SUB-WORKING GROUP 5-A-2

The Group met once and considered two questions:

1: <u>The calculation method for OEPM</u>

Document 24 (France) was discussed and an explanation was given of the need to adopt a method slightly different from that proposed in the First Session of the Conference. The Group agreed that the method described in Document 24 should be adopted.

2. <u>The values to be used for the calculation of OEPM</u>

Document 25 (France) was discussed and an explanation was given of the very small paradox which arises if the values suggested in the First Session were to be adopted. The Group agreed that the proposal suggested in Document 25 should <u>not</u> be adopted. It was felt that the paradox is sufficiently explained in Document 25 and it was agreed that its significance is very small. It was also agreed that it is the carrier-to-interference <u>ratios</u> which are important in evaluating the Plan. The ad hoc Group concluded that the overall protection ratios to be used are therefore: 30 dB for the co-channel and 14 dB for the adjacent channel as given in the Report to the First Session of the Conference.

> B. SALKELD Chairman of Sub-Working Group 5-A-2 ad hoc 1

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Document 169-E 5 September 1988 Original: English

WORKING GROUP 5-A

Yugoslavia

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 6

According to the WARC ORB(1) Report, item 6.2.1 feeder links frequency planning is based on linear translation of the down-link frequencies. This method is evidently the simplest one and <u>inter alia</u> it implicitly generates frequency channels free of the harmonic components up to the 10th order. It is generally expected that the down-link compatibility assures the feeder link compatibility too. We consider as useful to clarify this fact.

The power budgets on the up and down paths are dependent on e.i.r.p., free space attenuation, rain attenuation, other losses and antennas. In the problem addressed here antennas and their patterns are of special interest.

Antenna patterns are represented by the relative antenna gain (R) as a function of the antenna off-axis angle (φ), or relative off-axis angle (φ/φ_0), or simply

 $R = f(\varphi) \text{ or }$ $R = f(\varphi/\varphi_0)$

where φ_0 is -3 dB antenna beamwidth.

Bearing in mind that it is possible to consider an orbital position for planning purposes separately, we can consider a single orbital position in this proposal.

It is clear that on the up path the levels of the interfering powers depend on angles φ_W and φ_{OW}^{1} of the WANTED satellite. On the down path the levels of interfering powers are dependent on antenna pattern angles φ_I and φ_{OI}^{2} of INTERFERING satellites. Since coverages are mostly elliptical, φ_O is function of the angle of orientation of the ellipse θ and that there are in the general case several interferers on the up and down paths, they can be represented in the following form:

$$I_{u} = \sum_{i=1}^{m} I_{ui} (\varphi_{wi}, \varphi_{owi}, \varphi_{wi})$$

$$I_{d} = \sum_{j=1}^{m} I_{dj} (\varphi_{Ij}, \varphi_{oIj}, \varphi_{Ij}).$$

$$2$$

¹ Index of wanted satellite.

² Index of interfering satellite.

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The graphical representation of the given formulae is shown in Figures 1 and 2. PW, PI_1 and PI_2 represent the wanted and interfering signals, and TWP, TPI_1 , and TPI_2 test points in wanted and interfering areas.

YUG/169/1

As it is seen, the interference mechanisms in the feeder link and in the down-link are different and the linear translation planning can be seen only as the simplest approach. Better results were obtained by using other methods for channel assignments in the planning exercises.



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ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

<u>Corrigendum 1 to</u> <u>Document 170-E</u> 27 September 1988 <u>Original</u>: English/French

COMMITTEE 4

SUMMARY RECORD

OF THE

SIXTH MEETING OF COMMITTEE 4

1. <u>Paragraph 4.5</u>

End the second sentence with the words "existing systems." (deleting "and for improvement in the software").

2. <u>Paragraph 4.10</u>

<u>Replace</u> by the following:

"4.10 The <u>delegate of Côte d'Ivoire</u> said that his Administration had made a number of proposals regarding existing systems in Document 81 and Annex 1, based on Article 11 of the Radio Regulations, and in particular No. 1042. The latest date for advance publication decided on by the Board, namely 8 August 1985, meant that systems notified by that date would be launched by about 1990. Assuming an average lifespan of a satellite of about seven years, the last systems would have to leave the geostationary orbit about 1997. Before that date, they would gradually be moved from the geostationary orbit. His Administration would prefer the IFRB not to take existing systems into account in its planning exercises and to carry out its programme as if the orbit were not occupied, and proposed that any decisions taken with regard to the Plan at the present time should only be officially applicable as of August 1997, by which time all the systems in the orbit would have to be in accordance with the Plan."

3. Paragraph 4.20

Amend the first sentence to read:

"... such a way as to satisfy national requirements" (deleting "the necessary conditions and").

4. Paragraphs 4.27 and 4.28

Replace "barograph" and "barographs" by "histogram" and "histograms".

CONF\ORB-2\DOC\170C1E.TXS

INTERNATIONAL TELECOMMUNICATION UNION Warc on the use of the Geostationary-satellite orbit and the planning of space services utilizing it (0)SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 170-E 13 September 1988 Original: English

COMMITTEE 4

SUMMARY RECORD

OF THE

SIXTH MEETING OF COMMITTEE 4

(ALLOTMENT PLANNING AND ASSOCIATED PROCEDURES)

Monday, 5 September 1988, at 0905 hrs

Chairman: Mr. S. PINHEIRO (Brazil)

Subjects discussed:

Documents

-

- 1. Oral report by the Chairman of Group 4 ad hoc 1 2. First report of Working Group 4-A 167
- 3. Requirements
- Existing systems 4.

28, 153

7, 12, 33, 53, 59, 65, 66, 69, 81, 83, 97, 118, 141

1. Oral report by the Chairman of Group 4 ad hoc 1

1.1 The <u>Chairman of Group 4 ad hoc 1</u> said that the Group had considered, at its third meeting, the IFRB report (Document 140) which analysed planning exercises 1-1-2-1 and 1-1-3-1. Since the results had been deemed unsatisfactory, a further analysis had been carried out, taking into account further proposed modifications. The Group therefore requested a fourth meeting in order to consider that analysis. In response to a request communicated to the Conference during the previous weekend, and in view of the need to observe deadlines, he had agreed to consideration of a synthesis instead of separate analyses of the two bands. It was hoped that the requested fourth meeting could be convened before noon on the following day, in order to consider that synthesis. With regard to the status of systems, informal talks had continued between the Delegation of Luxembourg and the IFRB with regard to the GDL-6 system.

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1.2 <u>Mr. Bellchambers</u> (IFRB), referring to those talks, said that the difficulties with regard to the modifications to the service area of a GDL-6 no longer created a problem in respect to the application of the Radio Regulations and consequently GDL-6 could be regarded as an existing system without reservation.

1.3 <u>The Chairman</u> thanked the Chairman of Group 4 ad hoc 1 for his report and said that details had just been circulated in respect of the exercises referred to.

2. First report of Working Group 4-A to Committee 4 (Document 167)

2.1 The <u>Chairman of Working Group 4-A</u> introduced the report contained in Document 167.

2.2 The <u>delegate of Colombia</u> said that minimum elevation angles had not been approved as suggested in the report; as could be seen from Documents 120 and 132, a minimum elevation angle of 52° for "P" zones had been proposed. The report should rather have reflected the fact that the IFRB was to carry out some prior exercises in that regard.

2.3 The <u>delegate of Venezuela</u> agreed with that remark. In his view, the text of Document 167 also incorrectly implied that rain attenuation was the only outstanding parameter for discussion.

2.4 The <u>delegate of Ecuador</u> supported the two previous speakers.

2.5 The <u>Chairman of Working Group 4-A</u> said his understanding was that the values shown in Document 167 were those agreed upon by a majority in the Working Group, after lengthy discussion, for the purpose of proceeding with the requisite planning exercise as quickly as possible.

2.6 The <u>delegate of Canada</u> said that, in order to avoid giving a false impression, the words "approved the values for technical parameters" in the first sentence of Document 167 should perhaps be followed by "to be used for planning exercises", since that was clearly the intention set forth in Document DT/ll(Rev.1) on which the discussions had been based. Likewise, the text in Document 167 relating to composite antenna pattern should be clarified, preferably by including wording from the last sentence in the second paragraph of 2.3 b) of Document DT/ll(Rev.1). With regard to space station antenna characteristics, it had been proposed in the Working Group that fast fall-off characteristics could be used not only for existing systems but for allotments as required by administrations. He was puzzled by the reference to approval of aggregate C/I values, since he recalled no such decision and felt that the matter had still to be considered. With regard to minimum elevation angle, it had been requested that administrations should be able to specify a preference for lower angles if they so wished.

2.7 The <u>Chairman of Working Group 4-A</u> said that the sentence in Document 167 to C/I ratio had been taken from the text of Document DT/ll as an expression of the general feeling, the implication being that the C/I value could be lowered if deemed too great a constraint for purposes of the Plan. The text relating to composite antenna pattern reflected the majority's wish to speed up the procedure; the pattern could be used after the planning exercise, but only for the analysis. The text relating to satellite antenna could perhaps be amended if the Canadian Administration wished to have fast fall-off characteristics specified in its requirements. In response to a request by the <u>Chairman</u>, he said that the questions raised could be discussed at the Working Group's next meeting with a view to taking clear decisions for purposes of the Plan.

3. <u>Requirements</u> (Documents 28, 153)

3.1 The <u>delegate of India</u> said that his Administration preferred a single world-wide Plan, with a single coverage per country; there could be provision for more than one coverage wherever the geographical situation warranted, but such requirements should be met by appropriate procedures.

3.2 The <u>delegate of Argentina</u> drew attention to Resolution 4 (1-88) of the CITEL Conference, the text of which appeared in Annex 2 to Document 58.

3.3 The <u>delegate of Cuba</u> said that his Administration would welcome a world-wide single planning system. But it was deeply concerned about the approach reflected in the planning exercise analysis attached to Document 140, particularly by the inadequate orbital separation shown in many cases relating to Region 2. The values in such cases could and should be improved.

3.4 The <u>delegate of Japan</u> said that his Administration preferred a single world-wide system. It still felt that one could be achieved, but only on the basis of genuine world-wide cooperation. The Conference had a duty to ensure that equitable access to the geostationary orbit by all countries was guaranteed and that the spectrum was used efficiently. The ITU's traditional spirit of cooperation should be observed, and patience should be exercised, until the results could be seen.

3.5 The <u>delegate of the Federal Republic of Germany</u> said that his Administration too was in favour of a world-wide planning system. The First Session had called for a planning method which guaranteed access by all countries to the GSO. All allotments should be subject to the same parameters and all countries should be entitled to receive allotments having, as far as possible, the same flexibility in terms of the pre-determined arc, regardless of the Region. It was hoped that any allotment plan adopted at the current session would be aimed at maximum potential use of the GSO. Any loss of capacity or flexibility resulting from notions of sectorizing the orbit would be contrary to the principles adopted at the First Session. Region 2 requirements, therefore, should be fulfilled on the basis of equal applicability to all ITU Regions.

3.6 The <u>delegate of Uruguay</u> said that his Administration agreed on a world-wide system applicable to all Regions. At the same time, it felt that, pursuant to the relevant CITEL Resolutions, there should be possibility for improvement in appropriate areas with a view to optimum use of the GSO spectrum. 3.7 The <u>delegate of Singapore</u> reiterated his Administration's preference for a world-wide system having common characteristics. Countries which had particular geographical problems could have their requirements accommodated by means of associated procedures. He agreed with the United Kingdom Delegation that if too many constraints were introduced there would be a risk of achieving no Plan at all.

3.8 The <u>delegate of Paraguay</u> said that no decision could be taken until improved results had been produced. The analysis attached to Document 140, stemming from Decisions taken at the First Session, implied a system of satellite networks. But there was no certainty that all the networks would come into being; some 60% of the satellites in question did not yet exist.

3.9 The <u>delegate of Qatar</u> said that the general trend of the discussion reflected the decision, taken at the First Session, in favour of a world-wide Plan with one coverage per administration. Subregional plans, however, were of particular importance to the developing countries and should be accorded special attention, without prejudice to national priorities which of course would have priority in the Plan.

3.10 The <u>delegate of Canada</u>, introducing Document 153, said that it had been prepared in response to requests for more information about his Administration's preparations for the Conference. Canada was in favour of one world-wide Plan with one set of regulatory procedures and technical parameters. But it also supported the view put forward by CITEL that in areas where there was a lower density of requirements the Conference should consider other objectives which could result in an improved Plan benefiting from specific geographical characteristics (Document 58, Annex 2, <u>resolves</u> 12). The idea of making additional allotments in areas where there was no congestion was in keeping with the Decisions of WARC ORB(1) and the planning instructions given to the IFRB. Document 153 reported the results of a planning exercise carried out by his Administration which demonstrated the much enhanced orbital capacity that could be used by Region 2 under IFRB Plan 2.1.1.1 without degrading the capacity available to Regions 1 and 3 in any way.

3.11 The <u>delegate of Italy</u> supported the view of those who had spoken in favour of one world-wide Plan.

3.12 The <u>delegate of Thailand</u> said that there should be one world-wide Plan with uniform technical parameters regardless of geographical considerations. The Plan should provide one coverage per administration and additional requirements should be dealt with in accordance with the associated procedures.

3.13 The <u>delegate of the USSR</u> said that the decision had already been taken in favour of a single world-wide plan with no sectorization of the GSO. Any requirements additional to the Plan could be met by the associated procedures.

3.14 The <u>delegate of France</u> expressed strong support for the position taken by the USSR. Canada's Document 153 was not in accord with that position. In particular, it made no provision for the French Administration's requirement for a multi-beam allotment to cover a number of French territories in Region 2.

3.15 The <u>delegate of Sweden</u> said that his Administration favoured one world-wide Plan without sectorization of the GSO to provide both for requirements and for existing systems. Requirements additional to the Plan should be accommodated in accordance with its associated procedures. 3.16 The <u>delegate of the German Democratic Republic</u> said that his Administration wanted a uniform world-wide Plan but a satisfactory solution would be hard to achieve. The results for European countries contained in the IFRB's analysis of planning exercises 1-1-2-1 and 1-1-3-1 (Document 140) were most unsatisfactory. The analysis of the five worst single interferences (C/I) annexed to the report showed that more were due to neighbouring beams and to orbit positions with a separation of under 1° than were caused by existing systems. That problem had to be solved before starting the next round of planning exercise.

3.17 The <u>delegate of Papua New Guinea</u> said that his Administration favoured a single world-wide Plan which treated allotments and existing systems alike. The Plan should provide uniform coverage for all countries and any additional requirements should be dealt with by its associated procedures.

3.18 The <u>delegate of Mexico</u> said that the case presented by Canada in Document 153 was a viable argument for optimizing orbital capacity. It deserved consideration as an important means of devising the best single coverage for each country, since some orbital positions might not be acceptable in certain cases.

3.19 The <u>Chairman</u>, summing up, concluded that the Commmittee favoured a uniform world-wide Plan which gave a single coverage to each country. A number of administrations, mainly in Region 2, wanted additional arrangements that would allow them to benefit from regional geographical characteristics. Some were not content with the planning exercises carried out so far and their opinions should be taken into account.

He, therefore, considered that the first Conference planning exercise should aim to produce a uniform Plan giving single-coverage world-wide. Special provisions for particular regions should be implemented later through procedures associated with the Plan. Once a good Plan existed, Working Group 4-B might be authorized to consider, in accordance with its mandate in Document 148, how the geographical situations of certain regions could be used to improve the Plan in their case.

3.20 The <u>delegates of Morocco</u>, <u>Qatar</u>, <u>the USSR</u>, <u>Egypt</u>, <u>China</u> and <u>Saudi Arabia</u> endorsed the Chairman's conclusions.

3.21 The <u>delegate of Japan</u>, supported by the <u>delegate of India</u>, proposed that the Plan should also include additional requirements and possible modifications, for which the procedures should be evolved by Working Group 4-C.

3.22 The <u>delegate of Canada</u> said that his Administration could support the Chairman's conclusions on the understanding that Working Group 4-B would be able to examine the Plan and consider improvements for Region 2 in particular. Canada would work with other Region 2 administrations to find changes that would make such improvements without impairing the Plan with respect to Regions 1 and 3.

3.23 The <u>delegate of Colombia</u> also wished it to be understood that his Administration's approval for the Plan depended on it having the required characteristics. In particular, it should have enough flexibility to allow the incorporation of subregional requirements which took account of special situations in Region 2, provided that such arrangements did not adversely affect other Regions. The Chairman's summary and proposals were approved on that basis.

4. <u>Existing systems</u> (Documents 7, 12, 33, 53, 59, 65, 66, 69, 81, 83, 97, 118 and 141)

4.1 The <u>Chairman</u> said that the problem before the Committee was whether existing systems were to be included in the Plan in the same way as allotments or to be dealt with under its associated regulatory procedures.

4.2 The <u>delegate of the USSR</u> said that all existing systems should be included in the Plan, as stated in the Report of the First Session. The compatibility of existing systems with plan allotments should be effected through coordination and appropriate procedures, as should any problems of interference.

4.3 The <u>delegate of the United States</u> said that his Administration supported the intention of the Report of the First Session that existing systems be included in the Plan on an equal footing with allotments under the Plan.

4.4 The <u>delegate of France</u> said that his Administration's position was still as set out in Document 33. Existing systems could not be integrated in the Plan in the same way as national requirements because of their characteristics. Moreover, their inclusion would give some administrations additional allotments and so contravene the basic principle of equality of access. France therefore proposed that existing systems be dealt with by suitable temporary procedures external to the Plan itself.

4.5 The <u>delegate of Japan</u> said that the most recent results of the allotment exercise carried out by the Board on the basis of recent data provided by administrations showed some improvements. However, there was still a need for further adjustments in the existing systems and for improvement in the software. Japan's position, based on the Report to the Second Session, was that steps should be taken to establish a Plan which included existing systems.

4.6 The <u>delegate of Canada</u> said that his Administration's proposal number 3 in Document 59 contained a definition of existing systems in Article 1. In section 3 of Article 8 it was suggested that the incompatibilities, or inhomogeneity between existing systems and the standardized parameters of the Plan should be dealt with through procedures, and possible procedures were described in detail.

4.7 The <u>delegate of Algeria</u> said that his Administration did not oppose the inclusion of existing systems in the Plan provided they had no adverse effect. If it was not possible to establish a Plan in that way, as the Board's exercise perhaps indicated, then existing systems should be dealt with through procedures.

4.8 The <u>delegate of Luxembourg</u> said that the Allotment Plan should take account of existing systems as defined by the First Session, and every effort should be made to ensure that they were compatible with the allotment. If that was not possible, then other solutions should be sought.

4.9 The <u>delegate of Kenya</u> said that as his country did not have an existing system, its only real interest was to ensure that allotments could be implemented without too much difficulty. If existing systems could be accommodated in the Plan by adopting generalized parameters, depending on the number of administrations wishing to implement them, then they should be so accommodated. However, Kenya's proposal was that existing systems should eventually be taken out of the allotment bands on a voluntary basis. Such a transfer could be worked out over a number of years corresponding to the operational life of the system. If, then, some procedures could be worked out to facilitate the acquisition of another band for such systems, there might be some incentive for the total removal of those systems. That option should be considered before any final decision on existing systems was made.

4.10 The <u>delegate of the Côte d'Ivoire</u> said that his Administration had made a number of proposals regarding existing systems in Document 81 and Annex 1, based on Article 11 of the Radio Regulations, and in particular No. 1042. The latest date for advance publication decided on by the Board, namely 8 August 1985, meant that systems modified by that date would have to be launched by about 1990. Since the average lifespan of a satellite was seven years, the last systems would have to leave the geostationary orbit about 1997. Before that date, they would gradually be moved from the geostationary orbit. His Administration would prefer existing systems not to be taken into account by the Board, and that the latter should carry out its programme as if the orbit were not occupied, any decisions being taken with regard to the Plan at the present time only being officially applicable as of August 1997, by which time all the systems in the orbit would have to be in accordance with the Plan.

4.11 The <u>delegate of Senegal</u> said that his Administration's proposal in Document 83 was based on the results of the First Session of the Conference, and in particular on paragraph 3.2.5 of the Report. Its interpretation of that paragraph was that the Plan did not have to include existing systems. Since it was clear from the Board's exercises that it would be difficult if not impossible to make a Plan using existing systems, those systems should be dealt with through well-specified procedures.

4.12 The <u>delegate of Mexico</u> expressed support for the principle adopted at the First Session of the Conference that existing systems should be included in the Allotment Plan. Some adjustments might be necessary and in that connection he endorsed paragraph 3.3.4.9 of the Report to the Second Session. It was now up to the Second Session to analyse the situation in the light of the Radio Regulations, bearing in mind the stage of development of existing systems.

4.13 The <u>delegate of China</u> said that in Document 118 his Administration proposed that existing systems should be amended so as to be in conformity with the Allotment Plan with a view to being included in it. Having seen the Board's results using existing systems the Chinese Delegation realized the implications of such a proposal and therefore considered that new ways should be sought, in particular by accommodating existing systems through procedures. The proposal made by France was reasonable and for the time being seemed to be the only way of solving the problems.

4.14 The <u>delegate of India</u> said that his Administration's proposal IND/141/6 supported the decision of the First Session with regard to existing systems and considered that they should be included in the Plan on an equal footing.

4.15 The <u>Chairman</u> invited comments from administrations which had not submitted written proposals.

4.16 The <u>delegate of Cameroon</u> said that his Administration considered that account should be taken of existing systems but not in such a way as would impede the Plan. The only possible solution therefore seemed to be through procedures. The <u>delegates of Mali</u> and <u>the Central African Republic</u>, together with the <u>delegates of Colombia</u>, <u>Morocco</u> and <u>Thailand</u> also endorsed the French proposal. 4.17 The <u>delegate of Papua New Guinea</u> said that the Committee really needed more information before it when considering existing systems, which should be included in the planning process on an equal basis with allotments. Some time might usefully be spent in exploring, with the use of full synthesis, a comment made by the United States Delegation that where existing systems were causing a problem, they should be handled through procedures. In other words, there was no reason why systems which did not cause a problem should not be included in the Plan. Maybe some compromise along those lines might be possible.

4.18 The <u>delegate of Pakistan</u> said that existing systems should form part of the Plan on an equal basis.

4.19 The <u>delegate of Togo</u> said that if existing systems were to be part of the Plan, it would imply that countries with existing systems would have more than one allotment, and that was not what had been decided. He therefore supported the views expressed by the delegate of the Côte d'Ivoire that 1997 should be set as the date by which existing systems had to leave the geostationary orbit.

4.20 The <u>delegate of Saudi Arabia</u> said that his Administration would have no objection to including existing systems in the Plan provided that they could be changed in such a way as to satisfy the necessary conditions and national requirements. If that was not possible, the only alternative would be to handle them through independent procedures.

4.21 The <u>delegate of Singapore</u> also supported the French proposals for one allotment per country but recognized that that could cause problems for some countries. It might therefore be possible to accommodate existing systems in the Allotment Plan with some modifications. However, he also supported the delegate of Kenya's suggestion for a time-frame for the eventual removal of existing systems.

4.22 The <u>delegates of Afghanistan</u>, <u>Benin</u> and <u>Indonesia</u> said that existing systems should be included in the Plan through procedures only. The <u>delegate of</u> <u>Benin</u> also stressed the importance of the principle of one allotment per country.

4.23 The <u>delegate of Ethiopia</u> said that existing systems should only be included in the Plan if the Conference could establish a Plan which accommodated both existing systems and allotments.

4.24 The <u>delegate of the United Kingdom</u> said that the point at issue was not whether to accommodate existing systems into the Plan which had been decided in the First Session, but how to do so and procedures were undoubtedly the mechanism whereby the Conference would be obliged to regulate those systems. In that connection the time factor and the lifetime of those provisions were important. The Committee should therefore concentrate its efforts on finding generating procedures that would tell administrations and the IFRB how to deal with a situation when a planned allotment was to be converted into an assignment and a new real system was to be put into orbit. Any conflict between that and an existing system should be resolved by the procedures.

4.25 The <u>delegate of Jordan</u> said that existing systems should be encouraged to modify their operating parameters so as to be compatible with the Plan and therefore part of it. Those which could not be made compatible should be dealt with in separate procedures. 4.26 The <u>delegate of Liberia</u> said that existing systems should be considered both at the national level and at the regional level, for example, through such systems as INTELSAT and ARABSAT, before deciding whether or not they were to be included in the Plan. Countries which had such systems should, together with representatives of the IFRB, seek ways of including them in the Plan and at the same time preventing interference.

4.27 The <u>Chairman</u> expressed the hope that a decision could be taken at the Committee's next meeting, in the light of the results from Working Group 4-A, on both existing systems and the pre-determined arc. The barograph distributed by the Board was intended for consideration by Working Group 4 ad hoc 1 but since a number of speakers had taken it into account in their statements, a brief explanation might be in order.

4.28 Mr. Bellchambers (IFRB) said that the barographs distributed during the meeting were the result of two synthesis programmes using the technical parameters agreed in Working Group 4-A with one or two exceptions. The minimum transmitter power density of 0 dBW/MHz had not been included nor had the 1.6° beamwidth with 0.2° antenna pointing accuracy. Otherwise, the parameters contained in Document 167 had been used. The existing systems used were those whose modifications had been conveyed to the Board by 1700 hours on Friday, 2 September. In some cases, there had been useful changes which had had some impact. The number of beams had been reduced in the 4/6 GHz band from 247 because some systems had been taken out. The situation for the 11/14 GHz band was similar, except that the number of beams remained almost the same. A double check was being carried out on that position although the beam numbers were thought to be correct, certainly in the exercise. The query had arisen after Pakistan's two beams had been included: there must have been one other correction which had counterbalanced it. There were therefore 225 beams in both cases.

The meeting rose at 1205 hours.

The Secretary:

F.S. LEITE

The Chairman:

S. PINHEIRO

Document 171-E 5 September 1988 Original: English

COMMITTEE 5

Egypt

PROPOSAL CONCERNING FEEDER-LINK PLANNING

Introduction

The WARC-77 and WARC ORB-85 Conferences adopted the noise and interference parameters as summarized in the following table:

Parameter		WARC-77 Down-links Plane	WARC ORB-85 Feeder Links
Carrier-to-noise ratio	(dB)	14.5 for 99% of the worst month	24 for 99% of the worst month
Co-channel protection ratio	(dB)	30	40
Adjacent channel protection ratio	(dB)	14	21*

* Some administrations proposed that planning should use a value of 24 dB, but where this cannot be applied a value of 21 dB should be used.

It is noticed that the protection ratios for the overall links are not adopted. Also the value of the carrier-to-noise ratio for the feeder links needs further consideration.

Feeder links carrier-to-noise ratio

This proposal is concerning the time percentage in which the $(C/N)_u$ should be reached. In practice there are two extreme cases:

<u>Case (1)</u>: In this case the transmitting earth station and the receiving earth stations are very close together. The fading durations in the feeder links are totally correlated to the fading durations in the down-links, and it is sufficient to have:

 $(C/N)_{ij} = 24$ dB for 99% of the worst month.

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<u>Case (2)</u>: In this case the transmitting earth station and the receiving earth stations are widely separated; the fading durations in the feeder links are totally independent from the fading durations in the down-links, and assuming $(C/N)_{\rm u} = 24$ dB for 99% of the worst month would result in a $(C/N)_{\rm T} = 14$ dB only for 98% of the worst month. This value of availability cannot be accepted. Also considering that the feeder link is common to many down-links, the feeder link should have better availability than the down-links. It is necessary to adopt a $(C/N)_{\rm u} = 24$ dB for 99.9% of the worst month for the feeder links; in this case a value of $(C/N)_{\rm T} = 14$ dB for 99% of the worst month shall be achieved.

EGY/171/1

In view of the above considerations, Egypt proposes that: the carrier-to-noise ratio for the feeder link $(C/N)_u$ should be 24 dB for 99.9% of the worst month.

Limit of rain attenuation

EGY/171/2

The annex to this proposal give the rain attenuation levels not exceeded for 99%, 99.9% and 99.99% of the worst month for some countries assigned satellite positions -25, -19, -13, -7 and -1. Inspection of these levels shows that the rain attenuation not exceeded for 99.9% varies over a large range. Then the adjustment of the e.i.r.p. to compensate the extreme high levels will result in very high values of e.i.r.p. which will disturb the required uniform distribution of the e.i.r.p. in the plane. For this reason Egypt proposes to set a maximum limit of 10 dB for the rain attenuation not exceeded for 99.9% of the worst month. The excess rain attenuation above this level is permitted to be compensated by power control technique.

Overall protection ratios

Conference Document 25 explains the paradoxical situation which might occur if the overall protection ratios were less than those of the down-links. Egypt shares the same conclusion of this document in that the overall protection ratios should be at least equal to those of the down-links. However, as indicated in the introduction of this document the down-links co-channel protection ratio equals 30 dB, and the adjacent channel protection ratio is 14 dB.

EGY/171/3

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For the above considerations Egypt proposes that the overall co-channel and adjacent channel protection ratios should be:

- 30 dB for the co-channel;
- 14 dB for the adjacent channel.

Feeder link adjacent channel protection ratio

EGY/171/4

Egypt shares the views expressed in the Report of the First Session of the Conference that planning should use a value of 24 dB, but where this cannot be applied a value of 21 dB should be used.

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ANNEX

390 END COUNTRY	CODE	E	N	т	A1	A2	A3
		2		-			
F		2.6	45.9	32.99925	2.755999	9.20726	23.43217
ZAI		21.3	-6.8	42.82548	11.37584	38.00449	96.72017
D		9.600001	49.9	26.63747	2.947977	9.848621	25.06441
LUX		6.000001	49.8	28.10269	2.848244	9.515432	24.21646
BEN		2.2	9.5	62.87236	9.240035	30.86918	78.56102
AUT		12.2	47.5	27.5643	4.078776	13.6264	34.67874
BEL		4.6	50.6	27.8488	1.860035	6.214017	15.81446
NMB		17.5	21.6	41.86698	.4579202	1.529823	3.893348
NIG		7.8	9.399999	56.95165	9.648588	32.23407	82.03464
SUI		8.199999	46.6	30.12039	5.806571	19.39863	49.36888
HOL		5.4	52	26.27576	1.879153	6.277887	15.97701
I		12.3	41.3	32.58179	4.051029	13.53371	34.44283
CME		12.7	6.2	59.12939	1.178144	3.935951	10.01686
GAB		11.8	6	60.94961	9.518256	31.79866	80.92651
STP		7	8	64.79586	5.735667	19.16176	48.76603
ISR		34.9	31.4	27.1401	2.159068	7.213029	18.35692
COG		14.6	- 7	56.81299	2.455651	8.203856	20.87854
AGL		4.2	33.2	40.26298	1.707395	5.704079	14.51669
CAF		21	6.3	49.86296	10.41057	34.7797	88.51317
ALB		19.8	41.3	34.95835	5.757009	19.23306	48.94748
EGY		29.7	26.8	38.90552	1.619464	5.410318	13.76908
SDN		28.9	12.7	46.16072	2.705013	9.036926	22.99868
SDN		29.2	7.5	47.20529	6.699956	22.38326	56.96465
SDN		30.4	19	42.22587	.8873358	2.964418	7.544344
YUG		18.4	43.7	33.49637	3.833466	12.80687	32.59305
SWZ		31.5	-26.5	42.57995	3.12554	10.44183	26.57409
POL		19.3	51.8	27.72385	2.756707	9.209625	23.43819
ROU		25	45.7	31.43639	3.86097	12.89876	32.8269
BOT		23.3	-22.2	52.19672	1.065233	3.558738	9.056869
ZMB		27.5	-13.1	53.69463	2.027843	6.774631	17.24121
тсн		17.3	49.3	30.75067	2.707018	9.043623	23.01572
BUL		25	43	33.84889	5.722245	19.11692	48.65191
MOZ		34	-18	45.00329	2.195731	7.335512	18.66863
DDR		12.6	52.1	29.0272	2.653084	8.863443	22.55717
HNG		19.5	47.2	32.13402	3.703303	12.37202	31.48638
IFB		24.5	-28	50.8211	1.410118	4.710933	11.98917
MWI		34.1	-13	46.89736	2.186648	7.305168	18.59141

Al: Rain attenuation exceeded for less than 1% of the worst month. A2: Rain attenuation exceeded for less than 0.1% of the worst month. A3: Rain attenuation exceeded for less than 0.01% of the worst month.

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INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 172-E 5 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 4

Democratic People's Republic of Korea

PROPOSALS FOR THE WORK OF THE CONFERENCE

1. As defined in paragraph 3.3.4.9 of the Report of the First Session, the Allotment Plan should include the existing networks, subject to the adjustments to ensure their compatibility with newly planned ones.

2. The Allotment Plan should be on the world-wide basis with the guarantee of one coverage per country, surely taking account of geographical situations including mountainous conditions.

According to our rechecked data on the rainfall intensity of some parts of our country, the rain climatic zones for three of the test points mentioned in Document 28, page 35 should be corrected as follows:

TP No. 2 is in N zone instead of K zone and TPs 7 and 8 in M zones, respectively, instead of K zones.

75% of our territory is mountainous and many towns are located in deep valleys, surrounded with high mountains, which need a high elevation angle.

KRE/172/1

In consideration of the above-mentioned geographical condition, the Democratic People's Republic of Korea Delegation proposes that our orbital position should be within the arc of 110° - 150° East on the basis of more than 40° of minimal elevation angle.

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Document 173-E 5 September 1988 Original: English

COMMITTEE 5

FIRST REPORT OF WORKING GROUP 5-B TO COMMITTEE 5

Organization of work 1.

The Chairman proposed to establish two Sub-Working Groups:

- Sub-Working Group 5-B-1 to be chaired by Mr. S. Selwyn, (United States) to deal with the regulatory aspects in association with Appendices 30 and 30A as well as with RR 480 and Resolution No. 2 (SAT-R2);
- Sub-Working Group 5-B-2 to be chaired by Mr. R. Zeitoun, (Canada) to deal with Resolution No. 505 and possible provisions for HDTV satellite broadcasting.

The Working Group approved the above-mentioned proposals. In detail the terms of references are as follows:

Sub-Working Group 5-B-1:

- to establish the regulatory provisions associated to the Plan and to examine the technical criteria other than those used in preparing the Plan;
- to deal with points 2, 4 and 7 of the Committee 5 terms of reference (Document 114).

Sub-Working Group 5-B-2:

to deal with points 3 and 5 of the Committee 5 terms of reference (Document 114).

Both Sub-Working Groups should take into account point 6 of the Committee 5 terms of reference ("to prepare such consequential amendments in the Radio Regulations as may be necessitated from the view point of broadcasting-satellite matters (agenda item 12)") as far as it concerns the scope of their terms of references.

2. Annex 4 of Appendix 30A

Taking Document 39 as a basis, technical parameters for sharing were discussed:

> $(\Delta T/T)'$ should be used for the determination, when coordination is required between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link plan in the frequency band 17.7 - 18.1 GHz. Antipodal

For reasons of economy, this document is printed in a limited number of copies. Participants are therefore kindly asked to bring their copies to the meeting since no others can be made available.



or (near) antipodal satellites must also be taken into account;

- methods for the determination of the coordination area around a feeder-link station in the frequency band 17.7 18.1 GHz could be based on CCIR Reports 999 and 1010;
 - $\Delta T/\Delta$ threshold values would be needed in the band 17.3 17.8 GHz for determining when coordination is required to protect a frequency assignment to the fixed-satellite service (Earth-to-space).

Generally, the work carried out by CCIR (Table 5-V of the Report to the Second Session of WARC ORB) seems to be considered as a good basis. Sub-Working Group 5-B-1 will continue to study this subject with the aim to establish an acceptable text.

3. <u>Resolution No. 2 (SAT-R2)</u>

Although subject to some concern no objection in principle was raised against the inclusion of this Resolution on interim systems into the Radio Regulations for Region 2. The Chairman proposed that the discussion, whether or not these provisions should also be made applicable to other regions, could be suspended until the Sub-Working Group 5-B-1 has developed a text for Region 2 which satisfies the concerns expressed by administrations.

> C. DOSCH Chairman of Working Group 5-B

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Document 174-E 5 September 1988 Original: English

WORKING GROUP 5-A

Source: Document DT/2

NOTE OF THE CHAIRMAN OF WORKING GROUP 5-A

At the request of Working Group 5-A, the attached rain maps for Regions 1 and 3, taken from CCIR Report 563-3 (Dubrovnik, 1986) are presented for information.

> R.M. BARTON Chairman of Working Group 5-A

Attachments: 2

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INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 175-E 5 September 1988 Original: English

COMMITTEE 6

FIRST REPORT OF WORKING GROUP 6-A TO COMMITTEE 6

Working Group 6-A held its first meeting on 2 September.

The meeting considered Document DT/15 which was a collection of the proposals from administrations on agenda item 2.

Some administrations indicated omissions and errors in DT/15 and it was agreed that a revised document would be issued.

One administration indicated the legal problems surrounding MPMs and agreed to provide a text outlining the situation.

The Deputy Secretary-General brought to the attention of the meeting Document 177 and Corrigendum 1 from the First Session which detailed the legal situation.

It was agreed that this document should be made available (Document 165).

One administration indicated that some change to Article 10 of the Radio Regulations might be necessary but it was questionable that this is in the terms of reference of Working Group 6-A.

The Chairman indicated that a synthesis document would be prepared to facilitate discussions and requested all administrations to forward proposals for agenda item 2 to him as soon as possible so that all views can be presented.

One administration asked about the next meeting but was informed that discussions were in progress with the Chairman of Committee 6.

G.H. RAILTON Chairman of Working Group 6-A

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INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 176-E 8 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

PLENARY MEETING

MINUTES

OF THE

SECOND PLENARY MEETING

Thursday, 1 September 1988, at 1605 hrs

Chairman: Prof. Dr. I. STOJANOVIĆ (Yugoslavia)

Subjects discussed:

Documents

- 1. Oral reports by Committee Chairmen on the organization and progress of their work
- 2. Appointment of Vice-Chairmen of the Conference and its Committees (continued)

1. <u>Oral reports by Committee Chairmen on the organization and</u> progress of their work

1.1 The <u>Chairman of Committee 2</u> said that Committee 2 had held its first meeting earlier in the day and had set up a Working Group to examine credentials. Its first meeting would take place the following week.

1.2 The <u>Chairman of Committee 3</u> said that the Budget Control Committee had held its first meeting earlier in the day and had taken note of all documents. The Committee had asked him to write to the Chairmen of all Committees, to the Board and to the Directors of the CCIs regarding the financial impact of decisions taken in the Committees, having noted with concern the very narrow margin between the estimated expenditure for the Conference and the expenditure limit set by the 1982 Plenipotentiary Conference. The Committee's next meeting was due to take place during the second or third week of the Conference.

1.3 The <u>Secretary-General</u> pointed out that related to the question of expenditure margins was the formal aspect that if those margins were to be exceeded, a referendum of Members of the Union would be required. It was therefore to be hoped that participants would exercise prudence and complete their work within the schedule established.

1.4 The <u>Chairman of Committee 4</u> said that Committee 4 had met four times and had taken certain basic decisions. Ad hoc Group 4/1 had been set up under the chairmanship of Mr. N'Diongue of Senegal to consider the definition of existing systems, and the problem of which systems would be considered as existing systems in accordance with the decision of the First Session. In addition, Working Group 4-A had been set up under the chairmanship of Mr. Ito of Japan to deal with the technical parameters and criteria needed for running the programme. Working Group 4-B, chaired by Mr. N'Diongue, had also been set up to deal with the Plan and Working Group 4-C, chaired by Mr. Ducharme of Canada had been set up to handle associated procedures. There was no reason to think that the deadline set for Committee 4 would not be met and all the necessary data should be available for running the programme for the development of the plan by the following week.

The Chairman of Committee 5 said that his Committee had so far held 1.5 three meetings and organized its work by setting up two Working Groups, Working Group 5-A, chaired by Mr. Barton of Australia, to prepare a frequency plan, and Working Group 5-B, chaired by Mr. Dosch of the Federal Republic of Germany to deal with all matters related to procedures and modifications to the Radio Regulations. The Committee had decided to give priority to the planning work and that had been done during the first week. The Committee was at the stage of verifying administrations' requirements and had decided to set the deadline for administrations to check and complete their requirements at 1800 hours on Monday, 5 September. The Board had sent a telex to administrations not present at the Conference to inform them of that deadline. Some administrations had not yet collected from the Board the forms summarizing their requirements; those administrations were urged to do so quickly since the forms had to be corrected and returned to the Board by the stated deadline. The first planning exercise was expected to start by the middle of the second week of the Conference.

1.6 The <u>Chairman of Committee 6</u> said that there had been a general introduction of almost all the documents allocated to the Committee in the two meetings held so far. Three Working Groups had been set up, Working Group 6-A, chaired by Mr. Railton of New Zealand, to deal with improved procedures, and Working Group 6-B, chaired by Mr. Carew of Canada, to deal with simplified procedures and Working Group 6-C, chaired by Mr. Palmer of the United States, to deal with other topics assigned to Committee 6. Working Group 6-B had started its work earlier in the day and at its first meeting had set up its
first Sub-Working Group as well as an ad hoc Group. It was considered that ten meetings would be required the following week for the various Working Groups. No major problems had been encountered as yet but Document 111 on the application of Nos. 858 and 863 of the Radio Regulations had raised objections from some administrations which felt strongly that the document in its present form should not be considered either by the Committee or the Conference, and, in fact, should be withdrawn. He had since been informed that the Board had confirmed that the document would be re-presented in a revised form.

1.7 The <u>Chairman of Committee 7</u> said that the Committee had met for the first time earlier in the day to prepare its work and set up its teams. It was ready to work as soon as documents were submitted to it.

The Chairman of the Technical Working Group of the Plenary said that 1 8 the Working Group had met three times. At its first meeting it had dealt with the organization of work and presentation of documents relating to Appendices 3, 4, 28 and 29 to the Radio Regulations and the possible use of bands in the range 18.1 to 30 GHz, all of which corresponded to the first three terms of reference of the Working Group. The first meeting had concluded that its work on Appendices 3 and 4 could only proceed after receiving guidance from Committee 6 on regulatory procedures relating to the proposed notification of satellite networks and typical earth stations, and it had therefore decided to send a note to Committee 6 requesting that that subject be given priority. At its second meeting, the Working Group had held its first general discussion on modifications to Appendix 29, based on proposals in the documents; the views expressed essentially related to the consequences of the possible replacement of the present threshhold value of 4%, either by a higher value such as 6% as proposed by the United States, or by a wide range of values as proposed by France, according to the combination of the types of currently used carriers. The general discussion had continued at the Group's third meeting and general agreement had been reached for a new threshhold value of 6% but some sensitive questions such as the way in which special carrier combinations should be treated had been left open.

Appointment of Vice-Chairmen of the Conference and its Committees (continued)

2.1 The <u>delegate of Uruguay</u> said that several countries in Region 2 wished to propose the appointment of a Vice-Chairman from that Region to Committee 5 in view of the number of important questions which had emerged from the Conference in Rio de Janeiro.

2.2 The <u>Secretary-General</u> said that at one stage in the review of the proposed structure of the Conference a separate Plenary Working Group had been considered but for certain Region 2 matters it was felt, finally, to put all broadcasting matters together under a Committee. He fully understood the feelings of the countries concerned, however, and suggested that the Conference should so decide on the matter.

2.3 The <u>Chairman</u> said that in view of the special interests involved, the request seemed perfectly justified. Since there were no objections, he took it that the Conference agreed to the appointment of another Vice-Chairman for Committee 5.

It was so <u>decided</u>.

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2.4 The <u>Secretary-General</u> said that in addition to the newly agreed Vice-Chairman for Committee 5, some appointments had been left open at the first Plenary Meeting. To complete the list he proposed for consideration H.E. Mr. P. Martin Leyes Hernandez, Minister of Communications of Colombia, as Vice-Chairman of the Conference, Mr. Carlos Merchan Escalante (Mexico) as Vice-Chairman of Committee 5 and Mr. S.K. Kibe (Kenya) as Vice-Chairman of Committee 6. With those nominations the designation of persons for Conference chairmanships would be complete.

2.5 The <u>Chairman</u> said that since there were no objections he took it that those nominations were approved.

It was so <u>decided</u>.

2.6 The <u>Chairman</u> congratulated the persons thus elected.

The meeting rose at 1630 hours.

The Secretary-General:

R.E. BUTLER

The Chairman:

Prof. Dr. I. STOJANOVIĆ

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INTERNATIONAL TELECOMMUNICATION UNION WARC ON THE USE OF THE **ORB-88** WARG ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 177-E 5 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

SUB-WORKING GROUP 5A-1

NOTE FROM THE CHAIRMAN OF SUB-WORKING GROUP 5A-1

During the meeting of Sub-Working Group 5A-1 on 2 September 1988, the IFRB was requested to prepare a report on the application of Resolution 102 relating to pre-coordination of Feeder Links for the BSS. In response to that request, the IFRB informs the Conference that it has received information from two Administrations in application of Resolution 102 and has published two Special Sections.

- Res. 102/1 (16/09/86) from J for BS-2. Japan stated that it had reached agreement with KOR, KRE, PNG and URS.
- Res. 102/1 (11/11/86) from D for TV-Sat. D reported that agreement had been reached with AUT, BEL, F, HOL, I, LUX, SUI and that no such agreement was reached with other Administrations sharing the orbital position 19°W.

L. TOMATI Chairman of Sub-Working Group 5A-1 **ORB-88** WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 178-E 5 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

WORKING GROUP 4-A

Luxembourg

MEASURES TO IMPROVE THE SITUATION OF THE ALLOTMENT PLAN

<u>Introduction</u>

The IFRB planning exercises published prior to WARC ORB-88 have appeared to indicate that the accommodation of existing systems as an integral part of the Allotment Plan is not possible. Further planning exercises conducted in the last week have appeared to support this view. Specifically the existing system administrations recently submitted significant modifications to their systems in both C and Ku bands. The IFRB then conducted separate C and Ku band ORBIT II planning exericses (singleentry ordering followed by aggregrate entry analysis) on the basis of these updated characteristics. A superficial comparison of the results of the previous and most recent planning exercises in the C band (1-1-2-1 versus 1-1-2-4) and the Ku band (1-1-3-1 versus 1-1-3-4) would seem to indicate that the overall picture is not very much improved. The current conclusion is that the existing systems will not be considered on an equal basis with national systems.

The Luxembourg Administration has analyzed the latest IFRB planning exercises and it does appear that accommodation of the existing systems is indeed <u>feasible</u>. The case for this is elaborated in the following sections.

Method of accommodation

A detailed inspection of the results of the IFRB planning exercises in the C band (1-1-2-4) and Ku band (1-1-3-4) would tend to indicate that whilst the overall picture has improved vis-a-vis existing systems, the worst case C/I values in both bands is of the order of 15 - 16 dB.

It is well known that the most congested part of the orbit/spectrum resource is in Region 1. It would seem then that if the Region 1 problems can be resolved then there should be ample scope to address the issues in other Regions.

The following proposals should be considered with respect to the standard technical parameters of some of the <u>national allotments</u>. In particular these proposals - if applied - will lead to a more efficient use of the orbit/frequency spectrum than currently possible.

1. <u>Earth station antenna radiation patterns</u>

In conformity with CCIR Recommendation 580-1, all developed countries should conform to the 29-25logO side-lobe radiation pattern. CCIR Recommendation 580-1 is due to come into effect at about the same time as the likely commencement of the Allotment Plan. The 29-25logO pattern is consistent with the range of both up-link and down-link antenna diameters being considered in both the C and Ku bands. It is therefore urged that the developed countries specifically in Western Europe and North America conform to a 29-25logO antenna side-lobe pattern for both the C and Ku band up-link and down-link antennas.

2. <u>Spacecraft antenna radiation patterns</u>

It is well known that the SAT-83 fast roll-off spacecraft antenna patterns demonstrate significantly reduced spill-over than the standard SAT-83 or the reference default pattern employed presently by the IFRB in the planning exercises.

It is specifically urged that the developed countries in Western Europe and North America conform to the SAT-83 fast roll-off spacecraft antenna radiation pattern.

3. <u>Rain margin</u>

The IFRB have employed a rain margin of 10 dB in both C and Ku bands. As discussed in Working Group 4-A draft Report DT/11(Rev.1), it is proposed that the rain attenuation margin be reduced from 10 dB to 5 dB since other methods are in practice available for rain fade compensation.

4. <u>Aggregate C/I criterion</u>

The present aggregate C/I criterion is 26 dB. However, Working Group 4-A has agreed that the C/N be increased from 14 dB to 16 dB. Since, as is well known, the overall C/(I+N) is the fundamental design parameter in satellite communication systems, the C/I criterion can therefore be reduced from 26 dB to 24 dB in view of the 2 dB increase in C/N.

5. <u>Overall improvement</u>

In general terms the above proposals will result in additional protection being afforded to both national and existing systems as follows:

- Proposal 1 relating to the earth station antenna radiation pattern should yield on the order of an extra 3 dB margin.
- Proposal 2 relating to the space station antenna radiation pattern should yield on the order of an extra 2 dB margin.
- Proposal 3 relating to the desired rain margin should yield on the order of an extra 5 dB margin.

In total, an additional protection margin of circa 10 dB appears feasible over and above that presently permitted. Therefore assuming that if the overall C/I criterion is set at 24 dB as proposed, the additional margins <u>cumulatively</u> afforded by the above measures should very significantly improve the situation and achieve the desired aggregate C/I criterion.

<u>Conclusion</u>

It had been shown that it appears feasible to accommodate <u>both</u> existing systems and national systems, if the standard technical parameters proposed above for the latter systems and the modifications to the former systems are both incorporated.

INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 179-E 5 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

WORKING GROUP 5-A

FIRST REPORT OF SUB-WORKING GROUP 5-A-2 TO WORKING GROUP 5-A

1.

The Sub-Working Group has the following Terms of Reference:

- determine the technical parameters to be used for the development of the Plan;
- prepare guidelines for the use of ULPC.

The Group held the meeting three times and set up the following ad hoc Groups:

5-A-2 ad hoc 1: Chairman, Mr. B. Salkeld (United Kingdom)

- determine the calculation method for OEPM and the values to be used for calculation of OEPM.

5-A-2 ad hoc 2: Chairman, Mr. B. Salkeld (United Kingdom)

- prepare guidelines for the use of ULPC.

2. <u>Technical parameters to be used for the next planning exercises</u>

The Sub-Working Group concluded the following as the technical parameters to be used for the next planning exercises.

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SUMMARY OF THE TECHNICAL PARAMETERS TO BE USED FOR THE NEXT PLANNING EXERCISES

	Parameter	Value	Note
1.	Carrier-to-noise ratio	24 dB	
2.	Co-channel carrier-to- interference protection ratio	40 dB	
3.	Adjacent channel carrier-to- interference protection ratio	21 dB	
4.	Feeder link e.i.r.p. initial planning value	17.3 - 18.1 GHz - 84 dBW 14.5 - 14.8 GHz - 82 dBW	
5.	Transmitting antenna		
a)	Diameter	17.3 - 18.1 GHz - 5 m 14.5 - 14.8 GHz - 6 m	
b)	On-axis gain	57 dBi	
6.	Off-axis e.i.r.p.		
a)	Co-polar off-axis e.i.r.p.	E-25-25 log φ (dBW) for 1° ≼ φ ≼48°, E-67(dBW) for φ > 48°	
Ъ)	Cross-polar off-axis e.i.r.p.	E-30(dBW) for $0^{\circ} \leq \varphi \leq 1.6^{\circ}$, E-25-25 log φ (dBW) for $1.6^{\circ} < \varphi \leq 48^{\circ}$, E-67(dBW) for $\varphi > 48^{\circ}$	
7.	Earth station antenna mispointing loss	l dB	

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	Parameter	Value	Note
8.	Satellite receiving antenna		
a)	Cross section of beam	elliptical or circular	
b)	Co-polar reference pattern	relative gain (dB)	
		$-12 \left(\frac{\varphi}{\varphi}\right)^2 \text{ for } 0 \le \frac{\varphi}{\varphi} \le 1.30$	
-		$-17.5 - 25 \log \left(\frac{1}{\varphi_0}\right)$ for $\frac{1}{\varphi_0} > 1.30$	
		curve C: as curve C. Curve C equals minus the on-axis gain	
c)	Cross-polar reference pattern	relative gain (dB)	
		$-30 - 12 \left(\frac{9}{7} \right)^2 \text{ for } 0 \leq \frac{9}{7} \leq 0.5$	·. ·
		$\begin{array}{ccc} -33 & \text{for } 0.5 < \frac{\varphi}{\varphi_0} < 1.67 \\ -\left(\frac{\mu_0 + \mu_0 \log \left \frac{\varphi}{\varphi_0} - 1 \right \right) \text{ for } \frac{\varphi}{\varphi_0} > 1.67 \end{array}$	
		After intersection with curve C: as curve C. Curve C equals minus the on-axis gain	
9.	Satellite receiving antenna pointing accuracy	0.2°	
10.	Satellite receiving system noise temperature	1800 K	-

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	Parameter	Value	Note
11.	Type of polarization	Circular	
12.	Sense of polarization		See Note 1
13.	Automatic gain control	Not taken into account	See Note 2
14.	Power control	Not taken into account	See Note 3
15.	Earth station location		
16.	Propagation		See Note 4
17.	Carrier to noise degra- dation due to AM-to-PM conversion	2.0 dB	
18.	Depolarization compensation	Not taken into account	
19.	Site diversity	Not taken into account	
20.	Calculation method of OEPM		See Note 5
21.	Overall protection ratio	30 dB for co-channel 14 dB for adj-channel	

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<u>Note 1</u> - Relaxation of the principle for the choice of sense of polarization is permitted when the planning is made possible.

Note 2 - Satellite transmitting power is assumed to be constant.

<u>Note 3</u> - The plan should not take account of power control. Power control is permitted only to the extent that interference to other satellites does not increase by more than $0.5~{\rm dB}^1$ relative to that calculated in the feeder link plan.

<u>Note 4</u> - The model described in paragraph 6.2.2.17 is described in the WARC ORB(1) Report. (For Rain Climatic Zone Map see Document DT/12.)

Note 5 - Calculation method for OEPM

	$M_{\rm ov} = -10 \log (10)$	-(C/I) _u /10 0	-(C/I) _d /10 + 10) -	R _{ov}	dB
where	$(C/I)_u = M_u + R_u$,	dB
and	$(C/I)_d = M_d + R_d$					dB

 $R_{\rm u},~R_{\rm d}$ and $R_{\rm ov}$ are feeder link, down-link and overall-link protection ratios.

Typical values are: $R_u = 40 dB$;

 $R_d = 31 dB;$ and

 $R_{ov} = 30 dB$.

where: M_u : the equivalent^{*} protection margin for the feeder link; and

 M_d : the equivalent^{*} protection margin for the down-link.

 $\rm M_u$ and $\rm M_d$ have to be calculated independently. For $\rm M_u$ the calculation is given in paragraph 1 of the Annex to Chapter 8 of the Report of WARC ORB-85. $\rm M_d$ was calculated according to WARC BS-77.

3. <u>Guidelines for the use of ULPC</u>

This matter is now under examination by Sub-Working Group 5-A-2 ad hoc Group 2.

T. KOMOTO Chairman of Sub-Working Group 5-A-2

¹ This margin has to be shared between power control effects and depolarization compensation effects, when both are involved (see section 6.2.2.19).
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ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT Document 180-E 5 September 1988 Original: Spanish

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

WORKING GROUP 6-B

Argentine Republic

DRAFT MODIFICATION OF ARTICLES 11 AND 13

An analysis of the situation of systems which are currently either being implemented or planned reveals different kinds of difficulties for bringing them into service within the time limits laid down in RR 1042 and 1550.

These difficulties, which have been pointed out in the IFRB's Report to the First Session of the Conference, have persisted and have perhaps increased, and for the administrations concerned, are generally either of an internal or of an external nature.

The internal type of difficulties, especially for developing countries, originates basically in technical or economic problems or others related to contracting tasks.

External difficulties are mainly due to failure occurring in the launchings or in the start-up of equipment required to operate the satellites once in orbit.

It may be pointed out that these types of difficulties can also affect administrations which have not yet initiated the process of bringing into service a national system or which find themselves in the period following advance notice, requiring facilities provided by satellites shared by several administrations, which also have the same type of problems.

In the light of the above, the Argentine Administrations proposes:

ARTICLE 11

ARG/180/1

MOD 1042

An administration (one acting on behalf of a group of named administrations) which intends to establish a satellite system shall, prior to the coordination procedure in accordance with No. 1060 where applicable, send to the International Frequency Registration Board, not earlier than <u>five six</u> years and preferably not later than two years before the date of bringing into service each satellite network of the planned system, the information listed in Appendix 4.

ARTICLE 13

ARG/180/2

MOD 1550

The project date of the bringing into use of a frequency assignment may be shall be extended on request of the notifying administration by four months. In the case where the administration states that, due to exceptional circumstances, it needs a further extension of this period, such extensions may be provided but it shall in no case exceed eighteen thirty-six months from the original projected date of bringing into use.

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INTERNATIONAL TELECOMMUNICATION UNION **ORB-88** WARC ON THE USE OF THE GEOSTATIONARY SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 181-E 5 September 1988 Original: English

Source: Document DT/18

COMMITTEE 6

NOTE FROM THE CHAIRMAN OF WORKING GROUP 6-C ON PROPOSED DEFINITIONS DEALING WITH THE ALLOTMENT PLAN

1. Committee 6, as part of its terms of reference, has to review definitions under agenda item 5. Several proposals have been submitted under Article 1 of the Radio Regulations or in a new appendix for the Allotment Plan. The latter definitions apply more directly to the work of Committee 4 under agenda item 1. Accordingly, Committee 6 requests Committee 4 to treat these proposals in conjunction with the Allotment Plan.

2. The following proposals are identified:

URS/7/11	(MOD RR 18 and 19)
IND/141/28	(MOD RR 18 and 19)
AUS/49/10	(Service Area)
AUS/49/11	(International Satellite System)
AUS/49/12	(Regional Satellite System)
AUS/49/13	(Domestic Satellite System)
AUS/49/14	(Multi-Administration Satellite System)
VEN/88/13	(Plan Allotment)

3. The attention of Committee 4 is also drawn to proposal D/70/1 (Allotment within the FSS Allotment Plan).

L.M. PALMER Chairman of Working Group 6-C

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Corrigendum 1 to Document 182-E 7 September 1988 Original: English

WORKING GROUP 5-A

FIRST REPORT OF THE SUB-WORKING GROUP 5-A-1 TO THE WORKING GROUP 5-A

Page 1, paragraph 2.2, second line:

read "check" instead of "control".

Page 2

- paragraph 2.4, third indent:

add "[Document 179]" after the words "Group 5-A-2".

paragraph 2.9, first line:

read "overall" instead of "total".

<u>add</u> at the end of the paragraph the following: "and published as a Conference document".

paragraph 3, first line:

add the word "conditions" after "clear sky". Place the sentence "Subsequent planning exercises will be done in clear-sky conditions" in brackets.

> L. TOMATI Chairman of Sub-Working Group 5-A-1

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<u>Document 182-E</u> 5 September 1988 <u>Original</u>: English

WORKING GROUP 5-A

FIRST REPORT OF THE SUB-WORKING GROUP 5-A-1 TO THE WORKING GROUP 5-A

The Sub-Group met twice. These arguments have been discussed.

1. <u>Establishment of an ad-hoc Group to help the IFRB during the planning process</u>

The terms of reference of the ad hoc Group are reported in Document 158 and they were approved. They are reproduced below:

1. To examine together with the IFRB the submitted requirements with the aim of identifing missing data and errors, if it is the case.

2. To identify the cases of incompatibilities in the Plan produced by the IFRB.

3. To contact the administrations concerned in order to find satisfactory solutions.

The composition of the ad hoc group was also agreed. It is reported below:

- For Region 1: a representative from the United Kingdom, Egypt, Kenya, USSR and Yugoslavia.
- For Region 3: a representative from Japan, China, India, Iran and the United States of America.
- a representative of the IFRB.

The coordination of the ad hoc Group will be assured by the Chairman of the Sub-Working Group 5-A-1.

2. <u>Guidelines for the first planning exercise</u>

The following steps for producing the planning exercise were agreed.

2.1 After the IFRB has received from the interested administrations the corrections of their requests (1800 hours Monday, 5 September 1988), the IFRB will give back only to the administrations concerned, for control purposes, the received corrections. This will be done at the latest by 1200 hours Tuesday, 6 September 1988.

2.2 The concerned administrations will have until 1800 hours on 6 September 1988 to control if the IFRB has correctly noted their observations. If within the specified deadline no comment has been communicated to the IFRB, the requirements received from administrations will be assumed to be correct.

2.3 For the planning exercise, the technical parameters produced by Sub-Working Group 5-A-2 will be used. It is expected that these parameters will be available at the end of Tuesday, 6 September 1988. 2.4 The first IFRB planning exercise will be carried out on the following basis:

- uniform e.i.r.p.: 84 dBW for the 17 GHz band 82 dBW for the 14 GHz band;
- clear-sky conditions;
- technical data provided by Sub-Working Group 5-A-2;
- excluding the above, requirements submitted by the administrations before 1800 hours Monday, 5 September 1988 and eventually amended at the latest by 1800 hours Tuesday, 6 September 1988.

2.5 Having done the Plan the IFRB will give to each administration only the detailed analysis that concerns the administration itself.

2.6 A complete analysis of the entire Plan (Region 1 and Region 3) will be put at the disposal of all the administrations for consultation only.

2.7 A complete analysis of the entire Plan will be put at the disposal of the ad hoc Group for its work.

2.8 The presentation of the Plan will be done by orbital position.

2.9 Equivalent up-link protection margins and total (up and down) equivalent protection margins will be produced.

2.10 The ad hoc Group will examine the results of the plan exercise, it is its task to identify incompatibilities and to suggest solutions.

2.11 Some representatives nominated by the ad hoc Group will assure the contact with the administrations with the aim to facilitate the solution of the incompatibility problems. They will also collect from the administrations concerned the modifications to their requirements; it is strongly desirable that those modifications will be made only with the aim to eliminate negative margins.

3. <u>Subsequent planning exercises</u>

Subsequent planning exercises will be done in clear-sky. Modifications in the requirements suggested by the ad hoc Group, after consultation and approval by the administrations, will be taken into account.

4. <u>Meeting of the ad hoc Group</u>

The ad hoc Group met at 17.15 on Monday, 5 September 1988.

After discussion, decision was taken not to nominate for the moment any representative to contact the administrations. Those representatives will be nominated when necessary as a consequence of the incompatibility problems that would arise.

The IFRB will develop a form for use by administrations to formulate any modifications in their requirements to solve incompatibility problems. The form will be contained in a document with attached instructions on how to use this form.

The problems related to the power control have been also discussed within the ad hoc Group. Decision was taken to defer those problems to a higher level Working Group.

The United States of America representative was requested to coordinate with other Region 2 administrations with respect to any problem of interaction between the existing Region 2 Plan and the forthcoming Regions 1 and 3 Plans.

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L. TOMATI Chairman Sub-Working Group 5-A-1 INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 183-E 5 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

4 AD HOC 1

Note by the Secretary-General

IFRB REPORT

PLANNING EXERCISE 1-1-2-4

At the request of the Chairman of Group 4 ad hoc 1, I have the honour to transmit to the Conference a copy of the above-mentioned Report.

R.E. BUTLER Secretary-General

Attachment

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For reasons of economy, this document is printed in a limited number of copies. Participants are therefore kindly asked to bring their copies to the meeting since no others can be made available.

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PLANNING EXERCISES 1-1-2-4 AND 1-1-3-4

At the request of the Chairman of Group 4 ad hoc 1, planning exercises 1-1-2-4 and 1-1-3-4 were performed by the IFRB using modified existing networks and the new standardized technical parameters adopted in Working Group 4-A.

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Due to technical difficulties, planning exercise 1-1-3-4 could not be produced in time for this document.

- Annex 1 Report 1-1-2-4 sorted by orbital position
- Annex 2 Report 1-1-2-4 sorted by beam name
- Annex 3 List of five worst interferers for 1-1-2-4
- Annex 4 Histogram comparing exercises 1-1-2-1 and 1-1-2-4

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ANNEX 1

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<u>COLUMN</u>	DESCRIPTION
1.	Beam Name
2.	Orbital Position (decimal degrees)
3.	Ellipse Boresight Longitude (decimal degrees)
4.	Ellipse Boresight Latitude (decimal degrees)
5.	Ellipse Major Axis (degrees)
6.	Ellipse Minor Axis (degrees)
7:	Major Axis Orientation (degrees counter-clockwise from Equator)
8.	Up-link e.i.r.p. (dBW/MHz)
9.	Down-link e.i.r.p. (dBW/MHz)
10.	Up-link Frequency (GHz)
11.	Down-link Frequency (GHz)
12.	Worst Aggregate C/I
13.	Western Limit of Service Arc
14.	Eastern Limit of Service Arc
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ORB (2)	PLAN DE ADJUDICACION EJERCICIO	1-1-2-4	-	I PARTE	-	RESULTADOS DE SINTESIS

PAG. 1

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FIYNOLHEARSMASHOOFOEZUUNAHTSOMENTOONNISAHTTSAOFIMHFS	RRW01FRB IRQ00000 IRQ00000 VMB01FRB GMB00000 UX00000 EGY01FRB GMD0000 EGY01FRB AFG00000 CENTFRB SWZ00000 SWZ00000 SGM01FRB BEL00000 SGM01FRB BEL00000 CNR00000 CN00000 CN00000<	3.36 3.99 3.999 11.061 11.460 11.718 12.3252 13.429 13.499 13.907 14.401 14.611 15.306 16.501 16.888 17.78 18.440 14.401 16.3501 16.881 17.78 18.440 16.8840 18.840 18.840 18.840 18.840 18.840 18.840 18.840 18.840 18.840 18.840 18.840 18.840 18.840 18.840 18.840 18.840 18.840 18.840 18.840 19.5252 21.487 222.726 23.800 24.800 24.800 24.800 24.800 24.800 24.800 24.800 24.800 24.800 24.800 24.800 24.800 24.800 25.75 25.75	00815004406779036831313134342566519970553 448.646779120368342966666319048830075960556858583686651929 -165295712017209284550468300075958796055685858585858585858585858585858585858	$\begin{array}{c} -2.3\\ 5.100\\ -2.3\\ 151.3\\ -2.$	8333300942805410532124953312441000000 880688809928055410532124410000000 0.1.20000212001355285574900219598584443888360003411354075060200 0.1.2000021201335011102411230020131021202034113540755060200 0.1.20000212013350111024112300201310212000000 0.1.2000021201335001110021200000000000000000	0.805 0.850 0.850 0.800 0.915 0.800 1.959 0.808 1.809 1.8000 1.8000 1.8000 1.8000 1.8000 1.8000 1.8000 1.8000 1.8000 1.80000 1.80000 1.80000 1.80000000000	$\begin{array}{c} 90.00\\ 142.29\\ 95.66\\ 90.00\\ 90.00\\ 90.00\\ 90.00\\ 90.00\\ 145.79\\ 199.71\\ 999.71\\ 999.71\\ 90.00\\ 145.84\\ 900.77\\ 199.72\\ 134.37\\ 140.99\\ 170.09\\ 170.09\\ 170.09\\ 170.09\\ 122.20\\ 134.37\\ 140.99\\ 122.20\\ 121.40\\ 122.20\\$	39. 72732522698893115979900111144115543775977991111445145543759799115979799864995111108834155437554991111445943759795459921111445943755544434954557790779911144459451011110883445101111111111111111111111111111111111	$\begin{array}{c} 18. 01\\ 20. 78\\ 20. 10\\ 17. 98\\ 18. 24\\ 20. 54\\ 18. 24\\ 20. 54\\ 18. 24\\ 20. 56\\ 20. 51\\ 18. 24\\ 20. 69\\ 19. 69\\ 20. 56\\ 20. 51\\ 18. 22\\ 20. 69\\ 19. 69\\ 20. 56\\ 20. 69\\ 20. 56\\ 20. 86\\$	88 88 <td< td=""><td>ਸ਼</td><td>$\begin{array}{c} 22.74\\ 18.370\\ 19.557\\ 19.557\\ 19.557\\ 19.557\\ 19.557\\ 19.557\\ 19.557\\ 19.557\\ 15.30\\ 19.557\\ 15.30\\ 115.30\\ 15.30$</td><td>$\begin{array}{c} -31.80\\ -31.80\\ -19.80\\ -245.40\\ -77.30\\ -45.40\\ -77.30\\ -53.90\\ -18.70\\ -53.90\\ -19.80\\ -19.80\\ -25.80\\ -19.80\\ -25.80\\ -19.80\\ -25.80\\ -19.80\\ -25.80\\ -10.10\\ -20.90\\ -25.80\\ -24.40\\ -12.70\\ -61.10\\ -20.90\\ -13.80\\ -22.50\\ -24.40\\ -12.70\\ -25.80\\ -24.80\\ -54.80\\ -54.80\\ -54.80\\ -54.80\\ -22.50$</td><td>91.80 106.60 113.25 44.50 128.30 128.30 102.070 455.70 102.070 40.10 102.070 40.10 50.70 64.9</td><td></td></td<>	ਸ਼	$\begin{array}{c} 22.74\\ 18.370\\ 19.557\\ 19.557\\ 19.557\\ 19.557\\ 19.557\\ 19.557\\ 19.557\\ 19.557\\ 15.30\\ 19.557\\ 15.30\\ 115.30\\ 15.30$	$\begin{array}{c} -31.80\\ -31.80\\ -19.80\\ -245.40\\ -77.30\\ -45.40\\ -77.30\\ -53.90\\ -18.70\\ -53.90\\ -19.80\\ -19.80\\ -25.80\\ -19.80\\ -25.80\\ -19.80\\ -25.80\\ -19.80\\ -25.80\\ -10.10\\ -20.90\\ -25.80\\ -24.40\\ -12.70\\ -61.10\\ -20.90\\ -13.80\\ -22.50\\ -24.40\\ -12.70\\ -25.80\\ -24.80\\ -54.80\\ -54.80\\ -54.80\\ -54.80\\ -22.50$	91.80 106.60 113.25 44.50 128.30 128.30 102.070 455.70 102.070 40.10 102.070 40.10 50.70 64.9	

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PAG. 3

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ORB	(2)	PLAN D'ALLOTISSEMENT EXERCICE	1-1-2-4		I PARTIE		RESULTATS DE SYNTHESE
ORB	(2)	ALLOTMENT PLANNING EXERCISE	1-1-2-4	-	PART I	-	SYNTHESIS RESULTS
ORB	(2)	PLAN DE ADJUDICACION EJERCICIO	1-1-2-4	-	I PARTE	-	RESULTADOS DE SINTESIS

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1	2	3	4	<u>5</u> 5	6	7	8	્9	10	11	12	13	14	
1 YUG00000 IRN00000 LIE0IFRB SMR00000 PAK0IFRB URSSTAD3 URSSTAD4 STP0IFRB BRM0IFRB URS00000 HKG00000 HKG00000 HKG00000 HKG00000 CYP00000 AGL01FRB MGT00000 CYP00000 AGL01FRB MGT00000 CYP00000 AGL01FRB URSST-22 URSST-22 URSST-22 INSATAD6 INSATAD6 INS	$\begin{array}{c} 2\\ 26.59\\ 27.08\\ 28.51\\ 29.58\\ 28.51\\ 29.58\\ 35.05\\ 44.95\\ 46.11\\ 57.75\\ 58.73\\ 59.45\\ 59.45\\ 59.45\\ 59.45\\ 59.45\\ 59.96\\ 60.15\\ 59.96\\ 60.15\\ 59.96\\ 60.15\\ 59.96\\ 60.15\\ 59.96\\ 60.15\\ 100\\ 83.000\\ 85.005\\ 95.34\\ 113.46\\ 11$	3 19.00 12.81 54.40 9.52 68.53 35.00 7.00 56.86 32.95^{-} 14.50 100.76 12.50 14.50 44.10 10.50 44.10 10.50 44.10 12.50 44.20 83.200 83.200 83.200 83.200 83.200 84.200 85.000 85.000 85.000 85.000 85.000 85.000 85.000 85.000 81.700 85.000 81.700 82.000 81.700 82.000 81.700 82.000 81.700 82.000 81.700 82.000 81.700 85.000 85.000 81.700 85.000 81.700 85.000 81.700 85.000 81.700 85.000 81.700 85.000 81.700 85.000 81.700 85.000 81.700 85.000 81.700 85.000 81.700 85.000 81.700 85.000 81.700 85.000 81.700 85.000 85.000 81.700 85.000 85.000 85.000 85.000 85.000 85.000 85.000 85.000 85.000 85.000 85.000 85.000 85.000 85.000 85.000 85.000 85.000 85.000 85.000 166.101 135.12 174.93 173.820 173.820 178.50	$\begin{array}{c} 4\\ 43.98\\ 63.98\\ 632.98\\ 47.15\\ 29.000\\ 1.00$	5 1.47 2.87 1.47 3.71 0.80 2.22 17.30 0.80 2.22 17.30 0.80	$\begin{array}{c} 6\\ 0.80\\ 0.80\\ 1.58\\ 0.80\\ 0.80\\ 1.58\\ 0.80\\ 0.80\\ 1.58\\ 0.80\\ 0.80\\ 1.58\\ 0.80\\ 0.80\\ 0.80\\ 0.80\\ 0.80\\ 0.80\\ 0.80\\ 0.80\\ 0.80\\ 0.80\\ 0.80\\ 0.80\\ 1.72\\ 3.80\\ 0.80\\ 0.80\\ 1.72\\ 3.18\\ 5.01\\ 8.29\\ 0.80\\ 1.58\\ 0.80\\ 0.80\\ 0.80\\ 1.58\\ 0.80\\ 0.$	7 155.61 15.57 144.23 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00 176.63 90.00 90.00 90.00 90.00 176.63 80.00 90.00 90.00 19.95 58.00 90.00 19.95 58.00 90.00 19.95 58.00 90.00 15.81 90.00 15.82 90.00 15.83 90.00 15.83 90.00 15.83 90.00 15.83 90.00 15.83 90.00 15.83 90.00 15.83 90.00 15.83 90.00 15.83 15.64 15.84 15.84 15.64 15.65 15.85 15.85 15.85 10.00 90.00 10.85 10.00 90.00 10.85 10.00 90.00 10.85 10.00 90.00 10.85 10.00 90.00 10.85 10.00 90.00 10.85 10.00 90.00 10.85 10.00 90.00 10.85 10.00 90.00 10.85 10.00 90.00 10.85 10.00 90.00 10.85 10.00 90.00 10.85 10.00 90.00 10.85 10.00 90.00 10.85 10.00 10.85 10.00	8 44.72 48.04 39.82 52.04 39.82 50.60 160.00 41.77 54.86 39.57 57.1 40.57 40.57 40.57 40.57 40.57 51.68 40.57 51.68 40.57 56 39.85 40.57 56 30.80 160.00 63.80 160.00 63.55 44 44 47 85 63.50 160.38 160.00 160.20 44 47 85 63.57 15 63.50 160.20 65 56 160.00 65 57 15 63.80 160.20 65 56 80 160.20 40 57 56 80 160.20 40 57 56 80 160.20 40 80 160.20 80 160.20 40 80 160.20 80 160.20 160.20 40 80 160.20	9 20.63 21.37 20.94 18.44 18.39 20.20 20.20 20.20 18.60 21.80 21.80 21.80 21.62 18.32 19.16 19.27 18.75 18.75 18.75 18.75 18.75 18.75 18.75 18.75 18.75 18.75 18.75 18.75 18.72 21.26 30.00 20.20 20.20 20.20 21.80 21.80 21.80 21.80 21.80 21.80 21.80 21.80 21.80 20.20 20.71 21.26 20.71 21.26 21.41 21.55 21.41 21.55 21.41 21.41 21.43 22.141 22.141 21.55 21.55 21.55 21.55 21.55 21.55 21.55 21.55 21.55 20.71 21.26 21.55 21.41 21.55 21.55 21.55 21.55 21.55 20.71 21.55 21.55 21.55 21.55 20.71 21.55 21.55 21.55 21.55 20.71 21.55 21.5	10 6.88 6.88 6.88 6.88 6.88 6.88 6.88 6.8	11 4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.	$\begin{array}{c} 12 \\ 18.17 \\ 22.61 \\ 16.44 \\ 19.08 \\ 19.17 \\ 10.99 \\ 19.71 \\ 17.14 \\ 26.62 \\ 19.89 \\ 218.07 \\ 26.85 \\ 208.07 \\ 26.85 \\ 208.07 \\ 26.62 \\ 19.99 \\ 26.62 \\ 19.99 \\ 26.62 \\ 19.99 \\ 26.62 \\ 19.99 \\ 26.62 \\ 19.30 \\ 29.34 \\ 12.39 \\ 29.34 \\ 12.34 \\ 30.12 \\ 32.93 \\ 19.321 \\ 18.76 \\ 19.321 \\ 18.75 \\ 18.321 \\ 18.75 \\ 18.321$	$\begin{array}{c} 13 \\ -25.80 \\ 14.500 \\ -36.500 \\ -36.500 \\ -36.500 \\ -45.400 \\ -45.400 \\ -45.400 \\ -45.400 \\ -45.400 \\ -44.700 \\ -44.700 \\ -44.700 \\ -38.1000 \\ -38.100 \\ -39.1$	SLT. 1 14 60.20 33.50 55.50 61.50 138.40 55.50 61.50 141.50 61.40 61.40 61.40 61.40 61.40 61.40 61.40 61.40 61.40 61.40 61.40 61.40 61.40 83.10 95.50 66.50 87.90 72.30 74.10 93.60 93.60 113.70 114.30 114.30 114.30 114.30 124.90 137.60 131.90 149.90 159.00 179.00 179.00 179.00	

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PAG. 4

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ı	2	7	6	5	6	7	8		10	11	12	17	SLT.	1
KIROIFRB VTNOIFRB KRE00000 PHL0IFRB PNG0IFRB NZLROSSO CBG0IFRB SNG00000 BRU0IFRB NRU0IFRB PNGP1B01 PNGP1B02	2 147.27 147.33 148.61 148.89 151.22 152.37 152.37 152.50 153.03 166.90 167.60 167.60	173.00 106.15 128.31 122.05 148.30 166.77 105.12 103.85 114.60 166.90 157.00 198.00	1.00 15.71 40.19 11.36 -6.64 -77.85 12.91 1.28 4.50 -0.50 -4.00 18.00	0.80 3.05 1.57 3.39 3.34 0.80 1.11 0.80 0.80 0.80 0.80 16.00 2.80	0.80 0.94 0.80 1.72 2.28 0.80 0.80 0.80 0.80 0.80 0.80 0.8	90.00 81.61 21.60 81.60 166.75 90.00 61.13 90.00 90.00 90.00 153.00 90.00	41.09 53.70 45.09 55.77 55.94 39.76 49.09 45.39 44.05 40.73 56.70 56.70	18.29 21.67 20.63 21.44 21.01 18.94 21.45 19.37 18.97 18.08 125.00 125.00	6.88 6.88 6.88 6.88 6.88 6.88 6.88 6.88	4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6	21.02 22.58 16.97 25.31 31.29 33.41 24.65 20.50 24.94 35.39 30.51 57.34	120.60 58.90 80.70 74.40 104.90 56.50 51.40 62.30 114.50 167.40	179.00 150.80 176.40 179.00 179.00 153.80 156.30 166.90 179.00 167.60	

IFRB CONFERENCE PREPARATION

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ANNEX 2

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COLUMN	DESCRIPTION
1.	Beam Name
2.	Orbital Position (decimal degrees)
3.	Ellipse Boresight Longitude (decimal degrees)
4.	Ellipse Boresight Latitude (decimal degrees)
5.	Ellipse Major Axis (degrees)
6.	Ellipse Minor Axis (degrees)
7.	Major Axis Orientation (degrees counter-clockwise from Equator)
8.	Up-link e.i.r.p. (dBW/MHz)
9.	Down-link e.i.r.p. (dBW/MHz)
10.	Up-link Frequency (GHz)
11.	Down-link Frequency (GHz)
12.	Worst Aggregate C/I
13.	Western Limit of Service Arc
14.	Eastern Limit of Service Arc

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SCENARIO FILE ORDER

ORB (2) ORB (2)	PLAN D'ALLOTISSEMENT EXERCICE ALLOTMENT PLANNING EXERCISE	1 - 1 - 2 - 4 1 - 1 - 2 - 4	-	I PARTIE PART I	-	RESULTATS DE SYNTHESE SYNTHESIS RESULTS
URB (2)	PLAN DE ADJUDICACION EJERCICIO	1-1-2-4	-	I PARTE	-	RESULTADOS DE SINTESIS

					and the Collinson									-
1	2	3	4	5	6	7	8	9	10	11	12	13	SLT. 14	1
ABI/00000 ADL00000 AFG00000 AFG00000 AFS00000 AGL0IFRB ALG00000 ARG00000 ARG00000 ARG00000 ARG00000 ARG00000 BAL00000 BAH01FRB BEL00000 BBERC0IFRB BERC0IFRB BBFA00000 BBERC0IFRB BBFA00000 BBERC0IFRB BC00000 BBRM01FRB BBRU01FRB BCA00000 BRB01FRB BCCANNW000 CCAR00000 CCAN00000 CCHL000000 CCHL000000 CCHL000000 CCHL000000 CCHL000000 CCHL000000 CCHL000000 CCHL000000 CCHL000000 CCHL000000 CCHL000000 CCHL000000 CCHL000000 CCHL000000 CCHL000000 CCHL000000 CCHC000000 CCHC000000 CCHC000000 CCHC000000 CCHC00000000	$\begin{array}{c} -69.37\\ 113.60\\ 19.52\\ 60.152\\ -158.000\\ -58.00\\ -32.805\\ -32.805\\ -39.68\\ -113.68\\ -69.68\\ -113.68\\ -69.68\\ -113.68\\ -56.38\\ -56.38\\ -56.88\\ -56.68\\ -115.68\\ -61.68\\ $	$\begin{array}{c} -69.092\\ 65.022\\ 65.35\\ 17.37\\ 24.35\\ 17.37\\ -158.39\\ -44.58\\ -11.69\\ -66.09\\ 135.31\\ -50.89\\ -66.09\\ 135.315\\ -75.88\\ -22.0\\ -68.63\\ -50.60\\ -88.63\\ -23.90\\ -64.390\\ -59.60\\ 114.69\\ -75.884\\ -25.59\\ -60\\ -88.63\\ -25.58\\ -64.390\\ -59.60\\ 114.69\\ -75.388\\ -75.388\\ -75.388\\ -75.388\\ -75.388\\ -75.388\\ -75.388\\ -75.388\\ -75.388\\ -75.388\\ -75.388\\ -75.20\\ -75.20\\ -25.20\\ -25.20\\ -25.20\\ -85.20\\ -85.20\\ -25.20\\ -85.20\\ -25.20\\ -85.20\\ -25.20$	$\begin{array}{c} 12.36\\ -63.56\\ -29.56\\ -27.594\\ -32.58\\ -27.594\\ -38.27\\ -38.27\\ -27.594\\ -38.27\\ -27.594\\ -38.27\\ -25.594\\ -38.27\\ -25.594\\ -25.594\\ -25.594\\ -25.594\\ -25.595\\ -22.51\\ -25.595\\ -22.51\\ -25.595\\ -22.51\\ -25.55\\ -22.51\\ -25.55\\ -22.51\\ -25.55\\ -22.51\\ -25.55\\ -22.51\\ -25.55\\ -25.$	80 80 80 80 80 80 80 80 80 80	0.80 0.80 0.80 0.897 2.72 1.542 8.80 0.80 0.80 0.80 0.80 0.80 0.80 0.8	$\begin{array}{c} 90.00\\ 90.00\\ 119.89\\ 115.20\\ 119.95\\ 16.18\\ 0.216\\ 142.24\\ 78.27\\ 90.00\\ 138.88\\ 8.89\\ 138.37\\ 135.97\\ 90.00\\ 138.88\\ 7.135.97\\ 90.00\\ 129.06\\ 64.46\\ 44.31\\ 53.86\\ 90.00\\ 129.06\\ 66.00\\ 90.00\\ 129.06\\ 66.00\\ 90.00\\ 129.06\\ 142.43\\ 153.81\\ 138.94\\ 174.99\\ 5.00\\ 142.43\\ 13.81\\ 138.94\\ 174.99\\ 5.00\\ 142.88\\ 90.00\\ 142.88\\ 90.00\\ 142.88\\ 90.00\\ 55.22\\ 90.00\\ 55.22\\ 90.00\\ 55.22\\ 90.00\\ 55.22\\ 90.00\\ 27.83\\ 34.57\\ \end{array}$	43975513.9960551233091512084772554281944733997518824464623.3209155120847255535566244623.3209155177512084772554281944733897705519868881271381446465445555564906636723.1389688812713834544544555556906636723.1389688812713834444999.821	$18.97 \\ 18.72 \\ 20.85 \\ 21.09 \\ 20.70 \\ 21.23 \\ 21.95 \\ 20.80 \\ 20.92 \\ 18.18 \\ 20.35 \\ 21.63 \\ 20.37 \\ 21.59 \\ 20.86 \\ 19.10 \\ 20.28 \\ 21.53 \\ 20.37 \\ 21.59 \\ 20.28 \\ 21.53 \\ 20.21 \\ 19.36 \\ 21.53 \\ 20.21 \\ 19.36 \\ 21.53 \\ 20.21 \\ 19.36 \\ 21.53 \\ 20.21 \\ 19.36 \\ 21.53 \\ 20.21 \\ 19.36 \\ 21.53 \\ 20.21 \\ 19.36 \\ 21.53 \\ 20.21 \\ 19.36 \\ 21.53 \\ 20.21 \\ 19.36 \\ 21.53 \\ 20.21 \\ 19.36 \\ 21.53 \\ 20.21 \\ 19.20 \\ 22.01 \\ 19.20 \\ 22.01 \\ 19.20 \\ 22.01 \\ 19.20 \\ 22.01 \\ 19.20 \\ 22.01 \\ 19.20 \\ 22.01 \\ 19.20 \\ 20.38 \\ 20.38 \\ 20.01 \\ 20.38 \\ 20.38 \\ 20.01 \\ 20.3$		₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽	18.59 30.12 17.51 23.12 28.94 21.78 43.11 23.20 16.23 23.79 14.32 31.96 16.77 35.90 25.57 17.72 21.80 19.00 15.84 17.14 24.94 14.36 25.42 15.97 21.40 19.00 15.84 17.44 24.94 14.36 25.42 15.97 21.40 19.00 15.84 17.51 23.06 24.65 24.94 16.23 25.57 21.80 19.00 15.84 17.51 22.28 21.64 24.94 14.36 25.57 17.72 21.80 19.00 15.84 17.14 24.94 14.36 25.57 17.72 21.80 19.00 15.84 17.14 24.94 14.36 25.57 17.72 21.80 19.00 15.84 17.14 24.65 20.48 21.64 18.07 19.91 24.65 25.67 19.95 19.65 25.67 19.90 16.77 16.77 16.77 16.77 17.72 21.80 19.00 15.84 17.14 24.65 25.57 17.72 21.80 19.00 15.84 17.14 24.65 25.57 16.77 17.72 21.80 19.00 15.84 17.14 24.65 25.57 17.72 21.80 19.00 15.84 17.14 24.65 25.57 18.07 19.95 19.65 25.57 18.07 19.95 19.65 25.57 18.76 20.48 25.57 18.76 20.48 25.57 18.76 20.48 25.57 18.76 20.48 25.57 18.76 20.68 21.65	$\begin{array}{c} -119.40\\ 113.00\\ 8.40\\ -15.60\\ -37.20\\ -57.80\\ -77.80\\ -77.80\\ -77.80\\ -77.80\\ -77.80\\ -77.80\\ -77.80\\ -77.80\\ -77.80\\ -77.80\\ -78.80\\ -77.80\\ -78.80\\ -113.00\\ -27.48\\ -107.60\\ -113.60\\ -24.80\\ -121.60\\ -48.50\\ -48.50\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -26.40\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -126.30\\ -26.40\\ -126.30\\ -26.40\\ -126.30\\ -26.40\\ -126.30\\ -26.40\\ -126.30\\ -26.40\\ -126.30\\ -26.40\\ -126.30\\ -26.40\\ -126.30\\ -26.40\\ -126.30\\ -26.40\\ -126.30\\ -26.40\\ -26.00\\ -26$	$\begin{array}{c} -18.90\\ 114.30\\ 128.30\\ 72.30\\ 60.70\\ -56.40\\ -56.40\\ -56.40\\ -27.10\\ -55.30\\ -27.10\\ 55.30\\ -27.10\\ 55.30\\ -27.10\\ 55.30\\ -27.10\\ 55.30\\ -27.10\\ 155.30\\ -21.92\\ 62.00\\ 52.40\\ 141.50\\ 166.90\\ -18.80\\ -18.80\\ -18.80\\ -18.80\\ -110.70\\ 153.80\\ -110.70\\ 153.80\\ -110.70\\ -92.80\\ -10.80\\ -90.80\\$	

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PAG. 1

SCENARIO FILE ORDER

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PLAN D'ALLOTISSEMENT EXERCICE 1-1-2-4 - I PARTIE - RESULTATS DE SYNTHESE ALLOTMENT PLANNING EXERCISE 1-1-2-4 - PART I - SYNTHESIS RESULTS PLAN DE ADJUDICACION EJERCICIO 1-1-2-4 - I PARTE - RESULTADOS DE SINTESIS ORB (2) ORB (2) ORB (2)

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1	2	3	4	5 j ²³⁵	6 	7	8	. 9	10	11	12	13	SLT. 14	1	
DJI0IFRB DMA0IFRB DNK00000 DNK00002 DOM0IFRB E 00002 EGY0IFRB EQA00000 FJ10IFRB FLKSTGGL FNL00000 GAB0IFRB GDL00000 GHA00000 GHA00000 GHA00000 GHA00000 GHA00000 GHA00000 GHA00000 GHA00000 GUF00000 GUF00000 GUF00000 GUF00000 GUF00000 HND00000 HND00000 HND00000 HND01FRB INS00000 I 00000 I ND01FRB INS00000 I RN00000 I SL00000 JAR00000 JAR00000 JON00000 CHA00000 JON00000 CHA0000 CHA00000 CHA00000 CHA	$\begin{array}{c} 0.17\\ -70.17\\ -39.15\\ -39.15\\ -65.47\\ 14.17\\ 11.74\\ -3.11\\ 144.180\\ -325.280\\ 16.811\\ 13.41\\ 58.73\\ 25.49\\ -70.90\\ -39.5\\ 13.41\\ 58.70\\ -3.411\\ -58.70\\ -158.7$	$\begin{array}{c} 42.60\\ -61.304\\ -70.40\\ -29.30\\ -70.2.40\\ -29.30\\ -70.2.40\\ -29.30\\ -70.2.40\\ -29.30\\ -$	$\begin{array}{c} 11.67\\ 15.03\\ 61.74\\ 18.67\\ 19.92\\ -19.62\\ -$	0.80 0.80 0.80 0.80 2.64 2.11 2.14 0.88 1.80 0.80 0	0.80 0.80 0.80 0.80 1.21 1.91 1.03 1.08 0.80 1.20 1.08 0.80 0.80 0.80 0.80 0.80 0.80 0.8	90.00 90.00 158.61 90.00 9.50 145.79 170.85 104.39 166.14 90.00 168.62 5.86 143.47 62.35 90.00 90.00 90.00 90.00 157.49 90.00 157.49 90.00 157.49 90.00 157.49 90.00 157.49 90.00 157.49 90.00 120.31 75.21 90.00 31.90 90.00 148.80 90.00 148.80 90.00 14.11 90.00 14.23 142.29 90.00 148.80 90.00 14.14 168.47 90.00 148.80 90.00 14.14 168.47 90.00 148.80 90.00 14.11 90.00 14.23 14.23 14.23 14.23 14.23 14.23 14.23 14.23 14.23 14.23 14.23 19.00 14.00 14.00 90.00 14.14 10.00 90.00 14.14 10.00 90.00 14.14 10.00 90.00 14.14 10.00 90.00 14.14 10.00 90.00 14.14 10.00 90.00 14.14 10.00 90.00 10.0	39.256 41.999 39.49 48.026 554.06 48.59 49.15 54.69 48.69 41.44 45.06 48.59 41.32 45.26 48.45 45.26 48.45 45.26 48.45 45.26 48.45 45.26 48.45 45.26 48.45 45.27 40.85 54.27 40.95 40.27 40.27 40.57 40.27 40.57 40.27 40.57 40.27 40.57 40	$\begin{array}{c} 18.23\\ 18.19\\ 20.61\\ 18.72\\ 18.72\\ 18.72\\ 18.72\\ 18.72\\ 10.56\\ 21.63\\ 21.63\\ 21.63\\ 21.63\\ 21.63\\ 20.56\\ 20.79\\ 20.56\\ 20.79\\ 20.56\\ 20.79\\ 20.56\\ 20.79\\ 20.56\\ 20.79\\ 20.56\\ 20.79\\ 20.63\\ 21.69\\ 20.63\\ 21.69\\ 20.63\\ 20.65\\ 19.52\\ 10.55\\ 21.69\\ 20.63\\ 19.56\\ 20.78\\ 20.63\\ 19.56\\ 20.78\\ 20.63\\ 19.56\\ 20.78\\ 20.63\\ 19.56\\ 20.63\\ 19.26\\ 20.78\\ 20.50\\ 18.28\\ 20.56\\ 18.29\\ 20.51\\ 20$		\$	$\begin{array}{c} 14.65\\ 16.96\\ 24.54\\ 22.57\\ 15.30\\ 20.06\\ 21.71\\ 22.1.22\\ 20.41\\ 35.64\\ 17.01\\ 16.567\\ 20.65\\ 29.67\\ 20.65\\ 29.67\\ 20.61\\ 19.460\\ 17.91\\ 19.48\\ 23.28\\ 19.420\\ 17.91\\ 19.48\\ 23.28\\ 24.85\\ 24.85\\ 23.69\\ 16.17\\ 17.222\\ 19.61\\ 23.69\\ 16.17\\ 17.222\\ 17.06\\ 29.61\\ 41.82\\ 17.06\\ 29.67\\ 20.61\\ 42.887\\ 17.06\\ 29.61\\ 41.82\\ 10.62\\ 20.65\\ 10.62\\ 20.65\\ 10.62\\ 20.65\\ 10.62\\ 20.65\\ 10.62\\ 20.65\\ 10.62\\ 20.65\\ 10.62\\ 1$	$\begin{array}{c} -28.40\\ -12.10\\ -40.80\\ -40.80\\ -40.80\\ -40.80\\ -40.80\\ -40.80\\ -40.80\\ -40.80\\ -40.80\\ -120.80$	$ \begin{array}{c} 113. \\ -10. \\ -38. \\ -30. \\ 50. \\ 93. \\ -39. \\ 106. \\ 5. \\ 179. \\ -27. \\ 46. \\ -27. \\ 61. \\ 5. \\ 48. \\ -27. \\ 61. \\ 5. \\ 62. \\ -27. \\ 61. \\ 5. \\ 62. \\ -10. \\ -38. \\ -41. \\ 536. \\ -147. \\ -91. \\ -38. \\ 62. \\ 62. \\ -147. \\ -91. \\ -38. \\ 62. \\ 62. \\ -147. \\ -147. \\ 1134. \\ 25. \\ 97. \\ 106. \\ 102. \\ 7. \\ 1147. \\ -147. \\ 101. \\ 97. \\ 104. \\ 102. \\ 104. \\$	60 50 60 50 60 50 90 10 10 10 10 10 10 10 10 10 10 10 10 10	

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ORB (2) ORB (2)	PLAN D'ALLOTISSEMENT EXERCICE ALLOTMENT PLANNING EXERCISE	1-1-2-4	-	I PARTIE	-	RESULTATS DE SYNTHESE
ORB (2)	ALLUIMENT PLANNING EXERCISE PLAN DE ADJUDICACION EJERCICIO	1-1-2-4	_	PART I I PARTE	_	SYNTHESIS RESULTS RESULTADOS DE SINTESIS

					and a surger of the second second second	ala an	Martin mar						0. T	
1	2	3	4	منطقی 5 +	6 ++	7	8	9	10	11	12	13	SLT. 14	1
KRE00000 KHT00000 LA00IFRB	148.61 0.00 129.17	128.31 48.04 103.66	40.19 29.30 18.15	1.57 0.80 1.78	$ \begin{array}{c} 0.80 \\ 0.80 \\ 1.01 \end{array} $	$21.60 \\ 90.00 \\ 118.76$	45.09 39.96 48.21	20.63 18.84 20.71	6.88 6.88 6.88	4.65 4.65 4.65	16.97 17.65 19.20	80.70 -19.50 56.60	176.40 116.10 149.90	
	14.61 2.57 28.51	-9.43 17.04 9.52	33.83 6.55 27.85 47.15	0.80	$ \begin{array}{c} 0.80\\ 0.80\\ 2.01\\ 0.80 \end{array} $	90.00 134.37 173.66	39.37 46.27 50.79 39.82	18.32 20.49 20.59	6.88 6.88 6.88	4.65	15.66 18.06 26.48	-31.60 -59.60 -43.50 -36.50	103.20 40.60 77.90	
LSOOIFRB LUX00000 MAUOIFRB	0.07 11.06 17.74	28.40 6.14 57.50	-29.50 49.75 -20.17	0.80 0.80 0.80	0.80 0.80 0.80	90.00 90.00 90.00	39.14 39.35 42.11	18.14 18.39 18.75	6.88 6.88 6.88	4.65	24.73 20.50 26.76	-40.10 -53.90 8.00	96.90 66.10	 -
MDG01FRB MDG01FRB MDW00000 MEX00000	18.44 18.80 -158.70 -113.11	7.40 46.35 -177.42 -103.47	43.67 -18.47 28.22 23.32	0.80 2.70 0.80 5.79	$\begin{array}{c} 0.80 \\ 0.91 \\ 0.80 \\ 2.47 \end{array}$	90.00 69.69 90.00	40.41 51.95 38.92 57.49	18.45 21.27 18.01	6.88 6.88 6.88	4.65 4.65 4.65	17.77 25.86 42.39	-41.80 -0.70 -169.80	56.60 91.90 -147.60	
MLA00000 MLD0IFRB MLI0IFRB	145.84 113.66 -41.04	108.52 73.34 -4.70	3.95 2.48 17.68	2.78 2.23 2.55	1.04 0.80 2.27	5.54 88.16 114.33	53.72 48.87 53.79	21.58 21.15 21.23	6.88 6.88 6.88	4.65 4.65 4.65	17.22 18.93 19.82	$ \begin{array}{r} -136.10 \\ 65.60 \\ 21.10 \\ -46.40 \end{array} $	-71.80 152.40 124.90 38.90)) }
MNG01FRB MOZ01FRB MRC00000	145.92 24.80 16.88	14.68 106.70 34.37 -7.83	36.12 46.65 -17.36 29.97	0.80 2.57 3.60 3.46	0.80 1.06 1.74 0.91	90.00 13.34 60.34 37.73	40.55 48.87 53.51 49.20	18:75 21.26 20.88 20.86	6.88 6.88 6.88 6.88	4.65	16.61 22.72 31.22 22 57	-39.10 57.00 -10.60 -56.80	68.50 148.90 79.50	
MRL00000 MTN0IFRB MWI0IFRB	141.92 -3.37 12.21	174.93 -10.11 34.10	8.81 19.83 -13.19	2.38 2.71 1.55	1.30 2.26 0.80	107.34 45.50 94.29	53.31 51.68 44.31	21.41 20.54 20.22	6.88 6.88 6.88	4.65	18.31 20.09 15.08	127.50 -63.10 -25.00	179.00 42.70 93.70	1
NCGOIFRB NCL00000 NGROIFRB	-127.21 113.46 59.65	-84.91 166.10 9.20	12.03 12.95 -21.20 17.24	1.01 0.80 2.47	0.80 0.80 1.23	90.00 111.71 90.00 55.81	47.79 47.52 49.78	21.11 20.13 21.14	6.88 6.88 6.88 6.88	4.65	29.78 18.30 31.04 22.91	-13.90 -134.20 113.00 -44.20	5.70 -36.30 114.30 60.70	
NIGOIFRB NIU00000 NMBOIFRB NOR00000	15.30 -122.98 3.90 27.08	8.23 -169.89 18.50 12.81	$9.89 \\ -19.05 \\ -21.10 \\ 63.32$	2.54 0.80 2.63 2.83	1.95 0.80 2.57 0.80	29.59 90.00 39.66	53.95 42.66 51.73 48 23	20.93 18.95 20.54 21.37	6.88 6.88 6.88	4.65 4.65 4.65	18.92 25.23 23.70	-36.90 -175.00 -45.40	54.90 -120.10 82.50	
NPLOIFRB NRUOIFRB NZL00000	114.28 166.90 142.01	84.25 166.90 173.82	28.26 -0.50 -41.46	1.29 0.80 2.64	$0.80 \\ 0.80 \\ 1.45 \\ 0.80 \\ $	163.13 90.00 37.61	43.66 40.73 50.62	20.04 18.08 21.13	6.88 6.88 6.88	4.65	19.32 35.39 17.58	30.30 114.50 134.50	137.60 179.00 179.00	
OCE00000 OMA00000 PAK0IFRB	152.33 -114.85 0.43 33.89	$ \begin{array}{r} 166.77 \\ -141.85 \\ 55.97 \\ 68.53 \end{array} $	-16.11 21.87 29.70	0.80 3.51 1.85 2.22	0.80 2.36 0.80 1.89	90.00 137.48 99.15 108.61	39.76 55.00 45.32 50.68	18.94 21.07 20,68 20.97	6.88 6.88 6.88	4.65	33.41 27.39 17.26	$ \begin{array}{r} 150.90 \\ -175.00 \\ -9.80 \\ 23.00 \end{array} $	179.00 -101.20 122.20	
PHL01FRB PLM00000 PNG01FRB	148.89 -158.70 151.22	122.05 -161.42 148.30	11.36 7.00 -6.64	3.39 0.80 3.34	1.72 0.80 2.28	81.60 90.00 166.75	55.77 40.71 55.94	21.44 18.09 21.01	6.88 6.88 6.88	4.65	25.31 42.10 31.29	74.40 -169.80 104.90	169.10 -147.60 179.00	
POL 00000 PORMDRAZ PRG01FRB	-128.23 13.96 -40.71	-80.30 19.66 -19.03 -58.55	8.42 51.93 37.75 -23.16	0.88 1.41 3.45 1.86	0.80 0.80 1.51	159.52 170.09 174.44 137.73	47.82 44.19 51.70	21.15 20.55 20.98 21.07	6.88 6.88 6.88 6.88	4.65	16.45 15.49 17.77	-129.40 -12.70 -57.40 -101.80	-31.00 50.90 21.10	
PRU00000 PTC00000 QAT00000	*-44.72 -130.85 2.34	-73.50 -130.10 51.69	-25.07 25.50	3.79 0.80 0.80	* * 2.00 0.80 0.80	114.72 90.00 90.00	* 57.15 38.56 39.53	21.47 17.83 18.76	6.88 6.88 6.88	4.65	21.05 43.91 16.02	-120.40 -175.00 -17.10	-29.00 -60.70 120.00	
ROU00000 RRW0IFRB	-3.11 23.26 3.36	25.06 30.00	-21.12 45.76 -2.00	0.80 1.54 0.80	0.80 0.80 0.80	90.00 179.67 90.00	44.32 44.92 39.38	19.49 20.63 18.01	6.88 6.88 6.88	4.65 4.65 4.65	31.78 15.94 22.00	-13.90 -16.40 -31.80	5.70 66.50 91.80	

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PAG. 3

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S 00000 SCN0IFRB SDN0IFRB SDN0IFRB SDN0IFRB SEV0IFRB SSLV0IFRB SSLV0IFRB SSLV0IFRB SSLV0IFRB SSNG00000 SSMG00000 SSMG00000 SSMG00000 SSMG00000 SSMG00000 SSMG00000 SSMG00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 TCH00IFRB SSUR000000 TCH00IFRB SSUR000000 TCH00IFRB SSUR000000 TCH00IFRB SSUR00000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 TUN000000 SSMC0000 SSMC0000 SSMC000000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 SSMC00000 S	$\begin{array}{c} 21.48\\ -69.253\\ 19.253\\ 16.779\\ -130.370\\ 145.370\\ 152.251\\ -51.59\\ -52.251\\ -61.20\\ -6$	$\begin{array}{c} 16.65\\ -62.90\\ 30.88\\ -14.32\\ 159.40\\ -89.00\\ 159.40\\ -89.00\\ 159.40\\ -89.00\\ -170.585\\ -56.90\\ -170.55.29\\ 38.66\\ 17.68\\ -55.29\\ 38.66\\ 17.88\\ -55.29\\ 38.66\\ 17.88\\ -55.29\\ 38.66\\ 17.88\\ -175.09\\ 35.76\\ 179.16\\ 55.76\\ 32.11\\ -56.864\\ 97.20\\ -86.60\\ -65.05\\ 168.50\\ -86.60\\ -86.00\\ -86.60\\ -86.0$	$\begin{array}{c} 60.88\\ 17.33\\ 13.48\\ 13.70\\ -8.69\\ 13.67\\ -14.22\\ 43.93\\ 1.28\\ 6.35\\ 46.96\\ 1.00\\ 46.95\\ 3.93\\ -26.35\\ 46.96\\ 1.00\\ 46.95\\ 3.93\\ -26.35\\ 46.96\\ -21.18\\ 39.06\\ -8.96\\ -21.18\\ 39.06\\ -5.86\\ 24.28\\ 0.91\\ -33.07\\ 48.02\\ 52.68\\ 24.28\\ 0.91\\ -5.86\\ 24.28\\ 0.91\\ -5.86\\ 24.28\\ 0.91\\ -5.86\\ 24.28\\ 0.91\\ -5.86\\ 24.28\\ 0.91\\ -5.86\\ 24.28\\ 0.91\\ -5.86\\ 24.28\\ 0.91\\ -5.86\\ 24.28\\ 0.91\\ -5.86\\ 24.28\\ 0.91\\ -5.86\\ 24.28\\ 0.91\\ -5.86\\ 24.28\\ 0.91\\ -5.86\\ 24.28\\ 0.91\\ -5.86\\ 24.28\\ 0.91\\ -5.86\\ 24.28\\ 0.00\\ 0$	$\begin{array}{c} 1.41\\ 0.80\\ 3.82\\ 1.60\\ 0.80\\ 1.72\\ 0.80\\$	0.80 0.73 0.730 17.30 17.30	$\begin{array}{c} 28.41\\ 90.00\\ 109.52\\ 117.84\\ 90.00\\ 154.09\\ 90.00\\ 90.00\\ 90.00\\ 90.00\\ 90.00\\ 90.00\\ 90.00\\ 24.62\\ 90.00\\ 90.00\\ 24.62\\ 90.00\\ 90.00\\ 172.68\\ 90.00\\ 172.70\\ 106.08\\ 90.00\\ 172.68\\ 90.00\\ 172.68\\ 90.00\\ 172.68\\ 90.00\\ 172.68\\ 90.00\\ 172.68\\ 90.00\\ 172.68\\ 90.00\\ 172.68\\ 90.00\\ 172.68\\ 90.00\\ 172.68\\ 90.00\\ 172.68\\ 90.00\\ 123.77\\ 61\\ 60.38\\ 176.62\\ 5.90\\ 165.38\\ 90.00\\ 124.46\\ 106.07\\ 90.00\\ 95.12\\ 5.90\\ 165.38\\ 90.00\\ 155.61\\ 106.07\\ 90.00\\ 95.12\\ 4.70\\ 155.61\\ 106.07\\ 90.00\\ 90.$	44.59 46.87 56.33 46.165 46.175 47.2557 47.2557 47.2557 47.2557 47.2557 47.2557 47.2557 47	20.94 18.19 20.92 20.86 18.61 19.12 17.80 18.39 19.37 20.63 18.99 18.60 18.43 20.52 20.55 19.14 20.52 20.55 19.14 20.52 20.27 19.02 18.26 18.52 20.32 20.32 20.32 20.32 20.62 20.55 19.14 19.02 18.52 20.32 20.32 20.55 19.14 19.02 18.52 20.32 20.55 19.14 19.02 18.52 20.32 20.55 19.14 19.02 20.55 19.14 20.52 20.55 19.14 20.52 20.55 19.14 20.52 20.55 19.14 20.52 20.27 20.27 20.62 20.27 20.27 20.62 20.27 20.27 20.62 20.27 20.20	6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	$\begin{array}{c} 16.46\\ 16.56\\ 19.632\\ 19.92\\ 19.92\\ 19.92\\ 19.92\\ 19.92\\ 19.92\\ 19.39\\ 19.50\\ 19.50\\ 19.50\\ 19.71\\ 16.835\\ 19.69\\ 19.71\\ 16.835\\ 19.69\\ 19.71\\ 16.835\\ 19.69\\ 19.71\\ 16.835\\ 19.69\\ 19.71\\ 16.835\\ 19.69\\ 19.71\\ 16.835\\ 19.69\\ 19.71\\ 16.835\\ 19.69\\ 19.71\\ 16.835\\ 19.69\\ 19.71\\ 16.835\\ 19.69\\ 19.71\\ 16.835\\ 19.69\\ 19.71\\ 16.85\\ 22.04\\ 18.44\\ 19.79\\ 22.58\\ 18.44\\ 19.79\\ 22.58\\ 18.44\\ 19.79\\ 22.58\\ 18.44\\ 19.79\\ 22.58\\ 18.44\\ 19.79\\ 22.58\\ 18.44\\ 19.79\\ 22.58\\ 18.97\\ 15.41\\ 10.30\\ 14.99\\ 15.41\\ 10.30\\ 10.85$	-7.00 -113.20 -11.60 -62.70 3.100 -140.100 -169.80 -36.500 -13.900 -45.800 -26.800 -26.800 -26.800 -25.700 -21.300 -25.700 -21.300 -175.000 -175.000 -175.000 -175.000 -175.000 -127.300 -21.300 -25.700 -21.300 -25.700 -21.300 -25.700 -21.300 -25.700 -12.300 -25.700 -12.300 -25.700 -12.300 -25.700 -25.700 -21.300 -25.700 -21.300 -25.700 -21.300 -25.700 -21.300 -22.300 -22.300 -22.300 -26.800 -27.900 -27.900 -27.900 -27.900 -27.900 -27.900 -27.900 -26.800 -27.900 -27.900 -27.900 -26.800 -27.900 -27.900 -27.900 -26.800 -27.900 -29.300 -27.900 -29.300 -27.900 -29.300 -29.500 -29.500 -20.500	$\begin{array}{c} 47.\\ -12.\\ 73.\\ 34.\\ 107.\\ -147.\\ 61.\\ 156.\\ 102.\\ 59.\\ 53.\\ -5.\\ 89.\\ 64.\\ 54.\\ 54.\\ 54.\\ 54.\\ 54.\\ 54.\\ 54.\\ 5$	$\begin{array}{c} 1 \\ 0 \\ 0 \\ 3 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$	

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PAG. 5

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1	2	3	4	5	6	7	8	9	10	11	12	13	14
URSSTAD5 URSSTAD6 URSFOT-1 URSFOT-2 URSFOT-3 INSAT-2A INSAT-2B INSAT-2C PNGP1801	85.00 127.95 -13.55 80.00 -168.10 83.00 93.45 74.00 167.60	85.00 128.00 -13.50 80.00 -168.00 81.70 82.00 82.20 157 00	0.00 0.00 0.00 0.00 22.40 21.70 -600	17.30 17.30 17.30 17.30 17.30 17.30 4.10 4.10 4.40 4.40	17.30 17.30 17.30 17.30 17.30 17.30 3.90 3.80 3.80 7.50	90.00 90.00 90.00 90.00 90.00 79.00 17.00 153.00	$\begin{array}{c} 160.00\\ 160.00\\ 160.00\\ 160.00\\ 160.00\\ 63.80\\ 63.80\\ 63.80\\ 63.80\\ 5670\end{array}$	20.20 20.20 12.80 12.80 12.80 30.00 30.00 30.00	15.00 15.00 15.00 15.00 6.88 6.88 6.88	4.65 4.65 4.65 4.65 4.65 4.65 4.65	12.29 13.21 24.11 34.61 32.39 46.83 29.30 51.11	84.90 127.90 -13.60 79.90 -168.10 82.90 93.40 73.90 167.60	85.10 128.10 -13.40 80.10 -167.90 83.10 93.60 74.10
PNGP1B02 PNGP2B01 PNGP2B02	167.60 -174.90 -174.90	198.00 -190.00 -155.00	18.00 -6.00 24.00	2.80 16.00 2.80	2.80 7.50 2.80	90.00 102.00 90.00	56.70 56.70 56.70	125.00 125.00 125.00	6.88 6.88 6.88	12.00 12.00 12.00	57.34 44.32 59.81	167.40 -175.00 -175.00	167.60 -174.80 -174.80

IFRB CONFERENCE PREPARATION

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ANNEX 3

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***** 116 5	WURST SINGLE INTERFERENCES (C/I)	****						
-3.6 SYR00000 21.0 TCD0IFRB	CMEOIFRB 22.06 MTNOIFRB SDNOIFRB 21.84 CAFOIFRB	28.29	ISROIFRB	29.02	LBNOIFRB	31.96		•
20.5 TCH00000 -3.9 TG00IFRB	S 00000 20.35 DDR00000 MTN01FRB 22.44 ZMB01FRB	21.23	AUT00000 CMEDIFRB	21.25 29.56	BUL00000	25.21	D 00000	28.52
59.3 THA00000 -123.1 TKL00000	BRM0IFRB 21.44 NIU00000 26.00							
-127.2 TONOIFRB -61.5 TRD00000	NO INTERFERER VCTOIFRB 19.74 BRBOIFRB	20.31	SUROIFRB	21.68	ATGOIFRB	24.63		
1.3 TUN00000 17.8 TUR00000	LBY00000 20.64 BUL00000 23.89 ARS00000	27.16						
144.6 TUV00000 16.6 TZA0IFRB	CAR00000 18.67 VUT0IFRB ZAI0IFRB 19.84 ARS00000	24.06 24.99	J 00000 GABOIFRB	26.33 26.57	SDNOIFRB	28.02	SEY0IFRB	31.58
-1.6 UAEOIFRB 1.1 UGAOIFRB	ETH00000 20.38 OMA00000 RRW0IFRB 27.54 ZWE00000	20.57 30.21						
-61.6 URG00000 57.8 URS00001	ARGOUDOOD 25.85 BOLOIFRB BRMOIFRB 27.60	26.31						
139.5 URS00002	INSAI-28 19.75 INDOIFRB AUS00000 21.94 J 00000	24.41 31.62						
-62.5 VCT0IFRB	TRD00000 19.97 BRB0IFRB	26.10	ATGOIFRB	29.04				
147.3 VTNOIFRB	MLA00000 25.23 INS0000	26.67	в 00000	28.55				
-158.7 WAK00000 51	NO INTERFERER	28.12	TUVOOOOO	29.68	SLMOIFRB	30.26	FJIOIFRB	30.97
3.8 YEMOIFRB	YMS00000 20.72 NMB0IFRB	24.95	IRQ00000	29.80				
26.6 YUG00000	SUIOIFRB 23.80 HNG00000	24.78 24.62	0MA00000 NOR00000	25.77 26.75	JOROOOOO LIEOIFRB	29.69 28.28	BOT00000 D 00000	29.91 28.80
-4.0 ZMB01FRB	NIGOIFRB 25.45 TGOOIFRB 31.12						N N	
-26.5 URSSTAD1	FLKSTGGL 9.98 B 00000	24.82	NMBOIFRB CHL00000	31.40 28.58	ARG00000	28.62	Ĩ	Č.
35.1 URSSTAD3	ALSU0000 15.66 URSU0003 NOR00000 12.94 FNL00000	30.51 15.56	URS00001	22.76	S 00000	23.81	PAKOIFRB	28.06
85.0 URSSTAD5	URS00002 13.15 IND0IFRB	24.27	CHN00000	30.22	D 00000 URS00001	31.24 25.33	HOL 00000 URS00003	31.75 30.86
-13.5 URSFOT-1	ISL00000 24.17	10.34	UKSUUUUZ	24.45	MNGUIFRB	26.53	J 00000	29.70
-168.1 URSFOT-3 83.0 INSAT-24	NO INTERFERER							
93.5 INSAT-2B 74.0 INSAT-2C	URS00002 30.62			A				
167.6 PNGP1B01 9 167.6 PNGP1B02 9	NRUOIFRB 31.06 NO INTERFERER				m		,	
-174.9 PNGP2B01 10 -174.9 PNGP2B02 10	NO INTERFERER NO INTERFERER		* (Y RY		899au.		J.
				- N		C. C. Stranger		31

IFRB CONFERENCE PREPARATION

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***** THE 5 WORST SINGLE INTERFERENCES (C/I) *****

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-65.5	DOMOIFRB		NO INT	ERFERER								•
14.2	E 00002	53	I 00000	19.73	ALG00000.	20.98	ZAIOIFRB	23.84	P0L00000	23.94	MRC00000	29.24
11.5	EGYOIFRB		ALG00000	24.29	KENOIFRB	27.54	AFG00000	28.03	GRC00000	28.70		
-115.8	EQA00000		CLM00000	22.48	CUB00000	30.25	and the second		•			
~1.4	ETHOOOOO		UAEOIFRB	25.32 🥢	DJIOIFRB	26.08	YMS00000	31.25				
-3.1	F 00000	56	MTNOIFRB	21.58								
144.2	FJIOIFRB		J 00000	23.03	VUTOIFRB	25.50						
-32.8	FLKSTGGL	52	NO INT	ERFERER					.		•	
25.2	FNL00000		NOR00000	20.25	HNG00000	21.35	S 00000	28.94 🚿				
-32.8	G 00000	52	NO INT	ERFERER					r.			
16.8	GABUIFRB	- /	COGOIFRB	19.75	ZAIOIFRB	22.55	TZAOIFRB	25.52	NIGOIFRB	28.19	MRC00000	31.37
-3.1	GDLUUUUU	56	MINUIFRB	30.45								
13.4	GHAUUUUU		NIGOIFRB	24.09	ALGOOOOO	27.63	GRC00000	31.93		*		
58.7	GIBUUUUU	54	UKSUUUUI	28.15								
4.0	GMBUUUUU		GNBUIFRB	21.26	NMBOIFRB	26.62						
2.7	GNBUIFRB		GMBUUUUU	21.29	LBY00000	24.53		÷			•	
27.2	GNEUIFRB		NGRUIFRB	20.37	AGLUIFRB	26.4/			-			
13.5	GREUUUUU			22.51	ALGUUUUU	25.34	POLOOOOO	27.77	BEL00000	28.40 🔪	EGYOIFRB	29.41
-/0.9	GRUUIFRB		DMAUIERB	20.48	GUYUUUUU	26.84						
-126.2	GREUUUUU	22		ERFERER		<u> </u>	ι.					
-124.0		F/	HNDUUUUU	19.70	NCGUIFRB	28.26	\sim	The second se			N	
-59.1	CUTOTERR	56	MINULFRB	30.72	A.D.O.O.O.O.	0/ 75		1 Star				
-158 7	CUMMPAGO	51	SENUUUUU	20.27	AKGUUUUU	26.35	/					
-198.7	GUY00000	51		27 04	CONATERR	70 70	/ TR4	nin wird.			N.	
58 7	86000000	56	THA00000	27.94	SCHUIFKD	50.50	1 Q.	`R\S[]A-			·	
-123 1	нкоссоссо	54	GTM00000	20.12			//	MN STALL			<u></u>	
26 9	HNGOOOOO		D 00000	10 08	YUGOOOOO	20 33	BOLLOOOD	Sales 1	FUL 00000			<i></i>
L	1111000000		00000	1 7 7 1			K H U H H H H H H	2 H 2 M B 2 /		20 21		
16 5			MRC00000	10 05	TODOOOOO	10 71	APSODOOO	21.20	PREDUDUU	27.21	A0100000	20.20
16.5	HOLOOOOO		MRC00000	19.05		19.71	ARS00000	22.38	BEL00000	29.32	TZAOIFRB	29.58
16.5 -69.8 -158.7	HOL00000 HTI0IFRB HWA00000	51	MRC00000 JMC00000	19.05 25.69 FREERER	I 00000 GUY00000	19.71 31.78	ARSOOOOO	22.38	BEL00000	29.32	TZAOIFRB	29.58
16.5 -69.8 -158.7 -158.7	HOL00000 HTI0IFRB HWA00000 HWL00000	51 51	MRC00000 JMC00000 NO INT NO INT	19.05 25.69 ERFERER FRFFRFR	I 00000 GUY00000	19.71 31.78	ARSOOOOO	22.38	BEL00000	29.32	TZAOIFRB	29.58
16.5 -69.8 -158.7 -158.7 15.2	HOL00000 HTI0IFRB HWA00000 HWL00000 I 00000	51 51	MRC00000 JMC00000 NO INT NO INT E 00002	19.05 25.69 ERFERER ERFERER 20.98	I 00000 GUY00000 	19.71 31.78	ARS00000	22.38	BEL00000	29.32	TZAOIFRB	20.20 29.58
16.5 -69.8 -158.7 -158.7 158.7 15.2 96.9	HOL00000 HTI0IFRB HWA00000 HWL00000 I 00000 IND0IFRB	51 51	MRC00000 JMC00000 NO INT NO INT E 00002 URS00002	19.05 25.69 ERFERER ERFERER 20.98 19.76	I 00000 GUY00000 	19.71 31.78 22.09 20.95	ARS00000	22.38	ALG00000	29.32	TZAOIFRB	26.26 29.58 27.97
16.5 -69.8 -158.7 -158.7 15.2 96.9 142.3	HOL00000 HTI0IFRB HWA00000 HWL00000 I 00000 IND0IFRB INS00000	51 51	MRC00000 JMC00000 NO INT NO INT E 00002 URS00002 CAR00000	19.05 25.69 ERFERER ERFERER 20.98 19.76 28.26	I 00000 GUY00000 NIGOIFRB INSAT-2B AUSO000	19.71 31.78 22.09 20.95 31.56	ARS00000	22.38	BEL00000	29.32	BEL00000	26.26 29.58 27.97
16.5 -69.8 -158.7 -158.7 15.2 96.9 142.3 -40.2	HOL00000 HTIOIFRB HWA00000 HWL00000 I 00000 I ND0IFRB INS00000 IRL00000	51 51	MRC00000 JMC00000 NO INT NO INT E 00002 URS00002 CAR00000 PORMDRAZ	19.05 25.69 ERFERER ERFERER 20.98 19.76 28.26 19.16	I 00000 GUY00000 NIGOIFRB INSAT-2B AUSO0000 B 00000	22.09 20.95 31.56 24.04	ARS000000 HOL00000	22.38 26.48 26.23	BEL00000	29.32 27.94	BEL00000	26.26 29.58 27.97
16.5 -69.8 -158.7 -158.7 15.2 96.9 142.3 -40.2 28.4	HOL00000 HTI0IFRB HWA00000 I 00000 I 00000 IND0IFRB INS00000 IRL00000 IRN00000	51 51	MRC00000 JMC00000 NO INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER	I 00000 GUY00000 NIGOIFRB INSAT-28 AUS0000 	22.09 20.95 31.56 24.04	ARS00000 HOL00000 DNK00000	22.38 26.48 26.23	BEL00000	29.32	TZAOIFRB	29.58 27.97
16.5 -69.8 -158.7 -158.7 15.2 96.9 142.3 -40.2 28.4 .3.4	HOL00000 HTI0IFRB HWA00000 I 00000 IND0IFRB INS00000 IRL00000 IRN00000 IRQ00000	51 51	MRC00000 JMC00000 NO INT NO INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT JOR00000	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.40	I 00000 GUY00000 NIG0IFRB INSAT-28 AUS00000 LBY00000	19.71 31.78 22.09 20.95 31.56 24.04 27.93	ARS00000 HOL00000 DNK00000	22.38 26.48 26.23	BEL00000	27.94	BEL00000	29.58 27.97
$ \begin{array}{r} 16.5\\ -69.8\\ -158.7\\ -158.7\\ 15.2\\ 96.9\\ 142.3\\ -40.2\\ 28.4\\ .3.4\\ -17.4 \end{array} $	HOL00000 HTI0IFRB HWA00000 I 00000 IND0IFRB INS00000 IRL00000 IRN00000 IRQ00000 ISL00000	51 51	MRC00000 JMC00000 N0 INT N0 INT E 00002 URS00002 CAR00000 PORMDRAZ N0 INT JOR00000 N0 INT	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.40 ERFERER	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93	ARS00000 HOL00000 DNK00000	22.38 26.48 26.23	BEL00000	27.94	BEL00000	29.58 27.97
16.5 -69.8 -158.7 -158.7 15.2 96.9 142.3 -40.2 28.4 -17.4 -1.0	HOL00000 HTI0IFRB HWA00000 IWD01FRB INS00000 IRL00000 IRL00000 IRL00000 IRN00000 ISL00000 ISL00000 ISR01FRB	51 51	MRC00000 JMC00000 N0 INT N0 INT E 00022 URS00002 CAR00000 PORMDRAZ N0 INT JOR0000 N0 INT LBN0IFRB	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.40 ERFERER ERFERER 19.73	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30	ARS00000 HOL00000 DNK00000 SYR00000	22.38 26.48 26.23 27.76	ALG00000	29.32	BEL00000	29.58 27.97
16.5 -69.8 -158.7 158.7 96.9 142.3 -40.2 28.4 -17.4 -1.0 144.3	HOL00000 HTI0IFRB HWA00000 IWD01FRB INS00000 IRL00000 IRL00000 IRL00000 ISR00000 ISR01FRB J_00000	51 51	MRC00000 JMC00000 NO INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.40 ERFERER 19.73 23.24	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30	ARS00000 HOL00000 DNK00000 SYR00000	22.38 26.48 26.23 27.76	BEL00000 ALG00000	29.32 27.94 31.93	TZAOIFRB BEL00000	29.58 27.97
16.5 -69.8 -158.7 -158.7 15.2 96.9 142.3 -40.2 -40.2 -40.2 -40.2 -17.4 -1.0 144.3 -158.7	HOL00000 HTI0IFRB HWA00000 I WL00000 IND0IFRB INS00000 IRL00000 IRQ00000 ISR0IFRB J 00000 JAR00000	51 51	MRC00000 JMC00000 NO INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000 NO INT	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.40 ERFERER 19.73 23.24 ERFERER 23.24 ERFERER	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30	ARS00000 HOL00000 DNK00000 SYR00000	22.38 26.48 26.23 27.76	EL00000	29.32 27.94 31.93	TZAOIFRB BEL00000	29.58 27.97
$\begin{array}{c} 16.5 \\ -69.8 \\ -158.7 \\ -158.7 \\ 15.2 \\ 96.9 \\ 142.3 \\ -40.2 \\ 28.4 \\ -17.4 \\ -1.0 \\ 144.3 \\ -158.7 \\ -69.2 \end{array}$	HOL00000 HTI0IFRB HWA00000 I 00000 IND0IFRB INS00000 IRL00000 IRL00000 ISL00000 ISL00000 JAR00000 JAR00000	51 51	MRC00000 JMC00000 NO INT NO INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000 NO INT HTI0IFRB	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.24 ERFERER 19.73 23.24 ERFERER 25.69	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72	ARS00000 HOL00000 DNK00000 SYR00000 SCN01FRB	22.38 26.48 26.23 27.76 29.11	EL00000	29.32 27.94 31.93	BEL00000	29.58 27.97
16.5 -69.8 -158.7 -158.7 15.2 96.9 142.3 -40.2 28.4 -17.4 -1.0 144.3 -69.2 -158.7	HOL00000 HTI0IFRB HWA00000 I 00000 IND0IFRB INS00000 IRL00000 IRQ00000 ISL00000 JSR0IFRB J 00000 JAR00000 JAR00000 JON00000	51 51 51	MRC00000 JMC00000 NO INT NO INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000 NO INT HTI0IFRB NO INT	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.40 ERFERER 19.73 23.24 ERFERER 25.69 ERFERER	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72	ARSOOOOO HOLOOOOO DNKOOOOO Syrooooo Scnoifrb	22.38 26.48 26.23 27.76 29.11	EL 00000 AL GOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO	29.32 27.94 31.93	BEL00000	29.58 27.97
16.5 -69.8 -158.7 -158.7 15.2 96.9 142.3 -40.2 28.4 -17.4 -1.0 144.3 -158.7 -69.2 -158.7 -158.7	HOL00000 HTI0IFRB HWA00000 IND0IFRB INS00000 IRL00000 IRL00000 IRL00000 IRN00000 ISR0IFRB J 00000 JAR00000 JAR00000 JON00000 JON00000	51 51 51	MRC00000 JMC00000 NO INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000 NO INT HTI0IFRB NO INT HTI0IFRB	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.24 ERFERER 19.73 23.24 ERFERER 25.69 ERFERER 22.43	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72 22.64	ARS00000 HOL00000 DNK00000 SYR00000 SCN01FRB LBY00000	22.38 26.48 26.23 27.76 29.11 24.02	ETH00000	29.32 27.94 31.93 26.05	ISROIFRB	29. 58 27. 97 29. 85
16.5 -69.8 -158.7 158.7 96.9 142.3 -40.2 28.4 -17.4 -17.4 -158.7 -158.7 -69.2 -158.7 -158.7 11.7	HOL00000 HTI0IFRB HWA00000 I ND0IFRB INS00000 IRL00000 IRL00000 ISR01FRB J 00000 JAR00000 JAR00000 JOR00000 JOR00000 KEN0IFRB	51 51 51	MRC00000 JMC00000 NO INT NO INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000 NO INT HTI0IFRB NO INT IRQ00000 SOM0IFRB	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.40 ERFERER 23.24 ERFERER 25.69 ERFERER 25.69 ERFERER 22.43 19.87	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72 22.64 23.97	ARS00000 HOL00000 DNK00000 SYR00000 SCN0IFRB LBY00000 EGY0IFRB	22.38 26.48 26.23 27.76 29.11 24.02 24.83	ETH00000 ALG00000 ETH00000 AFG00000	29.32 27.94 31.93 26.05 29.46	ISROIFRB MWIOIFRB	29.85 30.24
16.5 -69.8 -158.7 -158.7 15.2 96.9 142.3 -40.2 28.4 -17.4 -1.0 144.3 -158.7 -69.2 -158.7 -158.7 11.7 11.7	HOL00000 HTI0IFRB HWA00000 I ND0IFRB INS00000 IRU00000 IRU00000 ISR0IFRB J 00000 JAR00000 JAR00000 JAR00000 JAR00000 JON00000 KEN0IFRB KER00000	51 51 51 51	MRC00000 JMC00000 NO INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000 NO INT HTI0IFRB NO INT IRQ00000 SOM0IFRB CHN00000	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.40 ERFERER 23.40 ERFERER 23.24 ERFERER 25.69 ERFERER 25.69 ERFERER 22.43 19.87 30.30	I 00000 GUY00000 INIGOIFRB INSAT-2B AUS00000 LBY00000 JOR00000 LBN01FRB ZAI01FRB MLD01FRB	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72 22.64 23.97 30.52	ARS00000 HOL00000 DNK00000 SYR00000 SCN0IFRB LBY00000 EGY0IFRB	22.38 26.48 26.23 27.76 29.11 24.02 24.83	ETH00000 ALG00000 ETH00000 AFG00000	27.94 27.94 31.93 26.05 29.46	ISROIFRB MWIOIFRB	29.85 30.24
16.5 -69.8 -158.7 15.2 96.9 142.3 -40.2 28.4 -17.4 144.3 -158.7 -158.7 1.7 113.5 147.3	HOL00000 HTI0IFRB HWA00000 I 00000 IND0IFRB INS00000 IRL00000 IRQ00000 ISL00000 ISR0IFRB J 00000 JAR00000 JAR00000 JAR00000 KEN0IFRB KER00000 KIR0IFRB	51 51 51 51 51	MRC00000 JMC00000 NO INT NO INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000 NO INT HTI0IFRB NO INT IRQ00000 SOM0IFRB CHN00000 CAR00000	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.240 ERFERER 19.73 23.24 ERFERER 25.69 ERFERER 22.43 19.87 30.30 22.03	I 00000 GUY00000 I NIGOIFRB INSAT-28 AUS00000 LBY00000 JOR00000 JOR00000 LBN01FRB ZAI0IFRB MLD0IFRB VTN01FRB	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72 22.64 23.97 30.52 30.95	ARS00000 HOL00000 DNK00000 SYR00000 SCN01FRB LBY00000 EGY01FRB MRL00000	22.38 26.48 26.23 27.76 29.11 24.02 24.83 31.14	PRL00000 BEL00000 ALG00000 ETH00000 YMS00000 AFG00000	29.32 27.94 31.93 26.05 29.46	ISROIFRB MWIOIFRB	29.85 30.24
$\begin{array}{c} 16.5\\ -69.8\\ -158.7\\ -158.7\\ 15.2\\ 96.9\\ 142.3\\ -40.2\\ 28.4\\ -17.4\\ -1.0\\ 144.3\\ -158.7\\ -169.2\\ -158.7\\ 1.7\\ 113.5\\ 147.3\\ 148.6\\ \end{array}$	HOL00000 HTI0IFRB HWA00000 IND0IFRB INS00000 IRL00000 IRL00000 IRL00000 IRN00000 ISR0IFRB J 00000 JAR00000 JAR00000 JAR00000 JAR00000 KER0IFRB KER00000 KIR0IFRB KER00000	51 51 51 51	MRC00000 JMC00000 NO INT NO INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT HTI0IFRB CAR00000 SOM0IFRB CHN00000 CAR00000 PHL0IFRB	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.240 ERFERER 19.73 23.24 ERFERER 25.69 ERFERER 22.43 19.87 30.30 22.03 18.20	LBN01FRB ZAUS00000 LBY00000 LBY00000 LBY00000 LBY00000 LBN01FRB ZA101FRB MLD01FRB J 00000	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72 22.64 23.97 30.52 30.95 24.13	ARS00000 HOL00000 DNK00000 SYR00000 SCN0IFRB LBY00000 EGY0IFRB MRL00000	22.38 26.48 26.23 27.76 29.11 24.02 24.83 31.14	ETH00000 ALG00000 ETH00000 AFG00000	29.32 27.94 31.93 26.05 29.46	TZAOIFRB BEL00000 ISROIFRB MWIOIFRB	29.85 30.24
-69.8 -158.7 -158.7 96.9 142.3 -40.2 28.44 -17.4 -17.4 -144.3 -158.7 -69.2 -158.7 113.5 147.3 148.6 0.0	HOL00000 HTI0IFRB HWA00000 IND0IFRB INS00000 IRL000000 IRL000000 IRL000000 ISR01FRB J AR00000 JAR00000 JAR00000 JAR00000 JAR00000 KEN0IFRB KER00000 KIR0IFRB KIR00000 KIR0IFRB	51 51 51 50	MRC00000 JMC00000 NO INT E 00002 CAR00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000 NO INT HTI0IFRB CAR00000 SOM0IFRB CHN00000 CAR00000 PHL0IFRB OMA00000	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.40 ERFERER 23.40 ERFERER 23.24 ERFERER 25.69 ERFERER 25.69 ERFERER 23.40 ERFERER 24.40 ERFERER 24.40 ERFERER 25.69 ERFERER 25.69 ERFERER 24.40 ERFERER 25.69 ERFERER 25.69 ERFERER 25.69 ERFERER 25.69 ERFERER 25.69 ERFERER 25.00 22.00 20.00 22.00 20.00 22.00 20.00 22.00 20.00 22.00 20.0	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72 22.64 23.97 30.52 30.95 24.13 26.38	ARS00000 HOL00000 DNK00000 SYR00000 SCN0IFRB LBY00000 EGY0IFRB MRL00000 IRQ00000	22.38 26.48 26.23 27.76 29.11 24.02 24.83 31.14 27.13	ALGOOOOO ALGOOOOO ETHOOOOO AFGOOOOO AFGOOOOO	27.94 27.94 31.93 26.05 29.46 31.27	TZAOIFRB BEL00000 ISROIFRB MWI0IFRB	29. 58 27. 97 29. 85 30. 24
-69.8 -158.7 -158.7 96.93 142.33 -40.2 28.44 -17.44 -17.44 -158.72 -158.72 -158.72 -158.72 -158.72 -158.72 -158.72 -158.72 -158.72 -169.22 -158.72 -169.22 -158.72 -169.22 -158.72 -169.22 -158.72 -169.22 -158.72 -169.22 -158.72 -169.22 -158.72 -169.22 -158.72 -169.22 -158.72 -169.22 -158.72 -169.22 -158.72 -169.22 -158.72 -159.72 -158.72	HOL00000 HTI0IFRB HWA00000 I ND0IFRB INS00000 IRL00000 IRL00000 ISR01FRB J 00000 JOR00000 JOR00000 JOR00000 KEN0IFRB KER00000 KIR0IFRB	51 51 51 50 8 C	MRC00000 JMC00000 NO INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000 NO INT HTI0IFRB NO INT HTI0IFRB CAR00000 SOM0IFRB CHN00000 CAR00000 PHL0IFRB OMA00000 URSSTAD6	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.40 ERFERER 23.24 ERFERER 23.24 ERFERER 25.69 ERFERER 22.03 19.87 30.30 22.03 19.74	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72 22.64 23.97 30.52 30.95 24.13 26.38	ARS00000 HOL00000 DNK00000 SYR00000 SCN0IFRB LBY00000 EGY0IFRB MRL00000 IRQ00000	22.38 26.48 26.23 27.76 29.11 24.02 24.83 31.14 27.13	ALGOOOOO ALGOOOOO ETHOOOOO AFGOOOOO AFGOOOOO	27.94 27.94 31.93 26.05 29.46 31.27	TZAOIFRB BEL00000 ISROIFRB MWIOIFRB	29.85 30.24
$\begin{array}{c} 16.5\\ -69.8\\ -158.7\\ -158.7\\ 96.9\\ 142.3\\ -40.2\\ 28.4\\ -17.4\\ -1.0\\ 144.3\\ -158.7\\ -69.2\\ -158.7\\ 113.5\\ 147.3\\ 148.6\\ 129.2\\ 0.1\\ \end{array}$	HOL00000 HTI0IFRB HWA00000 I ND0IFRB INS00000 IRU00000 IRU00000 ISR0IFRB J 00000 JAR00000 JAR00000 JAR00000 KEN0IFRB KER00000 KIR0IFRB KRE00000 LA00IFRB	51 51 50 8 C	MRC00000 JMC00000 NO INT NO INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000 NO INT IRQ00000 SOM0IFRB CHN00000 PHL0IFRB OMA00000 URSSTAD6	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.40 ERFERER 23.40 ERFERER 23.24 ERFERER 25.69 ERFERER 22.43 19.87 30.30 22.03 18.20 19.74 19.74	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72 22.64 23.97 30.52 30.95 24.13 26.38 20.41	ARS00000 HOL00000 DNK00000 SYR00000 SCN0IFRB LBY00000 EGY0IFRB MRL00000 IRQ00000 KWT00000	22.38 26.48 26.23 27.76 29.11 24.02 24.83 31.14 27.13 25.05	ETH00000 ALG00000 ETH00000 AFG00000 DJ101FRB SYR00000	29.32 27.94 31.93 26.05 29.46 31.27 29.42	TZAOIFRB BEL00000 ISROIFRB MWIOIFRB	29.65 29.58 27.97 29.85 30.24
$\begin{array}{c} 16.5 \\ -69.8 \\ -158.7 \\ -158.7 \\ 96.9 \\ 142.3 \\ -40.2 \\ 28.4 \\ -17.4 \\ -1.0 \\ 144.3 \\ -158.7 \\ -158.7 \\ 1.7 \\ 113.5 \\ 147.3 \\ 148.6 \\ 129.2 \\ 0.1 \\ 129.2 \\ 0.1 \\ 142.6 \\ 129.2 \\ 0.1 \\ 142.6 \\ 129.2 \\ 0.1 \\ 142.6 \\ 129.2 \\ 0.1 \\ 142.6 \\ 129.2 \\ 0.1 \\ 142.6 \\ 129.2 \\ 0.1 \\ 142.6 \\ 129.2 \\ 0.1 \\ 142.6 \\ 129.2 \\ 0.1 \\ 142.6 \\ 129.2 \\ 0.1 \\ 142.6 \\ 129.2 \\ 0.1 \\ 142.6 \\ 129.2 \\ 0.1 \\ 142.6 \\ 129.2 \\ 120.2 \\ 1$	HOL00000 HTI0IFRB HWA00000 IND0IFRB INS00000 IRL00000 IRL00000 IRQ00000 ISR0IFRB J 00000 JAR00000 JAR00000 JAR00000 JAR00000 KEN0IFRB KER00000 KIR0IFRB KER00000 KIR0IFRB KER00000 LBN0IFRB LBN0IFRB	51 51 50 8 C	MRC00000 JMC00000 NO INT NO INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000 NO INT HTI0IFRB NO INT IRQ00000 SOM0IFRB CHN00000 CAR00000 PHL0IFRB OMA00000 URSSTAD6 ISR0IFRB	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.24 ERFERER 25.69 ERFERER 25.69 ERFERER 22.43 19.87 30.30 22.03 18.20 19.60 19.74 19.79 19.20	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72 22.64 23.97 30.52 30.95 24.13 26.38 20.41 29.12	ARS00000 HOL00000 DNK00000 SYR00000 SCN0IFRB LBY00000 EGY0IFRB MRL00000 IRQ00000 KWT00000 NIG0IFRB	22.38 26.48 26.23 27.76 29.11 24.02 24.83 31.14 27.13 25.05 29.18	ALGOOOOO ALGOOOOO ETHOOOOO AFGOOOOO DJIOIFRB SYROOOOO GHAOOOOO	29.32 27.94 31.93 26.05 29.46 31.27 29.42 30.37	TZAOIFRB BEL00000 ISROIFRB MWIOIFRB	29. 85 30. 24 29. 65
$\begin{array}{c} 16.5\\ -69.8\\ -158.7\\ -158.7\\ 96.9\\ 142.3\\ -40.2\\ 28.4\\ -17.4\\ -158.7\\ -69.2\\ -158.7\\ -158.7\\ 113.5\\ 144.6\\ 0.0\\ 129.2\\ 144.6\\ 0.2\\ 144.6\\ 28.5\end{array}$	HOL00000 HTI0IFRB HWA00000 IND0IFRB INS00000 IRL00000 IRL00000 IRL00000 IRL00000 IRN00000 ISR0IFRB J 000000 JAR00000 JAR00000 JAR00000 JAR00000 JAR00000 JAR00000 LSR0IFRB KER00000 KIR0IFRB KER00000 LA00IFRB LBR0IFRB LBR0IFRB LBR0IFRB	51 51 50 8 C	MRC00000 JMC00000 NO INT NO INT E 00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000 NO INT HTI0IFRB CAR00000 SOM0IFRB CHN00000 CAR00000 PHL0IFRB OMA00000 URSSTAD6 ISR0IFRB ZAI0IFRB TUN00000	19.05 25.69 ERFERER 20.98 19.76 28.26 19.76 28.26 19.16 ERFERER 23.40 ERFERER 23.40 ERFERER 23.24 ERFERER 25.69 ERFERER 25.69 ERFERER 25.69 ERFERER 23.24 ERFERER 25.69 22.43 19.87 30.30 19.74 19.74 19.74 19.74 20.30 20.50	I 00000 GUY00000 IIINSAT-2B AUS00000 LBY00000 JOR00000 LBY00000 LBN0IFRB ZAI0IFRB MLD0IFRB J 00000 LBN0IFRB J 00000 LBN0IFRB	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72 22.64 23.97 30.52 30.52 24.13 26.38 20.41 29.12 23.70	ARS00000 HOL00000 DNK00000 SYR00000 SCN0IFRB LBY00000 EGY0IFRB MRL00000 IRQ00000 KWT00000 NIG0IFRB	22.38 26.48 26.23 27.76 29.11 24.02 24.83 31.14 27.13 25.05 29.18	ETH00000 ALG00000 ETH00000 AFG00000 AFG00000 DJI0IFRB SYR00000 GHA00000	29.32 27.94 31.93 26.05 29.46 31.27 29.42 30.37	TZAOIFRB BEL00000 ISROIFRB MWIOIFRB	29. 85 30. 24 29. 65
-69.8 -158.7 -158.7 96.9 142.3 -40.2 28.4 -17.4 -17.4 -158.7 -69.2 -158.7 -158.7 113.55 144.3 -158.7 113.55 147.3 148.60 129.2 0.1 14.665 28.4	HOL00000 HTI0IFRB HWL00000 IND0IFRB INS00000 IRN00000 IRN00000 IRN00000 ISR01FRB J AR00000 JAC00000 JAC00000 JAC00000 JAC00000 JAC00000 KEN0IFRB KER00000 KIR00FRB KER00000 LA00IFRB LBR01FRB LBR01FRB LBR01FRB	51 51 50 8 C	MRC00000 JMC00000 JMC00000 N0 INT E 00002 CAR00000 PORMDRAZ N0 INT JOR00000 N0 INT LBN0IFRB CAR00000 N0 INT IRQ00000 SOM0IFRB CAR00000 SOM0IFRB CAR00000 SOM0IFRB CAR00000 SOM0IFRB CHN00000 CAR00000 PHL0IFRB OMA00000 SMR00000 SMR00000 SMR00000 SMR00000	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.40 ERFERER 23.40 ERFERER 23.24 ERFERER 25.69 ERFERER 22.03 19.87 30.30 22.03 18.20 19.74 19.79 19.20 30.80 19.70	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72 22.64 23.97 30.52 30.95 24.13 26.38 20.41 29.12 22.79	ARS00000 HOL00000 DNK00000 SYR00000 SCN0IFRB LBY00000 EGY0IFRB MRL00000 IRQ00000 KWT00000 NIG0IFRB YUG00000	22.38 26.48 26.23 27.76 29.11 24.02 24.83 31.14 27.13 25.05 29.18 24.92	ETHOOOOO ALGOOOOO ETHOOOOO AFGOOOOO AFGOOOOO DJIOIFRB SYROOOOO GHAOOOOO SUIOIFRB	29.32 27.94 31.93 26.05 29.46 31.27 29.42 30.37 28.54	TZAOIFRB BEL00000 ISROIFRB MWIOIFRB	29. 58 27. 97 29. 85 30. 24 29. 65 31. 53
$\begin{array}{c} 16.5\\ -69.8\\ -158.7\\ -158.7\\ 96.9\\ 142.3\\ -40.2\\ 28.4\\ -17.4\\ -17.4\\ -17.4\\ -158.7\\ -69.2\\ -158.7\\ 113.5\\ 147.3\\ 148.6\\ 0.129.2\\ 0.1\\ 14.6\\ 28.5\\ 0.1\\ 14.6\\ 28.5\\ 0.1\\ 11\\ 14.6\\ 28.5\\ 0.1\\ 11\\ 14.6\\ 28.5\\ 0.1\\ 11\\ 14.6\\ 129.2\\ 0.1\\ 11\\ 14.6\\ 129.2\\ 0.1\\ 11\\ 14.6\\ 129.2\\ 0.1\\ 11\\ 14.6\\ 129.2\\ 0.1\\ 11\\ 14.6\\ 129.2\\ 0.1\\ 11\\ 14.6\\ 129.2\\ 11\\ 14.6\\ 129.2\\ 11\\ 14.6\\ 129.2\\ 11\\ 14.6\\ 129.2\\ 11\\ 14.6\\ 129.2\\ 11\\ 14.6\\ 129.2\\ 11\\ 14.6\\ 129.2\\ 11\\ 14.6\\ 129.2\\ 11\\ 14.6\\ 14.6\\ 129.2\\ 11\\ 11\\ 14.6\\ 129.2\\ 11\\ 14.6\\ 129.2\\ 11\\ 11\\ 14.6\\ 129.2\\ 11\\ 11\\ 14.6\\ 129.2\\ 11\\ 11\\ 14.6\\ 129.2\\ 11\\ 11\\ 14.6\\ 129.2\\ 11\\ 11\\ 14.6\\ 129.2\\ 120\\ 11\\ 11\\ 14.6\\ 120\\ 120\\ 11\\ 11\\ 14.6\\ 120\\ 120\\ 120\\ 120\\ 120\\ 120\\ 120\\ 120$	HUL00000 HTI0IFRB HWL00000 I ND0IFRB INS00000 IRL00000 IRL00000 IRQ00000 ISR0IFRB J 00000 JOR00000 JOR00000 JOR00000 JOR00000 KER0IFRB KER00000 KIR0IFRB LBR0IFRB LBR0IFRB LBR0IFRB	51 51 50 8 C	MRC00000 JMC00000 NO INT NO INT E 00002 CAR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000 NO INT HTI0IFRB CAR00000 SOM0IFRB CAR00000 SOM0IFRB CHN00000 SOM0IFRB CHN00000 URSSTAD6 ISR0IFRB TUN00000 SMR00000 BCI00000 BCI00000	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.40 ERFERER 23.24 ERFERER 24.03 19.73 20.30 19.74 19.77 20.20 19.77 20.00 10.00	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72 22.64 23.97 30.52 30.95 24.13 26.38 20:41 29.12 22.79 27.20	ARS00000 HOL00000 DNK00000 SYR00000 SCN0IFRB LBY00000 EGY0IFRB MRL00000 IR000000 KWT00000 NIG0IFRB YUG00000	22.38 26.48 26.23 27.76 29.11 24.02 24.83 31.14 27.13 25.05 29.18 24.92	ETHOOOOO ALGOOOOO ETHOOOOO AFGOOOOO AFGOOOOO DJIOIFRB SYROOOOO GHAOOOOO SUIOIFRB	29.32 27.94 31.93 26.05 29.46 31.27 29.42 30.37 28.54	TZAOIFRB BEL00000 ISROIFRB MWIOIFRB	29. 58 27. 97 29. 85 30. 24 29. 65 31. 53
$\begin{array}{c} 16.5\\ -69.8\\ -158.7\\ -158.7\\ 96.9\\ 142.3\\ -40.2\\ 28.4\\ -17.4\\ -1.0\\ 144.3\\ -158.7\\ -69.27\\ 113.5\\ 147.3\\ 148.6\\ 129.2\\ 0.1\\ 14.6\\ 28.5\\ 0.1\\ 17.7\\ 113.7\\ 142.6\\ 28.5\\ 0.1\\ 17.7\\ 11.7\\ 113.7\\ 147.3\\ 148.6\\ 0\\ 129.2\\ 0.1\\ 17.7\\ 11.7\\ 113.7\\ 147.3\\ 148.6\\ 0\\ 129.2\\ 0.1\\ 17.7\\ 11.7\\ 113.7\\ 147.3\\ 148.6\\ 0\\ 129.2\\ 0.1\\ 17.7\\ 11.7\\ 113.7\\ 147.3\\ 148.6\\ 0\\ 129.2\\ 0.1\\ 17.7\\ 11.7\\ 113.7\\ 113.5\\ 147.3\\ 148.6\\ 0\\ 129.2\\ 0.1\\ 17.7\\ 11.7\\ 113.5\\ 147.3\\ 148.6\\ 0\\ 129.2\\ 0.1\\ 17.7\\ 11.7\\ 113.5\\ 147.3\\ 148.6\\ 0\\ 129.2\\ 0.1\\ 17.7\\ 11.7\\ 113.5\\ 147.3\\ 148.6\\ 0\\ 129.2\\ 0.1\\ 17.7\\ 11.7\\ 113.5\\ 147.3\\ 148.6\\ 0\\ 129.2\\ 0.1\\ 17.7\\ 11.7\\ 113.5\\ 147.3\\ 148.6\\ 0\\ 129.2\\ 0.1\\ 17.7\\ 113.5\\ 147.3\\ 147.3\\ 148.6\\ 0\\ 129.2\\ 0.1\\ 17.7\\ 113.5\\ 147.3\\ 14$	HUL00000 HTI0IFRB HWL00000 IND0IFRB INS00000 IRN00000 IRN00000 IRN00000 ISR0IFRB J 000000 JAR00000 JAR00000 JAR00000 JAR00000 JAR00000 LSR0IFRB KER00000 KEN0IFRB KER00000 LA00IFRB LBY0000 LA00IFRB LBY0000	51 51 50 8 C	MRC00000 MRC00000 MC00000 MC00000 MC0002 URS00002 CAR00000 PORMDRAZ NO INT JOR00000 PORMDRAZ NO INT JOR00000 NO INT LBN0IFRB CAR00000 NO INT IRQ00000 NO INT IRQ00000 CHN00000 CAR00000 PHL0IFRB CHN00000 URSSTAD6 SAT0IFRB ZAI0IFRB TUN00000 BOT00000 BOT00000	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.40 ERFERER 23.40 ERFERER 23.40 ERFERER 23.40 ERFERER 22.43 19.73 23.24 ERFERER 22.43 19.74 19.79 19.20 19.77 26.10 24.81 19.77 26.10 24.81 19.77 26.20 27.26 27	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72 22.64 30.95 30.95 24.13 26.38 20.41 29.12 22.79 27.20	ARS00000 HOL00000 DNK00000 SYR00000 SYR00000 SCN0IFRB LBY00000 EGY0IFRB MRL00000 IRQ00000 KWT00000 NIG0IFRB YUG00000 I 00000	22.38 26.48 26.23 27.76 29.11 24.02 24.83 31.14 27.13 25.05 29.18 24.92 29.16	ETHOOOOO ALGOOOOO ETHOOOOO AFGOOOOO AFGOOOOO DJIOIFRB SYROOOOO GHAOOOOO SUIOIFRB EGYOIFRB	29.32 27.94 31.93 26.05 29.46 31.27 29.42 30.37 28.54 29.37	TZAOIFRB BEL00000 ISROIFRB MWIOIFRB	29.85 30.24 29.65 31.53
$\begin{array}{c} 16.5\\ -69.8\\ -158.7\\ -158.7\\ 96.9\\ 142.3\\ -40.2\\ 28.4\\ -17.4\\ 0\\ 144.3\\ -158.7\\ -158.7\\ 1.7\\ -69.2\\ -158.7\\ 11.7\\ 113.5\\ 147.3\\ 148.6\\ 0\\ 129.2\\ 0.1\\ 14.6\\ 28.5\\ 0.1\\ 11.7\\ 17.4\\ \end{array}$	HOL00000 HTI0IFRB HWL00000 IND0IFRB INS00000 IRL00000 IRL00000 IRL00000 IRL00000 IRN00000 ISR0IFRB J 00000 JAR00000 JAR00000 JAR00000 JAR00000 JAR00000 JAR00000 JAR00000 JAR00000 JAR00000 LISR0IFRB LBR0IFRB LBR0IFRB LBR0IFRB LBR0IFRB LBC0IFRB LS00IFRB LS00IFRB LS00IFRB	51 51 50 3 C	MRC00000 JMC00000 N0 INT E 00002 URS00002 CAR00000 PORMDRAZ NO INT JDR00000 JDR00000 NO INT LBN0IFRB CAR00000 NO INT LBN0IFRB CAR00000 NO INT HTI0IFRB CAR00000 SOM0IFRB CHN00000 SOM0IFRB CHN00000 SOM0IFRB ZAI0IFRB ZAI0IFRB ZAI0IFRB SMR00000 BOT00000 BEL00000	19.05 25.69 ERFERER 20.98 19.76 28.26 19.16 ERFERER 23.240 ERFERER 23.240 ERFERER 25.69 ERFERER 22.43 19.87 30.30 22.03 18.20 19.74 19.79 19.20 30.80 19.77 26.10 24.81 29.02	I 00000 GUY00000 	19.71 31.78 22.09 20.95 31.56 24.04 27.93 25.30 26.72 22.64 23.97 30.52 30.95 24.13 26.38 20.41 29.12 22.79 27.20	ARS00000 HOL00000 DNK00000 SYR00000 SCN0IFRB LBY00000 EGY0IFRB MRL00000 IR000000 KWT00000 NIG0IFRB YUG00000 I 00000	22.38 26.48 26.23 27.76 29.11 24.02 24.83 31.14 27.13 25.05 29.18 24.92 29.16	ALGOOOOO ALGOOOOO ETHOOOOO AFGOOOOO AFGOOOOO DJIQIFRB SYROOOOO GHAOOOOO SUIQIFRB EGYQIFRB	29.32 27.94 31.93 26.05 29.46 31.27 29.42 30.37 28.54 29.37	TZAOIFRB BEL00000 ISROIFRB MWIOIFRB	29. 58 27. 97 29. 85 30. 24 29. 65 31. 53

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***** THE 5 WORST SINGLE INTERFERENCES (C/I) ***** ORB-POS NAME ID INTERFERER GUY00000 21.43 -69.4 ABW00000 SCNOIFRB 23,44 JMC00000 28.30 113.5 ADL00000 31.44 50 CHN00000 11.6 AFG00000 EGYOIFRB 22.07 INSAT-2B BHR00000 22.42 **KENOIFRB** 25.79 30.86 INSAT-2A 30.86 19.5 AFS00000 SDNOIFRB 24.82 -- NO INTERFERER --E 00002 24.16 -- NO INTERFERER --CHL00000 20.49 60.1 AGLOIFRB 12.3 ALG00000 EGYOIFRB 31.33 -158.7 ALS00000 51 -58.0 ARG00000 20.49 16.4 ARS00000 TZAOIFRB SDNOIFRB 27.57 TUR00000 31.86 -32.8 ASCSTHTC -61.2 ATGOIFRB 52 -- NO INTERFERER ATN00000 TRD00000 19.74 BRBOIFRB 23.22 SURDIFRB 23.68 26.03 VCTOIFRB 29.26 -59.6 ATN00000 139.7 AUS00000 ATGOIFRB 23.69 INS00000 26.34 URS00003 27.61 22.2 AUT00000 R0U00000 19.73 TCH00000 19.87 S 00000 21.49 D 00000 23,91 HNG00000 26.39 -39.8 B 00000 -- NO INTERFERER ------117.0 BAHOIFRB CUBODODO 19.81 CLM00000 19.83 13.3 BEL00000 GRC00000 21.54 I 00000 21.73 00002 F 23.06 ALG00000 25.04 LUX00000 25.60 17.3 BENOIFRB CTI00000 20.12 NIGOIFRB GHADOOOO 20.25 30.27 -32.8 BERCAYMS -- NO INTERFERER 52 -----45.7 BFAOIFRB **VEN00000** 28.06 MLIOIFRB 30.33 11.1 BHR00000 EGYOIFRB 17.66 ARS00000 25.47 SLV0IFRB 27.23 AFG00000 21.67 -128.4 BLZ00000 -60.4 BOL0IFRB PNROIFRB 21.65 NCGOIFRB 22.06 GTM00000 29.12 ARG00000 23.24 CHL00000 **T**REE 28.55 19.72 2.0 BOT00000 NMBOIFRB YMS00000 30.35 -60.6 BRBOIFRB ATGOIFRB 22.89 20.22 TRD00000 BOLOIFRB 21.69 VCTOIFRB 25.57 ATN00000 30.16 57.3 BRMOIFRB URS00001 THA00000 29.02 INS00000 153.0 BRUOIFRB 29.12 17.55 PHLOIFRB 31.08 19.6 BUL00000 SDNOIFRB TUR00000 19.74 TCH00000 24.17 AFS00000 26.55 R0U00000 29.88 TCDOIFRB 22.7 CAFOIFRB 22.63 SDNOIFRB 28.94 -- NO INTERFERER -82.5 CANNE000 --112.7 CANNW000 MEX00000 18.10 144.9 CAR00000 J 00000 22.91 INS00000 24.51 MLA00000 29.75 152.4 CBG0IFRB SNG00000 26.19 VTNOIFRB 31.68 -56.4 CHL00000 ARG00000 19.73 112.8 CHN00000 -- NO INTERFERER -113.8 CKH00001 OCE00000 19.77 -115.6 CKH00002 OCE00000 20.97 EQA00000 31.40 -117.9 CLM00000 EQA00000 26.03 129.0 CLN00000 URSSTAD6 19.76 LAOOIFRB 27.55 -3.5 CME0IFRB MTNOIFRB 24.34 14.2 CNR00000 ZAIOIFRB 53 22.53 MRC00000 23.17 ALG00000 24.76 18.4 COGOIFRB SDN0IFRB 21.69 GABOIFRB 26.82 ZAIOIFRB 28.07 TCD01FRB 30.43 CAFOIFRB 30.94 59.4 COMOIFRB THA00000 31.45 12 83433 -61.7 CPV0IFRB SRLOIFRB 25.10 SEN00000 28.35 17.9 CTI00000 BENOIFRB 23.33 -129.7 CTR00000 SLVOIFRB 23.58 PNROIFRB 24.14 NCGOIFRB 26.34 -115.7 CUB00000 BAHOIFRB 19.74 MEX00000 23.95 EQA00000 24.02 CLM00000 29.32 59.4 CVA0IFRB MLT00000 20.70 NGROIFRB 25.06 URS00001 26.04 THA00000 31.65 60.1 CYP00000 58.7 CYPSBA00 23.9 D 00000 18.9 DDR00000 0.2 DJI0IFRB CYPSBA00 19.98 MLT00000 26.24 AGLOIFRB 28.20 URS00001 28.72 NGROIFRB 30.54 54 🤇 19.75 19.76 URS00001 CYP000003 19.97 HNG00000 R0U00000 20.63 AUT00000 21.21 YUG00000 27.98 TCH00000 28.19 17.56 19.73 MCOOIFRB 20.82 TCH00000 SDN0IFRB 27.06 HOL00000 27.89 S 00000 28.09 YMS00000 ETH00000 19.74 00000AM0 19.91 KWT00000 30.34 YEMOIFRB 30.63 -70.2 DMAOIFRB SCNOIFRB 20.03 GRDOIFRB 20.56 -39.2 DNK00000 -39.2 DNK00002 55 55 IRL00000 26.39 IRL00000

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B 00000

31.71

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B-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

<u>Document 184-E</u> 6 September 1988 <u>Original</u>: English

SUB-WORKING GROUP 6-B-1

Luxembourg

PROPOSALS FOR THE CONFERENCE

ARTICLE 13

Proposed Modification to Article 13

LUX/184/1

MOD 1548

(2) A notice of a change in the basic characteristics of an assignment already recorded, as specified in Appendix 3 (except the name of the station or the name of the locality in which it is situated or the date of bringing into use), shall be examined by the Board <u>on the basis of technical information</u> <u>available to it to determine the possibility of unacceptable</u> <u>interference and according to No. 1503, and, where appropriate,</u> Nos. 1504, 1505, 1506 to 1508 and 1509 to 1512. <u>Where the finding</u> <u>is favourable with respect to Nos. 1503 to 1512 and, if the</u> <u>proposed change does not result in unacceptable interference, it</u> <u>shall be recorded. Furthermore, and the provisions of</u> Nos. 1515 to 1546 inclusive shall apply. Where the change should be recorded, the recorded assignment shall be amended according to the notice.

<u>Reasons</u>: To ensure that the Board is able in its examination to take all available technical information into account.

CONF\ORB-2\DOC\184E.TXS

WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT <u>88</u>-SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Addendum 1 to Document 185-E 14 September 1988 Original: English

WORKING GROUP 5-B

Japan

PROPOSAL RELATING TO THE REGULATORY PROCEDURES OF THE PLAN FOR THE FEEDER LINKS FOR THE BROADCASTING-SATELLITE SERVICE

Agenda item 6

1. Introduction

We have proposed the basic concept of the regulatory procedures for the feeder links for the broadcasting-satellite service in Document 185, where we state that the regulatory procedure should be integrated into current Appendix 30A.

In Appendix 30A the coordination procedures for the stations in the fixed-satellite service are not fully described when the frequency assignments to the feeder links to the satellite-broadcasting service are involved.

2. Proposal

Japan proposes that Article 7 should be revised to include coordination procedures between feeder link space stations and space stations in the fixed-satellite service so that the feeder links for the broadcasting-satellite service will be fully compatible with the fixed-satellite service, as described in the annex to this document.

Annex: 1

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ANNEX

ARTICLE 7

J/185/1

 MOD Procedure Concerning Coordination, Notification and Recording in the Master/Register of Frequency Assignments to Stations in the Fixed-Satellite Service (space-to-Earth) in Region 2 in the Band-17.7-17.8 GHz, in the Bands 17.7-18.1 GHz in Regions 1 and 3 and 17.7-17.8 GHz in Region 2, when Frequency Assignments to Feeder-Link Station for the Broadcasting-Satellite Service Appearing in the Region 2 Plan Are Involved

J/185/2

ADD 7.1 Coordination between receiving earth stations in the fixedsatellite service (space-to-Earth) and transmitting earth stations for the feeder links.

J/185/3

MOD 7.1.1 -7.1 The provisions of Armex 4 to this Appendix Articles 11 and 13 and Appendix 29 of the Radio Regulations are applicable to receiving earth transmitting space stations in the fixed satellite service of Region 2 in the band 17.7 17.8 GHz bands 17.7 - 18.1 GHz in Regions 1 and 3 and 17.7 - 17.8 GHz in Region 2 together with the provisions of Armex 4 to this Appendix, except that in relationship with feeder-link stations in Region 2, the threshold value mentioned in Appendix 29 to the Radio Regulations is replaced by those given in Annex 4 to this Appendix. When the threshold values provided in these provisions are exceeded in relation to the assignments to the stations for the fixedsatellite service, those assignments are supposed to be affected.

J/185/4

MOD 7.1.2 7.2 Administrations planning to implement assignments for receiving earth stations in the 17.7 - 17.8 18.1 GHz band in fixed-satellite service (space -to-Earth) should evaluate the level of interferance that might be caused by the closest feeder-link earth station located on the border of the territory of another administration. In cases where the entry in the Plan or the Master Register contains information on specific earth stations, the level of interference shallbe assessed on the basis of coordination contours calculated in accordance with Annex 4 to this Appendix. Should this administration find that interference may be caused by the feeder-link earth stations to its planned fixed-satellite service receiving earth station, it may request the administration responsible for the feeder-link earth station to indicate the planned actual locations of the feeder-link earth station. J/185/5

MOD 7.1.3 7.3 An administration which receives a request under 7.2 7.1.2 shall, within a period of three months, indicate the actual locations of its earth stations and communicate it to the Board in order to update the Plan.

J/185/6

(MOD)7.1.4 7.4

J/185/7 MOD 7<u>.1.5</u> 7.5 If the administration responsible for the feeder-link transmitting earth stations does not communicate to the Board, within a period of three months , the actual locations of its feeder-link earth stations, this administration may implement its feeder-link earth station provided it does not cause harmful interference to the fixed-satellite service receiving earth station under consideration.

J/185/8

ADD 7.2 Coordination between the feeder link receiving space station and fixed satellite service (space-to-Earth) transmitting space station

J/185/9

ADD 7.2.1 The provisions of Article 11 and Article 13 and the Appendix 29 of the Radio Regulations are applicable to the feeder link receiving space station in the bands 17.7 - 18.1 GHz in Regions 1 and 3 and 17.7 - 17.8 GHz in Region 2 together with the provisions of Annex 4 to this Appendix, except that in relation with feeder link stations in Region 2, the threshold value mentioned in Appendix 29 to the Radio Regulations is replaced by those given in Ammex 4 to Appendix. When the threshold values provided in these provisions are this exceeded in relation to the assignments to the stations for the feeder-link service, those assignments are supposed to be affected.

J/185/10

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ADD 7.2.2 The frequency assignments of the stations for the fixed satellite service (space-to- Earth), which is to be coordinated with under the provision of 7.2.1 are either of the followings:

> (a) Those of the space station in the fixed satellite service (space-to-Earth) in conformity with the provision of Radio Regulation No 1503 with its frequency or part of the spectrum overlapping the frequency assignment in conformity with the Plan and, which exceed the threshold value fixed in Annex 4 to this Appendix.

- 4 -ORB(2)/185(Add.1)-E

(b) Those exceeding the threshold value fixed in Annex 4 to this Appendix excluding those which are recorded in the International Frequency Master Register or for which the coordination in accordance with the provision of Article 11 of the Radio Regulations has been completed or is now in progress.

5 5 12

14114

J/185/11

The administration planning a frequency assignment to a transmitt-ADD 7.2.3 ing space station in the fixed satellite service (space-to-Earth) in the 17.7 -18.1 GHz frequency band shall have to estimate the degree of radio interference based on the provision of paragraph 7.2.2 in relation with the feeder link receiving space station of another administration. The administration planning a new frequency assignment to a transmitting space station shall send the information specified in Appendix 3, Section A and D, of the Radio Regulations both to the administration responsible for the feeder link receiving space station and to the Board and request the commencement of coordination. The administration responsible for the feeder link receiving space station shall immediately send the acknowledgement of the receipt of the information through a telegram to the administration planning a frequency assignment to the transmitting space station. It shall also send its copy to the Board. The administration seeking coordination shall, if it does not receive the acknowledgement within 30 days after the dispatch of the coordination data, send a telegram asking for the acknowledgement, and the administration receiving the telegram shall make a reply within a period of 15 days.

J/185/12

ADD 7.2.4 When the administration responsible for the feeder-link receiving space station receives the coordination data under 7.2.3, it shall assess whether the interference is harmful or not and notify its response to the administration seeking coordination within a period of three months. In the case of the response of disagreement, it shall show appropriate suggestions for the solution of the problem. The copy shall be also sent to the Board.

J/185/13

ADD 7.2.5 If the administration seeking coordination does not receive the reply by the final day of the three-month period, it may ask for the assistance of the Board with respect to this problem. J/185/14

ADD 7.2.6 If the administration responsible for the feeder link receiving space station reveals unfavorable assessment under 7.2.4, it is possible to demand additional information necessary for assessment of interference of the administration seeking coordination.

J/185/15

ADD 7.2.7 When the administration responsible for the feeder-link receiving space station receives the additional information mentioned in 7.2.6, it shall decide on whether the interference is harmful or not within a period of three months. The result of the decision shall be notified to the government seeking coordination and the Board.

In the assessment about harmful interference mentioned in 7.2.4 and herein, Annexes 1 and 4 to this Appendix, the tecnical standards of IFRB and relevant Recommendations of the CCIR shall be employed.

J/185/16

ADD 7.2.8 The agreement mentioned in 7.2.4 may be given for a fixed period of time. In this case, a copy shall be also sent to the Board.

J/185/17

ADD 7.2.9 If there is a difference of opinion with respect to interference under 7.2.4 and 7.2.7, between the administration seeking coordination and the administration responsible for the feeder-link receiving space station or if coordination between these administrations is impossible, the administration seeking coordination may request the assistance of the Board.

J/185/18

ADD 7.2.10 If the request for assistance in 7.2.5 or 7.2.9 is made or if the acknowledgement in 7.2.3 and the decision in 7.2.7 are not made, the Board shall take the steps shown hereunder and follow the procedure in Article 8 of this Appendix:

- (a) The Board shall dispatch a telegram reguesting an immediate acknowledgement to the administration concerned with respect to 7.2.3.
- (b) The Board shall dispatch a telegram requesting an immediate decision with respect to 7.2.5 or 7.2.9 to the administration concerned.
- (c) With respect to 7.2.5, the Board shall assess interference and make a notice about the result of the assessment to the administration seeking coordination and the administration responsible for the feeder link receiving space station.

(d) If a difference in opinion remains between the administrations concerned with respect to 7.2.9, it is possible to request the additional information necessary for assessment of interference from the administration concerned. Based on the information, the Board shall make recommendations by showing the result of the assessment of interference and suggestions for resolving the problem.

1. 1. 1.

. . .

(e) If the coordination between the administrations concerned is impossible with respect to 7.2.9, the Board shall take the place of the administration responsible for the feeder link receivingspace station and conduct coordination with the administration seeking coordination. In this case, the Board shall respect the opinion of the administration responsible for the feeder link receiving space station.

J/185/19

ADD 7.2.11 If the administration responsible for the feeder link receiving space station fails to give a decision based on 7.2.4 and 7.2.7 by the specified date, it shall promise not to raise objection with respect to harmful interference through the use of the frequency assignment of the administration which sought coordination.

J/185/20

ADD 7.2.12 If there is a difference in opinion between the administration seeking coordination and the administration responsible for the feeder-link receiving space station, the administration seeking coordination shall promise not to notify the Board of the frequency assignment in question and not to commence the use of it excluding the cases in which the assistance of the Board has already been requested.

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 185-E 6 September 1988 Original: English

WORKING GROUP 5-B

<u>Japan</u>

PROPOSALS RELATING TO THE REGULATORY PROCEDURES OF THE PLAN FOR THE FEEDER LINKS FOR THE BROADCASTING-SATELLITE SERVICE

Agenda item 6

1. <u>Introduction</u>

The WARC ORB(2) Conference is to establish the Plan for the feeder links for the broadcasting-satellite service operating in the 12 GHz band in Regions 1 and 3. For maintaining the Plan it is also important to establish the provisions of the regulatory procedure.

At present for the broadcasting-satellite service the Appendix 30 to the Radio Regulations is applied to the three Regions. Considering this it is desirable that a single consolidated regulatory procedure should be equally applicable to all the Regions.

It is preferable that the provisions for the regulatory procedure are concise. In addition we would present our basic views which should be taken into account to establish the provisions for the regulatory procedure for the feeder-link Plan.

2. <u>Proposals</u>

For the regulatory procedures of the Plan for the feeder links for the broadcasting-satellite service, we propose the following:

2.1 <u>Modify</u> the current Appendix 30A in order to be applicable to all three Regions for the feeder-link Plan, using frequency bands of both 14 GHz and 17 GHz.

2.2 <u>Clarify</u> the condition where a proposed modification is considered modification of the Plan.

2.3 <u>Revise</u> Article 7 in order that the new Article 7 fully accommodates coordination procedure between the feeder-link stations and the stations of the fixed satellite service.

2.4 In case the Conference decides to permit use of up-link power control, introduce the condition on which the power control is permissible and the procedure to give maximum value of control.

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WARC ON THE USE OF THE GEOSTATIONARY SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 186-E 9 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 5

SUMMARY RECORD

OF THE

FOURTH MEETING OF COMMITTEE 5

(BROADCASTING SATELLITE SERVICE (BSS) MATTERS AND ASSOCIATED PROCEDURES)

Monday, 5 September 1988, at 1400 hrs

Chairman: Mr. D. SAUVET-GOICHON (France)

Subjects discussed:

Documents

1. Approval of the summary records of the first and second meetings 122, 131 2. Oral report of the Chairmen of Working Groups 5-A and 5-B 3. Introduction of documents concerning terms of reference of Committee 5: 3.1 Item 3 (Resolution 505) 40, 49, 54, 60, 65, 73, 86, 99, 107, 116, 134, 141 3.2 Item 5 (HDTV) 3, 12, 36, 37, 42, 49, 54, 60, 65, 87, 88, 102

1. <u>Approval of the summary records of the first and second meetings</u> (Documents 122 + Corr.1, 131)

The summary records of the first and second meetings of the Committee, as contained in Documents 122 + Corr.1 and 131, were <u>approved</u>. (In the English version of the Corrigendum to Document 122 the word "very" in the last phrase of the first paragraph of 1.2 should be corrected to read "every".)

2. Oral report of the Chairmen of Working Groups 5-A and 5-B

2.1 The <u>Chairman of Working Group 5-A</u> said that his Group had not met since his previous report but that work was progressing, in Sub-Working Groups and ad hoc Groups, on preparation for the first planning exercise. He asked whether, as was customary, the IFRB would be representing the interests of administrations not present at the Conference, especially with regard to planning. He further asked whether information would be provided by the IFRB on coordination work carried out prior to the Conference on the BSS feeder-link plan, under Resolution 102.

2.2 In reply, the <u>Chairman</u> noted that a document was being prepared by the IFRB for presentation to the Conference. <u>Mr. Brooks</u> (IFRB), confirmed that the Board could ensure that standards adopted by the Conference were within a range acceptable to absentee administrations but stressed that the Board was not empowered to take decisions on behalf of administrations.

The Chairman of Working Group 5-B said that, at its first meeting, 2.3 Working Group 5-B had set up two Sub-Working Groups: 5-B-1, chaired by Mr. Selwyn, of the United States of America, to deal with the regulatory aspects in association with Appendices 30 and 30A as well as with RR 480 and Resolution 2 (SAT-R2); and 5-B-2, chaired by Mr. Zeitoun, of Canada, to deal with Resolution 505 and possible provisions for HDTV satellite broadcasting. A document would be issued giving the terms of reference in detail. Annex 4 to Appendix 30A had been discussed on the basis of Document 39. It had been concluded that the parameter (DT/T)' should be used under fading conditions for the determination, when coordination was required between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link plan in the frequency band 17.7 to 18.1 GHz. The question of antipodal or near-antipodal satellite interference had been taken up again and would be dealt with in the Sub-Working Group. CCIR Reports 999 and 1010 could form the basis of work on methods for the determination of the coordinOtion area around a feeder-link station in the frequency band 17.7 to 18.1 GHz. There had also been discussion of DT/T threshold values that would be needed in the band 17.3 to 17.8 GHz to determine when coordination was required to protect a frequency assignment to the fixed-satellite service in the earth-to-space direction. The Sub-Working Group was to complete the study and establish an acceptable text for Annex 4 of Appendix 30A. Although some concern had been expressed, there had been no objection in principle to the inclusion of Resolution 2 (SAT-R2) in the Radio Regulations for Region 2. Discussion on whether or not those provisions could be made applicable to other regions had been suspended until Sub-Working Group 5-B-1 had drawn up an acceptable text for Region 2. Footnote 480 remained to be dealt with.

3. Introduction of documents concerning terms of reference of Committee 5

3.1 <u>Item 3 (Resolution 505)</u> (Documents 40, 49, 54, 60, 65, 73, 86, 99, 107, 116, 134, 141)

Document 40

3.1.1 The <u>delegate of Bulgaria</u> questioned whether the Conference had the right to consider the range 0.5 - 3 GHz, when Resolution 505 gave the range 0.5 - 2 GHz.

3.1.2 The <u>delegate of Italy</u> pointed out that Document 40 stated "... preferably in the range 0.5 - 2 GHz".

3.1.3 The <u>delegate of the United Kingdom</u> explained that the intent of Document 40 had been to recommend that the Plenipotentiary Conference consider the frequency range 0.5 - 3 GHz for a selective reallocation conference. He recalled that WARC MOB-87 had considered the need to look at the range 1 - 3 GHz for new mobile and mobile-satellite services. A future conference could well consider the complete range 0.5 - 3 GHz.

3.1.4 The <u>delegate of Canada</u> noted that agenda item 9 referred to Recommendation 2 of the First Session which in turn referred to a frequency of operation within or outside but near the range 0.5 - 2 GHz.

Document 49

3.1.5 The <u>delegate of Australia</u> said that his Administration had a strong interest in seeing a workable sound-broadcasting service available to those administrations wishing to use it but considered that further study, especially of frequency assignment and sharing conditions, was necessary. He drew attention to proposal AUS/49/43, contained in Document 49, which suggested modification to Resolution 505.

Document 54

3.1.6 The <u>delegate of Japan</u> presented the proposal of his Administration relating to the satellite sound-broadcasting systems in the UHF band, as contained in Annex 3 to Document 54.

Document 60

3.1.7 The <u>delegate of Canada</u> said that, while it would be feasible to provide a sound-broadcasting service in the UHF band to vehicular receivers, the frequency band 0.5 - 2 GHz was heavily used by various terrestrial services in all countries and CCIR studies had shown that it would not be feasible to share frequencies in the same location, although geographic sharing might be possible under certain conditions. Further studies should be carried out in the 0.5 - 2.7 GHz band and their results reported to a future conference, as indicated in proposal CAN/60/290, contained in Document 60.

Document 65

3.1.8 The <u>delegate of Algeria</u> drew the attention of the Committee to proposal ALG/65/8, as contained in Document 65.

Document 73

3.1.9 The <u>delegate of New Zealand</u> presented proposal NZL/73/5, as set out in Document 73.

Documents 86, 99 and 107

3.1.10 Documents 86 (Senegal), 99 (Mexico) and 107 (Paraguay) were introduced by the respective Delegations.

Document 116

3.1.11 The <u>delegate of Chile</u> introduced proposal CHL/116/12, as contained in Document 116.

Document 134

Document 134 was noted and referred to Working Group 5-B for consideration.

Document 141

3.1.12 The <u>delegate of India</u> drew attention to proposal IND/141/35, as contained in Document 141.

3.1.13 In reply to the question by the <u>delegate of the United Kingdom</u> on whether that proposal should not be left to Committee 6 for discussion, the <u>Chairman</u> said that the possible extension of the terms of reference of Committee 5 would be discussed later in Plenary.

3.1.14 The <u>representative of the CCIR</u>, commenting on proposals for CCIR studies, said that it was inappropriate for the CCIR to study spectrum allocation as that was the prerogative of competent administrative radio conferences. The CCIR could, however, study sharing criteria and the pertinent technical characteristics. In view of the extensive studies already carried out, future studies should be confined to new information.

3.1.15 The <u>delegate of the United States of America</u> said that it would be useful to the CCIR if the Conference were to provide guidance on future CCIR studies.

3.2 <u>Item 5 (HDTV)</u> (Documents 3, 12, 36, 37, 42, 49, 54, 60, 65, 87, 88, 102)

3.2.1 The <u>Chairman</u> pointed out that the Frequency Allocation Table contained an allocation of the band 22.5 - 23 GHz for the BSS service in Regions 2 and 3, shared by other services under Article 14 and that the First Session had called for a study of an appropriate frequency band for HDTV without prejudice to those existing allocations.

The representative of the CCIR, said that the results of the CCIR 3.2.2 intersessional work were described in Chapter 7 of Part II of the CCIR Report, a Chapter which comprised nearly 40% of the intersessional report on the BSS. Several developments had led to the First Session decision to consider HDTV broadcasting by satellite: first, HDTV signals could provide a significant improvement in quality and realism over 525/625 line systems; secondly, the implementation of HDTV BSS was being considered by some administrations; and thirdly, a world-wide frequency allocation to the BSS suitable for HDTV transmission would be desirable to facilitate the implementation of a unique world-wide standard for HDTV transmission by satellite. In carrying out its work, the CCIR had emphasized that the technical means of developing HDTV for the BSS should ensure a very high picture quality in order to secure the main advantage of HDTV as compared to convention systems. In addition, an allocation to the BSS for HDTV should allow for a sufficient number of programmes in order to stimulate the interest of industry and broadcasting in developing the new service. There were several conflicting objectives which required a careful balance when establishing system parameters for the satellite broadcasting of HDTV, including picture quality. the number of programmes, bandwidths and receiver complexity. The CCIR had concluded

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that it was not possible to define a unique set of system parameters, and its report to the Second Session attempted to show clearly the relationship between the factors involved and to indicate the advantages and disadvantages of the possible choices.

The general conclusion reached was that HDTV broadcasting should provide the potential of picture quality that came as close as possible to that of the studio signal for reception in homes. To allow for the introduction of wide RF band HDTV on a world-wide basis, a world-wide allocation to the BSS was sought for a total bandwidth of about 500 MHz, preferably not above 23 GHz. Four additional conclusions reached were, first, that both analogue and digital systems were feasible; secondly, that all systems needed a certain amount of bandwidth compression; thirdly, that narrow RF band systems, operating in a 24 - 27 MHz channel, were characterised by relatively high degrees of bandwidth compression and by analogue modulation; and fourthly, that wide RF band systems, both analogue and digital, required an RF channel bandwidth of the order of 50 - 120 MHz.

Document 12

3.2.3 The <u>delegate of the United States of America</u> introduced the considerations set out on pages 60 to 62 of the document, with special emphasis on the draft Resolution in proposal USA/12/79 on the continuation of studies to find a suitable band for the BSS, preferably on a world-wide basis, to accommodate HDTV.

Document 36

3.2.4 The <u>delegate of Brazil</u> introduced proposal B/36/1, to the effect that, owing to problems associated with rain attenuation in tropical and equatorial areas, the 23 GHz band should not be used for planning on a world-wide basis, but that the 12 GHz band would be more appropriate.

Documents 42 + Corrs. 1, 2, 3, and 37

3.2.5 The <u>delegate of the Netherlands</u>, introducing Document 42 on behalf of the 21 delegations listed in it and its corrigenda, said that, owing to profound differences of opinion between the administrations concerned, the CEPT countries were not in a position to recommend a single band for HDTV on a world-wide basis. He drew special attention to proposal CEPT/42/6, containing a draft Recommendation to be submitted to the Plenipotentiary Conference, the Administrative Council and the CCIR for appropriate action.

3.2.6 The <u>delegate of India</u>, referring to proposal CEPT/42/1, questioned the need for special regulatory provisions to introduce HDTV into the 12 GHz band, since HDTV was only one form of television, for which there was no separate definition. The <u>delegate</u> of the Netherlands replied that special provisions were required because of the high degree of compression involved in HDTV.

3.2.7 The <u>delegate of Spain</u> said that his Administration's paper (Document 37) was similar in content to Document 42, except that Spain was prepared to specifiy certain bands to be considered for wideband HDTV, as set out in <u>recommends</u> 1 of the draft Recommendation in proposal E/37/5.

Document 49

3.2.8 The <u>delegate of Australia</u> introduced his Administration's proposals AUS/49/44 and 45, recommending specific bands for HDTV with due consideration for feeder links.

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Documents 54, 60, 65, 87 and 102

3.2.9 The <u>delegate of Japan</u> drew attention to proposal J/54/50 that the Conference should take no decision on the frequency band and that the CCIR should continue its studies of sharing conditions and suitable bands on a world-wide basis. The <u>delegate of</u> <u>Canada</u> introduced draft Resolution MM in proposal CAN/60/289, to the effect that the results of further CCIR studies should be submitted to a future WARC competent to take the necessary decisions. The <u>delegate of Algeria</u> said that proposal ALG/65/9 also entailed further studies by the CCIR. The <u>delegate of Senegal</u> pointed out that proposal SEN/87/1 called for a Resolution inviting the CCIR to continue its studies, and the <u>delegate of Mexico</u> said that the purpose of proposal MEX/102/1 was to entrust consideration of the results of CCIR studies to a future competent WARC.

Document 88

The Committee <u>took note</u> of proposal VEN/88/16, which would be referred to Working Group 5-B.

3.2.10 The <u>Chairman</u>, summing up the discussion, said it was clear that the Committee would have to draft a Resolution or Recommendation referring the necessary decisions to a future competent WARC and incorporating the main considerations raised in the documents introduced. Any new papers on the subject would be forwarded to the competent Working Groups.

The meeting rose at 1535 hours.

The Secretary:

The Chairman:

G. MESIAS

D. SAUVET-GOICHON

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

<u>Corrigendum 1 to</u> <u>Document 187-E</u> 19 September 1988 <u>Original</u>: French

COMMITTEE 6 WORKING GROUP OF THE PLENARY

<u>France</u>

Replace the text of Annex 1 (Draft Resolution [xy]) by the following text:

ANNEX 1

F/187/1

ADD

DRAFT RESOLUTION [xy]

Method of Calculation for Determining if Coordination is Required Between Geostationary-Satellite Networks Sharing the Same Frequency Bands: Complement of the Method Described in Appendix 29

The World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Second Session - Geneva, 1988),

<u>considering</u>

a) that the method described in Appendix 29 to the Radio Regulations, while easy to use, is imprecise and does not guarantee that all cases of potential interference will be detected;

b) that texts available in CCIR Study Group 4 provide information on possible means of improving the accuracy of the method without altering the principle involved or affecting its simplicity;

c) that making the method more precise would serve to reduce the number of superfluous instances of coordination, thereby relieving administrations of an administrative burden and unnecessary costs;

d) that before taking a final decision on the use of a variant of the method, it would be advisable to assess the benefits to be derived from it;

<u>resolves</u>

1. that administrations should be asked to use the threshold values in Table 1 instead of the single value of [4%] whenever the data referred to in Appendix 3 or <u>invites</u> 1 below are available;

invites

1. administrations as far as possible to supply the following information within the framework of item 4 of Section F of Appendix 4:

- If available, indicate, for each Earth-to-space service area, the types of carriers involved and, for each type, the maximum spectral power density (dB(W/Hz)) to be delivered to the antenna of the transmitting earth station (the bandwidth over which this is averaged depends on the nature of the service concerned) for each size of transmitting earth station antenna.
- If available, indicate, for each space-to-Earth service area, the types of carriers involved and, for each type, the maximum spectral power density (dB(W/Hz)) to be delivered to the transmitting antenna of the space station (the bandwidth over which this is averaged depends on the nature of the service concerned).

See Table 1.

2. the CCIR to pursue its studies in order to determine the most appropriate threshold values for various types of carrier.

	FDM - FM	Digital	Single channel	FM-TV
FDM-FM	11	8	9	. 11
Digital	9	9	9	9
Single channel	9	9	9	2
FM-TV	4	4	4	5

TABLE 1

CONF\ORB-2\DOC\187C1E.TXS

ORDOS WARC ON THE USE OF THE GEOSTATIONARY SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT Document 187-E 6 September 1988 Original: French

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 6 WG/PL

France

PROPOSALS FOR THE WORK OF THE CONFERENCE

(Agenda items 3 and 4)

DRAFT RESOLUTION [XY] AND AMENDMENTS TO APPENDIX 4

As noted by the CCIR in its Report to the Conference and by various administrations, the method currently used to determine whether coordination is required is imprecise. Although it is extremely simple, this method, which is described in Appendix 29 to the Radio Regulations, frequently gives rise to the conclusion that coordination is required when in fact subsequent detailed calculations show that no acceptable interference actually occurs. Conversely, it can happen that the 4% threshold value advocated in the text now in force is not adequate to protect certain transmissions from interference caused by television carriers. This is true, in particular, of the single channel carriers frequently used for rural telecommunications.

To remedy this state of affairs, the French Administration proposed that this inadequate single threshold of 4% be replaced by a small number of thresholds related to the types of the wanted and interfering carriers involved (see Document 21). Whilst acknowledging the great advantages of such an approach, the Working Group of the Plenary merely increased the threshold from 4 to 6%, a measure which does not solve the problems mentioned in the previous paragraph.

In order to check the validity of its idea and to help administrations which so desire to reduce the number of superfluous coordinations and ensure that they do not overlook any cases of harmful interference, France proposes that the Conference should adopt a <u>Resolution inviting the administrations to use this variant</u> of the Appendix 29 method. The Resolution also calls upon the CCIR to pursue work on the subject and proposes that the question of replacing the single threshold value by a set of values according to the type of the wanted and interfering carrier involved be considered at a future conference (see Annex 1).

Minor amendments would also be required to Appendix 4 to request administrations to supply wherever possible the information necessary to apply this variant of the $\Delta T/T$ method (see Annex 2). It might also be desirable to make reference to the possible use of this Resolution in Section I of Article 11.

ANNEX 1

F/187/1

ADD

DRAFT RESOLUTION [XY]

Method of Calculation for Determining if Coordination is Required Between Geostationary-Satellite Networks Sharing the Same Frequency Bands: Variant of the Method Described in Appendix 29

The World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and on the Planning of Space Services Utilizing It (Geneva, 1988),

<u>considering</u>

a) that the method described in Appendix 29 to the Radio Regulations, while easy to use, is imprecise and does not guarantee that all cases of potential interference will be detected;

b) that texts available in CCIR Study Group 4 provide information on possible means of improving the accuracy of the method without altering the principle involved or affecting its simplicity;

c) that making the method more precise would serve to reduce the number of superfluous instances of coordination, thereby relieving administrations of an administrative burden and unnecessary costs;

d) that before taking a final decision on the use of a variant of the method, it would be advisable to assess the benefits to be derived from it;

e) that application of the variant requires only minor amendments to Appendices 4 and 29 of the Radio Regulations;

resolves

1. that administrations shall supply the data indicated in item 4 e) of Sections C and D of Appendix 4, insofar as they are available;

2. that administrations shall use the threshold values in Table 1 instead of the single value of [4%] whenever the data referred to in resolves 1 are available;

invites the CCIR

to pursue its studies in order to determine the most appropriate threshold values for various types of carrier.

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TABLE	1
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		FDM-FM	Digital	Single channel	FM-TV
	FDM-FM	11	8	9	11
	Digital	9	9	21	9
	Single channel	9	9	9	2
	FM-TV	4	4	34	5
	<u></u>		· · · · · · · · · · · · · · · · · · ·	• • • • • • • • • • • • • • • • • • •	

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- 4 -ORB(2)/187-E

ANNEX 2

Amendments to Appendix 4

F/187/2

Section C, item 4

ADD

e) If available, indicate, for each Earth-to-space service area, the types of carriers involved¹ and, for each type, the maximum spectral power density $(dB(W/Hz))^2$ to be delivered to the antenna of the transmitting earth station (the bandwidth over which this is averaged depends on the nature of the service concerned) for each size of transmitting earth station antenna.

F/187/3

Section D, item 4

ADD e) If available, indicate, for each space-to-Earth service area, the types of carriers involved¹ and, for each type, the maximum spectral power density (dB(W/Hz))² to be delivered to the transmitting antenna of the space station (the bandwidth over which this is averaged depends on the nature of the service concerned).

Notes to Sections C and D

F/187/4

ADD

MOD

¹ See Resolution [XY], Table 1.

F/187/5

 $\frac{\pm 2}{2}$ The most recent version of CCIR Report 792 should be used to the extent applicable in calculating the maximum power density per Hz.

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WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 188-E 6 September 1988 Original: English

COMMITTEE 6

FIRST REPORT OF WORKING GROUP 6-C TO COMMITTEE 6

1. Working Group 6-C held its first meeting on 5 September. The terms of reference for the Group as contained in Document 138, were adopted, noting the addition of agenda item 12.

2. The attribution of documents as shown in Document 138 was amended. A corrigendum to Document 44 was added, along with those pertinent proposals contained in Documents 70(D), 54(J), 88(VEN), 103(MEX), 106(PRG), 109(PRG), 117(F), and 141(IND). Document 58 was removed from the attribution list as it directly refers more to the work of Working Group 6-A.

3. The IFRB Report (Document 11) on the Accuracy of the master register and distribution of IFRB seminar documents was noted. The Group believed that paragraph 5.2 of that Report, dealing with suspended assignments under Article 13, should be considered by Working Group 6-B.

3.1 The Group agreed to permit the Working Group Chairman to draft a Resolution dealing with future review and update of the master register. The Resolution would use as a basis, Resolution No. 2 from the Report of the First Session, and ITU Resolution No. 9 from the 1979 WARC. This Resolution is under preparation and will be examined at a later meeting of the Working Group.

3.2 The Group noted the efforts of the IFRB to distribute seminar documents to administrations. The Working Group expressed their appreciation to the IFRB for this effort.

4. Proposals concerning Article 8 changes contained in Document DT/17 were examined, with the following results:

4.1 IND/141/38 and 39, proposals to add a country footnote to permit India to use the band 1 517 - 1 521 MHz for sound BSS, were deferred pending decisions in Committee 5.

4.2 CAN/60/5 and 6 and J/53/21, new footnote incorporating reference to proposed new Article 11A or the FSS Allotment Plan, were deferred pending decisions in Working Group 6-B and Committee 4.

4.3 J/54/47 and USA/56/9-11 were also deferred pending decisions in Committee 5. One administration was of the opinion that the power flux-density values shown in USA/56/10 (ADD RR 839A) were not in accordance with the terms of reference of the Conference because of their possible impact on the terrestrial radio services. The advice of Committee 6 is requested.

4.4 J/53/22 and J/54/5, NOC to RR 858, was adopted (see Annex).

4.5 CAN/60/4A, a modification to RR 863, was agreed, to add "except Canada" to this footnote (see Annex).

4.6 USA/12/16, MOD RR 884, to correct a typographical error, was adopted (see Annex).

5. Document DT/18, a proposed note to Committee 4 through Committee 6, forwarding certain proposals on definitions concerning the Allotment Plan, was adopted, with one addition. The text of that note was forwarded to Committee 6 in Document 181.

6. Three documents were examined concerning feeder links in the fixed-satellite service for the mobile-satellite service. These documents, 6(Rev.), 43 + Corr., and AUS/49/27, were discussed at some length. Some administrations were of the opinion that in order to provide for the service now, it was necessary to move forward with the Resolution contained in Document 43. They believe that the Resolution draws attention to the problem of providing mobile-satellite feeder links and reinforces the work of the CCIR. Other administrations questioned the relevance of this topic, vis-a-vis the agenda of this Conference, as the work of the CCIR was still on-going. The Secretariat was requested to obtain a copy of the CCIR Circular-letter of 29 June, forwarding draft new Questions from CCIR Study Group 8 to administrations for comment, and the results of any discussions held at the Administrative Council this summer. It was decided to continue informal discussions on the issue, and to request also the advice of Committee 6.

> L.M. PALMER Chairman of Working Group 6-C

Annex: 1

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ANNEX

- 1) NOC 858
- 2) MOD 863 The use of the band 14.5 14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe (except Canada) and for Malta.

3) MOD 884 In the band 31 - 31.3 GHz the power flux-density limits specified in No. 2542 2582 shall apply to the space research service.

INTERNATIONAL TELECOMMUNICATION UNION ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 189-E 6 September 1988 Original: English

Source: Document DT/25

SUB-WORKING GROUP 5-A-2

NOTE FROM THE CHAIRMAN OF SUB-WORKING GROUP 5-A-2

ORB-88 FEEDER-LINK SYSTEM

As requested by Sub-Working Group 5-A-2, data related to the antenna parameters used in the second planning exercise (May 1988) is included. These parameter set keys are the pointers into a section of code that defines each of the antenna patterns used by the interference model. (Re: ORB-88 Document 19-E, Annex 1 to Chapter 5).

The antenna keys A881-A887 refer to antenna characteristics as shown in the attached figures.

T. KOMOTO Chairman of Sub-Working Group 5-A-2 - 2 -ORB(2)/189-E



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PAG. 3







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ORB-88 FEEDER-LINK SYSTEM

PAG. 5



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ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 190-E 6 September 1988 Original: French

COMMITTEE 4

FINAL REPORT OF THE CHAIRMAN OF GROUP 4 AD HOC 1

The terms of reference of Group 4 ad hoc 1, as adopted by Committee 4 and given in Document 124, consisted of the following two items:

- -. Possible modifications to the characteristics of existing systems with a view to improving the results of planning exercises
- Status to be given to systems modified after 8 August 1985 and to new systems notified to the IFRB after 8 August 1985 for advance publication.

Group 4 ad hoc 1 held four meetings.

1. Regarding possible modifications to the characteristics of existing systems, the ad hoc Group requested a preliminary analysis by the IFRB (see Document 140).

Having considered the results of their analysis in Document 140, the Group concluded that they were not satisfactory and that a new analysis was needed, with further modifications to the characteristics of existing systems, even though, according to some administrations, such modifications could not lead to the desired results in the longer term (aggregate C/I > 26 dB).

At the request of a number of administrations, this second analysis was consolidated, taking into account the technical parameters newly adopted in Working Group 4-A and new modifications to the characteristics of existing systems.

The ad hoc Group then examined the results of this synthesis (IFRB Document 183) and reached the following conclusions:

- a) The results are still not satisfactory.
- b) For some administrations, the processing of existing systems now has to be considered, since the two attempts made so far have yielded no positive results.
- c) For other administrations, it might be possible to find a solution as follows:
 - either, reviewing the technical parameters adopted in Working Group 4-A;

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or, improving the algorithm concerning the determination of the orbital position;

or, reducing the aggregate C/I ratio;

or, once again changing the characteristics of existing systems.

2. Regarding the second item of the terms of reference of Group 4 ad hoc 1, after identifying the three networks concerned (PACSTAR, PAKSAT and GDL-6), the Group concluded that these three networks should be considered as existing systems.

C.T. N'DIONGUE Chairman of Group 4 ad hoc 1

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 191-E 6 September 1988 Original: French

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 4

FIRST REPORT BY THE CHAIRMAN OF WORKING GROUP 4-B

The terms of reference of Working Group 4-B are given in Documents 148 and 149.

The Working Group held its first meeting primarily to examine two items:

- the organization of work;
- objective criteria for taking account of the particular geographical situation of certain countries in defining the coverage of a country (Allotment Plan).

1. In connection with the first item relating to organization of work, the Group decided to set up a Sub-Working Group 4-B-1 to be responsible for the establishment of the Allotment Plan. This Sub-Group will be made up of experts from 11 countries: Kenya, Algeria, United Kingdom, France, USSR, India, Japan, China, United States, Canada, and Brazil. The Chairman of this Sub-Group will be nominated later from among the experts involved.

2. With reference to the second item, objective criteria were defined for taking account of the particular geographical situation of certain countries in defining the coverage of a country (Allotment Plan). These criteria are as follows:

1) <u>Operational restraints</u>.

Two cases were singled out:

- countries with dispersed territories requiring multiple beams to perform a function;
- countries requiring an orbital position located within specified limits of an orbital arc with a view to achieving optimization with respect to orbital positions already allocated within this arc.
- 2) <u>Size of territory</u>

The Group considered that for certain countries with very large territories, consideration must be given to the possibility of:

a) multiplication of beams with a view to bringing the power of the transmitter down to realistic proportions, having regard to technical feasibility. It was suggested that a power limit might be determined; b) several orbital positions if necessary. If this were not necessary, a request by an administration to use more than one orbital position could only be agreed to if the request did not penalize the Plan.

With regard to the power limit to be determined under point 2a), some administrations suggested that when this item was examined, account should be taken not only of the concept of the power emitted by the satellite transponder, but also by the power transmitted by the earth stations as well as the power flux-density.

Finally, during the discussion of these objective criteria, some administrations raised the question of the minimum angle of elevation having regard to mountainous zones and particular latitudes. The Working Group considered that this point should be considered by Working Group 4-A and that the minimum angle of elevation should be determined not only in accordance with the criterion of rain attenuation but also in accordance with the criteria of mountainous zones and particular latitudes.

3. In the course of the meeting, the Working Group also considered the question of allotment planing requirements with regard to possible modifications and proposed that Committee 4 should adopt the text given in Annex 1 hereto.

C.T. N'DIONGUE Chairman of Working Group 4-B

<u>Annex</u>: 1

ANNEX

Allotment planning requirements

1. At its first meeting on Monday 5 September, Group 4-B considered the question of allotment planning requirements.

2. The allotment planning requirements submitted for the fixed-satellite service and used during the planning exercises have been published in Annex 1 of Document 28.

3. Delegations are invited to review the requirement submitted and used, in accordance with the decisions of this Conference. Any correction or modification necessary or requested (in particular, columns 7, 8 and 10 concerning the geographical coordinates, the test points and the rain-climatic zones, respectively) shall be appropriately indicated (on a copy of the page relating to each administration in Document 28). This annotated page only shall be returned to the D level in the CICG by [Thursday, 8 September 1988 at 1800 hrs]. Timely return of the marked copy will ensure the inclusion of the modifications in the planning exercise to be carried out later in week three. In the absence of any requested modification, the requirements as published in Document 28 will be used.

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ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 192-E 6 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Source: Document 167(Rev.1)

COMMITTEE 4

FINAL REPORT OF WORKING GROUP 4-A TO COMMITTEE 4

Working Group 4-A after long discussions and in the spirit of cooperation and compromise reached majority agreement on values for technical parameters for the Plan, following suggestions made in DT/11(Rev.1).

- Total C/N value of 16 dB under rain fading conditions, implying up-link C/N of 23 dB and down-link C/N of 17 dB.
- 2. Minimum earth station transmitter power density of 0 dBW/MHz averaged over the carrier bandwidth.
- 3. Aggregate carrier to interference ratio C/I of 26 dB. In the event that this value does not yield satisfactory results in the planning exercise, a lower value of C/I will be examined in conjunction with the total value of C/N of 16 dB above.
- 4. Earth station antenna size of 7 m for 6/4 GHz and 3 m for 14/11-12 GHz.
- 5. Earth station antenna pattern shown in Appendix 29, with side-lobe pattern of 32 -25 log θ. If so desired by an administration the improved side-lobe pattern of 29 -25 log θ will be used. If time permits, the impact of substituting the composite antenna pattern on C/I values may be investigated by the IFRB after the planning has been carried out.
- 6. Earth station receiving noise temperature of 140 K for 4 GHz and 200 K for 11 12 GHz.
- 7. Space station antenna characteristics as depicted in SAT-83 with fast fall-off characteristics when so specified by the administrations. Minimum beamwidths of 0.8 deg. for 14/11-12 GHz and 1.6 deg. for 6/4 GHz.
- 8. Space station receiving system noise temperature of 1000 K for 6 GHz and 1500 K for 14 GHz.
- 9. 70% efficiency for earth station antennas and 55% for space station antennas as used by the IFRB.
- 10. 0.2 deg. antenna pointing error.

1

11. The minimum elevation angle for each test point defining the service area will be based on its climatic zone.

10 deg. for A to G climatic zones, 20 deg. for H to L climatic zones, 30 deg. for M and N climatic zones, and 40 deg. for P climatic zone.
The resulting service arc would satisfy the conditions of visibility at the minimum elevation angles specified.

Administrations may select lower elevation angles for their service areas. For countries at high latitudes, if the above values for minimum elevation angle are unobtainable, then the assumption used by the IFRB in Document 19(Corr.1) paragraph 1.3.5 will apply.

Certain administrations could not accept without reservations the minimum elevation angles for climatic zones N and P.

- 12. The rain attenuation margin was fixed at 8 dB. Some countries expressed their concern but the Working Group reached this compromise value.
- 13. For single beam coverage, maximum power limits for both earth station and satellite were requested by two administrations who would inform the IFRB of the values they would apply to their own systems. If the multi-beam coverage concept is allowed, two other administrations would inform the IFRB of their maximum power limits for satellite and earth stations.

Y. ITO Chairman of Working Group 4-A

INTERNATIONAL TELECOMMUNICATION UNION ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 193-E 7 September 1988 Original: English

Source: Document DT/26

COMMITTEE 6

NOTE FROM THE CHAIRMAN OF WORKING GROUP 6-C ON CERTAIN PROPOSALS FOR REVISION OF PROVISIONS UNDER ARTICLE 29

Working Group 6-C has to consider under its terms of reference, the consequential amendments to Radio Regulations, necessitated from the standpoint of the improved regulatory procedures developed (agenda item 12). It decided that certain proposals under Article 29 of the Radio Regulations pertain to the Working Group of the Plenary as they fall within its purview.

Accordingly, Working Group 6-C transmits to the Working Group of the Plenary, through Committee 6, the two proposals as listed in the annex.

L.M. PALMER Chairman of Working Group 6-C

Annex: 1

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ANNEX

Proposals concerning Article 29

Special Rules Relating to Space Radiocommunication Services

Section III. Station Keeping of Space Stations¹

USA/56/14

MOD A.29

¹In the case of space stations on board <u>nominally</u> <u>geostationary</u> <u>geosynchronous</u> satellites with orbits having an angle of inclination <u>no</u> greater than <u>15</u> 5 degrees the positional tolerance shall relate to the nodal point.

<u>Reasons</u>: To clarify the permissible inclinational excursions of geostationary satellites.

KEN/69/36

§ 4.1 The +0.1 degree E-W station keeping limits currently established in RR Article 29 may be retained. The CCIR may continue studies on N-S limits as mentioned in paragraph 3.8.3.2 of the CCIR Report to the Second Session. This information should be specified in the Final Acts.

INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 194-E 7 September 1988 Original: French

COMMITTEE 2

FIRST REPORT OF WORKING GROUP 2-A TO COMMITTEE 2

The Working Group of Committee 2 (Credentials) met on 6 September 1988. It examined the credentials of the following Delegations:

Germany (Federal Republic of) Saudi Arabia (Kingdom of) Australia Belgium Benin (People's Republic of) Brazil (Federative Republic of) Bulgaria (People's Republic of) Burundi (Republic of) Cameroon (Republic of) Central African Republic Vatican City State Korea (Republic of) Côte d'Ivoire (Republic of) Cuba Denmark United States of America Ethiopia (People's Democratic Republic of) Finland France Gabonese Republic Greece Guinea (Republic of) Hungarian People's Republic Indonesia (Republic of) Iran (Islamic Republic of) Ireland Israel (State of) Italy Japan Jordan (Hashemite Kingdom of) Kenya (Republic of) Kuwait (State of) Lebanon Liechtenstein (Principality of) Luxembourg Malaysia Mali (Republic of) Malta (Republic of) Mongolian People's Republic Norway New Zealand Oman (Sultanate of)

Papua New Guinea Paraguay (Republic of) Netherlands (Kingdom of the) Poland (People's Republic of) Portugal German Democratic Republic Romania (Socialist Republic of) United Kingdom of Great Britain and Northern Ireland San Marino (Republic of) Singapore (Republic of) Switzerland (Confederation of) Tanzania (United Republic of) Czechoslovak Socialist Republic Thailand Togolese Republic Tonga (Kingdom of) Uruguay (Eastern Republic of) Venezuela (Republic of) Viet Nam (Socialist Republic of) Yugoslavia (Socialist Federal Republic of) Zimbabwe (Republic of)

All these credentials were found to be in order.

S. SISSOKO Chairman of Working Group 2-A INTERNATIONAL TELECOMMUNICATION UNION ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 195-E 13 September 1988 Original: English

COMMITTEE 4

SUMMARY RECORD

OF THE

SEVENTH MEETING OF COMMITTEE 4

(ALLOTMENT PLANNING AND ASSOCIATED PROCEDURES)

Wednesday, 7 September 1988, at 1100 hrs

Chairman: Mr. S. PINHEIRO (Brazil)

Subjects discussed:Documents1.Subregional systems-2.Report by the Chairman of Working Group 4-B191

For reasons of economy, this document is printed in a limited number of copies. Participants are therefore kindly asked to bring their copies to the meeting since no others can be made available.

1. <u>Subregional systems</u>

1.1 The <u>delegates of Zimbabwe</u>, <u>Kenya</u>, <u>Tanzania</u> and <u>Senegal</u> requested that the Committee give some consideration to the possibility of setting aside a number of orbital positions for possible use by subregional systems.

1.2 The <u>Chairman of Working Group 4-C</u> said that the details of the procedures to accommodate subregional systems, which would be associated with the Plan would shortly be dealt with by his Group and therefore need not be considered by the Committee at that juncture.

1.3 On that understanding, and on the understanding that the decision for a single world-wide Plan was not being called into question, the <u>Chairman</u> said that speakers would be able to express a view on the reservation of certain orbital arcs for subregional systems at any point in the discussion which had a bearing on the subject.

2. <u>Report by the Chairman of Working Group 4-B</u> (Document 191)

2.1 The Chairman of Working Group 4-B reviewed Document 191, which set out the decisions made by the Group at its first meeting and, in its annex, proposed a draft text on allotment planning requirements. The names of the Experts to serve on Sub-Working Group 4-B-1 (paragraph 1, Document 191), which was to draw up the Allotment Plan in close cooperation with the IFRB, and that of the Group's Chairman, would be submitted to the Committee shortly. At its second meeting that morning, the Group considered further the allotment planning requirements to be used during the planning exercise to be carried out at the weekend. In addition to the requirements set out in the annex to Document 191, the Group had decided that at the present stage, the only special requirements that would be included in the planning exercise would be those for countries with dispersed territories requiring multiple beams, or those from countries with territories so large that multiple beams and more than one orbital position were necessary. No other special requirements would be taken into consideration at the present initial planning stage; other special requirements and the technical procedures for dealing with them would be discussed at a later point. The Group had further decided that Working Group 4-A should be asked to consider the question of the power limit referred to in paragraph 2.2.a of Document 191. In the context of countries requiring an orbital position located within specified limits of an orbital arc, with a view to achieving optimization with respect to orbital positions already allocated within that arc, it had also been decided that although the requirement would not be inserted in the first planning exercise, administrations could ask for more than one orbital position in addition to their single entitlement if that did not compromise the Plan.

2.2 The <u>Chairman</u> drew the Committee's attention to the fact that the outcome of the planning exercise was to be considered as a first draft of the Allotment Plan. He invited the Committee to consider the text of the annex to Document 191.

Annex - Allotment planning requirements

2.3 <u>Mr. Bellchambers</u> (IFRB), referring to paragraph 2, said that the requirements used in previous planning exercises had in fact been those published in January 1988 in Circular Letter No. 723. The requirements which appeared in Document 28, Annex 1, were those submitted in response to a request sent out by the Board in Circular-letter No. 735; they had not yet been used in any planning exercise, but, unless modified by administrations, would serve in the preparation that weekend of the draft Plan.

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2.4 After some discussion among <u>Mr. Bellchambers</u> (IFRB), the <u>delegate of</u> <u>Canada</u> and the <u>Chairman</u>, the Committee <u>decided</u> that the square brackets on the seventh line of paragraph 3 should be deleted and the words "1800 hrs." should be replaced by "1400 hrs.". On a point raised by <u>Mr. Bellchambers</u> (IFRB), it was <u>agreed</u> to replace the words "the D level" on the seventh line of the same paragraph by "Office J 130".

2.5 In reply to a question from the <u>delegate of the United States of</u> <u>America</u>, the <u>Chairman</u> said that modified requirements concerning special requirements other than those decided on for inclusion in the preparation of the first draft Plan need not necessarily be handed in by the deadline mentioned, although ideally the IFRB would naturally wish to have all requirements available at the same time. A further deadline, such as 1200 hours on Friday, 9 September 1988, could be set for such additional special requirements. In reply to a question from the <u>delegate of Italy</u>, he confirmed that consideration of requirements for an allocation to coincide with operational or projected systems would only be taken into consideration after the draft Plan had been prepared. In reply to the <u>delegate of Uruguay</u>, he said that a special request of that nature, if not yet put forward, could still be made if handed in for the second deadline mentioned.

2.6 In reply to a question from the <u>delegate of Saudi Arabia</u>, the <u>Chairman of Working Group 4-B</u> said that the decision of the Conference to which requirements submitted for preparation of the first draft Plan had to conform was that of single national coverage, the only exception being the special requirements to meet the needs of countries with dispersed territories or countries with large territories.

2.7 <u>Mr. Bellchambers</u> (IFRB) noted in that context that some of the requirements listed in Document 28 did not meet those criteria. A number of decisions regarding their inclusion, if unmodified, in the initial Plan would therefore be necessary. To reply to a question by the <u>delegate of France</u>, it was not for the Board to exercise judgement in that respect but for administrations themselves to make the necessary modifications. For example, in some cases a few countries had a service zone well outside their territories; the Committee should note that the Board was not in a position to examine testpoints to see whether they were in a country's territory or not.

2.8 The <u>delegate of the Federal Republic of Germany</u> said he assumed that comment applied only to testpoints well outside a country's borders. His Administration had taken the 1977 broadcasting Plan as the basis for establishing its testpoints; in some cases they were a few kilometres outside the national territory in order to obtain a good ellipse.

2.9 In reply to a question from the <u>delegate of Yugoslavia</u>, the <u>Chairman</u> confirmed that the draft Plan would be a multi-band Plan, including both the 6/4 and the 13/11 GHz bands.

2.10 In reply to the <u>delegate of Norway</u>, who asked whether telegrams could not be sent to administrations not present at the Conference to allow them to submit modifications to their requirements by the Thursday deadline, <u>Mr. Bellchambers</u> (IFRB) said it was clear that pressure of time would prevent any replies being received by the deadline. However, the outcome of the planning exercise would be no more than a first draft Plan and modified requirements, if any, received by administrations not present could be considered when preparing the final Plan. 2.11 Following the discussions, the <u>Chairman</u> proposed that telegrams were sent to administrations not present at the Conference inviting them to submit modifications to their requirements if needed. Any reply to this enquiry would only be considered in the Plan subsequent to the final draft Plan.

It was so <u>agreed</u>.

The meeting rose at 1205 hours.

The Secretary:

The Chairman:

F.S. LEITE

S. PINHEIRO

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Corrigendum 1 to Document 196-E 28 September 1988 Original: French/ English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 4

SUMMARY RECORD

OF THE

EIGHTH MEETING OF COMMITTEE 4

1. <u>Paragraph 3.1</u>

In the French text, <u>replace</u> the word "dimanches" in the twentieth line by "démarches".

2. <u>Paragraph 3.13</u>

Add the following at the end of the last sentence:

".. and giving equal status to both parts in the procedures to be developed by the Conference."

3. <u>Paragraph 3.22</u>

Amend the second sentence as follows:

"Every possibility, including synthesis using ORBIT II and manual synthesis, should be explored in producing a Part B that offered maximum comapatibility with Part A."

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INTERNATIONAL TELECOMMUNICATION UNION WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 196-E 13 September 1988 Original: English

COMMITTEE 4

SUMMARY RECORD

OF THE

EIGHTH MEETING OF COMMITTEE 4

(ALLOTMENT PLANNING AND ASSOCIATED PROCEDURES)

Wednesday, 7 September 1988, at 1400 hrs

Chairman: Mr. S. PINHEIRO (Brazil)

Subjects	Documents	
1.	Report of Working Group 4-A	192
2.	Report of Group 4 ad hoc 1	190
3.	Existing systems	DT/28

1. <u>Report of Working Group 4-A</u> (Document 192)

1.1 The <u>Chairman of Working Group 4-A</u> presented the final report of his Group, contained in Document 192, indicating the points in which it differed from the first report of the Working Group in Document 167(Rev.1). Although the Working Group had addressed the problem of rain attenuation, it had had no criteria on which to base recommendations concerning other specific requirements, for example those of mountainous countries. He therefore suggested that discussion of such special requirements be deferred until the draft planning exercise had been performed.

In reply to a request by the <u>delegate of India</u> for clarification concerning item 2 of Document 192, he said that it had been agreed, as a compromise, to define carrier power as an average over the carrier bandwidth, for planning purposes only. In reply to <u>Mr. Bellchambers</u> (IFRB), he confirmed that, in planning, a reference bandwidth of 1 MHz would be taken.

1.2 The <u>Chairman of Working Group 4-A</u> considered that such compromise values were acceptable in drawing up a draft plan. If the draft Plan did not meet with approval, however, those values should be reconsidered.

1.3 The <u>delegate of Canada</u>, supported by the <u>delegate of Australia</u>, stressed that it should be made clear, in item 5 of Document 192, that an investigation of the impact of substituting the composite antenna pattern on C/I values would be carried out, if the necessary software were available.

1.4 The <u>Chairman of Working Group 4-A</u> recalled that item 5 had been drafted as it stood because planning had to be carried out, whereas the investigation of composite antenna pattern was not mandatory.

1.5 <u>Mr. Bellchambers</u> (IFRB) said that the Board had found discontinuities within the CCIR composite antenna pattern and had produced a response which had not yet been approved by the Conference. If the Board's variation were accepted, there would be no problem in carrying out such an investigation after the draft Plan had been produced.

1.6 The <u>delegate of Canada</u> agreed, in the light of that explanation, to accept the wording of item 5 as it stood.

1.7 Referring to item 11, the <u>delegate of Ecuador</u> made the statement reproduced in Annex 1.

1.8 The <u>delegate of Côte d'Ivoire</u> supported that statement.

1.9 The <u>delegate of Switzerland</u>, supported by the <u>delegates of the</u> <u>Democratic People's Republic of Korea</u>, <u>Spain</u> and <u>Italy</u>, expressed reservations about drawing up the Plan without taking account of the specific requirements of mountainous countries. It was not acceptable to defer consideration of such special requirements while other problems, such as rain fade, were being dealt with at the initial stage.

1.10 The <u>delegate of Israel</u> pointed out that not all special requirements had yet been submitted; he suggested that the wishes of administrations be accommodated in a subsequent trial of the Plan. The <u>delegate of France</u> questioned whether the data were available to enable account to be taken of the difficulties faced by mountainous countries. 1.11 The <u>Chairman of Working Group 4-B</u> recognized the inequity inherent in taking account only of certain specific requirements in the planning exercise while neglecting others but noted that the information required to take account of the requirements of mountainous countries was not available. Further consideration could be given to the question of minimum elevation angle but, in view of time constraints, he suggested that modifications be made to the Plan at a subsequent stage.

1.12 The <u>Chairman</u> proposed that the draft Plan be drawn up without taking account of the various outstanding special requirements but that they be accommodated at the following stage.

1.13 The <u>delegates of Argentina</u> and <u>Colombia</u> reserved their right to insist upon consideration of special requirements if the Plan produced following the Chairman's proposal proved unacceptable.

1.14 In reply to <u>Mr. Bellchambers</u> (IFRB), the <u>Chairman</u> confirmed that, in item 12, the rain attenuation margin had been fixed at a maximum of 8 dB.

1.15 Referring to item 13, the <u>delegate of the USSR</u> drew the attention of the Committee to RR 2570 which established maximum values for the power flux-density at the Earth's surface. All planning calculations should comply with that regulation.

1.16 <u>Mr. Bellchambers</u> (IFRB) observed that the maximum power limits referred to could only be taken into account in the draft Plan if they applied to all administrations, otherwise the code would have to be modified and that could not be done in time.

1.17 The <u>delegate of Canada</u> said that his Delegation had appreciated that difficulty and could withdraw its requirements for a maximum power limit.

1.18 The <u>delegate of the USSR</u> said that his Delegation could agree to not having any power limits, but felt that the Conference had to abide by the Radio Regulations: the conditions his Delegation was suggesting would not in practice result in any particular difficulties according to its calculations, which were in accordance with the Radio Regulations.

1.19 <u>Mr. Bellchambers</u> (IFRB) said that the Board had developed a programme in which it could examine the p.f.d. limit in relation to Article 28, but it would be a separate task carried out after the draft Plan had been produced, to identify the beams which caused p.f.d. in excess of the limits.

1.20 The <u>Chairman</u> having asked what effect that would have on the number of beams in the Plan, the <u>Chairman of Working Group 4-A</u> said that according to an exercise he had carried out on the p.f.d. on the Earth's surface, when a C/N of 23 dB was considered in the down-link, the p.f.d. was -162 dB(W/m²) in the case of 4.65 GHz and -176 dB (W/m²) in any 4 kHz band, in the case of 11 GHz; in other words, 12 dB and 16 dB respectively below that specified in No. 2570 of the Radio Regulations.

At the suggestion of the <u>Chairman</u>, it was <u>agreed</u> that the Committee could adopt the Board's suggestion to have a draft Plan with no power limitation, and that after the Plan had been produced, a check would be made to see if any beams went beyond the value specified in the Radio Regulations.

1.21 The <u>Chairman of Working Group 4-A</u>, replying to a question raised by the <u>Chairman</u>, said that the second sentence referred to maximum power requirements which would be put forward by Brazil and China in the event of Committee 4 deciding on a multi-beam situation.

1.22 The <u>delegate of Brazil</u> said that even though the Committee had decided on no power limit, his Administration wished to keep open the possibility of coverage by more than one beam and more than one orbital position in case power limits were later decided upon.

1.23 The <u>delegate of China</u> endorsed that position. China covered a vast area and if it was only allowed one beam, with a 500 Watt satellite output requirement there would be very great technical constraints in producing the transponder and multiple beams would be required to cover the whole country.

1.24 The <u>delegate of Canada</u> said he took it that the reference to more than one beam and more than one orbital location was not intended to cover the situation where it was necessary to have more than one orbital position in high latitudes in order to serve the whole country in a 10° elevation angle.

1.25 The <u>Chairman</u> said that the problem was simply one of power limitation.

The Committee took note of the comments made by Brazil and China.

2. <u>Report of Group 4 ad hoc 1</u> (Document 190)

2.1 The <u>Chairman of Group 4 ad hoc 1</u> said that the Group had met a number of times to consider the two items on its agenda and had decided that the results of the analysis contained in Document 140 were unsatisfactory and that a new run was needed which would take into account the technical parameters adopted in Working Group 4-A as well as new modifications to the characteristics of existing systems. The results of that synthesis were still not satisfactory and a number of administrations considered that there was no point in continuing along those lines, while others thought that an alternative solution should be sought. With regard to the second item on its agenda, the Group had concluded, after identifying the three networks concerned, that they should be considered as existing systems.

2.2 The <u>Chairman</u> said that as the Committee would shortly be considering the question of existing systems in depth, there was no point in opening a discussion in the present context. He warmly thanked the Chairmen of Group 4 ad hoc 1 and the Chairman of Working Group 4-A for the results they had produced.

2.3 The <u>delegate of Argentina</u> said that at the last meeting of the ad hoc Group, comments had been made regarding the analysis made for Region 2 (Document 140) about interference in some cases from neighbouring countries. The same comments by Region 2 administrations were reflected in Document 190.

2.4 The <u>Chairman</u> said that as he understood it, the problem with the output was not related to the software, which was working well, but to the fact that there was no solution to the C/I ratio required by the Conference.

3. <u>Existing systems</u> (Document DT/28)

3.1 The <u>Chairman</u> said that Document DT/28 was intended to help the Committee reach a compromise solution on existing systems and expressed the hope that the goodwill and cooperation which had existed so far would also prevail in the present case. Committee 4 had to find a way of being fair to all administrations in adopting a decision that was as close as possible to the ideal solution, but at the same time was realistic. As it was impossible to accommodate the wishes of all administrations because of their number and the diversity of their requirements, he proposed that the Plan be divided into two parts, Part A being the Allotment Plan and Part B containing a list of existing systems, since they had now been defined. Part A would contain one allotment per administration and as small a number of orbital positions and beams as possible. That part would therefore result from the planning process adopted by the Conference. A Plan based on national requirements would then be run during the coming weekend, so that the first plan would be available early the following week. An analysis of that Plan could then be made taking into account existing systems, after which efforts would be made to try and solve the incompatibilities between Parts A and B. If all else failed, then the Conference would at least have a Plan. There was no need to make any decision at the present time about the nature of regulatory procedures and it was not his intention even to discuss them at the present meeting, even though they were mentioned in the last paragraph of the document. Committee 4 was simply required to consider whether or not it could adopt the proposals for a Plan set forth in the document.

3.2 The <u>delegates of Paraguay</u> and <u>Côte d'Ivoire</u> expressed support for the approach proposed by the Chairman, although it did not answer several questions about how existing systems would be treated.

3.3 The <u>Chairman</u> said that such problems had yet to be dealt with, as had the procedures for handling them.

3.4 The <u>delegate of Japan</u> said that while the Chairman's proposal might afford a solution to a very difficult problem, it was not yet clear that the possibilities of including existing systems in the Plan were as slight as Document DT/28 suggested. If administrations with such systems could make further modifications to them, more attempts should be made to devise a Plan which included them. Only if that proved impossible should the Chairman's approach be adopted, because it raised such questions as how to identify and resolve any incompatibilities between Parts A and B of the Plan and what regulatory procedures were to be used.

3.5 The <u>delegate of Italy</u> asked if the proposed Part B of the Plan would indicate the date by which existing systems were to be phased out.

3.6 The <u>Chairman</u> said that such aspects had to be considered first by Working Groups 4-B and C. He repeated that the immediate problem was to decide whether the Committee wished to adopt the approach advocated in Document DT/28 or not.

3.7 The <u>delegate of the Federal Republic of Germany</u> expressed support for the Chairman's proposed approach which he considered to be in accordance with the Recommendations made by the Report of the First Session.

3.8 The <u>delegate of Canada</u> welcomed the Chairman's initiative as one which could be developed so as to include existing systems in the Plan.

3.9 The <u>delegate of France</u> said that his Administration could accept the proposed approach in principle, in a spirit of compromise, but reserved its right to return if necessary to issues that were not yet clear.

3.10 The <u>delegate of Uruguay</u> strongly supported the Chairman's proposal. However, he thought that the planning of national requirements for Part A must make provision for special geographical situations before the analysis to identify any incompatibilities with existing systems was performed.

3.11 Those views were endorsed by the <u>delegates of Colombia</u>, <u>Mexico</u>, <u>Spain</u> and <u>Argentina</u>.

3.12 The <u>Chairman</u> said that the proposal to make provision for special geographical situations when producing Part A of the Plan should be submitted and taken up in the Working Groups.

3.13 The <u>delegate of India</u> said that he supported both the Chairman's proposed approach and the suggestions made by the <u>delegate of Japan</u>, which could prove to be more compatible than they might seem. He suggested that Working Group 4-B should seek to reconcile them, with a view to developing a Plan in two parts that were mutually compatible and in which there would be scope for transferring compatible existing systems from Part B to Part A.

3.14 The <u>Chairman</u> agreed that Working Group 4-B should attempt to reduce the problem of incompatibilities in any way possible.

3.15 The <u>delegate of Senegal</u> said that the approach advocated by the Chairman raised a number of points which he would like clarified before deciding if he could support it, namely the relative priority to be accorded to allotments and existing systems when resolving incompatibilities, and whether the possible inclusion of compatible existing systems in Part A of the Plan would be in conformity with the principle of single coverage and equitable access.

3.16 The <u>Chairman</u> said that such questions were for the Working Groups to address in the first instance but, so far as the relative priority of allotments and existing systems was concerned, the Conference had to be realistic. His aim had been to find a solution that was equitable to all parties.

3.17 The <u>delegate of China</u>, supporting the Chairman's proposal, said that it was the best solution to the problem posed by existing systems. The question of the relationship between Parts A and B of the Plan could be solved by means of procedures designed to ensure compatibility.

3.18 The <u>delegate of Israel</u> said that if the anticipated Conference action to resolve incompatibilities between Parts A and B affected all administrations alike and did not call on only some of them to make sacrifices, he could approve the Chairman's proposal. Otherwise, alternative means of accommodating existing systems in the Allotment Plan should be sought, such as those suggested by Luxembourg in Document 178.

3.19 The <u>delegate of Papua New Guinea</u> approved the Chairman's initiative although its implications for existing systems were not clear. Every effort would have to be made to ensure that Parts A and B of the Plan were compatible and to safeguard the economic viability of existing systems. He thought that it might be necessary to look again at Luxembourg's suggestions in Document 178, as mentioned by the delegate of Israel.

3.20 The <u>delegate of Luxembourg</u> endorsed the proposal to explore the possibilities offered by making further modifications to existing systems. But he was also prepared to adopt the approach outlined by the Chairman as one way of seeking a solution. His ultimate position would depend on the results achieved and he might have to revert to his Administration's proposals in Document 178.

3.21 The <u>delegate of Iraq</u> said that too many questions remained unanswered for him to take a position on the Chairman's proposal. Existing systems should only be integrated into the Plan where possible and any with adverse effects must be modified as suggested by the delegates of Japan and India. 3.22 The <u>delegate of the United States of America</u> endorsed the views expressed by the delegates of Japan, India, Papua New Guinea and Luxembourg. Every possibility should be explored of producing a Part B that offered maximum compatibility with Part A. He could support the Chairman's proposed approach if that was its intention and if it allowed for modifications to the Plan in order to achieve compatibility between existing systems and national requirements.

3.23 The <u>Chairman</u>, replying to the two previous speakers, said that in the second stage which he envisaged, any means of resolving incompatibilities could still be employed, including the further modification of characteristics of existing systems if need be.

3.24 The <u>delegate of Kenya</u> said that he had reservations about approving the Chairman's initiative because he anticipated difficulty in resolving incompatibilities between Parts A and B of the Plan. It might be wise, as the delegate of Japan had suggested, to explore the possibility of making further modifications to existing systems before adopting the alternative approach in Document DT/28.

3.25 The <u>delegate of Tanzania</u>, in supporting those views, said that the success of the Chairman's approach depended on further changes being made to existing systems. If administrations were not willing to make more considerable modifications, there was little prospect of better results than had been achieved so far.

3.26 The <u>delegate of the USSR</u> said that he supported the Chairman's approach, bearing in mind that Parts A and B were both component parts of the Plan and that matters of specific detail were to be considered by Working Groups 4-B and C.

3.27 The <u>delegate of the United Kingdom</u> also supported the Chairman's initiative as a useful contribution to solving the problem of including existing systems in the Plan on an equal footing with allotments, as required by the Report of the First Session.

3.28 The <u>delegate of Pakistan</u> voiced his concern that any resulting Plan should conform with what had been agreed by the First Session.

3.29 The <u>delegates of Saudi Arabia</u>, <u>Egypt</u>, <u>Ethiopia</u>, <u>Togo</u>, <u>Algeria</u>, <u>Afghanistan</u>, <u>Ecuador</u> and <u>Qatar</u> supported the Chairman's proposal.

3.30 The <u>Chairman</u> said that in view of the large majority of speakers in favour of the compromise solution set out in Document DT/28, he assumed that the Committee wished to adopt it.

It was so <u>decided</u>.

The meeting rose at 1735 hours.

The Secretary:

F.S. LEITE

The Chairman:

S. PINHEIRO

Annex: 1

ANNEX 1

Statement by the delegate of Ecuador

The Administrations of Columbia, Ecuador, Peru and Venezuela submitted Document 132 with a view to highlighting the need to take into account the special geographical situation arising from high rainfall, especially in the rain climatic zones "N" and "P", in establishment of the Allotment Plan.

In preparing the above document, we were guided exclusively by the search for a form of <u>equitable</u> treatment for all rain climatic zones. After carrying out the necessary calculations, using the method described in CCIR Report 564-3, we reached the conclusion that no zone from "A" to "M", with an angle of elevation of 10 degrees, suffers attenuation of more than 15 dB. For the same condition to apply in zones "N" and "P", the conclusion was reached that in these zones the angles require should exceed 24 degrees and 52 degrees, respectively.

Despite the <u>equitable</u> and <u>technical</u> proposal, Group 4-A decided, <u>with</u> <u>reservations</u>, on a minimum angle of 40 degrees for zone "P" and 30 degrees for zone "M". The upshot, Mr. Chairman, is that this decision entails clearly <u>inequitable</u> treatment of the zones, considering that, while 40 degrees in zone "P" means an attenuation of 17.5 dB, 30 degrees in zone "M", on the other hand, lead to an attenuation of some 8.0 dB. When asked why the value of 30 degrees was taken for zone "M" the IFRB replied that this has been done to some extent <u>arbitrarily</u>. This means that zone "P", which consists practically exclusively of developing countries, is penalized and zone "M" is benefited arbitrarily.

This decision, combined with the decision concerning a maximum rainfall limit of 8.0 dB, means that developing countries will have to compensate up to 9.5 dB with techniques which will increase the cost of their systems.

In the light of the above, Mr. Chairman, we would like to state, with all due respect for the opinions of other administrations, that we consider that the decision taken is <u>inequitable</u> and to some extent <u>arbitrary</u>, which contradicts the spirit in which this Conference was convened, whereby <u>equitable</u> access was to be guaranteed for all countries to the geostationary-satellite orbit.

Lastly, considering that neither the Board nor any administration has put forward a technical argument for considering a minimum elevation angle of 30 degrees for rain climatic zones "M", we insist that this angle should be 20 degrees, in accordance with the proposal put forward in Document DT/11(Rev.1).

With regard to the minimum elevation angles for rain climatic zones "P" and the limit value of attenuation due to rain of "8 dB", we reserve the right to raise the matter again once the results of the draft Plan are known.

WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 197-E 7 September 1988 Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

COMMITTEE 6

SECOND REPORT OF WORKING GROUP 6-C TO COMMITTEE 6

1. The second meeting of Working Group 6-C was held on 6 September. The meeting reviewed proposals relating to Articles 1, 8, 27, and 29.

2. <u>Definitions in Articles 1 and 8</u> (Document DT/20)

2.1 Modifications to RR 109 and RR 169, definitions concerning feeder link and deep space, respectively, were approved (see Annex).

2.2 After considerable discussion, it was decided to establish an ad hoc Group to develop a new text on a proposed new definition on "space service" contained in PRG/106 - ADD 20A.

- Name of Group: Working Group 6-C ad hoc 1;
- Convenor: Mr. C. Montanaro (PRG)/Box 828;
- Participants: CAN, F, FRG, and U.K.; and
- Terms of reference: To develop appropriate text on a definition of "space service" (ADD RR 20A).

2.3 After some discussion, a second ad hoc Group was established to develop new definitions concerning certain elements on steerable beam antennas.

- Name of Group: Working Group 6-C ad hoc 2;
- Convenor: Mr. P. MISENER (USA)/Box 327;
- Participants: AUS, CAN, and U.K.; and
- Terms of reference: To develop appropriate texts concerning definitions on steerable beam antennas, using as a basis USA/56/7, CAN/60/1, USA/56/8, CAN/60/2, and USA/56/6.

2.4 Proposals concerning modified definitions of "satellite system" and "satellite network" were withdrawn (PRG/106/2, IND/141/17, and LUX/67/7). An additional proposal by India on a modification to RR 106 - satellite network - was deferred to a later meeting, dependent upon the discussion in Working Group 6-B (IND/141/28 and 37).

2.5 While the need was expressed that the notification process under Article 13 requires duplicating submissions on satellite networks, it was decided by Brazil to withdraw their proposed MOD RR 391 (B/35/1).

2.6 Several further definition proposals by India were withdrawn after recognition was given to existing definitions either in the Radio Regulations or CCIR (IND/141/19-27).

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3. <u>Modifications to Article 27</u> (Document DT/23)

3.1 A proposal to effect a consequential amendment to RR 2502-1 resulting from the 1987 Mobile WARC was approved (CAN/60/239) (see Annex).

3.2 Further amendments to Article 27 (CAN/60/240 - 243) were deferred pending discussions in Committee 5. The Chairman of Committee 6 may wish to convey this point to the Chairman of Committee 5.

4. <u>Modifications to Article 29</u> (Document DT/26)

4.1 After some discussion, it was decided to refer to the Chairman of the Technical Working Group of the Plenary, through Committee 6, the proposals contained in Document DT/26 (USA/56/14 and KEN/69/36), see Working Group 6-C note to Committee 6 in Document 193. The Chairman of Committee 6 may also wish to note, that there is a related proposal, in USA/56/20, but this has not yet been discussed in Working Group 6-C.

5. Items not completed at this meeting were decided to be considered at the third meeting of the Working Group along with new proposals not yet reviewed.

L.M. PALMER Chairman of Working Group 6-C

Annex: 1

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ANNEX

a)	MOD	109	Liaison de connexion: feeder link: enlace de conexión: A radio link from an earth station at a specified fixed point given location to a space station, or vice versa, conveying information for a space radiocommunication service other than for the fixed-satellite service. The given location may be at a specified fixed point, or at any fixed point with specified areas.
b)	MOD	169	Deep Space: Space at distances from the Earth approximately equal to, or greater than, the distance between the Earth and the Moon 2×10^{-6} kilometers.
c)	MOD	2502.1	*For provisions governing the mobile services, see:
			Special services related to safety

Land mobile service <u>and land mobile-satellite</u> <u>service</u>:

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INTERNATIONAL TELECOMMUNICATION UNION

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document 198-E 7 September 1988 Original: English

COMMITTEE 6

NOTE FROM THE CHAIRMAN OF WORKING GROUP 6-C TO THE CHAIRMAN OF COMMITTEE 6

Working Group 6-C considered three documents concerning feeder links in the fixed-satellite service for satellites operating in the mobile-satellite service (see first report of Working Group 6-C, Document 188).

After discussions, the Working Group considered it necessary to seek the advice of Committee 6 on the relevance of inclusion of this subject under its terms of reference in the light of the discussions held on the subject in the 43rd meeting of the Administrative Council and recent Administrative Circular AC/292 dated 29 June 1988 of CCIR.

The relevant extracts of the Report of the Chairman of Working Group PL-A to the Plenary Meeting (Document 6779 of CA-43) and the relevant draft new Questions of CCIR are reproduced in Annexes 1 and 2.

L.M. PALMER Chairman of Working Group 6-C - 2 -ORB(2)/198-E 1

ANNEX 1

Extract of the Report of the Chairman of the Working Group PL-A to the Plenary Meeting of CA-43 (Document 6779)

During the discussions on Document 6714 specific attention was drawn to Resolution No. 208 (Mob-87) and Recommendation No. 104 (Mob-87) wherein the ORB(2) Conference is required to take action. While some Councillors considered that it was too early for technical studies to be completed to enable the ORB(2) Conference to take decisions on these subjects, others were of the view that it was for the ORB(2) Conference itself to decide on these matters. Since the agenda of the ORB(2) Conference will not be changed now, it is up to the ORB(2) Conference to take action as considered appropriate.

The Plenary Meeting took note of the above Report (Document CA-43/6783)

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ANNEX 2

ANNEX I

(to AC/292)

DRAFT NEW QUESTION A/8

SYSTEM CONCEPTS OF THE MOBILE-SATELLITE SERVICE

The CCIR,

CONSIDERING

(a) Recommendation No. 405 of the World Administrative Radio Conference (Geneva, 1979), and Recommendations Nos. 313 (Rev.Mob-83) and 312 (Rev.Mob-87);

(b) that there is a need for more reliable long distance communication between existing terrestrial networks and mobile earth stations, such as maritime, aeronautical and land mobile stations;

(c) that international connectibility among the various mobile-satellite service is important;

(d) that integration of the various mobile-satellite services is now being studied to construct economical systems, provide users with useful services and to share the limited frequency resources effectively;

(e) that integration of the mobile-satellite and land mobile services is also being studied to make more effective use of frequency resources and to provide an economic system;

(f) that integration of mobile station equipment aboard aircraft for communications with satellite and terrestrial systems may be advantageous;

(g) that a hypothetical reference circuit and path are needed to provide a guide for design and construction of systems for mobile-satellite services,

DECIDES that the following questions should be studied:

1. what are the preferred fundamental system concepts in the following services;

1.1 maritime mobile-satellite service;

1.2 aeronautical mobile-satellite service;

1.3 land mobile-satellite service;

2. what are the technical feasibility, advantages and preferred system concepts for providing communications between two or more of the above-mentioned services;

3. what are the technical feasibility, advantages and preferred system concepts for providing communications to enable mobile terminals to communicate using one or more of the above-mentioned services and terrestrial mobile services;

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4. what are the technical requirements and preferred system concepts for interconnection of the above-mentioned services with terrestrial telecommunication services;

5. what are the technical and operational items to be recommended by CCIR relating to each mobile-satellite service and integrated systems;

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6. what is the preferred configuration of hypothetical reference circuit/path for mobile-satellite systems?

Sec. . Sec.

Note - See Recommendation 546, Reports 768, 770, 771, 921 and 1051.

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ANNEX II

(to AC/292)

DRAFT NEW QUESTION B/8

EFFICIENT USE OF THE RADIO SPECTRUM AND SHARING OF FREQUENCY RESOURCES IN THE MOBILE-SATELLITE SERVICE

The CCIR,

CONSIDERING

(a) Resolution No. 208 (Mob-87) and Recommendation No. 104 (Mob-87) of the World Administrative Radio Conference for the Mobile Services (Geneva, 1987);

(b) that there are shared frequency bands allocated to different mobile-satellite services and other services;

(c) that the operating technical characteristics of a system supporting the mobile-satellite service may differ from those applicable specifically to the aeronautical mobile-satellite service, land mobile-satellite service or maritime mobile-satellite service;

(d) that in the interest of conservation of the radio-frequency spectrum and to minimize the equipment which mobile units carry, there might be overall merit in establishing shared or adjacent frequency bands for the mobile services and the mobile-satellite services;

(e) that the use of a common satellite for the mobile-satellite services might be advantageous, especially if the same band of frequencies were used;

(f) that the operating characteristics of mobile stations may require different coordination measures from those used for the fixed-satellite service;

(g) that integration of mobile station equipment aboard aircraft for communications with satellite and terrestrial systems may be advantageous,

DECIDES that the following questions should be studied:

1. what are the preferred frequency bands for such systems including satellite to mobile earth station links, mobile earth station to satellite links and feeder links;

2. what are the preferred frequency bands for feeder links in the fixed-satellite service for the aeronautical mobile-satellite service, the land mobile-satellite service, the maritime mobile-satellite service and the mobile-satellite service operating in the bands 1 530 - 1 559 MHz and 1 626.5 - 1 660.5 MHz;

3. what is the feasibility of intersystem and intrasystem frequency sharing in the case of mobile-satellite systems, and sharing criteria;

4. what is the feasibility of frequency sharing between mobile-satellite services and other services, and sharing criteria;

5. what are the most suitable frequency bands for a public mobile telephone service with aircraft using terrestrial and space techniques;

6. what is the feasibility of frequency sharing between mobile-satellite systems which use non-geostationary orbits with systems which use the geostationary orbit;

7. what are the spot beam system planning concepts which provide for flexible frequency and power allocation to beams while providing for efficient use of the spectrum allocated to the mobile-satellite services;

8. what are the permissible interference criteria for intersystem frequency coordination;

9. what are the practical strategies for achieving efficient use of the geostationary orbit and frequencies allocated to the mobile-satellite services, recognizing that some networks will be optimized for regional coverage and some will be optimized for global coverage?

Note - See Reports 765 and 773.

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The texts of the following draft new Questions contained in Annexes III - XI of AC/292 are not reproduced.

ANNEX III

(to AC/292)

DRAFT NEW QUESTION C/8

POTENTIAL TYPES OF ORBIT IN MOBILE-SATELLITE SERVICES

ANNEX IV

(to AC/292)

DRAFT NEW QUESTION D-1/8

AVAILABILITY OF CIRCUITS IN MOBILE-SATELLITE SERVICES

ANNEX V

(to AC/292)

DRAFT NEW QUESTION D-2/8

PERFORMANCE OBJECTIVES FOR MOBILE-SATELLITE SERVICES

ANNEX VI

(to AC/292)

DRAFT NEW QUESTION E/8

TRANSMISSION CHARACTERISTICS FOR A MOBILE-SATELLITE COMMUNICATION SYSTEM

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ANNEX VII

(to AC/292)

DRAFT NEW QUESTION F/8

PROPAGATION AND MOBILE EARTH STATION ANTENNA CHARACTERISTICS FOR MOBILE-SATELLITE COMMUNICATION SERVICES

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ANNEX IX

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(to AC/292)

DRAFT NEW QUESTION H/8*

TECHNICAL AND OPERATING CHARACTERISTICS OF SYSTEMS PROVIDING RADIOCOMMUNICATION USING SATELLITE TECHNIQUES FOR DISTRESS AND SAFETY OPERATIONS

ANNEX X

(to AC/292)

DRAFT NEW QUESTION 1/8

TECHNICAL AND OPERATING CHARACTERISTICS OF THE RADIODETERMINATION-SATELLITE SERVICE

ANNEX XI

(to AC/292)

DRAFT NEW QUESTION AA/8*

STUDY ON GENERAL QUESTIONS RELATING TO THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)

CONF\ORB(2)\DOC\198E.TXS

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS ORB-88 CAMP SUR L'UTILISATION DE L'ORBITE DES SATELLITES GÉOSTATIONNAIRES ET LA PLANIFICATION DES SERVICES SPATIAUX UTILISANT CETTE ORBITE SECONDE SESSION, GENÈVE, AOÛT/OCTOBRE 1988

Document 199-F/E/S 7 septembre 1988 Original: anglais

COMMISSION 4

NOTE DU PRESIDENT DE LA COMMISSION 4

BESOINS RELATIFS AU PROJET DE PLAN D'ALLOTISSEMENT

Les délégations sont invitées à examiner le besoin soumis selon les décisions de la présente Conférence. Toute correction ou modification nécessaire ou demandée (en particulier pour les colonnes 7, 8 et 10 concernant respectivement les coordonnées géographiques des points de mesure et les zones hydrométéorologiques) doit être dûment indiquée (sur une copie). Cette page annotée doit être retournée au bureau J.130 du CICG avant le jeudi 8 septembre 1988 à 14 heures. Le renvoi en temps voulu de celle-ci permettra l'inclusion des modifications dans le projet de Plan qui devra s'effectuer à la fin de la deuxième semaine. En l'absence de toute demande de modification, les besoins publiés dans le Document 28 seront utilisés compte tenu des décisions de la Commission 4.

Les besoins autres que ceux qui s'appliquent au premier projet de Plan doivent être soumis avant le vendredi 9 septembre 1988 à 12 heures.

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Le Président de la Commission 4 S. PINHEIRO

COMMITTEE 4

NOTE FROM THE CHAIRMAN OF COMMITTEE 4

REQUIREMENTS FOR THE DRAFT ALLOTMENT PLAN

Delegations are invited to review the requirement submitted in accordance with the decisions of this Conference. Any correction or modification necessary or requested (in particular, columns 7, 8 and 10 concerning the geographical coordinates, the test points and the rain-climatic zones, respectively) shall be appropriately indicated (on a copy of the page relating to each administration in Document 28). This annotated page shall be returned to office J130 in the CICG by Thursday, 8 September 1988 at 1400 hours. Timely return of the marked copy will ensure the inclusion of the modifications in the draft Plan to be carried out at the end of the second week. In the absence of any requested modification, the requirements as published in Document 28 will be used taking into account the decisions of Committee 4.

Specific requirements other than those applying to the first draft Plan shall be submitted by Friday, 9 September 1988 at 1200 hours.

S. PINHEIRO Chairman of Committee 4

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Nota del Presidente de la Comisión 4

NECESIDADES PARA EL PROYECTO DE PLAN DE ADJUDICACIONES

Se invita a las delegaciones a que examinen las necesidades sometidas con arreglo a las decisiones de la presente Conferencia. Cualquier corrección o modificación necesaria o solicitada (en particular en las columnas 7, 8 y 10 correspondientes respectivamente a las coordenadas geográficas, los puntos de prueba y las zonas hidrometeorológicas) será indicada en forma conveniente (en una copia de la página relativa a cada administración del Documento 28). Se devolverá esta página anotada a la oficina J.130 del CICG hasta el jueves 8 de septiembre de 1988 a las 14.00 horas. La devolución oportuna de la copia anotada permitirá la inclusión de las modificaciones en el proyecto de Plan que se preparará al final de la segunda semana. En ausencia de una solicitud de modificación, se utilizarán las necesidades publicadas en el Documento 28, según las decisiones de la Comisión 4.

Las necesidades específicas distintas de las aplicables al primer proyecto de Plan deberán someterse hasta el viernes 9 de septiembre de 1988 a las 12.00 horas.

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S. PINHEIRO Presidente de la Comisión 4

INTERNATIONAL TELECOMMUNICATION UNION

ORB-88 WARC ON THE USE OF THE GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING OF SPACE SERVICES UTILIZING IT

Document 200-E 9 September 1988

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

LIST OF DOCUMENTS (Documents 151 to 200)

> PL = Plenary Meeting C = Committee

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WG = Working Group

No.	Origin	Title	Destination
151	WG 5A	Organization of the work	WG 5A
152	SG	Conference Chairmanships	-
153	CAN	Demonstration of optimizing orbit capacity	C.4
154	CLM	Proposal for the work of the Conference - Agenda Items 2 and 4	C.6
155	EGY	Proposal relating to feeder-links planning	C.5
156	J	Frequency bands in which improved regulatory procedures shall be applied - Agenda Items 2 and 14	C.6, WG/PL
. 157	J	Proposal on the improved regulatory procedures	C.6
158	SWG 5A1	Terms of reference of the Ad Hoc Group 5Al	SWG 5A1
159	WG 6B	First Report of Working Group 6B to Committee 6	C.6
160	C.3	Note by the Chairman of Committee 3 to the Chairmen of Committees 4, 5 and 6	C.4, C.5, C.6
161	C.3	Summary Record of the first meeting of Committee 3	C.3
162	C.5	Summary record of the third meeting of Committee 5	C.5
163	C.4	Summary Record of the fourth meeting of Committee 4	C.4
164	C.4	Summary Record of the fifth meeting of Committee 4	C.4
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No.	Origin	Title	Destination
165	SG	Information Note by the Secretary-General (conferences and meetings)	WG 6A
166	C.7	Summary record of the first meeting of Committee 7	C.7
167 (Rev. 1)	WG 4A	First Report of Working Group 4A to Committee 4	C.4
168	SWG 5A2 Ad Hoc 1	Report of Sub-Working Group 5A2 Ad Hoc 1 to Sub-Working Group 5A2	SWG 5A2
169	YUG	Proposals for the work of the Conference - Agenda Item 6	WG 5A
170	C.4	Summary Record of the sixth meeting of Committee 4	C.4
171	EGY	Proposal concerning feeder-link planning	C.5
172	KRE	Proposals for the work of the Conference	C.4
173	WG 5B	First Report of Working Group 5B to Committee 5	C.5
174	WG 5A	Note of the Chairman of Working Group 5A	WG 5A
175	WG 6A	First Report of Working Group 6A to Committee 6	C.6
176	PL	Minutes of the second Plenary Meeting	PL
177	SWG 5A1	Note from the Chairman of Sub-Working Group 5A1	SWG 5A1
178	LUX	Measures to improve the situation of the Allotment Plan	WG 4A
179	SWG 5A2	First Report of Sub-Working Group 5A2 to Working Group 5A	WG 5A
180	ARG	Draft modification of Articles 11 and 13	WG 6B
181	WG 6C	Note from the Chairman of Working Group 6C on proposed definitions dealing with the Allotment Plan	C.6

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No.	Origin	Title	Destination
182 + Corr. 1	SWG 5A1	First Report of the Sub-Working Group 5Al to the Working Group 5A	WG 5A
183	SG	IFRB Report - Planning exercise 1-1-2-4	4 Ad Hoc 1
184	LUX	Proposals for the Conference - Proposed modification to Article 13	SWG 6B1
185	J ·	Proposals relating to the regulatory procedures of the Plan for the feeder-links for the broadcasting-satellite service	WG 5B
186	C.5	Summary Record of the fourth meeting of Committee 5	C.5
187	F	Proposals for the work of the Conference - Agenda Items 3 and 4 - Draft Resolution [XY] and modifications to Appendix 4	C.6, WG/PL
188	WG 6C	First Report of Working Group 6C to Committee 6	C.6
189	SWG 5A2	Note from the Chairman of Sub-Working Group 5A2 ORB-88 Feeder-link system	SWG 5A2
190	4 Ad Hoc 1	Final Report of the Chairman of Group 4 Ad Hoc 1	C.4
191	WG 4B	First Report by the Chairman of Working Group 4B	C.4
192	WG 4A	Final Report of Working Group 4A to Committee 4	C.4
193	WG 6C	Note from theChairman of Working Group 6C on certain proposals for revision of provisions under Article 29	C.6
194	WG 2A	First Report of Working Group 2A to Committee 2	C.2
195	C.4	Summary Record of the seventh meeting of Committee 4	C.4
196	C.4	Summary Record of the eighth meeting of Committee 4	C.4
197	WG 6C	Second Report of Working Group 6C to Committee 6	C.6

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No.	Origin	Title	Destination
198	WG 6C	Note from the Chairman of the Working Group 6C to the Chairman of Committee 6	C.6
199	C.4	Note from the Chairman of Committee 4 - Requirements for Draft Allotment Plan	C.4
200	SG	List of documents (151 to 200)	SG

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